NORTHLAND REGIONAL COUNCIL / KAIPARA DISTRICT COUNCIL

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HEARINGS COMMITTEE AGENDA TEGEL FOODS LIMITED

NRC: APP.039494.01.01 / KDC: RM170441

VENUE:	The Lighthouse Function Centre (Harding Park Dargaville)		
COMMENCES:	Wednesday, 8 August 2018 at 9 am		
COMMITTEE:	Ms Sharon McGarry (Chair), Dr Rob Lieffering, Mr Reginald Proffit and Mr Mark Farnsworth.		

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SUBMISSIONS

Copies of all submissions have been provided to the Hearings Committee under separate cover.

APPLICATION DOCUMENTATION

A copy of the application and the section 92 requests for further information are available on the council websites.

NOTE:

All pre-circulated material, including the agenda is taken as read at the hearing.

HEARING PROCEDURES

PRIOR TO THE HEARING

- 1 The receipt of this hearing agenda does not preclude the possible resolution of any issues that were unresolved at any pre-hearing meeting before the date of the hearing. Discussions between Council staff, the applicant, and any person who made a submission may still take place, with a view to resolution or clarification of any outstanding issues.
- 2 Any outcomes of any pre-hearing meetings will be reported to the Hearings Committee in staff reports.

EVIDENCE

If you intend to, at the hearing, read any additional evidence that expands on your evidence already provided to the Committee with the hearing agenda, please provide at least ten copies for circulation amongst those present at the hearing. It is normal for pre-circulated evidence to be taken as read at the hearing. No new submissions will be accepted at the hearing.

THE HEARING

- 1 The Chairperson opens the proceedings by introducing the Committee and asking the parties to introduce themselves and their witnesses. The hearing procedure is to be as informal as possible but must, where appropriate, recognise tikanga Māori.
- 2 The Council's officer may be asked by the Chairperson to briefly outline the application, describe the area and provide any other background information considered essential at this stage.
- 3 The Council officer's report and recommendation is to be taken as read, but the officer may give additional verbal or written comments arising from earlier responses to the circulated hearing agenda.
- 4 Applicants expand on their application material and produce any evidence not pre-circulated, adding any comments on the officer's verbal statements.
- 5 Submitters expand on their pre-circulated submissions and produce any evidence not pre-circulated, adding any comments on the previous statements by the applicant or by the Council's officer.
- 6 Normally only Committee members may question (through the chair) any of the parties to the application. Any question (as opposed to comments) by any party shall be in writing and given to the Chairperson for consideration as to whether it shall be put to any party. No cross examination will be allowed.
- 7 Prior to the applicant exercising a right of reply, the Council's officer shall answer questions raised in material presented by the applicant and the submitters, and shall state any changes to his or her original recommendation.
- 8 The applicant exercises a right of reply, taking the opportunity to cover matters raised by the Council's officer and submitters.
- 9 The Chairperson will then either close or adjourn the hearing and then:
 - If the hearing is closed, the decision will be notified to the applicant and the submitters within 15 working days or such extended time as may be determined under Section 37 of the Act.
 - If the hearing is adjourned the reasons for the adjournment will be given (e.g. further information required, the applicant's Right of Reply yet to be given etc.) together with the length of time of the adjournment. Note that if the hearing is adjourned after the applicant's right of reply has been exercised, the hearing must be concluded within 10 working days after the right of reply has been exercised. At the end of the adjournment, the hearing will be concluded and the decision will be notified to the applicant and the submitters within 15 working days of the date of conclusion or such extended time as may be determined under Section 37 of the Act.
 - The hearing will be recorded for quality assurance purposes only (a sound file copy of the recording may be obtained from the Hearings Administrator).

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JOINT NOTIFICATION OF APPLICATIONS FOR RESOURCE CONSENT UNDER THE RESOURCE MANAGEMENT ACT 1991

Northland Regional Council (NRC) and Kaipara District Council (KDC) have received applications from Tegel Foods Limited for resource consents associated with the development and operation of a free range poultry broiler farm at 5763 and 5802 State Highway 12, Arapohue, Dargaville.

Resource consent applications made to NRC include the taking and use of groundwater, the diversion of surface water as a result of flood protection works, the discharge of contaminants (mainly odour) to air, and earthworks for the development of the site and quarrying. The NRC reference number for this application is **APP.039494.01.01**.

Resource consent applications made to KDC include land use consent for breaches of rules relating to earthworks, a reduced setback of buildings from the intersection of State Highway 12 and Whakahara Road, the storage and use of hazardous substances, and road construction works. The KDC reference for this application is **RM170441**.

Both councils hold full copies of the application documents and assessments of environmental effects which can be viewed or purchased at the following locations:

NRC - www.nrc.govt.nz and at 36 Water Street, Whangarei; and

KDC - www.kaipara.govt.nz and at the KDC offices at 42 Hokianga Road, Dargaville and Unit 6, The Hub, 6 Molesworth Drive, Mangawhai.

If you have any questions about the applications, please contact:

For NRC consent applications: Stuart Savill on 09 470 1101, free phone 0800 002 004, stuarts@nrc.govt.nz; or

For KDC consent application: David Badham on 021 203 1034, davidb@barker.co.nz.

Any person may make a submission on the application, but a person who is a trade competitor of the applicant may do so only if that person is directly affected by an effect of the activity to which the application relates that (a) adversely affects the environment; and (b) does not relate to trade competition.

You may make a submission on the applications made to the NRC and KDC by sending a written or electronic submission to:

NRC: Private Bag 9021, Whangarei Mail Centre, Whangarei 0148 or mailroom@nrc.govt.nz.

KDC: Unit 6, 6 Molesworth Drive, Mangawhai 0505 or rmanotified@kaipara.govt.nz.

The submission must be in the prescribed form (Form 13). Copies of this form are available on both council's webpages and at their offices.

Submissions close on Wednesday, 7 March 2018.

You must also send a copy of your submission to Tegel Foods Limited (the applicant), whose address for service is Andrea Brabant, Tonkin and Taylor Ltd, PO Box 5271, Wellesley Street, Auckland 1141 or email at abrabant@tonkintaylor.co.nz, as soon as reasonably practicable after sending your submission to NRC and/or KDC.

Stuart Savill Consents Manager on behalf of Northland Regional Council

Wednesday, 7 February 2018

Jessica Hollis Resource Consents Manager on behalf of Kaipara District Council

www.nrc.govt.nz

NORTHLAND REGIONAL COUNCIL STAFF REPORT

APPLICATION NO.:	APP.039494.01.01	
REPORT BY:	Ruben Wylie Consultant	
APPLICANT:	Tegel Foods Limited	
PROPOSAL	Construction and operation of free range broiler farm.	
NATURE OF ACTIVITIES:	 Taking and use of groundwater; The diversion of surface water due to flood protection works; The discharge of contaminants (mainly odour) to air; Earthworks and quarrying for the development and operation of the site; Associated diversion and discharge of stormwater associated with earthworks. Allotment 145 Parish of Arapohue, Lot 1 DP 80493, Allotment 9 Parish of Whakahara, Part Northern Part Allotment 6 Parish of Whakahara. Part Middle Part Allotment 6 Parish of	
	Whakahara, Part Southern Part Allotment 6 Parish of Whakahara, Part North Eastern Part Allotment 8 Parish of Whakahara, Allotment 146 Parish of Arapohue, Lot 2 DP 207822, Lot 2 DP 210260, DP 25585, Part South Western Portion Allotment 8 Parish of Whakahara, Part North Western Part Allotment 1 Parish of Arapohue Lot 1 DP 207822	
LOCATION	At or about location co-ordinates 1685638E 6012554N	
CO-ORDINATES:	Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.	
LOCALITY:	5763 and 5802 State Highway 12, Arapohue, Dargaville.	
DURATION OF CONSENT SOUGHT:	35 Years.	

RELEVANT STATUTORY PLANNING INSTRUMENTS:

- Regional Policy Statement for Northland (RPS).
- Regional Water and Soil Plan for Northland (RWSP).
- Regional Air Quality Plan for Northland (RAQP)
- Proposed Regional Plan for Northland (PRP)
- National Policy Statement for Freshwater Management (NPSFM)
- Resource Management (National Environmental Standards for Air Quality) Regulations 2004
- Resource Management Act 1991 (RMA)

ACTIVITY	
CLASSIFICATION:	

Consent Type	For	Detail	Classification
Land Use Consent	Land Disturbance	Earthworks outside a Riparian Management Zone	 Subject to controlled activity rule 33.2.1 of the RWSP; Subject to discretionary activity rule to C.8.3.3 of the PRP
Water Permit	Diversion	Diversion of stormwater associated with earthworks outside a Riparian Management Zone	 Subject to controlled activity rule 22.2.1 of the RWSP; Subject to discretionary activity rule to C.8.3.3 of the PRP
Discharge Permit	Stormwater	Discharge of stormwater associated with earthworks outside a Riparian Management Zone	 Subject to controlled activity rule 22.2.1 of the RWSP; Subject to discretionary activity rule to C.8.3.3 of the PRP
Land Use Consent	Land Disturbance	Earthworks within a Riparian Management Zone	 Subject to discretionary activity rule 34.3.1 of the RWSP Subject to discretionary activity rule to C.8.3.3 of the PRP
Water Permit	Diversion	Diversion of stormwater associated with earthworks within a Riparian Management Zone	 Subject to discretionary activity rule 22.3.1 of the RWSP Subject to discretionary activity rule to C.8.3.3 of the PRP
Discharge Permit	Stormwater	Discharge of stormwater associated with earthworks within a Riparian Management Zone	 Subject to discretionary activity rule 22.3.1 of the RWSP Subject to discretionary activity rule to C.8.3.3 of the PRP
Land Use Consent	Structure	Construction of new flood defences within a public drainage district.	 Subject to discretionary activity rule 27.3.3 of the RWSP Subject to discretionary activity rule C.4.6 of the PRP

Consent Type	For	Detail	Classification
Water Permit	Diversion	Diversion of flood waters within a public drainage district	 Subject to discretionary activity rule 27.3.3 of the RWSP Subject to discretionary activity rule C.4.6. of the PRP
Water Permit	Take	Taking of drainage water within a public drainage district	 Subject to discretionary activity rule 27.3.3 of the RWSP. Subject to discretionary activity rule C.4.6 of the PRP
Water Permit	Diversion	Diversion of drainage water within a public drainage district	 Subject to discretionary activity rule 27.3.3 of the RWSP. Subject to discretionary activity rule C.4.6 of the PRP
Water Permit	Discharge	Discharge of drainage water within a public drainage district	 Subject to discretionary activity rule 27.3.3 of the RWSP. Subject to discretionary activity rule C.4.6 of the PRP
Water Permit	Take	Take groundwater for poultry drinking water, poultry shed washdown water; staff drinking water, poultry shed cooling system (mist generation), and dairy shed water requirements.	 Subject to discretionary activity Rule 24.1.1 of the RWSP. Subject to discretionary activity rule C.5.1.10 of the PRP
Air Discharge	Agricultural	Discharge of odour or particulates to air from factory farming that may be considered offensive or objectionable beyond the property boundary.	 Subject to discretionary activity rule 10.3.1 of the RAQP Subject to discretionary activity rule C.7.2.7 of the PRP
Air Discharge	Industrial	Discharge of contaminants into air from burning associated with the combustion of used litter and LPG	 Subject to discretionary activity rule 9.3.2 of the RAQP Subject to discretionary activity rule C.7.1.8 of the PRP

1. ACTIVITY DESCRIPTION

1.1 Application Documentation

- 1. The applicant provided an Assessment of Environmental Effects (AEE) to support the applications (AEE Report)1. The AEE Report has been prepared by Tonkin and Taylor Limited (T&T), which is the applicant's agent. The AEE Report is supported by a number of technical reports as listed below:
 - Technical Report A (Geotechnical Assessment Report).
 - Technical Report B (Flooding Assessment).
 - Technical Report C (Groundwater Assessment).
 - Technical Report D (Civil Preliminary Design Report).
 - Technical Report E (Air Quality Assessment).
 - Technical Report F (Hazardous Substances Assessment).
 - Technical Report H (Archaeological Assessment).
 - Technical Report I (Noise Assessment).
 - Technical Report J (Landscape Assessment).
- 2. The Technical Report E (Air Quality Assessment) has been peer reviewed Beca Limited (Beca) and reported on in a report entitled *"Tegel Foods – Review* of Technical Assessment of Discharges to Air", dated 25 December 2017. The review report is **attached** as **Appendix A**.
- 3. In addition to the AEE Report and the above technical reports, additional information has been supplied by the applicant in response to two requests for further information issued under the provisions of section 92(2) (s92) of the RMA. These responses are in the form of four separate suites of correspondence as, identified and summarised below.
- 4. Letter dated 21 December 2017 from T&T entitled *"Further Information Free Range Broiler Farm, Arapohue Application".*
 - Confirmed application of additional resource consent for diversion of floodwaters under Rule 24.3.3 of the RWSP.
 - Provided additional details around stormwater management and wash down generation and disposal.
 - Confirmed agreement to incorporate contingency measures and shed cleaning procedures recommended by the Beca Review into management plans.
 - Confirmed agreement to validate PM₁₀ and SO₂ emissions as part of the commissioning for the facility.
 - Provided details of additional written approvals.
 - Provided a correction to the values used for the air quality dispersal modelling.

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¹ Free Range Broiler Farm, Arapohue: Assessment of effects on the environment. October 2017. Prepared by Tonkin and Taylor Limited.

- 5. Letter dated 22 December 2017 from T&T entitled *"Further Information Free Range Broiler Farm, Arapohue Application".*
 - Confirmed an amendment to the application, adjusting the annual water volumes sought to 325 cubic metres per day (m³/day) (originally 350 m³/day) and 48,425 cubic metres per year (m³/year) (originally 63,250 m³/year)
 - Provided further details of the inferred extent of the intrusive andesite.
 - Provided an allocation and recharge assessment for the intrusive andesite.
 - Provided further details around the saline intrusion risk.
 - Offered a series of consent conditions relating to the groundwater take and bore construction.
- 6. Letter dated 18 May 2018 from T&T entitled *"RM170441 Response to Further Information Request"*.
 - Confirmed that an assessment of potential cultural effects on Kāpehu Marae would be supplied to the Northland Regional Council (NRC) and the Kaipara District Council (KDC) prior to the consent hearing.
 - Provided an assessment of the physical effects of the proposal on points of concerns raised by Kāpehu Marae in their submission.
 - Provided an economic impact assessment of the proposed activity.
 - Provided commentary on the character and intensity of potential odour compared to typical farming activities based on Technical Report E (Air Quality Assessment).
 - Amended the application by reducing the extent of the proposed quarry to enable a 100 metre separation between the quarry and Kāpehu Marae and reducing the volume to be quarried from 117,000 cubic metres (m³) to 50,000 m³.
- 7. Finally, T&T supplied a letter dated 15 June 2018 entitled "RM170441 Response to further clarifications on further information request issued 18 May". That letter was provided following an informal request for clarification on several matters covered in the 18 May 2018 section 92 response. A summary of the content of the 15 June 2018 letter is as follows:
 - Confirmed that a cultural impact assessment would be supplied by 5 July 2018.
 - Provided updated details concerning earthworks volumes.
 - Provided clarification on mitigation approaches for dust management associated with the quarry operation.
 - Provided clarification on the employment figures used to estimate the economic impact of the proposed activity.
- 8. The above documentation has been taken into account and, where considered appropriate, adopted throughout this report.

1.2 Overview of the Proposal

- 9. The proposal has been described in Section 4 of the AEE Report. Since that report was lodged with the Northland Regional Council (NRC), several changes have been made to the application in response to requests for further information, consultation or submissions. These changes are identified in the previous section, and incorporated into the below summary.
- 10. Tegel Foods Limited (the applicant) proposes to establish a free range poultry farm at Arapohue. The land on which the applicant proposes to develop the poultry farm is located at 5763 State Highway 12 (SH12), approximately 12 kilometres southeast of Dargaville. The location of the subject site is depicted in **Figure 1** below.



FIGURE 1: Location of the subject site (blue shading).

11. Resource consent applications have been lodged by the applicant with the NRC to allow for various activities associated with the construction and ongoing operation of the proposed poultry farm. Those activities include the discharge of contaminants to air, earthworks, diversion of stormwater and the taking of groundwater. The General Layout of the proposed poultry farm is depicted in **Figure 2** below.



FIGURE 2: General layout of the proposal development. Extracted from drawing number 1003839-030.

- 12. The applicant also applied for land use consents to install up to eight groundwater bores. Prior to notification of the activities covered by this report, the applicant requested that the bore consent application be processed separately on a non-notified basis. NRC agreed to this request and in February 2018 issued a land use consent *"to install and maintain up to five investigation bores and three production bores for the water supply requirements of a poultry broiler farm and dairy farm"*. The applicant has subsequently advised that this consent has been exercised and that investigation bores have been installed to assist with further groundwater investigations.
- 13. The applications lodged with NRC are being considered jointly with resource consent applications lodged with Kaipara District Council (KDC).
- 14. The proposal will involve the development of 32 free range poultry sheds, each approximately 138 metres long, 20 metres wide and 4.5 metres high, which will together house up to 1.32 million birds at any one time.
- 15. The site is to be utilised for raising poultry only. Hatchlings are to be transported from hatchery facilities in Auckland. Live birds are to be transported from the facility for processing in Auckland.

- ^{16.} Water for the proposed poultry farm will be sourced from roof water collection and storage. However, the applicant proposes to install up to three production bores and take up to 325 m³/day and 48,425 m³/year of groundwater to supplement the roof water collection supply.
- 17. Each of the proposed sheds is to be washed down up to seven times per year, following each production cycle. Washwater is to be discharged via spray irrigation into dedicated irrigation paddocks. Resource consent has not been sought for the discharge of wash water. The applicant is relying on rule 16.1 of the RWSP and Rule C.6.3.1 of the PRP to allow for the discharge as a permitted activity and has provided sufficient information to demonstrate compliance with the requirements of that rule.
- 18. Heating for the poultry sheds is proposed to be provided by an energy centre located onsite. The proposed energy centre is to be fuelled by a combination of LPG and the combustion of litter sourced from the poultry sheds. The remainder of the facility's energy demands are to be sourced via solar power or mains supply.
- 19. The facilities associated with the proposed poultry farm are located on flood prone land. To mitigate flooding effects on the proposed infrastructure, the applicant proposes to construct two bunds designed to protect the facilities. The footprint of the proposed bunds is depicted in **Figure 2** above.
- 20. Stormwater drainage within the operational footprint of the proposed poultry farm is proposed to be achieved by developing channel drains to convey flows up to the present day 1% Annual Exceedance Probability (AEP) event. These drains are proposed to be piped through the bunds via gravity. In addition to gravity flows, the applicant proposes to discharge stormwater from the site utilising two pumping stations in order to ensure the 1% AEP flood level is 300 mm below the finished floor level of the site facilities.
- 21. The pumps may also be utilised to lower groundwater levels within the poultry ranging areas, meaning the drains in combination with the pumps will be utilised as a land drainage system.
- 22. Up to 50,000 m³ of material for the construction of the bunds and other fill requirements is proposed to be sourced from an existing limestone quarry located near the north-eastern corner of the subject site. Additional material may be imported for the internal roads and to make up any additional fill requirements. At the time of writing, the applicant was yet to confirm the proportion of the earthworks comprising imported fill, although it has been confirmed that the total earthworks requirements (cut and fill) associated with the development of the proposed poultry farm is 429,000 m³.
- 23. Workers accommodation is to be developed within the south-eastern portion subject site. T&T Plan number 1003839-020 depicts the proposed dwellings. Accommodation is to consist of four additional dwellings. In addition, the proposed farm is to be split into four farm blocks comprising eight sheds each. Utility facilities comprising showers, kitchens and toilets are to be developed within each farm block (i.e. four facilities in total).

- 24. Wastewater from the workers accommodation is to be treated via four standalone on-site treatment and disposal systems. Wastewater from the utility sheds is to pass through a primary treatment tank for each utility shed. The primary tanks are to discharge into one of two secondary systems (each receiving wastewater from two utility sheds). Treated wastewater is to be disposed of via drip irrigation onto the proposed bunds.
- 25. Resource consent has not been sought for the discharge of treated wastewater from the residential dwellings or the utility sheds. The applicant is relying on Rules 15.1.3 and 15.1.4 of the RWSP and Rule C.6.1.3 of the PRP to allow for the discharge as a permitted activity. The applicant has provided sufficient information to demonstrate compliance with those permitted activity rules.

1.3 Air Discharges

- 26. The applicant has sought resource consent for the discharge of contaminants to air associated with the poultry housing and the combustion of litter at the proposed energy centre.
- 27. The poultry housing will generate odour as a result of the intensive nature of the farming operation. Odour is expected to be generated primarily as a result of anaerobic degradation of manure and excreta from housed chickens.
- 28. The primary sources of odour associated with the poultry housing will be the roof vents and pop holes on the side of the poultry sheds. The pop holes enable chickens to exit the sheds to the ranging areas. Ventilation of the sheds will be passive at times when the pop holes are open. When the pop holes are closed, the sheds will be maintained at negative pressure via active ventilation provided by exhaust fans located on the roof of each shed.
- 29. The sheds are to be operated on eight week cycles. The odour generated by each shed will vary throughout the operation cycle. A summary of each operation cycle is as follows:
 - At the beginning of each cycle, birds are enclosed within the shed for the first 21 days, after which point the pop holes will be opened.
 - Between days 31 to 42, birds are caught and removed.
 - The shed is then cleaned of litter and disinfected. Litter is transported to the energy centre and the shed is dormant for the remainder of the eight week cycle (approximately 14 days).
- 30. The proposed energy centre is intended to be operated 24 hours per day, utilising approximately 40 tonnes of litter per day. Up to 1,700 tonnes of litter is to be stored within the energy centre building.
- 31. The transport of litter to the energy centre will be achieved via covered trucks. The energy centre building will comprise an enclosed litter storage space maintained at negative pressure to limit the release of fugitive odour and dust. Stored litter will be continually conveyed to combustion appliances to be converted into energy. Inlet air for the combustion units is to be sourced from within the building, allowing for thermal destruction of odour.

- 32. Exhaust gases from the energy centre are proposed to be treated via bag filters before being discharged via one or two 16.75 metre high stacks. Exhaust gases are expected to contain fine particulate matter, sulphur dioxide, nitrogen oxide and carbon monoxide.
- ^{33.} In addition to air discharge associated with the operation of the proposed facility, construction activities may also give rise to air discharges associated with dust generation. The applicant does not consider that construction activities will give rise to any discharges that require resource consent and accordingly resource consent for air discharges associated with construction activities has not been sought. In that regard, the applicant intends to rely on permitted activity rule 10.1.2 of the RAQP and Rule C.7.2.6 of the PRP to allow for the discharge of dust associated with construction activities, including quarrying.

1.4 Flood Control Works and Stormwater Diversion

- 34. Technical Report B (Flooding Assessment) concluded that the site is flood prone and that the development will require mitigation measures that relate specifically to flooding.
- 35. Flooding mechanisms identified and assessed by T&T in that report are:
 - coastal flooding from the Wairoa River during extreme tides.
 - flooding from the Wairoa River following extreme rainfall events.
 - surface flooding within the site.
 - groundwater flooding, which will be exacerbated by sea level rise.
- ^{36.} The applicant has proposed a series of approaches in order to mitigate against flooding on the developed site. These are discussed below.

1.4.1 Flood Protection Bunds

- 37. The applicant proposes to construct two separate bunds with a crest level of 3.8 metres RL, providing 500 mm of freeboard up to the 2065 2% AEP flood level. The bunds are proposed to be constructed around the perimeter of farm blocks 1 and 2 (northern bund) and farm blocks 3 and 4 (southern bund). The position of the proposed bunds is depicted in **Figure 2** of this report. The bunds will tie into the toe of the hillside within the eastern portion of the subject site at the crest level of the proposed bunds.
- ^{38.} The proposed bunds are to be constructed with fill sourced from the existing quarry located within the subject site or from imported hard fill. At the time of writing, the applicant was yet to confirm the likely volume of fill that would need to be imported. A 300 mm layer of compacted topsoil will be used to finish the bunds.

1.4.2 Gravity Drainage

39. An existing network of surface drains is located within the subject site. These generally consist of open farm drainage canals which collect surface water runoff, discharging into larger collector drains flowing in a westerly direction, running perpendicular to SH 12.

- 40 The existing drainage network is depicted in the
 - The existing drainage network is depicted in the plans attached as Appendix D to the AEE Report, Drawing Number 1003839-010. That plan indicates that the collector drains all discharge into a large box culvert passing under SH 12. The culvert also functions as a cattle underpass.
 - 41. From the box culvert, stormwater is conveyed to an existing stopbank bordering the Wairoa River. Stormwater is discharged through the stopbank via a non-return outlet that is tidally controlled.
 - 42. The existing drainage network is intended to be upgraded by increasing the capacity of the open drains within the subject site. The drainage upgrades are described in detail within Technical Report D (Civil Preliminary Design Report) and depicted in the stormwater layout plan attached as Appendix D of the AEE Report (Drawing Numbers 1003839-101 to 103).
 - 43. In addition to the existing drains, channel drains are proposed to be constructed around the poultry sheds and ranging areas. The drains are to be designed to convey flows up to the 1% AEP rainfall event. The drains will be piped through the bunds via non-return outfalls to discharge into the collector drains.

1.4.3 Pumping

- ^{44.} In addition to the gravity drainage network, the applicant proposes to install stormwater pump stations in the northern and southern bunded areas. The pumping stations are intended to assist the gravity system to remove stormwater when rainfall events occur during high tide conditions. The pumps will discharge stormwater directly into the existing channels outside of the proposed bunds.
- 45. The proposed pumps have been sized to ensure that during a 1% AEP rainfall event, flood levels remain 300 mm below the finished floor levels of buildings; and to allow the grassed ranging areas to be drained within 24 hours.
- ^{46.} The applicant states that it may be necessary to operate the pumps to lower the static water level within the drainage network during wet periods. The reason for this is to ensure outdoor areas remain dry enough for chicken ranging. In that regard, the drainage network and pumping stations will function as a land drainage scheme when required.

1.5 Earthworks

47. The development of the site will require an estimated earthworks volume of approximately 429,000 m³ (cut and fill), over an area of approximately 36 hectares. The portion of the site over which earthworks was initially proposed to be undertaken is depicted in the earthworks plans attached as Appendix D to the AEE Report. However, in its 15 June letter (refer to Section 1.1, para. 7), T&T stated:

"Further geotechnical investigations have recently been completed to determine whether suitable material could be obtained on site to source the outstanding 59,400 m³ need for general fill. The preliminary investigations have confirmed there is suitable material on site that could be used as general fill. We are currently finalising the details of the proposed change in earthwork locations and will provide KDC and NRC with the relevant information and plans within sufficient time to inform both Council's s42A reports."

- ^{48.} That additional information was not supplied at the time of writing this report, and so there remains some uncertainty as to the total area within the site subject to earthworks and the extent to which fill will be sourced off-site. This is a matter that will accordingly require confirmation at the hearing of the application.
- 49. Key site developments requiring earthworks are the construction of the bunds, development of internal roads, excavation of quarry material, excavation of the borrow area for the energy centre, contouring of ranging areas and raising the floor level of the farm sheds.
- 50. T&T Technical Report K provides an erosion and sediment control plan intended to address the potential adverse effects of the proposed earthworks. That plan confirms the proposed development is intended to be completed in stages over a four year period, with the northern bunded area developed first over a period of approximately two years, and the southern bunded area completed in the two years following.
- 51. Although not stated in the application documentation, the applicant's agent confirmed via email dated 15 June 2018 that the four year construction timeframe assumed earthworks will be carried out all year round, including outside the earthworks season.

1.6 Water Take

- 52. Water use for the proposed poultry farm will be required for the following: drinking water for poultry, shed washdown water; staff drinking water, and the shed cooling system (mist generation). The vast majority of the water requirements are for poultry drinking water.
- ^{53.} In addition to the water demands of the proposed poultry farm, the applicant intends to retain a downscaled dairy operation on the farmland comprising the subject site. In that regard, the current herd size of the farm block comprising the subject site is approximately 650 cows and the applicant intends to reduce the herd size down to 150 cows. Water requirements for the dairy shed wash down operation on the site will be serviced from the proposed groundwater take. The applicant has estimated daily water demand to service the dairy shed will be up to 25 m³/day. Stock drinking water requirements are to be provided via existing surface water dams and troughs.
- ^{54.} The total daily water use has been estimated by the applicant to be up to 325 m³/day for the dairy shed washdown and all aspects of the proposed poultry chicken farm. The applicant has sought resource consent to allow for the taking of groundwater up to that daily volume.

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- 55. It is relevant to note that the applicant intends to harvest and use water for the facility via a roof water collection and treatment system. The AEE Report states that the roof water collection and treatment system is likely to fulfil the water demands for the facility over the winter months. The maximum daily groundwater volume will only be required during periods of dry weather when there is insufficient rainfall to support the water demands of the proposed operations.
- ^{56.} In light of the volumes of water anticipated to be yielded by the roof water harvesting process, the total annual volume sought for the groundwater take is 48,425 m³. That annual volume is equivalent to a daily average water take of approximately 133 m³/day.
- ^{57.} The proposed water take is intended to be carried out via the development of up to three new production bores, with each bore designed to pump up to 160 m³/day. The development of the production bores may require the development of up to five investigation bores. The location of the proposed investigation/production bores is depicted in **Figure 3** below.



FIGURE 3: Location of the proposed production/investigation bores.

2. SITE DESCRIPTION

- 58. The subject site and surrounding area is described in detail in Section 3 of the AEE Report. Having visited the site, I consider that the description set out in Section 3 is sufficiently detailed and accurately describes the site location, surrounding area and existing environment. I have accordingly adopted the site description contained in Section 3 of the AEE Report. A brief description of the site and surrounding area is provided below.
- ^{59.} The subject site is adjacent to SH 12 at Arapohue, approximately 12 km south of the Dargaville township.
- 60. The total land area of the subject site is approximately 247 ha. The site is presently utilised as a dairy farm, with the bulk of the land area comprising pastoral grazing blocks. Existing farm buildings on site include a 50 bay rotary milking shed, calf rearing sheds, an implement shed and five dwellings.
- 61. The western portion of the site comprises an alluvial flood plain and is generally flat. The eastern portion of the site is hilly and ranges from 2 metres RL at the central portion of the site, through to 70 metres RL towards the western extent of the site.
- 62. Surrounding land use comprises predominantly primary production land with the northern, eastern and southern site boundaries bounded by pastoral farm land. The western site boundary adjoins SH 12 and the Wairoa River.
- 63. A limestone quarry is located in the north-eastern corner of the site. The quarry is described as being approximately 70 metres by 50 metres and around 5 metres in depth.
- 64. The site is located within the catchment of the Whakahara Drainage District. A map depicting the extent of the Whakahara Drainage District is provided in **Figure 4** below. The subject site makes up approximately 60% of the total area of the drainage district.
- 65. Low density residential dwellings are situated throughout the surrounding landscape. Other notable features within the surrounding landscape include Kāpehu Marae which is situated adjacent to the northern eastern corner of the subject site, and an urupā located adjacent to northern boundary of the subject site, approximately 380 metres west of Kāpehu Marae.
- 66. **Figure 5** below depicts the location of the subject site relative to nearby properties and other notable features. The applicant has provided the written approvals from the persons identified in **Table 1** below. The location of the dwellings situated on the properties subject to these approvals is shown in **Figure 5**.



FIGURE 4: Whakahara Drainage District (yellow) and the land area comprising the subject site (blue shading). Drainage district area sourced from NRC PRP maps.



FIGURE 5: Subject site (blue shading) and nearby residential dwellings (blue squares). Yellow squares represent dwellings in which property owners have given written approval.

Name	Address
Lorraine Exley & David Brendan Dennis	65 Whakahara Road, Arapohue, Dargaville
Phil Lewis Langdon & Maree Susan Chapman	89 Whakahara Road, Arapohue, Dargaville
Edith Frances Perreau & Kerry Michael Perreau	5793 State Highway 12, Arapohue, Dargaville
Michael Shane & Beverly Elaine Lardner	5802 State Highway 12, Mititai
Darryl Tregidga & Joanne Tregidga	5562 State Highway 12, Arapohue, Dargaville
Rochelle Dianna Jillett & Paul Geoffrey Sorensen	5590 State Highway 12, Arapohue, Dargaville

TABLE 1:Persons who have Provided Written Approval for the Poultry
Farm Application

3. SUBMISSIONS

- 67. The application was publicly notified on 6 and 7 February 2018, with the submission period closing on 7 March 2018. A total of 2,441 valid submissions were received, including eight late submissions. Of those submissions, 11 are in support, four are neutral, and the remainder are in opposition to the proposal. As a result of the submissions, a second section 92 request for information was issued jointly by NRC and KDC² post notification.
- 68. A total of 2,299 submission comprised one of three *pro forma* submission templates.
- ^{69.} The principal issues raised by submissions are summarised below.

70. Discharges to Air

- Discharge from the energy centre will contain contaminants that will affect the quality of roof water collection and will extend over an area in excess of what was modelled by the applicant.
- The discharge from the energy centre will affect people's health, particularity those with pre-existing health conditions. Concerns raised about the implications of the air discharge on the health of students at Arapohue Primary School.
- The discharge from the energy centre will affect stock drinking water, food crops and milk quality as a result of contaminants released into the environment.
- The variability of meteorological conditions was not adequately taken into account when assessing odour impacts, nor was climate change. Particular concerns raised with regard to the frequency of fog and/or low temperatures, which will create conditions that will result in odour impacts above those modelled by the applicant. Concern was also raised about the effects of humid summers.
- Northland District Health Board (Submission NRC311) points to guidance documentation which suggests a minimum separation distance from sensitive receptors of 1.38 km, and identified peer reviewed literature that suggests Te Kopuru and marae will be affected.

² NRC and KDC Joint section 92 request for further information dated 30 April 2018.

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- Dust from the operation (including dander from chickens) was not adequately assessed and may affect people's roof water supplies.
- Concerns raised about the unproven nature of the energy centre technology.
- The odour assessment is based on unproven assumptions relating to the mitigation approaches and it is considered by a number of submitters that odour impacts will occur over an area exceeding the area predicated by the modelling work.
- A number of submitters raised concerns about the impacts of odour on the nearby Kāpehu Marae and urupā.
- Lack of assessment provided on reverse-sensitivity effects, in particularly odour effects.
- Concern with conclusions that rural communities are "generally insensitive" to odour and other air pollutants from the proposed activities.

71. Māori Cultural Values

- The mana of the land will be compromised by excessive numbers of chickens, which will pollute the land and groundwater.
- The excavation from the quarry for the construction of the bunds will damage land adjacent to Kāpehu Marae.
- The nearby urupā is extremely tapu, being the last physical holder of loved ones. Noise, dust, ash and odour from the activity will violate the tapu of the urupā.
- The urupā overlooks the proposed development. The impacts of the development on the visual amenity from the urupā will also violate the tapu of the site.
- The mana of Kāpehu Marae will be significantly compromised as a result of the impacts of the proposal on the tapu of the urupā and the direct impacts of the proposal on the marae itself.
- Insufficient consultation has been undertaken with affected marae and hapū.
- Constructing such a large farm so near to the marae undermines the rights held by Māori as Tangata Whenua and those rights and protections guaranteed by the Treaty of Waitangi.
- Effects from activities relating to odour will affect the ability of hapū and iwi members to utilise the cultural landscape including Kāpehu Marae and associated urupā.
- The supporting assessments do not adequately describe nor provide acceptable mitigation or conditions of consent relating effects of the proposed activity of cultural associations with important cultural landscapes.
- Effects on the water table will affect natural springs relied upon by whānau.
- Seepage of contaminants will affect traditional food gathering areas (locations not specified in the submission).
- Cultural sites of Maungaraho and Tokatoka will forever have their vistas changed.

- A cultural impact study needs to be completed with assistance from local iwi.
- Further information should be included with the application in respect of the impacts of the proposal on cultural values.

72. Effects of Flood Control Works

- Development of a large scale facility within flood prone land is inappropriate and construction of the bunds will cause increased flooding to neighbouring properties by removing portions of the existing floodplain.
- Flood events may result in inundation within the poultry farm areas, resulting in contamination of the Wairoa River.
- Bunds for flood control purposes will have an adverse visual impact and will modify the flood flows.

73. Water Take

- The proposed water take will impact on groundwater availability for neighbouring farms.
- The proposed groundwater take volumes are excessive.
- The assessment of effects for the groundwater take does not adequately take into account the impacts of climate change, particularly as those impacts relate to increased drought frequency.
- The groundwater take is not sustainable, is inconsistent with the regional policy statement in terms of climate change and will result in negative impacts on local businesses.

74. Earthworks

- The scale of the earthworks is inappropriate for a sensitive area.
- Earthworks could result in sediment contamination into nearby waterways.

75. **Discharges to Ground**

 Groundwater table close to ground level in the vicinity of the proposal and this may lead to contamination of groundwater, including leaching of nutrients into the water table and Kaipara Harbour.

76. Negative Economic Impacts

- The proposed activity will compromise current dairy farmers and organic vegetable growers, resulting in loss of employment for organic farms.
- Tourism in the area will be affected as a result of the impacts of the proposal on amenity values.

77. Other Impacts

- The chicken stocking rates will adversely affect the health of the animals.
- Light spill from the facility will affect the character of the area.
- The proposal will result in antibiotics in the food chain and increased antimicrobial resistance. Reference made to the proposal being inconsistent with the New Zealand Antimicrobial Resistance Action Plan.

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- The applicant should adopt 2018 World Health Organisation guidelines on the use of antibiotics in food producing animals.
- Antimicrobial agents and growth enhancers are contaminants of public health concern and water sources should be monitored for these and other contaminants of public health concern.
- Concerns raised regarding biosecurity impacts of the proposal, with reference to human pathogens.
- Traffic and noise generations will cause adverse effects.
- The proposed activity will result in the devaluation of nearby properties.
- Limited information and consultation was undertaken by the applicant with nearby residents.
- The proposal is an industrial activity which should not be allowed to be carried out in a rural area.
- Concerns raised with respect to the facility or flood control works being expanded in the future.
- The proposal will adversely affect the outlook from key landmarks (Maungaraho and Tokatoka).
- Local events with the Arapohue Bowling Club, A&P shows, local hall, local church and Arapohue school will be adversely impacted.
- The application does not address the greenhouse gas emissions of the proposal in the context of climate change.
- Concern raised with regard to the transport of litter should the incinerator prove to be impracticable.
- The geotechnical assessment does not adequately take into account the effects of settlement.
- Maungaraho and Tokatoka are outstanding natural features under the RPS and the proposal is not consistent with the RPS in terms of its impacts on the outstanding natural features.
- Discharges and soil disturbance activities will result in unacceptable effects on local flora and fauna.

78. Positive Effects Highlighted by Submissions are Summarised as follows:

- The proposal will result in increased employment in the area and improve business opportunities.
- Native tree planting on the site will mitigate the visual impact of the site and increase biodiversity.
- Odour impacts will be mitigated as a result of climate controls and ventilation within the poultry sheds.
- The burning of litter via the energy centre is an efficient use of the waste and is a better environmental outcome compared to spreading the waste on land.
- Rainwater harvesting will reduce the volume of water required from other sources.

The proposal will result in an associated reduction in the scale of the existing dairy operation, resulting in an overall reduction on the quantity of effluent discharged to land.

3.1 Comment on Submissions

79. The concerns raised by submitters are addressed in Section 4 below. For completeness, I have considered only those effects that relate to activities for which resource consent has been sought with NRC and are relevant considerations within the ambit of the RMA. In that regard, I have not assessed the concerns raised in submissions that relate to the following matters.

Noise Generation; Visual Amenity, including Light Spill; Traffic Generation

80. These are matters that fall within the regulatory authority of the KDC and are being assessed by the KDC under the provision of the Kaipara District Plan.

Greenhouse Gas Emissions

81. Sections 70A and 104E of the Resource Management Act state that a decision maker cannot have regard to the effects of a discharge into air of greenhouse gases on climate change.

Effects on Nearby Property Values

In the absence of specific evidence pertaining the likely effects of the proposed activity on property values, I have not taken into account any such effects put forward by submitters. This is consistent with *Foot v Wellington City Council (W73/98)* in which the Environment Court sets out that the starting point is that effects on property values are generally not a relevant consideration, and that any decrease of property values will generally be found to be a measure of adverse effects on amenity values.

Animal Welfare and Antimicrobial Resistance

83. Animal welfare and the effects of antimicrobial resistance are not matters that can be considered under the RMA.

Permitted Activities

A number of submissions relate to effects associated with permitted activities, such as the discharge of dust during construction and the discharge of wash down water to ground. I have not given consideration to submissions relating to permitted activities or activities for which no resource consent is required.

4. EFFECTS ASSESSMENT

4.1 Existing Environment

- 85. Section 104(1)(a) of the RMA provides that when considering a consent application, the consent authority must, subject to Part 2, have regard to the actual and potential effects on the environment of allowing the activity. The term "environment" must be read as the environment which exists at the time of the assessment and as the environment may be in the future as modified by the utilisation of permitted activities and by the exercise of resource consents which are being exercised, or already granted and which are likely to be exercised in the future.
- 86. Earlier in this report, I described the receiving environment as it presently exists. In my assessment of effects that follows, I have assessed the applications against the environment as described. I am not aware of any resource consents already granted but not yet exercised, that have the potential to modify the receiving environment.

4.2 Permitted Baseline

- 87. Section 104(2) provides that, when forming an opinion about the actual or potential effects of the activity, the consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect. This is often referred to as the "permitted baseline" and calls for a discretionary decision to be exercised by the consent authority as to whether or not to discount such permitted effects. In other words, the permitted baseline involves a comparison of effects of a proposed activity that requires resource consent with the effects of activities that are permitted.
- 88. Owing to the nature and scale of the activities for which resource consent is required, I do not consider there to be any value in assessing those activities against the permitted baseline. Therefore, I have not discounted the permitted baseline effects in undertaking my assessment of effect.

4.3 Application Documentation

89. An overview of documents considered in this section is provided in Section 1.1. The documentation identified in that section has been taken into account and, where considered appropriate, adopted as part of the assessment of effects contained below.

4.4 Effects on Air Quality

4.4.1 Applicant's Assessment

^{90.} The proposed activity will result in the discharge of contaminants to air associated with the combustion of litter and LPG for the energy centre, the discharge of odour from the poultry sheds and ranging areas, and the discharge of dust during the construction and the operation of the proposed facility.

- 91. Technical Report E (Air Quality Assessment) provides a technical assessment of the sources of air discharges, the contaminants of concern and the effects of the air discharges on the environment.
- 92. Odour emissions have been assessed and reported on in Technical Assessment E by utilising a method that accounts for the scale of the operation and the growth of the birds over the production cycle. Atmospheric dispersion modelling was then used to predict the potential impacts of the estimated odour emissions on the receiving environment.
- 93. Importantly, the approach taken in Technical Report E considered two scenarios, a "conventional management scenario" and a "site specific management scenario". The model for the conventional management scenario utilised guidance developed for the Environmental Protection Agency of Victoria³ and estimated odour emission over the batch cycle based on the overall mass of chickens. The site specific management scenario assumed an odour emission rate 51% of the conventional management scenario based on the climate control enabled by the energy centre resulting in a significant reduction in ammonia. The site specific management scenario was used in Technical Report E to assess the odour effects associated with the proposal.
- 94. The model results reported in Technical Report E predict 99.5 percentile one-hour average concentrations of odour in odour units per cubic metre (OU/m³).
 Figure 6 below depicts the spatial distribution of predicted odour concentrations used for assessing odour effects for the model 2012 year⁴. Contour plots for all modelled scenarios are attached as Appendix A to Technical Report E. The 99.5 percentile values produced by the dispersion modelling output portray the one hour average odour concentration that is predicted to be exceeded at a particular location for 0.5% of the time, or approximately 43 hours per year.

³ Environmental Resource Management Australia. 2012. Broiler Farm Odour Environmental Risk Assessment - Background to Technical Guidance. Technical Report for EPA Victoria.

⁴ The dispersion modelling was completed based on two modelled meteorological scenarios for 2012 and 2015.



FIGURE 6: Spatial distribution of predicted 99.5 percentile 1-hour average odour concentration (odour units) obtained from Figure 7-1 of Technical Report E. Triangles represent sensitive receptors.

- 95. Odour concentrations predicted in the dispersion modelling were assessed against the guideline values contained in the Ministry for the Environment *Good Practice Guide for Assessing and Managing Odour (MfE CPG)*⁵. The assessment criteria and outcomes are explained in detail in Section 7 of the Technical Report E. In summary, a threshold of 5 OU/m³ as a 99.5 percentile was used for identifying when a sensitive receptor would likely be exposed to a high risk to objectionable or offensive odour. Where odour is predicted to be less than 5 OU/m³, it has been considered that odour at that location is unlikely to be considered offensive or objectionable.
- ^{96.} T&T identified Kāpehu Marae, Arapohue Primary School and all residential dwellings as being sensitive receptors.
- 97. In its 21 December 2017 section 92 response letter, T&T stated that, "following receipt of all written approvals from properties within the predicted 5 OU/m³ contour (refer to Table 1), significant adverse odour nuisance effects are unlikely beyond the properties from which written approval has been obtained". It should be noted that the urupā to the east of Kāpehu Marae is situated within the boundary of the predicted 5 OU/m³ contour. T&T did not identify the nearby urupā as being a sensitive receptor in its odour assessment or AEE Report. As a consequence, the impacts of the potential exceedance of the 5 OU/m³ threshold on the urupā has not been considered.

⁵ Ministry for the Environment. 2016. Good Practice Guide for Assessing and Managing Odour. Wellington: Ministry for the Environment.

- 98. With regard to the discharge of combustion emissions from the energy centre, these were assessed utilising the same dispersion modelling technique used for the odour assessment, but with various modifications to reflect the changes to the discharge mechanics.
- 99. The assessment considered three contaminants of concern: particulate matter below 10 microns (PM₁₀), nitrogen oxide (NO_x), and sulphur dioxide (SO₂). These contaminants were assessed against the standards contained in the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NESAQ) and the guideline values in the New Zealand Ambient Air Quality Guidelines (AAQG)⁶.
- 100. The dispersion modelling reported on in Technical Report E indicates that all modelled contaminants are predicted to be significantly below relevant air quality standards.
- 101. Finally, with regard to dust generation, the applicant has not sought resource consent to allow for the discharge of dust associated with the construction and operation of the proposed facility. The applicant is relying on permitted activity rules to allow for the discharge of dust associated with these activities.

4.4.2 Technical Review

- 102. Beca was commissioned by NRC to undertake a peer review of Technical Report E. For completeness, it is relevant to note that an initial peer review of Technical Report E was completed by Beca in December 2017⁷ prior to notification. Following the conclusion of the submission period, the peer review report was revised and further developed by:
 - identifying and discussing key air quality concerns identified by submitters;
 - assessing the applicants responses to section 92 requests; and
 - making recommendations for consent conditions.
- 103. The peer review report (Beca Review) is **attached** as **Appendix A** and the outcomes summarised and discussed below.

4.4.3 Technical Review – Dust Generation

- 104. As discussed earlier, the applicant has not sought resource consent for the discharge of dust associated with construction work and the on-going operation of the proposal. Instead, the applicant intends to rely on permitted activity provisions.
- 105. With regard to dust generation, Sections 3.3 and 6.3.1 of the Beca Review confirms agreement with T&T that the proposed activities are unlikely to give rise dust nuisance beyond the property boundary.
- 106. I accept Beca's review findings as they relate to the effects of dust generated on site. I therefore consider it reasonable for the applicant to rely on permitted activity provisions to allow for the discharge of dust associated with the construction and on-going operation of the proposal.

⁶ Ministry for the Environment 2002. *Ambient Air Quality Guidelines*. Wellington: Ministry for the Environment.

⁷ Beca Limited (5 December 2017) Tegel Foods – Review of Technical Assessment of Discharges to Air.

4.4.4 Technical Review – Minor Sources of Odour

- 107. Before considering the major contributors to odour associated with the proposal activity, and taking into account the concerns raised by submissions, there is value discussing minor sources of odour that were not specifically assessed in Technical Report E.
- 108. Sections 3.2.7 to 3.2.10 of the Beca Review discusses odour generation from the following sources:
 - The range areas surrounding the sheds;
 - Removal of litter from the sheds; and
 - Collection and treatment of shed washwater.
- 109. With regard to odour generated from the ranging area, Beca refers to recently published research⁸ on that topic that confirms odour from ranging areas is of virtually no consequence. Beca state:

"...consequently, it is considered that the omission of odours from the range areas in the T&T assessment will not affect the results and conclusions of their report. The low odour potential of these areas is consistent with observations made by Beca during a site visit to a Waikato free range poultry farm."

- 110. I accept that conclusion.
- 111. With regard to the removal of litter from the sheds, Beca refers to an Australian based technical assessment⁹ which points out that most cleanout odour complaints are generally not attributable to the shed operations, but the way in which the manure is removed. The referenced document contains a series of recommendations for cleanout practices and Beca recommends the applicant follow these practices during cleanout operations. In its 21 December 2017 section 92 response letter, T&T confirmed those procedures would be followed when safe to do so.
- 112. The Beca Review states that washwater from the sheds, which is proposed to be irrigated to land, is expected to be of similar character to other odours from the site but of a lower intensity. Beca concludes that irrigation of washwater too close to sensitive receptors may result in the generation of low intensity odours, but the potential for the washwater to generate effective odours is low. The washwater disposal is depicted in plan numbers 1003839-091 attached as Appendix D to the AEE report. That plan indicates the proposed disposal site will be situated approximately 100 metres from the southern property boundary and approximately 250 metres from the nearest residential property.
- 113. Based on the assessment provided in the Beca Review, I consider that the odour effects associated with the clean out operations, range areas and collection and discharge of washwater are likely to be no more than minor.

⁸ Rural Industries Research and Development Corporation (2015). *Free range chickens—odour emissions and nutrient management.*

Pacific Environment Limited (2013). Development of Odour Environmental Risk Assessment Guidelines for Broiler Farms in Victoria.

- 114. As discussed earlier, Technical Report E utilised dispersion modelling to predict the distribution and concentration of contaminant discharges from the energy centre and poultry sheds. Section 4.3.1 of the Beca Review confirmed that the modelling system (CALPUFF/CALMET) is appropriate and takes into account the complex terrain of the site. Beca also confirmed that the model configuration was appropriate and generally provides a good representation of the discharge and dispersion conditions that will be present.
- 115. Section 4.3.2 of the Beca Review discussed the meteorological input to the model. Beca confirm that the meteorological inputs for the dispersion model are expected to provide a reasonable representation of the dispersion conditions which occur at the site. Beca did note, however, that the 2012 model year is considered to be more representative of expected air pollutant levels in the vicinity of the site compared to the 2015 model year. This is because there was a much lower correlation between observed wind flows and those predicted in 2015. Beca states, however, that it is unlikely that the conclusions reached by T&T would change if the assessment of effects was based solely on the 2012 predictions.
- 116. Based on the technical assessment completed by Beca, the modelling system and its configuration, including meteorological modelling, is appropriate. In other words, provided the model inputs as they relate to contaminant concentrations and discharge rates accurately reflect those that are likely to occur as a result of the proposed activity, the model outputs are expected to provide a reasonable prediction of odour dispersion.
- As discussed earlier, Technical Report E utilised a site specific management 117. scenario to model odour dispersion for the purpose of assessing the effects of the odour discharge. The odour concentrations used for that scenario were derived by assuming that the odour emission rate from the proposed activity will be 51% of the emission rates of a conventional broiler farm. That assumption is based on a study conducted by the energy centre supplier which. according to Technical Report E, demonstrated the heating and climate control provided by the energy centre system can achieve a 51% reduction in ammonia deneration. Technical Report E further assumed that ammonia can be used as a proxy for odour generation and therefore by using the heating methods provided by the energy centre, a 51% reduction on odour emission rates can be assumed. The Beca Review agreed that the site specific management scenario would likely result in substantial reductions in odour emission rates compared to the conventional management scenario. However, Beca was unable to verify that the site specific scenario would result in a 51% reduction in odour emission rates.
- 118. With the above considered, whilst the Beca Review confirmed the model is expected to provide a reasonable prediction of odour dispersion, there is uncertainty with the inputs used to derive those results. The consequences of this uncertainty are discussed later.

4.4.6 Technical Review – Combustion Products

- ^{119.} Section 3.4 of the Beca Review discusses the combustion emissions rates used to input the dispersion modelling. Beca confirmed that emission rates of PM_{10} and NO_x inputted into the model were reasonable. Beca did, however, point out that the SO_2 emission rates appeared to have been based on specifications provided by the manufacturer of the energy centre and suggested that, based on the sulphur content in chicken litter, SO_2 emission rates could be up to 32 times higher than those inputted into the model utilised in Technical Report E.
- 120. Section 4.7 of the Beca Review discusses the potential health effects, including the implications of the higher SO_2 emission rates, stating:

"T&T used the same modelling configuration to assess the potential health effects of the discharge of combustion contaminants as used to model the effects of the odour discharges. T&T assessed the results of the combustion discharge modelling against the relevant national and regional ambient air quality criteria, which is appropriate. The results of the T&T modelling demonstrated that the maximum concentrations of PM_{10} , SO_2 and nitrogen dioxide are expected to remain well below the relevant standard guideline values and any adverse effects on human health and the environment, resulting from the discharges, are expected to be negligible.

As noted in Section 3.4, the emission rate of SO₂ used as an input to the T&T model could be up to 32 times higher than the value estimated by T&T (up to 6.1 g/s), . Ambient concentrations of SO₂ predicted by modelling are directly proportional to the SO₂ emission rate. Consequently, the maximum ambient SO₂ concentrations may be 32 times higher than those reported by T&T and maximum 1 hour and 24 hour average SO₂ concentrations may reach 160 µg/m³ and 80 µg/m³ respectively. However, despite this discrepancy, the maximum ambient concentrations are still expected to remain well within the relevant health-based air quality criteria.

Beca therefore considers that no significant adverse health effects are expected to result from the discharge of combustion-related contaminants from the energy centre."

121. I accept the above findings. Based on the work presented in Technical Report E and the subsequent peer review completed by Beca, I consider that the effects of the discharge of contaminants to air from the proposed energy centre are likely to be no more than minor.

4.4.7 Technical Review – Odour

122. The Beca Review considered the primary sources of odour and the emission rates used and reported on in Technical Report E. Section 3.2.4 of the Beca Review concludes that the estimated odour emission rates are reasonable, stating (emphasis added):

"Beca considers that, overall, the estimate odour emission rates used by T&T are likely to be reasonable for the following reasons:

- The estimates of odour emission rates used by T&T are based on measurements made at conventional sheds;
- The proposed sheds will use computerised climate control to monitor temperature, humidity and CO₂ levels in the sheds;
- The proposed sheds will have indirect heating which should reduce shed humidity, the moisture content of the litter and the ammonia concentrations in the sheds;
- Litter will be completely removed and replaced after each batch; and
- Nipple drinkers will be used, which reduce the moisture content of the litter.

However, there is some uncertainty in the derived emission rates due to the following factors;

- The relationship between ammonia concentrations and odour emission rates from the sheds was found to be inconclusive;
- We cannot confirm that odour emission rates would necessarily be reduced by 51% for the proposed shed technology compared to traditional methods; and
- The modelled emission rates for the proposed shed have not been confirmed by any emission testing."
- 123. In terms of the assessment criteria used in Technical Report E, Sections 4.4 and 4.5 of the Beca Review confirms criteria used by T&T to assess the results of the odour dispersion modelling are consistent with the recommendations provided in the MfE GPG and that the criteria of 5 OU/m³ (99.5 percentile) is appropriate for this assessment. Beca also confirmed that it considered the risk assessment used in Technical Report E is reasonable.
- 124. I accept Beca's assessment and therefore accept the overall assessment approach within Technical Report E as being generally appropriate for determining the effects of the discharge of odour associated with the proposed activity. However, there are two important aspects highlighted by the Beca Review that warrant further discussion: uncertainty with the odour emission rates used in the model; and the effects of the odour discharge on the nearby urupā.

4.4.8 Uncertainty with Odour Emission Rates

- 125. Whilst Beca confirms the emission rates are likely to be reasonable, there is some uncertainty with the assumptions used to differentiate the emission rates between those accepted for conventional broiler sheds and those used in the assessment contained in Technical Report E. In summary, Beca was not able to verify the 51% reduction in odour emission rates assumed by T&T.
- Beca discusses the implications of the uncertainty with the odour emission rates in Section 4.6 of the Beca Review, stating (emphasis added):

"As noted previously, there is a level of uncertainty in the modelled odour emission rates and therefore there is also a level of uncertainty in the predicted odour concentrations at nearby sensitive receptors. If emissions of odour from the sheds are higher than have been estimated by T&T, the risk of an odour nuisance effect occurring may also be higher than what is assessed in the T&T report. An indication of the relative sensitivity of the odour risk assessment to the higher odour emission rates can be derived from the dispersion modelling results presented in Figure A7 of the T&T report. A summary of the number of sensitive receptors where the 99.5 percentile 1-hour average odour concentration are predicted to exceed the MfE guideline concentration of 5 OU/m³ for different odour emission rates (expressed as a percentage of the "conventional management" emission rate) is shown in Table 1. Only the sensitive receptors which have not provided written approval are considered in the table.

The results suggest that a greater number of sensitive receptors could potentially be impacted by discharges from the farm (compared to those identified in the T&T report) if the odour emission rates were higher than estimated by T&T. For example, the MfE guideline would be exceeded at a further four sensitive receptors if the emission rates were 24% higher than those modelled, and at a further eight sensitive receptors if the emission rates were 39% higher than those modelled. These increases are expected to be within the uncertainty of T&T's derived odour emission rates.

127. The table referred to in the above excerpt is reproduced in **Table 2** below.

TABLE 2:Estimate of the number of potentially affected sensitive receptors
for different odour emission rates. Table extracted from Section
4.6 of the Beca Review report.

Odour Emission Rate Scenario	Number of sensitive receptors where the predicted 99.5 percentile 1 hour average odour guideline exceeds 5 OU/m ³	
51% of the conventional shed emission rates (as assumed in the T&T report)	urupa	
63 % of the conventional shed emission rates	urupa, marae, & 3 dwellings	
71 % of the conventional shed emission rates	urupa, marae, & 7 dwellings	
83 % of the conventional shed emission rates	urupa, marae, Arapohue School & 10 dwellings	

- 128. The consequence of this uncertainty is that there is a potential for a high risk of objectionable or offensive odours affecting greater number of sensitive receptors compared to those identified in Technical Report E.
- 129. Taking into account the scale of the proposed activity, the outcome of the Beca Review and the consequences on neighbouring properties should the assumed odour emissions prove to be an underestimate, I do not consider that the odour assessment provided by the applicant gives appropriate levels of certainty in respect of the likely odour effects associated with the proposed activity.

4.4.9 Effects on the Urupā

- 130. In Section 4.6.1 of the Beca Review, it is identified that the MfE GPG categorises urupā as having high sensitivity to potential odour nuisance effects and that a high amenity value would therefore be expected to be maintained at the site.
- 131. I accept and adopt that assessment.
- 132. Beca further point out that the results of the modelling show that the predicted odour concentrations at the urupā exceed the MfE guideline criteria of 5 OU/m³.
- 133. The Beca Review goes on to point out that, based on the information provided by T&T, it is not possible to assess the potential risk of visitors to the urupā being exposed to odour as this would depend on the frequency and duration of visitors to the urupā. Beca does point out, however, that it is likely that the risk of exposure at the urupā will be lower compared to other sensitive receptors, such as dwellings, the marae and the school (during day time).
- 134. The submission of Kāpehu Marae provides some insight as to how the urupā differs from non-Māori burial sites. An excerpt from Section 1, Paragraph 5, states the following in respect of the urupā:

"This is where those they leave behind come to repeatedly in the days, weeks, months and years after their passing to draw comfort and ease their pain in quiet solitude as they remember and commune with all their whanaunga and tupuna lying there. Whānau spend many hours in our urupā with some even sleeping there."

- 135. In the absence of a cultural impact assessment (none was provided by the applicant at the time of writing), I consider it appropriate to draw from the information contained in the submission of Kāpehu Marae as it relates to the use of the urupā. In that regard, based on the information contained in the Kāpehu Marae submission, it can be assumed that the urupā will be visited by people at a frequency and duration that differs from non-Māori cemeteries, with visits sometimes occurring for many hours.
- 136. In my opinion, there is a lack of certainty in respect of the actual or potential adverse effects of the discharge of odour on the urupā due to:
 - the absence of a cultural impact assessment;
 - the uncertainty of the odour emission rates used for the odour model; and
 - Technical Report E did not consider the urupā to be a sensitive receptor and so excluded it from the effects assessment.

4.4.10 Conclusion

137. The Beca Review has confirmed that the model system used within Technical Report E is an appropriate means of predicting the potential odour effects beyond the property boundary. Technical Report E has assumed odour emission rates will be 51% compared to a conventional poultry farm. Beca is unable to verify that assumption, and this is a cause for some uncertainty with the predicted odour dispersion.

- - 138. In addition, the Beca Review identified that the urupā is a sensitive receptor. The applicant has not assessed the effects of the potential discharge of odour on the urupā in the context of the MfE CPG and so has not considered the sensitivity of the site to the predicted odour concentrations.
 - 139. The consequence of the uncertainty is that that there is the potential for additional properties containing sensitive receptors to be exposed to objectionable or offensive odour.
 - 140. A condition of consent requiring an adaptive management approach, for example limiting the initial farm size until odour effects can be verified, may be an effective means of addressing uncertainty with regard to the effects on neighbouring properties. However, the applicant has not provided an assessment of alternatives, and it is not clear whether a staged approach is viable. It is also not clear on what basis the project could be staged to appropriately address uncertainty with odour effects.
 - 141. It is relevant to note that in Section 2.1 of its 18 May 2018 section 92 response letter, T&T stated an assessment of alternative sites and methods considered will form part of the applicant's corporate and planning evidence presented at the hearing. Consideration of an adaptive management approach as a means of addressing uncertainty with the odour effects is therefore best dealt with during the hearing of the proposal.
 - 142. With all of the above taken into account, in my opinion there is insufficient certainty to demonstrate that odour associated with the proposed activity is unlikely to exceed MfE CPG guideline criteria at neighbouring properties for which no written approval has been provided. On that basis, I consider that the proposed activity has the potential to cause significant adverse effects on neighbouring properties and the use of the Kāpehu Marae urupā.

4.5 Effects on Flooding

- 143. Technical Report B (Flooding Assessment) confirms the subject site is flood prone. Major flooding can be expected to occur both as a result of coastal inundation and fluvial flooding of the Wairoa River. Current day 1% AEP levels for both flooding scenarios have been reported in Technical Report B as being 2.9 metres RL. That assessment is based on the results of earlier coastal flood hazard assessment works commissioned by NRC¹⁰ (in the case of coastal flooding levels) and river level gauge data from the last 35 years.
- 144. Based on the information contained in Technical Report B, during a 1% AEP flood event resulting in flood levels at 2.9 metres RL, low lying area on the subject site would be inundated by up to 1.8 metres of water. A map depicting the flood extent is provided in **Figure 7** below.

¹⁰ Tonkin and Taylor Ltd (2016). Coastal Flood Hazard Zones for Select Northland Sites.



FIGURE 7: Subject site and current day 1% AEP coastal inundation extent (2.9m RL). Mapped extent from NRC GIS data for present day Coastal Flood Hazard Zone.

145. Technical Report B provides an assessment of the effects of flooding on the proposed development, mitigation approaches and the effects of the overall development on flooding within the site and on surrounding properties. These are discussed below.

4.5.1 Bund Construction

- 146. The applicant proposes to construct two separate bunds in order to protect the poultry sheds from coastal and fluvial flood inundation. Technical Report B confirms the crest level of the proposed bunds is intended to be at 3.8 metres RL, providing 500 mm of freeboard to the 2% AEP flood levels in 2065 (i.e. 3.3 metres RL)¹¹. The crest height of the proposed bunds will therefore protect against present day 1% AEP flood events (2.9 metres RL) and provide protection against coastal inundation, taking into account sea level rise, throughout the estimated service life of the proposed development (i.e. 50 years).
- 147. The proposed bunds will result in a reduction in the flood storage area contained within the existing floodplain. The lost storage area resulting from the proposed bund construction may result in adverse flooding effects on surrounding properties because flood levels in the area outside the bunds may increase.

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¹¹ This flood level is based on Tonkin and Taylor Ltd (2016). Coastal Flood Hazard Zones for Select Northland Sites.

- ^{148.} The bunds will also result in floodwater that would otherwise flow onto the floodplain occupied by the bunds being diverted to adjoining properties.
- 149. The potential adverse effects on flood levels associated with the proposed bund construction have been assessed in Technical Report B. This report includes the outcomes of a hydrological assessment of the pre and post development situation which was undertaken using a hydrological model that took into account the 1% AEP rainfall intensity, soil types, tidal influences of the Wairoa River, and the catchment area.
- 150. Technical Report B identified that, during a 1% AEP rainfall event, a portion of the flood volume that would currently accumulate within the areas that are proposed to be bunded will be displaced as a result of the bund construction. The report estimated an increase in flood levels within the unbunded portions of the subject site of 100 mm when 1% AEP rainfall events coincide with high tide.
- 151. Technical Report B states that the estimated increase in flood levels will be below the crest level of SH 12. The report states SH 12 is overtopped at 2.35 metres RL. The reported modelling indicates post development 1% AEP flood levels within the unbunded portion of the site at 1.9 metres RL. In other words, it can be expected that, based on information provided in Technical Report B, there will be 0.45 metre freeboard above 1% AEP flood level to the SH 12 centreline post development.
- 152. It is relevant to note that Technical Report B does not comment on the effects of the flood control work on properties immediately adjacent to the north and south of the subject site. Clarification on the flooding impacts within those locations was provided by T&T in an email dated 9 July 2018. In that correspondence, T&T state that:
 - The critical 1% AEP event for the site is caused by coastal inundation rather than rainfall. In a coastal inundation event, bunding the site will have no effect on surrounding flood levels.
 - The estimated increase in flood levels on the site as a result of rainfall events (by 100 mm) will be contained within the site along the southern and eastern boundaries as the height of the existing embankments are above 2 metres RL, therefore having no effect on properties to the south of the site.
 - The northern boundary to the site has a small section with a level of 1.85 metres RL. There is the possibility that a 50 mm depth of floodwater over the unbunded area of the site is partly displaced north of the site during the post developed situation. This may result in a small (less than 50 mm) increase in flood level to the property north of the site, assuming that the existing flood level north of the site is similar to the existing flood level estimated within the site.
 - The displacement of floodwater to the northern site could be avoided by building up a small length of the embankment along the northern boundary.
- With the above considered, it can be expected that the proposed development is unlikely to affect flood levels to the south of the subject site. T&T has advised that flood levels may increase by less than 50 mm to the north of the subject site owing to the height of the existing embankment being slightly lower than
- site owing to the height of the existing embankment being slightly lower than the expected maximum flood levels. Should consent be granted, conditions of consent should be included requiring that the northern embankment be built up to prevent off-site flood effects to the north.
- 154. Downstream of the subject site (i.e. on the western side of SH 12) Technical Report B reports that flood levels are expected to increase by 10 mm for a short duration (up to 2.5 hours) during periods when the modelled 1% AEP rainfall event occur during a high tide. An estimated increase of that nature is of a small scale when compared to the existing pre-development flood level of the 1% AEP event of 1.8 metre RL.
- 155. As for coastal inundation, Technical Report B states, owing to the near limitless volume of water available for coastal inundation, loss of flood storage area for coastal inundation events has no effect on peak flood levels on adjoining sites.
- 156. Overall, I accept the assessment provided in Technical Report B as it relates to the effects associated with the reduction in floodplain storage and floodwater diversion caused by the bund construction; and it is my opinion that any effects associated with the bund construction on the diversion of floodwaters and loss of flood storage area are likely to be no more than minor.

4.5.2 Diversion of Drainage Water

153.

- 157. In addition to the proposed bunds, the applicant proposes to install two pumping stations, one within the northern bunded area and one within the southern bunded area.
- 158. The proposed pump stations will pump stormwater directly into the open channel situated adjacent to each bund and will be used to maintain the 1% AEP flood levels within the bunded portions of the subject site.
- 159. The pumping of floodwater from the bunded areas was factored into the model input for Technical Report B. The pumping of floodwater from the bunded area is therefore not expected to result in flooding impacts above those already described.
- 160. During wet periods, Technical Report B states that the pumps may be utilised to lower the static water level within the drainage network to ensure ranging areas can be utilised effectively by poultry. In effect, this will result in the drainage network operating as a private land drainage scheme.
- 161. Given the subject site is located within a public drainage scheme, it is relevant to take into account that the existing environment is already modified by drainage activities.
- 162. Moreover, the land area subject to the drainage is heavily modified and does not contain any notable natural habitat that would be sensitive to the impacts of the proposed land drainage.

- 163. The proposed discharge of drainage water will be into an existing drainage channel that subsequently flows through the existing box culvert under SH 12. The box culvert discharges into a drainage channel which travels in a straight line along the boundary of the subject site for approximately 400 metres, before discharging into the Wairoa River. Technical Report B indicates that the downstream drainage network, including the box culvert, has sufficient capacity to receive drainage water.
- 164. I accept the findings of Technical Report B as it relates to the proposed diversion of drainage water associated with the upgrade of existing drains, the creation of new drains and pumping of drainage water. On the basis on those findings, it is my opinion that the effects the proposed land drainage activity will be no more than minor.

4.5.3 Effects on the Integrity of the Whakahara Drainage District

- 165. The proposal will result in the construction of flood control work within the Whakahara Drainage District (refer to **Figure 4**, page 15). The Whakahara Drainage District is adjoined by other drainage districts to the north and south.
- 166. Private drainage and flood control work that takes place within a drainage district can potentially adversely affect the integrity of a scheme by displacing or obstructing flood water or diverting drainage water to areas with insufficient capacity to receive it.
- 167. As I have concluded earlier, the work reported in Technical Report B indicates that the effects of the flood control and drainage measures on flooding of adjoining properties will be no more than minor. In that regard, the proposed development is expected to result in an increase in 1% AEP flood level of 10 mm within the land situated to the west of SH 12.
- 168. Moreover, it is relevant to note that the land area comprising the subject site makes up approximately 60% of the Whakahara Drainage District area. The upper catchment of the drainage district beyond the extent of the subject site (i.e. eastern boundary of the site) is located approximately 40-50 metres above sea level and so will be unaffected by any obstruction or reduced flows within the drainage district as a result of the proposed development downstream within the floodplain. For completeness, it should be noted that any obstruction of flood flows within the drainage district caused by the bunds will be mitigated by the use of the proposed stormwater pumps.
- 169. Technical Report B indicates that the proposed activity is unlikely to affect the integrity of the Whakahara Drainage District or those adjoining drainage districts. It is therefore my opinion that the effects of the proposed flood control and drainage works on the integrity of the Whakahara Drainage District, and adjoining drainage districts, is likely to be no more than minor.
- 170. For completeness, it should be noted that Part 17 of the KDC General Bylaws 2008 regulates various activities within Land Drainage Areas. Clause 1715.1 of the KDC Bylaw requires that approval be obtained from the KDC for the erection of a flood defence structure within a drainage district. At the time of writing, the applicant has not obtained approval for the flood control activities.

- 171. 4In response to the above issues, T&T advised in its 8 May 2018 section 92 response letter that relevant KDC staff had been consulted with in respect of matters associated with the drainage district. T&T further stated consultation by T&T would be undertaken to address issues identified by relevant KDC staff prior to the hearing.
- 172. It should be noted that there remain outstanding issues raised by KDC personnel responsible for administering the KDC General Bylaws as they relate to Land Drainage Areas. These are identified in a letter from KDC Stormwater Engineer, Matthew Smith, which is **attached** as **Appendix B**. Because KDC General Bylaws preclude the erection of flood defence structures within a drainage district unless otherwise approved by KDC, and because there remain unresolved concerns raised by KDC, I consider this a relevant matter that requires addressing during the hearing. I consider this necessary because failure to gain approval under the bylaw for the flood control activities could materially affect the viability of the proposal.

4.5.4 Conclusion

173. Despite the outstanding issues in respect of the approval required under the KDC General Bylaws, I consider that the Technical Report B provides an acceptable assessment of flooding and the effects of flood control activities on the effects of flooding within the subject site and on adjacent properties. Based on the information contained in Technical Report B, I consider that any flooding related effects associated with the proposed activity will be no more than minor.

4.6 Effects on Groundwater

- 174. The applicant proposes to take up to 325 m³/day and 48,425 m³/year of groundwater via three production bores. The location of the proposed production bores is depicted in **Figure 3** (page 13). A description of the proposed water take activity is provided in Section 1.6 of this report.
- 175. Technical Report C (Groundwater Assessment) provides a detailed technical assessment of the water requirements of the proposed activity and the effects of the proposed groundwater take. For completeness, that report has been considered together with the section 92 response letter dated 22 December 2017 from T&T entitled *"Further information Free Range Broiler Farm, Arapohue Application".*

4.6.1 Hydrogeology

- 176. Technical Report C describes the hydrogeological setting of the surrounding area as follows:
 - Four main geological units have been identified with the land area comprising the subject site. The low lying portion of the site comprises alluvial deposits associated with the floodplain of the Wairoa River. This material has been reported to be low yielding and is believed to be recharged by a combination of rainfall and recharge from the Wairoa River.

- The majority of the eastern portion of the land area comprising the subject site consist of Northland Allochthon. This group is expected to extend westwards, beneath the alluvial deposit described above. The Northern Allochthon is considered to be generally of low permeability and yields low quantities of groundwater.
- The third geological unit is Āwhitu Group sandstone, which is mapped within the south-eastern portion of the site. Due to its elevation, recharge is likely to be predominantly from rainfall.
- Within the Northland Allochthon, two localised units of andesite rock are present on the site. Geotechnical investigation undertaken by T&T indicates that there may be a further two andesite rock intrusions. Technical Report C states that the andesite is likely to have intruded up through the Northland Allochthon, and is therefore likely to be bounded by the lower permeability Northland Allochthon material, although it is suggested that there may be some hydraulic connection between the andesite and the alluvial deposits where the andesite abuts the floodplain. However, it is relevant to note that the pump testing within the existing bore carried out as part of the technical assessment indicated that there was no hydraulic connection between the alluvial plain and the andesite intrusion within which the bore is located.
- 177. To assist the reader to conceptualise the above description, the geological units have been depicted utilising QMAP¹² data in **Figure 8** below. More accurate maps depicting the geological units are provided in the figures attached to Technical Report C.

¹² QMAP seamless digital data 2013. Geological Map of New Zealand 1:250 000. Lower Hutt, New Zealand. GNS Science.



FIGURE 8: Depiction of geological units described in Technical Report C. Source: QMAP. Note the spatial extent of the units differs from those indicated in Technical Report C. This figure has been provided to assist with conceptualise the geology of the site only.

- 178. The proposed water take and associated bore development is intended to take place within the andesite rock intrusions within the subject site. Technical report confirms that groundwater within the andesite rock is likely to be yielded from interconnected fractures within the rock, and owing to the elevation of the unit, states that it is likely to be recharged by rainfall.
- 179. Groundwater availability within the catchment has been assessed by assuming 10% of rainfall supports groundwater recharge. In response to a section 92 request for justification for the 10% recharge, T&T responded as follows¹³:

"A 10% rainfall recharge rate was used for the catchment-wide groundwater availability assessment, based on reported values from Ruawai¹⁴. This was a conservative value, based on the average recharge across the range of geological units, which accounts for low permeability surficial permeability's and saturated winter conditions on the alluvial flood plain (i.e. low recharge potential).

¹³ Section 1(i) of letter dated 22 December 2017 from T&T entitled "Further information – Free Range Broiler Farm, Arapohue Application".

¹⁴ SKM, 2004, Ruawai Town Water Supply Bores Hydrogeology and Bore Security Assessment, prepared for Kaipara District Council.

Based on minimum reported values for volcanic rock in Northland¹⁵, which is considered the most conservative indication of likely recharge to the andesite on site, average recharge rates are expected to be at least 13.2% of rainfall. Based on observations of significant gravel units within the andesite rock encountered at geotechnical bore BH2, actual recharge is likely to be higher."

^{180.} The subject site has been described in Technical Report C as lying across two mapped surface water catchments totalling 15.86 km². Based on a mean annual rainfall of 1,137 mm and a groundwater recharge rate of 10% of rainfall, groundwater recharge has been assessed as 4,924 m³/day.

4.6.2 Groundwater Allocation

- 181. NRC records indicate that there are no groundwater or surface water take consents located within the two surface water catchments subject to the above assessment. It is relevant to note, however, that section 14(3) of the RMA provides for the taking of freshwater for reasonable domestic needs or the reasonable needs animals for drinking water. In addition, Rule 25.1.1 of the RWSP provides for the taking of up to 10 m³ of groundwater per bore as a permitted activity. The PRP includes a broadly equivalent permitted activity rule (C.5.1.1).
- 182. An assessment of NRC's bore log database indicates that there is a total of 12 bores constructed within the catchment area assessed by T&T. The location of the bores and the catchment area analysed by T&T is depicted in Figure 9 below.
- ^{183.} To account for existing permitted water takes within the catchment subject to the groundwater recharge assessment, Technical Report C assumed a total of 500 m³/day is taken as permitted use within the catchment affected by the proposed water take. Technical Report C did not provide any details regarding the reasoning behind that assumption.

⁴²

¹⁵ Pride Mangeya 2015; Preliminary Assessment of Groundwater Recharge Rates; Northland Groundwater Recharge Zones; Northland Regional Council; January 2015.



- FIGURE 9: Groundwater recharge catchment area included in T&T Technical Assessment C. Recorded bores in the catchment (excluding those within the subject site) are shown as diamonds. The black border represents the land area comprising the subject site.
- 184. However, it was later clarified in an email dated 13 June 2018 from T&T that the assumptions for the permitted take volume were developed as follows:

"...the estimate of 500 m^3/d for permitted activity abstractions within the two catchments is likely to be very conservative. This was based on the following:

- Extrapolation of the current site groundwater demand (estimated at approximately 20 m³/day/km²) over the two catchments – giving a total abstraction for stock drinking water of approximately 320 m³/day. This is conservative on the basis that land use within the catchments are a mixture of dry-stock and dairy (rather than all dairy as assumed).
- The remaining 180 m³/day was calculated by assuming that each of the 50 dwellings within the catchment abstract and average of 3.5 m³ each again this is conservative on the basis that we expect that most dwellings harvest rainwater."
- 185. I consider that the above assumptions are appropriate and are likely to be highly conservative given that:
 - there are substantially less registered bores than there are residential dwellings within the catchment;

- the assumption of 20 m³/day/km² is generally consistent with regional estimates of stock drinking water requirements for dairy farms¹⁷.
- 186. With the above taken into account, I consider that the assumption of 500 m³/day is reasonable and is likely to be an overestimate of actual permitted use within the catchment.

4.6.3 Effect on Groundwater Availability

- 187. Technical Report C assessed groundwater recharge as 4,924 m³/day and 1,797,260 m³/year over the catchment area identified in **Figure 9**. Existing allocation has been assessed as 500 m³/day within the land area comprising the groundwater recharge catchment.
- 188. The Proposed National Environmental Standard for Ecological Flows and Levels 2008 (Proposed NES) suggest an interim groundwater allocation limit of 35% of the annual average recharge. The interim limit is intended to provide clear protection for ecological (and other) values from adverse effects of water abstraction in the absence of regional scale regulations on allocation limits¹⁸. Policy D.4.17 of the PRP mirrors the interim allocation limits set down in the Proposed NES, requiring that the quantities of fresh water that can be taken from *other aquifers*¹⁹ does not exceed 35% of average annual recharge. It should be noted that this policy is not yet operative and is subject to a number of submissions.
- 189. The 35% average annual recharge allocation limit has been applied in Technical Report C for the purpose of determining the amount of water available for allocation within the aquifer whilst protecting aquifer levels and flows. Because the 35% allocation limit is consistent with both the Proposed NES interim limits and those set down in Policy D.4.17 of the PRP, I consider that a 35% recharge allocation limit is suitable and provides an adequate precautionary approach for determining an appropriate allocation limit for the aquifer affected by the proposed groundwater take.
- ^{190.} Technical Report C reports that, taking into account the Proposed NES limits (i.e. 35% of annual recharge), there is 1,720 m³/day and 629,000 m³/year of groundwater available for allocation. Once the assumed permitted water takes are taken into account (500 m³/day), that leaves a total of approximately 1,200 m³/day and 446,500 m³/year²⁰ available for allocation.
- ^{191.} In addition to the allocation assessment completed for the affected catchment, in its section 92 response dated 22 December 2017, T&T also provided an assessment of groundwater recharge within the andesite aquifer only.

¹⁶ See for example BRANZ. 2009. Water End Use and Efficiency Project (WEEP): A Case Study. That work indicates domestic water use in New Zealand is generally in the vicinity of 200 litres per person per day.

¹⁷ Flemmer, C, Flemmer, R (2007) Water use by New Zealand dairy farms, 1997-2000. New Zealand Journal of Agricultural Research, 2007, Vol 50: 479-489.

¹⁸ Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document.

¹⁹ These are all aquifers other than coastal aquifers and those comprising the Aupouri Aquifer.

²⁰ Note this figure differs from that contained in Technical Report C. T&T confirmed via email dated 13 June 2018 that the original reported figure contained a minor mathematical error. The originally reported figure was 459,000 m³/year.

- 192. That recharge assessment took into account a revised analysis of the likely extent of the intrusive andesite within the subject site, estimating that the andesite covers a lateral extent well in excess of 100 ha.
- ^{193.} The assessment estimated annual recharge to be 158,000 m³/yr and that there is 55,400 m³/year available for allocation (i.e. 35% of annual recharge). The assessment concluded:

"In the context of the calculated groundwater availability, if the peak annual demand was abstracted (which is expected to be rare) and our conservative assessment of groundwater recharge is assumed, this would represent approximately 30% of the calculated annual recharge to the andesite within the site bounds and immediate vicinity. This still leaves around 110,000m³/yr for environmental benefits in the worst case scenario."

- ^{194.} I accept that conclusion, which is supported by the same assessment methodology utilised for the wider catchment.
- In summary, the applicant has sought a maximum daily groundwater take of 325 m³/day and 48,425 m³/year. The applicant has demonstrated that there is sufficient water available within the aquifer to allocate the volume sought. Moreover, in light of the under allocated nature of the groundwater resource, I consider that the adverse effects of the proposed water take on groundwater availability will be no more than minor.

4.6.4 Groundwater Drawdown Effects

- 196. Groundwater drawdown refers to the lowering of groundwater levels due to the reduced head caused by the taking of water from the aquifer. Groundwater drawdown can affect neighbouring bores or springs because lower groundwater levels can result in less water being available at the bore inlet or the groundwater-spring interface.
- 197. Technical Report C includes an assessment of drawdown effects, taking into account the pump testing undertaken, and states the following:

"The results of the pumping testing undertaken on EB 1 indicate no identifiable drawdown was observed within the observation piezometers during the pumping test, indicating that there is very little to no hydraulic connection between the andesite and the alluvial sediments (i.e. there is little to no flow between them). The observed water levels show an increased drawdown after three days of pumping at rates of 240 m³/day, further supporting this conclusion."

^{198.} I accept the above assessment and I consider the effects of the proposed water take on groundwater drawdown to be no more than minor.

4.6.5 Effects on Saline Contamination

199. Saline intrusion refers to the encroachment and mixing of saline groundwater from the coast with freshwater aquifers. Groundwater takes can increase the extent of saline instruction by lowering the head of freshwater aquifers, which can result in the interface between coastal saline water and freshwater extending further landward.

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- 200. Another mechanism of saline contamination of groundwater is upconing. Saline water can extend beneath a freshwater aquifer in a wedge shape due to its higher density under pressure (compared to freshwater). Bores located over or near the saltwater wedge can draw the saltwater upward, creating a saltwater cone that might reach and contaminate the well.
- 201. Technical Report C includes an assessment on the likelihood of saline intrusion and states the following:

"Based on early time hydraulic conductivity values calculated using the pumping test data and our understanding of the bore configuration, the assessment indicates that any higher salinity groundwater in the andesite is expected to occur over 70 m below mean sea level (based on a static water level within the andesite of 1.8 mRL). The assessment shows that the maximum yield available from the borehole before the occurrence of saline upconing is 2,200 m³/day. As the proposed groundwater take is only 350 m³/day, the likelihood of saline upconing into the andesite is assessed as very small.

Based on the pumping test data there was no hydraulic connection observed between groundwater in the andesite and groundwater in the fine-grained materials comprising the alluvial floodplain of the Wairoa River. For saline intrusion to occur laterally from the Wairoa River, abstraction of groundwater from the andesite would need to induce lateral groundwater flow from the alluvial flood plain, towards the bore. Because of the hydraulic boundary, we expect that this is unlikely to occur and accordingly, saline intrusion is unlikely."

202. A further assessment on the potential for saline contamination was provided in the 22 December 2018 section 92 response by T&T. Section (g) of that letter states:

"In terms of a potential connection with saline water, the pumping test undertaken at EB1 strongly indicates that there is very limited hydraulic connection between the andesite and the alluvial flood plains, supported by:

- Groundwater level monitoring during the pump testing showed no observable water level decline within the alluvial material during abstraction from the andesite. Despite nearly 8m of drawdown within the EB1.
- Water levels within the andesite continued to decline during pumping suggesting limited recharge from beyond or within the rock. Slow water level recovery responses once pumping had ceased supports this also.

These observations support a conclusion that the andesite is likely to be laterally bound by contact with low permeability alluvial or allochthon material. On this basis, we consider that although the andesite is likely to receive some recharge from the surrounding geological units, under pumped conditions, the leakage rate is very low. From this we conclude that the potential for a connection with saline water is highly unlikely."

203. With the above taken into account, I consider the effects of the proposed water take on saline contamination will be no more than minor.

4.6.6 Conclusion

204. On the basis of the information provided by the applicant, including the assessment provided in Technical Report C, I consider that any effects of the proposed activity associated with the proposed groundwater take will be no more than minor.

4.7 Effects of Soil Disturbance

- ^{205.} The applicant proposes to undertake approximately 429,000 m³ of soil disturbance (cut and fill) over a four year period.
- 206. Without adequate management, land clearance and earthworks activities can accelerate soil erosion and thereby increase the volume of sediment and nutrients entering waterways. Factors affecting sediment generation during the development of the subject site include:
 - the amount of exposed bare earth;
 - the proximity of the operation to water bodies;
 - the length of time during which the bare earth surface is exposed; and
 - the measures used to restrict, or control, sediment generation and transport from the site.
- 207. Other potential adverse effects include dust generation and the disturbance of archaeology.
- 208. In terms of dust generation, the applicant is relying on permitted Rule 10.1.2 of the RAQP and permitted Rule C.7.2.6 of the PRP to allow for the discharge of dust associated with the earthworks. The applicant has provided sufficient information with the application to demonstrate the proposed activity is likely to meet the conditions and standards associated with those permitted rules. Accordingly, the effects of dust generation associated the proposed earthworks has not be considered as part of this assessment.
- 209. With regard to archaeology, the applicant engaged CFG Heritage Limited to undertake an archaeological survey of area subject to the site development (Technical Report H). The survey confirms there are no recorded archaeological sites within the alluvial flats, nor was there any evidence of archaeology found during the field survey. Any potential effects on archaeology associated with the proposed earthworks can therefore be adequately managed with through accidental discovery protocols.
- 210. To address the potential adverse effects of the proposed soil disturbances, the applicant has included with the application an erosion and sediment control plan (T&T Technical Report K).
- 211. The erosion and sediment control plan sets out a staged and systematic approach to managing the impacts of the discharge of sediment from exposed soils as a result of the proposed earthworks operation. Key principles of the erosion and sediment control measures include:

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- Intercepting surface water runoff outside of the worked area to minimise the amount of erosion and sediment generation to be dealt with within the site during construction.
- Minimising, where possible, the areas of exposed soil to limit the generation of sediment laden water.
- Filtering or treating sediment laden runoff from within the worked area before discharging to the receiving environment.
- 212. I note that KDC commissioned Dr Paul Heveldt of Stantec New Zealand Limited to undertake a peer review of Technical Report K. The outcome of the review is included with the KDC reporting planner's section 42A Report. The review resulted in some minor points of clarification being sought by KDC, which were addressed by T&T in its 13 December 2017 section 92 response to KDC. Dr Heveldt subsequently confirmed the Technical Report K would provide appropriate erosion and sediment controls for the proposed earthworks.
- 213. Generally, I am satisfied that the erosion and sediment control plan is consistent with best practices and, if implemented appropriately, will adequately avoid or mitigate adverse effects caused by soil disturbance and associated sediment run-off.
- 214. However, despite the finding of Dr Heveldt, I am of the view that the erosion and sediment control plan does not provide sufficient details around erosion and sediment control measures taking into account:
 - the volume of earthworks associated with the proposal;
 - the size of the site;
 - the length of time over which earthworks will be carried;
 - that earthworks is proposed to be undertaken all year round, including throughout winter; and
 - the flood prone nature of the subject site.
- 215. With the above taken into account, I consider that a higher level of detail and design is required in respect to specific erosion and sediment control measures to be implemented during construction. I accept, however, that it is generally best to develop specific erosion and sediment control measures closer to the construction phase of the project alongside principal contractors.
- 216. Should consent be granted, it is recommended that conditions requiring a detailed erosion and sediment control plan be submitted to NRC that is consistent with the general erosion and sediment control principals, staging approach and control measures as set down in Technical Report K. However, the condition will require further details covering the following:
 - specific erosion and sediment control works (location, dimensions, capacity);
 - supporting calculations and design drawings;
 - details of construction methods;
 - timing and duration of construction and operation of control works (in relation to the staging and sequencing of earthworks);

- details relating to the management of exposed areas (e.g. grassing, mulching);
- wet weather contingencies, including risk management addressing flood risk and high groundwater levels; and
- monitoring and maintenance requirements.
- 217. With the above taken into account, I consider that the effects of the proposed soil disturbance activity will be no more than minor.

4.8 Effects on Cultural Values

218. A number of submissions have been received relating to the adverse effects of the proposed activity on Māori cultural values. These are summarised in Section 3 of this report.

4.8.1 Applicant's Assessment

- 219. The applicant commissioned Te Roroa Whatu Ora and Manawhenua Trust Board to undertake a cultural impact assessment (CIA) associated with the proposed development. That assessment is provided as Appendix M within the AEE Report.
- 220. The CIA provides an account of the Māori history of the area, including the establishment of Kāpehu Marae. The CIA, however, isolates its impact assessment to the effects of the proposed development on archaeology, concluding that no archaeology will be affected by the proposed development. That conclusion is supported by CFG Heritage Limited (Technical Report H), and I accept that the proposed development is unlikely to result in adverse effects on archaeology.
- 221. The AEE Report has concluded that the effects associated with the proposed development on Māori cultural values will be sufficiently avoided, remedied or mitigated to the extent necessary to prove acceptable to Kāpehu Marae.
- 222. A number of submissions raised concerns about the effects of the proposed development on Kāpehu Marae and the nearby urupā. The CIA does not provide an assessment of the impact of the development on cultural values in the context of the effects on the marae and urupā.
- 223. The location of Kāpehu Marae and the nearby urupā relative to the footprint of the proposed poultry sheds is depicted in **Figure 10** below. Farm 1 is approximately 450 metres to the southwest of the urupā and approximately 850 metres to the southwest of Kāpehu Marae.



FIGURE 10: Location of each poultry farm block relative to Kāpehu Marae and the nearby urupā. Note each farm block comprises eight individual sheds and associated ranging areas. The black border represents the land area comprising the subject site.

- 224. The post notification joint 92 request included, among other matters, the provision of a cultural impact assessment on the effects of the proposal on Kāpehu Marae and the urupā. The reason for that request was due to the number of submissions that had been received which raised concerns in respect of the effects of the proposed activity on Kāpehu Marae and the urupā.
- In its response to that section 92 request, T&T advised that a CIA would be provided prior to the hearing. T&T also provided a further assessment of the physical effects associated with the proposed activity. In the T&T response, a number of changes to the proposal were identified as a means of addressing the concerns raised by Kāpehu Marae. Changes to the proposed development relevant to the matters that require consideration by NRC are as follows:

- The consent application originally proposed to extract 117,500 m³ of material from the limestone quarry for the capital works associated with the proposed development. The quarrying work associated with the excavation of that volume of material was to result on the quarry footprint extending north, with the northern edge of the quarry footprint being located within approximately 40 metres of Kāpehu Marae. The expansion of the quarry was subsequently reduced to provide a 100 metre set back from Kāpehu Marae. The proposed reduction in the extent of the quarry reduced the proposed earthworks volumes from the quarry from 117,500 m³ to approximately 50,000 m³.
- It was initially intended to dispose of bird mortalities via the proposed energy centre. In its 18 May 2018 section 92 response letter, T&T advised that the disposal of bird mortalities via the energy centre would no longer take place as a result of concerns raised in submissions and discussions with Kāpehu stakeholders.
- 226. Having assessed the physical effects associated with the proposed activity, coupled with the changes set out above, the section 92 response letter concluded:

"Overall, it is considered that the above information in conjunction with the additional work Tegel is currently undertaking with Kāpehu stakeholders and the cultural expert will sufficiently assess the potential effects of the proposed poultry development. It is considered that the potential adverse effects associated with the construction and operation of the proposed poultry farm have been avoided, remedied or mitigated sufficiently to be considered acceptable on Kāpehu landholdings."

4.8.2 Cultural Effects Identified by Submitters

- 227. It is relevant to note that Kāpehu Marae's delegated representative, Dr Margaret Mutu, advised both councils via email dated 22 May 2018, that the applicant had not consulted with representatives authorised to speak on behalf of the marae for the purpose of assessing the effects of the proposal on cultural values.
- 228. The applicant's assessment on the effects of the activity on Kāpehu Marae therefore does not appear to be endorsed by the marae, taking into account the advice of Dr Mutu. Moreover, a number of submissions, including those of Kāpehu Marae, raise concerns that have not been assessed by the applicant. These are summarised as follows:
 - Adverse effects on the mana of the land by excessive numbers of chickens.
 - Adverse effects on the tapu of the urupā as a result of discharges to air.
 - Adverse effects on the mana of Kāpehu Marae as a result of the effects on the tapu of the urupā.
 - Adverse effects on the mana of Kāpehu Marae as a result of odour discharges.
 - Adverse effects of hapū and iwi members to utilise the cultural landscape.
 - Applicant has not provided acceptable mitigation or conditions of consent relating to effects of the proposed activity on cultural associations with important cultural landscapes.

- 229. Taking into account the information provided by the applicant and submitters in respect of the effects of the proposed activity on cultural values, there remains a great deal of uncertainty in respect of the actual and potential effects of the proposed activity on Kāpehu Marae, the urupā and the surrounding cultural landscape.
- In the absence of technical advice in the form of a cultural impact assessment, I am not able to draw conclusion in respect of the likely actual and potential adverse effects of the proposal on Māori cultural values. I understand both Kāpehu Marae and the applicant intend to advance separate cultural impact assessments for consideration during the hearing. Further assessment of the effects of the proposed activity on Māori cultural values is therefore best dealt with as part of the hearing process. However, based on the information contained in the application and provided in submission, it is apparent that the proposal has the potential to result in significant adverse effects on Māori cultural values.

4.9 **Positive Effects**

- 231. Having regard to the overall result of an activity, it is appropriate to evaluate all matters which relate to effects, including any benefits from the activity. The positive effects of the proposed activity must be balanced against all other effects when weighing its overall effects.
- 232. The AEE Report states that the proposed development will cost approximately \$80M and will provide employment for the Northland region, resulting in between 20 and 64 (at the peak) jobs over the construction period and approximately 32 fulltime staff once fully operational.
- 233. To quantify the economic impact associated with the proposed development, T&T supplied a report in its 18 May 2018 section 92 response prepared by Insight Economics (Economic Impact Report)²¹. The Economic Impact Report undertook an assessment of the direct economic impact of the one-off construction and the on-going operation and assessed these against various multipliers representing the flow-on effects of the direct economic impact. Flow on effects include, for example, purchases of locally produced goods and services which arise from the income derived by the extra employment that is created. Further impacts occur due to feedback effects – where other local firms require more labour and inputs to meet rising demand for their output, which has been stimulated by the proposed new activity.
- 234. The Economic Impact Report concluded that the total one-off economic impact of the proposed activity on the local economy would be \$10M in Gross Domestic Product (GDP) and \$7.2M in household incomes. On-going annual economic impacts were concluded to be \$2.8M in GDP and \$2.4M in household incomes.
- It is relevant to note that uncertainty and error in respect of the above figures is not reported in the Economic Impact Report. A request was sent to T&T via email dated 13 June 2018 to clarify what uncertainty or error was reported. In response to that request, the report's author, Mr Fraser Colegrave, responded via email on the same day as follows:

²¹ District Economic Impacts of Proposed Broiler Farm in Arapohue, Dargaville. Prepared by Insight Economics Ltd. 16 May 2018.

"The method used does not provide any error estimates directly. Furthermore, the analysis incorporates different assumptions, all of which contain some degree of uncertainty. That said, the most significant impacts of the project – i.e. the annual impacts of ongoing farm operations in table 7 – are likely to be quite accurate overall. These ongoing impacts are driven mostly by the farm's estimated 32-person workforce and their wages, which we know with reasonable precision. As a result, we have quite high confidence in the ongoing impacts, which matter the most in the long term. But, we have lower confidence about the one-off, upfront impacts.

To reflect these various uncertainties and ensure that the analysis was conservative, we erred towards conservative parameter values throughout. For example, we assumed that only a small proportion (17%) of farm development costs would be spent in the district. Accordingly, if anything, the analysis is likely to understate the true impacts, not overstate them. But, other than being confident about the likely direction of errors, it is difficult to say much about their likely magnitudes. Suffice to note that the true impacts are highly likely to exceed out estimates, with only relatively slim chances of true effects being overstated."

^{236.} In the absence of any information to the contrary, I accept the finding of the Economic Impact Report. Based on that report, I consider that positive economic effects of the proposed activity are likely to be significant as a result of substantial and measurable positive effects on the local economy, employment and household incomes.

5. ALTERNATIVES

- 237. In the further post notification information request dated 30 April 2018, the applicant was asked to provide a description of any possible alternative locations or methods for undertaking the activity.
- ^{238.} T&T responded to that request in its letter dated 18 May 2018, stating:

"We do not consider an assessment of alternatives under Schedule 4 is required under the RMA as the proposed poultry farm will not result in significant adverse effects on the environment, including those relating to cultural effects."

- ^{239.} Therefore, no assessment of alternative locations or methods for undertaking the activity has been supplied by the applicant.
- 240. Given the potential for objectionable odour to occur within neighbouring properties, I consider that an assessment of alternative methods (i.e. staging or a reduction in the scale of the proposal) should have been undertaken by the applicant. Doing so would have enabled an assessment of opportunities for including requirements for an adaptive management approach for the risks associated with the uncertainty around the odour discharge effects.
- 241. Moreover, section 105(1)(c) of the RMA requires that a consent authority to have regard to any possible alternative methods of a discharge when determining an application. In my opinion, the applicant has not provided sufficient information to enable regard to be given to alternative methods.

6. MITIGATION MEASURES

6.1 Flooding

242. The proposed site development includes a series of measures intended to mitigate against the effects of flooding of the subject site. These include perimeter bunds, improved drainage and the installation of stormwater pumping stations.

6.2 Air Quality

- ^{243.} The applicant proposes to mitigate odour generation from the site by implementing a series of operational and design features. These include:
 - Climate control and heating systems to reduce moisture levels within the litter, therefore reducing odour generation by inhibiting anaerobic conditions;
 - Use of ceiling vents to increase dispersion when the shed pop holes are closed.
 - The applicant has agreed to incorporate contingency measures and shed cleaning procedures recommended by the Beca Review into a management plan.
 - The storage site within the energy centre facility will be maintained at negative pressure, with outlet air fed into the energy burners to enable thermal destruction of odour.
- Bag filters are to be utilised to filter the exhaust from the energy centre.
- ^{245.} The applicant has agreed, as per the recommendation of the Beca Review, to the requirement for an Odour Management Plan by consent condition that includes contingency measures or responses for the following situations:
 - Failure of the Energy Centre to combust all of the chicken litter produced on site and which may require excess chicken litter to be disposed of offsite;
 - Failure of the Energy Centre to provide sufficient heating of the sheds to adequately control the moisture content of the sheds and to manage odour;
 - When offensive or objectionable odours are observed beyond the boundary of the site;
 - The disposal of dead birds in the event of an outbreak of disease; and
 - Odour associated with the wastewater storage and treatment system during upset conditions such as may occur due to shock loadings, overloading, mechanical failure, power cuts, and extreme weather such as long periods of very hot weather or rainfall which are outside usual design parameters.

6.3 Water Take

246. The applicant proposes to source the majority of its water supply from roof water collection. In doing so, the total maximum annual volume of water demand for the proposed activity is substantially lower compared to a scenario without the roof water harvesting.

7. MONITORING

247. The applicant has not proposed any on-going monitoring in respect of the various activity for which resource consent has been sought from NRC. Should consent be granted, on-going monitoring will be required to verify the effects of the proposal. This will most likely involve council monitoring for construction activities, and a combination of council monitoring and self-monitoring, with council audit visits, for ongoing operations.

8. STATUTURY ASSESSMENT

8.1 Part II Matters

- ^{248.} Under section 104(1) of the RMA, when considering an application for resource consent, the consent authority must have regard to Part 2 of the RMA.
- 249. In *R J Davidson Family Trust v Marlborough District* Council (NZHC 52) the High Court found that, when consent authorities are considering resource consent applications, they can only have recourse to Part 2 of the RMA if the relevant statutory planning documents are invalid, incomplete or uncertain. However, in the more recent case of *Skyline Enterprises Limited v Queenstown Lakes District* (NZEnvC124), the Environment Court noted that the R J Davidson decision was made in a context where there was only an operative plan in place. The Environment Court held that the existence of the proposed plan made it necessary to consider a resource consent application with reference to Part 2, while acknowledging that the relevant operative plan provisions would bear on the application of the Part 2 principles.
- 250. Given the proposed activity is subject to operative regional plans and the PRP, it is appropriate to assess the proposed activity against the relevant Part 2 matters. These will be addressed below.

8.1.1 Section 5

- 251. Section 5 of the RMA defines the purpose of the Act as being to promote the sustainable management of natural and physical resources. Sustainable management is defined in Section 5(2). For context, it is useful to point out that sustainable management is not, as defined in the RMA, about maintaining the status quo, but rather the management of the use and development of resources.
- 252. Relevant matters to consider under Section 5 are as follows:

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- The taking of groundwater water is to be substantially augmented with the use of roof water harvesting and the applicant has demonstrated that the water take will meet the reasonable foreseeable needs of future generations.
- The applicant has demonstrated that the reduced floodplain storage associated with the bund construction is unlikely to impact on adjoining properties or drainage schemes.
- The applicant has demonstrated that the proposed earthworks activity is unlikely to result in impacts on the receiving environment in a manner that is inconsistent with Part 5.
- The applicant has demonstrated that the proposed activity is likely to result in meaningful and on-going economic benefits in the form of employment, household income and GDP.
- The mitigation measures proposed by the applicant are likely to result in substantial reduction in odour emission rates from the poultry sheds. However, there remains uncertainty in respect of the effects on neighbouring properties and there is the potential for the proposal to give rise to significant odour effects on sensitive receptors.

8.1.2 Section 6

- 253. Section 6 of the RMA sets out that, in achieving the purpose of the Act, all persons exercising powers and functions under the Act shall recognise and provide for various matters of national importance. It is important to note that these matters of national importance are not to be achieved at all cost. Rather, they are matters that are to be recognised and provided for in achieving the purpose of the RMA (i.e. the sustainable management of natural and physical resources).
- 254. Relevant matters of national importance set down in Section 6 are discussed below.

6(e): The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waāhi tapu, and other taonga

At the time of writing, the applicant had not supplied a cultural impact assessment covering the actual and potential adverse effects of the proposal on the relationship of tangata whenua with the marae and urupā. Kāpehu Marae, however, has lodged a submission which provides a detailed assessment of matters relevant to Section 6(e).

6(f): The protection of historic heritage from inappropriate subdivision, use, and development

256. The applicant has provided an archaeological survey of the subject site and has demonstrated that the proposed activity is unlikely to adversely affect historic heritage.

6(h): The management of significant risks from natural hazards

257. The applicant has proposed to implement flood control work to mitigate against 1% AEP flood flows and 2% AEP coastal inundation factoring in sea level rise by 2065. These mitigation measures provide adequate management against significant risks from natural hazards.

8.1.3 Section 7

258. Section 7 of the RMA requires that all persons exercising powers and functions under the Act, in relation to managing the use, development, and protection of natural and physical resources, have particular regard to a number of matters. These are identified and discussed below.

7(a) Kaitiakitanga

259. This section provides recognition that kaitiaki needs to be provided with the opportunity to exercise guardianship of the natural and physical resources within their area of influence in accordance with tikanga Māori. Consultation with kaitiaki is necessary to fully understand the concerns of tangata whenua in respect of managing the use, development and protection of affected land. The AEE Report indicates the applicant has received input from tangata whenua in respect of the physical effects site development on archaeology. However, at the time of writing, the applicant was not able to report on the outcome of its engagement with tangata whenua in respect of the full breadth of matters relevant to Kaitiakitanga that were the subject of submissions on the proposal.

7(aa) The ethic of stewardship

260. The applicant has demonstrated that the proposed activity, on the whole, is an efficient and effective use of the district's resources. However, for the same reasons identified above, there does remain uncertainty in respect of the effects of the activity as it relates to the discharge of odour on the interests if the district and tangata whenua.

7(b) The efficient use and development of natural and physical resources

261. The applicant has demonstrated that the proposed activity will result in the efficient use of resources. Namely, the groundwater take is to be heavily augmented with roof water collection, heating of the facility is to be largely self-contained via combustion of litter, and the overall use of the land area comprising the poultry farm is an efficient use of that resource.

7(ba) The efficiency of the end use of energy

^{262.} The bulk of the energy demands for the facility will be facilitated via combustion of LPG and litter.

7(c) The maintenance and enhancement of amenity values

^{263.} The term "amenity values" is defined in the RMA as:

"... those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes."

- 264. Maintenance and enhancement of amenity values relate firstly to the existing environment and secondly to the environment as it is perceived in terms of the appropriate plans. The existing environment is characterised by rural activities. The NRC and KDC planning documents anticipate and provide for such activities and it can be expected that the amenity of the area will be affected by rural activities (for example, dust generation from cropping and farm races, odour from silage production and distribution, noise from the operation of farming machinery, landscape modifications associated changes in rural practices.)
- 265. With regard to visual amenity, Technical Report J provides a Landscape and Visual Amenity Assessment. I note that report was reviewed by R A Skidmore Urban Design Limited for the KDC as part of its assessment of the resource consent applications under the Kaipara District Plan. The KDC section 42A report concludes that, on the basis of these two reports, any adverse landscape and visual effects will be no more than minor.
- Odour is also an important factor to consider when having regard to the 266. maintenance and enhancement of amenity values. The applicant has proposed to undertake an activity that will result in the discharge of odour on a 24 hour basis, resulting in odour from the facility becoming a chronic presence throughout the surrounding area. As discussed in Section 4.4 above, I have concluded the proposed activity has the potential to give rise to significant odour effects on a number of neighbouring households and other sensitive receivers. I note the RMA does not require every proposal to maintain and enhance amenity values. The direction in section 5(c) to avoid, remedy or mitigate any adverse effects of activities on the environment contemplates that activities may have adverse effects on amenity values and still be in accordance with the sustainable management purpose of the Act. However, owing to the potentially significant effects associated with the discharge of odour, I consider that the proposed activity has the potential to severely compromise amenity values.

7(d) Intrinsic values of ecosystems

267. The subject site comprises a modified rural environment presentably utilised for dairy farming. The applicant has demonstrated that the activities associated with the proposed development will not compromise the ecosystem's integrity, form, functioning, or resilience.

7(f) Maintenance and enhancement of the quality of the environment

268. The proposed activity is unlikely to result in the enhancement of the quality of the environment due to the potential for objectionable odour to occur outside the confines of the property boundary. As discussed earlier, the direction in section 5(c) to avoid, remedy or mitigate any adverse effects of activities on the environment contemplates that activities may have adverse effects on the environment and still be in accordance with the sustainable management purpose of the Act. The applicant has proposed a number of operational initiatives to reduce the odour emission rates from the proposed facility (in comparison to a conventional broiler shed operation). For the same reasons identified in my assessment of Section 7(c) above, I consider that the proposed activity has the potential to severely affect the quality of the environment as a result of the discharge of odour.

7(g) Any finite characteristics of natural and physical resources

269. The applicant has demonstrated that there is sufficient water available to allocate the volumes as sought without affecting other water users.

7(h) The protection of the habitat of trout and salmon

270. Not applicable.

7(i) The effects of climate change

271. This section is aimed at considering the effects of climate change on the application, rather than the effects of the application on climate change. With that in mind, the applicant has demonstrated that the effects of climate change are likely to be mitigated sufficiently throughout the 50 year operational lifespan of the proposed activity.

7(j) The benefits to be derived from the use and development of renewable energy

272. This section relates to the generation of energy, rather than its use. The proposal is not specifically intended to provide renewable energy generation and so assessment under this section is not relevant.

8.1.4 Section 8

- 273. Section 8 sets out that, in achieving the purpose of the RMA, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).
- 274. Consultation with tangata whenua whose interests are affected by a proposed activity is a key component to recognising the rights of Māori under the Treaty and obtaining appropriate and accurate information on the effects and potential effects of an activity on affected Māori.
- 275. The AEE Report states that the applicant is engaging with iwi to ensure its culture and traditions and their ancestral land and water are considered, and that the principles of the Treaty of Waitangi are taken into account.
- 276. A number of submissions have been received expressing concerns around the lack of consultation. Of particular note is the submission of Kāpehu Marae, in which they highlight a number of concerns relevant to Section 8 and state that consultation with delegated marae representatives has been insufficient.
- 277. T&T, in its 18 May 2018 section 92 response letter, advised that the cultural impact assessment is to be provided prior to the hearing of the application. Kāpehu Marae has also advised that they are in the process of completing a cultural impact assessment, independent of the assessment commissioned by the applicant. Further assessment of the proposed activity against the provisions of Section 8 may therefore be necessary as part of the hearing of the application once further technical information relevant to Section 8 has been provided by both the applicant and Kāpehu Marae.

8.1.5 Overall Assessment

- 278. The purpose of the RMA is to sustain all natural and physical resources to enable people and communities to provide for their social, economic and cultural wellbeing. Based on the information provided by the applicant, it can be concluded that the proposed activity is likely to result in significant positive impacts on the local economy. However, due to the levels of uncertainty surrounding the potential adverse effects on neighbouring properties, the proposed activity has the potential to cause significant adverse effects on neighbouring sensitive receivers. Such effect would significantly compromise amenity values and the quality of the environment.
- 279. Moreover, there is insufficient information in respect of the effects of Māori cultural values to enable a full assessment against the provisions of sections 6(e), 7(a) and 8 of the RMA.
- 280. Overall, taking into account the potential for significant odour effects I am of the opinion that the proposed activity is not consistent with the sustainable management purpose of the RMA.

8.2 Regulations

8.2.1 National Environmental Standards for Air Quality

- 281. The Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NESAQ) contain standards and restrictions for ambient outdoor air quality. The proposed energy centre will result in the discharge of a number of combustion-derived contaminants that are regulated under the NESAQ.
- 282. Section 7.1.2 of the AEE Report and Section 8 of Technical Report E provides an assessment of the proposed activity against the relevant NESAQ standards. I accept that information, which demonstrates that the proposed activity is likely to comply with the relevant NESAQ standards.

8.2.2 Resource Management (Measurement and Reporting of Water Takes) Regulations

283. The Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 apply to holders of water permits which allow fresh water to be taken at a rate of 5 litres per second or more. In its 22 December 2017 section 92 response letter, T&T confirmed the applicant would take water at a rate of 5 litres per second. The proposal will therefore be subject to the above regulations, which impose certain requirements relating to the measurement, recording and reporting of water take volumes. Should consent be granted, it is recommended that conditions in accordance with these requirements be included so that NRC can more effectively and efficiently ensure compliance of the Regulation.

8.3 National Policy Statement for Freshwater Management

284. The National Policy Statement for Freshwater Management 2014 (NPS Freshwater) directs regional councils to set objectives for the state of fresh water bodies in their regions and to set limits on resource use to meet these objectives. The proposed water take activity requires consideration against relevant objectives of the NPS Freshwater. Relevant Objectives are assessed in **Table 3** below.

Objective	Description	Assessment
Objective B1	To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water.	As discussed in Section 4, the applicant has demonstrated that the groundwater resource is under allocated and the proposed taking of water is unlikely to result in any adverse effects that will compromise the life-supporting capacity of ecosystems.
Objective B3	To improve and maximise the efficient allocation and efficient use of water.	The applicant has confirmed that a significant proportion of water utilised for the proposed activity will be sourced from roof water collection. By augmenting the water take with roof water supply, I consider that the application is consistent with Objective B3.
Objective B5	To enable communities to provide for their economic well-being, including productive economic opportunities, in sustainably managing fresh water quantity, within limits.	The proposed water take activity is an inherent component of a broader activity in which the applicant has demonstrated will significantly contribute to the district and region.
Policy B7 1(b)	When considering any application, the consent authority must have regard to the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided	The proposed groundwater take is unlikely to result in any adverse effects on the life supporting capacity of water that warrant the effects to be avoided.

TABLE 3: Assessment against the National Policy Statement for Freshwater Management

8.4 New Zealand Coastal Policy Statement 2010

- 285. The purpose of a New Zealand Coastal Policy Statement is to set out policies in order to achieve the purpose of the RMA in relation to the coastal environment of New Zealand. The New Zealand Coastal Policy Statement 2010 (NZCPS).
- 286. Policy 1 of the NZCPS recognises that the coastal environment includes, amongst other things, areas at risk from coastal hazards. As discussed earlier in this report, the subject site is exposed to the hazard of coastal inundation. The subject site therefore forms part of the coastal environment within the context of the NZCPS.

287. It should be noted, however, that the subject site is not demarcated a coastal environment by the Regional Policy Statement for Northland, nor is the portion of the Wairoa River adjacent to the subject site part of the coastal marine area. I have accordingly included an assessment of the proposed activity against only those policies and objectives of the NZCPS that relate to coastal hazards. That assessment is provided in **Table 4**.

TABLE 4:	Assessment	of	the	Proposed	Activity	against	the	Relevant
	Provisions of	f the	e Nev	v Zealand C	oastal Po	licy State	emer	nt 2010

Objective	Description	Assessment
Objective 5	To ensure that coastal hazard risks taking account of climate change, are managed by:	The proposed development is located within an area that is subject to coastal flooding risk. Whilst the applicant
	 locating new development away from areas prone to such risks; 	measures to mitigate against the coastal hazard risk, the proposal is not
	 considering responses, including managed retreat, for existing development in this situation; and 	consistent with Objective 5.
	 protecting or restoring natural defences to coastal hazards. 	
Policy 24 Identification of coastal hazards	 Identify areas in the coastal environment that are potentially affected by coastal hazards (including tsunami), giving priority to the identification of areas at high risk of being affected. Hazard risks, over at least 100 years, are to be assessed having regard to: 	The subject has been identified being exposed to coastal flooding hazard (refer to Figure 7). The application is supported by a detailed assessment of the effects of coastal inundation. Mitigation has been proposed to address inundation hazards including sea level rise up to 2065. The applicant
	(a) physical drivers and processes that cause coastal change including sea level rise;	has demonstrated that the effect of those mitigation measures on adjoining properties are likely to be no more than minor.
	(b) short-term and long-term natural dynamic fluctuations of erosion and accretion;	
	(c) geomorphological character;	
	 (d) the potential for inundation of the coastal environment, taking into account potential sources, inundation pathways and overland extent; 	
	(e) cumulative effects of sea level rise, storm surge and wave height under storm conditions;	
	(f) influences that humans have had or are having on the coast;	
	(g) the extent and permanence of built development; and	

Objective		Descriptior	า	Assessment
	(h)	the effects of c on:	limate change	
		(i) matters (a)) to (g) above;	
		(ii) storm intensity and	frequency, and surges;	
		(iii) coastal dynamics;	sediment	
	taking i and the the like the regi	into account nation best available i ly effects of climation ion or district.	onal guidance nformation on ate change on	
Policy 25 Subdivision, use, and	In areas hazards years:	s potentially affec s over at least	ted by coastal the next 100	The proposed activity constitutes a major development within a land area subject to coastal inundation flooding
development in areas of coastal hazard risk	(a) avo env froi	bid increasing the vironmental and e m coastal hazards	risk of social, conomic harm s;	risk. The applicant proposes to manage that the risk of social, environment and
	(b) avo lan risł haz	bid redevelopmen ad use, that would k of adverse effect zards;	t, or change in d increase the ts from coastal	economic harm in relation to its investment through the implementation of a series of flood mitigation measures, including bunding, improved drainage,
	(c) end cha wo effe inc relo stri	courage redeve ange in land use uld reduce the ri ects from coas duding managed ocation or remov	elopment, or e, where that sk of adverse stal hazards, i retreat by val of existing pandonment in	stormwater pumps and appropriately elevated floor levels. The applicant has demonstrated the effects of the development, including hazard mitigation measures, are unlikely to increase the risk of hazards
	ext des rec	treme circumst signing for rela coverability from h	ances, and ocatability or azard events;	on surrounding properties.
	(d) end infr haz	courage the rastructure away zard risk where pr	location of from areas of racticable;	
	(e) dis stru alte nat	courage hard uctures and prom ernatives to the tural defences; an	protection ote the use of em, including d	
	(f) cor tsu mit	nsider the poten inami and how tigate them.	tial effects of to avoid or	

8.4.1 Conclusion

288. Whilst the proposed development is not strictly consistent with Objective 5 of the NZCPS, the applicant has demonstrated that the proposal is consistent with the underlying policy, which anticipates subdivision, use, and development in areas of coastal hazard risk.

8.5 Relevant Provisions of the Regional Plans and Regional Policy Statement

289. The AEE Report includes an assessment of the proposed activity against the relevant provisions of the RPS and the relevant policies and objectives within the PRP, RWSP and RAQP. That assessment is attached as Appendix I of AEE Report. Generally, I agree with the assessment contained in the AEE Report. There are, however, some aspects of that assessment in which my view differs, or I have further commentary to add. These are identified and discussed below. I have adopted the assessment of all other provisions assessed in Appendix I of the AEE Report.

8.5.1 Regional Policy Statement for Northland

- 290. The Regional Policy Statement for Northland (RPS) was made operative on 9 May 2016. The RPS provides the broad direction and framework for managing the region's natural and physical resources. It identifies significant resource management issues for the region and sets out how resources such as land, water, soil, minerals, plants, animals and structures will be managed.
- ^{291.} I have provided an additional assessment of the proposed activity against the provisions of the RPS below:

Deference	Description	Accomment
Reference	Description	ASSESSMENT
Objective 3.3	Maintain flows, flow variability and	The applicant has demonstrated that
Ecological flows	water levels necessary to safeguard	the proposed activity is unlikely to give
and water levels	the life supporting capacity, ecosystem	rise to any adverse effects on aquifer
	processes, indigenous species and the	levels that would affect the matters
	associate ecosystems of freshwater.	relevant to this objective.
Objective 3.12	Tangata whenua kaitiaki role is	The AEE Report indicates the applicant
Tangata whenua	recognised and provided for in decision-	has received input from tangata
role in decision-	making over natural and physical	whenua in respect of the physical
making	resources.	effects site development on
		archaeology. However, at the time of
		writing, the applicant was not able to
		report on the outcome of its
		engagement with tangata whenua in
		respect of the full breadth of matters
		relevant to Kaitiakitanga that were
		subject of submissions on the proposal.
Policy 5.1.1	Subdivision, use and development	The policy seeks to promote
Planned and	should be located, designed and built in	development that is consistent with the
co-ordinated	a planned and co-ordinated manner	surrounded land uses and integrated
development	which.	with infrastructure services
uovoiopinoitt		
	(a) Is guided by the 'Regional Form	In my view, the proposed activity is not
	and Development Guidelines' in	consistent with $5.1.1(a)$ which sets out
	Appendix 2;	that development should be located in a
	(b) Is guided by the 'Pegional Lirban	manner which maintains or enhances
	(b) is guided by the Regional Orban	the sense of place and character of the
	when it is when in natural	aurrounding environment. This is in
	when it is urban in nature;	large part owning to the pack of the
	(c) Recognises and addresses	development noting that the DDD
	potential cumulative effects of	aevelopment, noting that the PRP
		contains permitted activity rules allow

TABLE 5: Assessment of Relevant RPS Provisions

Reference	Description	Assessment
	subdivision, use, and development, and is based or sufficient information to allow assessment of the potential long- term effects;	for various activity associated with factory farming.
	 (d) Is integrated with the development funding, implementation, and operation of transport, energy water, waste, and other infrastructure; 	
	 (e) Should not result in incompatible land uses in close proximity and avoids the potential for reverse sensitivity; 	
	(f) Ensures that plan changes and subdivision to/in a primary production zone, do not materially reduce the potential for soil-based primary production on land with highly versatile soils 10, or if they do, the net public benefit exceeds the reduced potential for soil-based primary production activities; and	
	(g) Maintains or enhances the sense of place and character of the surrounding environment excep where changes are anticipated by approved regional or district council growth strategies and/or district or regional plan provisions.	
	 (h) Is or will be serviced by necessary infrastructure. 	

8.5.2 Regional Water and Soil Plan for Northland

292. The RWSP covers the effects of land use activities on water and soil. The plan identifies the significant water and soil issues and seeks to address these through the policies and rules. I have provided an additional assessment of the proposed activity against the provisions of the RWSP below:

TABLE 0. Regional Water and Son Fidit for Northland Folicy Assessment	TABLE 6:	Regional Water and Soil Plan for Northland Policy Assessment
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Reference	Description	Assessment
Objective 6.3.1	The management of the natural and physical resources within the Northland region in a manner that recognises and provides for the traditional and cultural relationships of tangata whenua with the land and water.	Consultation with tangata whenua is necessary to fully understand the cultural relationships of tangata whenua in respect of the use, development and protection of affected land.
Policy 6.4.1	To recognise and, as far as practicable provide for the relationship of Māori and their culture and traditions with respect to the use, development and protection	In the absence of supporting technical information (i.e. a cultural impact assessment) in respect of the effects of the proposed activity of Māori interest, it

Reference	Description	Assessment
	of natural and physical resources in the Northland region.	is not possible to provide a complete assessment of the proposed activity against this Objective 6.3.1 and Policy 6.4.1. However, on balance, and based on the information contained in the application report and submissions, I am of the view that the proposed activity is not consistent with these provisions on the basis of the potential adverse effects on Kāpehu Marae and the nearby urupā.

8.5.3 Regional Air Quality Plan for Northland

293. The RAQP applies to air in the whole of the Northland region. The plan identifies the significant air quality issues and sets out policies and rules so that these will be managed. I have provided an additional assessment of the proposed activity against the provisions of the RAQP below:

Reference	Description	Assessment
Objective 6.6.1	The sustainable management of Northland's air resource including its physical, amenity and aesthetic qualities by avoiding, remedying or mitigating adverse effects on the environment from the discharge of contaminants to air.	The proposed activity will result in discharges of contaminants associated with the housing of chickens and the discharge of combustion products associated with the energy centre.
Objective 6.6.2	The maintenance and, where necessary, enhancement of the quality of the environment so that it is free from noxious, dangerous, offensive or objectionable adverse effects associated with discharges to air, such as odour, dust, smoke and poor visibility.	The applicant has demonstrated that the exhaust discharges from the energy centre are unlikely to give rise to discharges that would cause adverse health effects or impacts on the amenity of the area. In terms of odour from the poultry sheds, the applicant has advised that several steps are to be undertaken in order to reduce odour generation from the proposed facility. However, the extent to which these mitigation measures are likely to reduce odour generation is uncertain. In light of that uncertainty, I have concluded that the proposed odour discharge has the potential to cause significant adverse
		effects on neighbouring properties. On that basis I am of the opinion that the proposed activity is inconsistent with Objectives 6.6.1 and 6.6.2.

Table 7: Regional Air Quality Plan for Northland Assessment

Reference	Description	Assessment
Policy 6.7.5	Where the effects of activities are unknown or not well understood, to adopt a precautionary approach to the granting of resource consent applications for the discharge of contaminants to air where it is considered that the effects of such discharges on the environment may be significant.	As outlined above, I have concluded that, owing to the uncertainty surrounding the odour effect, the proposed odour discharge has the potential to cause significant adverse effects on neighbouring properties. A precautionary approach incorporating adaptive management would, in my view, be an effective means of addressing the risks associated with that uncertainty. An adoptive management approach, however, has not been proposed, and there is insufficient information in the application to enable an adaptive management approach to be required through conditions of consent. Accordingly, in my view, the proposed activity is inconstant with Policy 6.7.5
Policy 6.11	To ensure that burning of fuels or waste materials do not create noxious, dangerous, offensive or objectionable adverse effects from smoke, odour or particulate emissions or affect the general amenity of residences, public places and work places.	The applicant has demonstrated that exhaust and odour emissions from the energy centre are unlikely result in any adverse effects beyond the property boundary that are more than minor.
Policy 6.15.1	To ensure that the discharge of contaminants to air should not result in offensive or objectionable odours that could adversely affect people and communities.	As previously outlined, I have concluded that the proposed odour discharge has the potential to cause significant adverse effects on neighbouring properties. On that basis, I am of the opinion that the proposed activity is inconsistent with Policy 6.15.1.

8.5.4 Proposed Regional Plan for Northland

294. The PRP is a single plan that combines the existing three regional plans and was notified in September 2017. This means that its objective and policies have legal effect and need to be considered as well. I have provided an additional assessment of the proposed activity against the relevant provisions of the PRP below:

Reference	Description	Assessment
Objective F.0.1	Manage the use, development, and protection of Northland's natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while:	An assessment of the proposed activity against Part 2 of the RMA is provided in Section 8.1.
	 sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations, and 	
	(2) safeguarding the life-supporting capacity of air, water, soil, and ecosystems, and	
	(3) avoiding, remedying, or mitigating any adverse effects of activities on the environment.	
Policy D.2.5	When considering a resource consent application:	The applicant has demonstrated that the proposed activity is likely to result in
	 (1) have particular regard to issues, uses, values, objectives and outcomes identified in an operative plan or strategy adopted by council that has followed a consultation process carried out in accordance with the consultative principles and procedures of the Local Government Act 2002, and 	significant economic benefits for the local economy. On that basis, the proposed is likely to enhance the economic wellbeing of the community. However, in considering those positive effects against this policy, it is also relevant to consider the views expressed in submissions, and the outcomes of community consultation undertaken by the applicant – both of
	(2) have regard to the values of the local community and tangata whenua.	which provide an indication as to the values of the local community.
		With regard to tangata whenua values, as I have outlined earlier, in the absence of a cultural impact assessment it is not possible to give full consideration to the likely effects of the proposed activity on tangata whenua values. However, based on the submission and the information provided by the applicant, the proposed activity has the potential to give rise to significant adverse effect on the values held by tangata whenua.

TABLE 8: Assessment of the Proposal against the Proposed Regional Plan for Northland

8.5.5 Conclusion

^{295.} The bulk of the proposal is consistent with the relevant policies and objectives of the relevant regional planning documents. However, my assessment above has identified that the proposed activity does not achieve a number of the odour related objectives and policies contained in the RAQP. Moreover, there is insufficient information to enable a full assessment against the tangata whenua provisions contained within the above plans.

9. DISCUSSION

- 296. The applicant has sought consent to allow for various activities associated with the establishment and operation of a large scale poultry factory farming operation at Arapohue, approximately 12 kilometres southeast of Dargaville. The proposal requires resource consent to allow for the taking of water, flood control activities, flood water diversion, land drainage, earthworks and discharges to air (odour and combustion products).
- ^{297.} The primary issue with the proposal relates to the effects of the discharge of odour associated with the poultry housing. I have concluded the effect of the remainder of the proposed activities are likely to be no more than minor.
- 298. With regard to the effect of the proposed odour discharge, I have concluded that the discharge has the potential to result in significant adverse effects on neighbouring property owners. That conclusion has been formed due to the uncertainty surrounding the likely odour emission rates discharged from the poultry sheds. The applicant's assessment of odour effects has assumed odour emission rates will be 51% of a conventional poultry farm. That emission rate cannot be verified.
- 299. With the above taken into account, it is relevant to consider the case of *Craddock Farms Ltd v Auckland Council*²². In that case, the Environment Court considered an appeal to an Auckland Council decision to decline an application to establish and operate a large layer chicken farm in a rural area. The Court remarked on the difficulties of accurately predicting odour adverse effects and found that while odour dispersion modelling, relied on by the applicant, could make a useful contribution to informing the consideration of relative odour effects, the results were not absolute and might not reflect what actually occurred. The Court found there were significant uncertainties about the appropriate odour generation rates and concentrations predicted to be received at the boundary of adjoining properties. The high potential impact of significant adverse odour effects was the basis of the Court's dismissal of the application.
- 300. It is relevant to note, that in *Craddock Farms,* the Court considered the opportunity for a staged approach, limiting the initial farm size until odour effects could be verified. In the end, the Court discounted the option of staging because it was considered it would be impracticable and unlikely to resolve the uncertainty surrounding the effects of the proposal on the neighbouring properties.

²² [2016] NZEnvC 51.

- 301. In contrast, I consider a staged approach would be worth exploring in this situation. The subject site covers a large area and staging the project would potentially allow for odour risks to be managed through appropriate separation distances from sensitive receivers and reduced overall odour emission rates (due to a reduced number of sheds). Therefore, a staged approach would allow for odour emission rates to be verified for a smaller sized, and potentially lower risk, operation before expanding to the maximum scale sought through this consent application.
- 302. However, it is not clear whether staging the development to enable an adaptive management approach is viable, nor is it clear what the staging threshold would be to appropriately mitigate risks associated with the odour discharge. Accordingly, I have not taken into account the option for an adaptive management approach when considering the effects of the proposal and my overall recommendation.

10. **RECOMMENDATION**

- 303. Due to the potentially significant adverse effects of the odour discharge on neighbouring properties, it is my recommendation that the resource consent application is **DECLINED** for the following reasons:
 - (a) The proposed activity does not achieve a number of the odour related objectives and policies contained in the RAQP;
 - (b) The proposed activity has the potential to cause significant adverse odour effects on neighbouring sensitive receptors who have not provided written approval; and
 - (c) On balance, the proposal does not achieve the sustainable management purpose of the RMA as a result of the potentially significant odour effects outside the property boundary.

APPENDIX A: TECHINCAL REVIEW ASSESSMENT OF AIR DISCHARGE



Report

Tegel Foods - Technical Review of Assessment of Discharges to Air

Prepared for Northland Regional Council Prepared by Beca Limited

25 June 2018
Revision History

Revision Nº	Prepared By	Description	Date
1	Mathew Noonan	Draft for Client Review	20 June 2018
2	Mathew Noonan	Final	25 June 2018

Document Acceptance

Action	Name	Signed	Date
Prepared by	Mathew Noonan		25 June 2018
Reviewed by	Prue Harwood		25 June 2018
Approved by	Graeme Jenner		25 June 2018
on behalf of	Beca Limited		

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1 Introduction

1.1 Background

Tegel Foods Limited (Tegel) has applied to Northern Regional Council (NRC) for consent to discharge contaminants to air from a proposed free range chicken broiler farm to be located at Arapohue, 12 km south of Dargaville. The primary discharges will be odour and dust from the broiler shed, and the combustion-related pollutants from the energy centre.

NRC has commissioned Beca Ltd (Beca) to provide specialist air quality technical inputs to support NRC's section 42a report in respect of the Tegel application.

Beca reviewed the report prepared by Tonkin & Taylor Limited (T&T) titled *"Free Range Broiler Farm, Arapohue: Air quality impact assessment"* (T&T report) on behalf of the NRC in 2017. The Beca review¹ (referred to as the *"Beca Technical Review"*) has been incorporated into this current report. However, where appropriate, the findings have been updated based on the site visit and air quality concerns raised by the submitters.

1.2 Purpose of this report

This report provides a technical assessment of Tegel's application to discharge contaminants to air from the Arapohue poultry farm. Specifically, the report:

- Identifies and discusses the key air quality concerns raised by submitters;
- Provides an assessment of the applicant's responses to the NRC section 92 request for further information;
- Incorporates, and where relevant, expands on, the technical assessment prepared previously by Beca (Beca Technical Review); and
- Makes recommendations for consent conditions should a resource consent be granted.

1.3 References

The assessment in this report has been based on the following information;

- The "Free Range Broiler Farm, Arapohue: Air quality impact assessment" report prepared by T&T for Tegel;
- Dispersion modelling input files provided by T&T;
- The spreadsheet detailing the modelled emission rate calculation provided by T&T;
- Submissions in response to the resource consent application provided by NRC; and
- Tegel's response to the NRC and Kaipara District Council (KDC) section 92 requests for further information.



¹ *Tegel – Review of Tegel Foods - Review of Technical Assessment.* Report prepared by Beca for Northland Regional Council, 5 December 2017

1.4 Site Visits

Beca staff visited the proposed Arapohue site on the 28 May 2018. Tegel also arranged for Beca to visit a free-range poultry farm located in the Waikato region, which uses comparable shed technologies to those proposed for the subject site. This latter visit was undertaken on 31 May 2018.

1.5 Limitations

This report has been prepared by Beca for NRC. Beca has relied upon the information provided by NRC in completing this document. Unless otherwise stated, Beca has not sought to independently verify the information provided. This document is, therefore, based upon the accuracy and completeness of the information provided and Beca cannot be held responsible for any misrepresentations, incompleteness or inaccuracies provided within that information. Should any new or additional information become available, this report will need to be reviewed accordingly.



2 Description of Activity

2.1 Overview

The proposed activities are described in detail in the T&T report. The farm will house 1.325 million birds in 32 free range sheds, each of which will contain 41,400 birds. The litter produced will be combusted in the site energy centre and the heat produced will be used to heat the sheds.

2.2 Shed Design

The aspects of the proposed shed design that are of most relevance to the potential effects on air quality are summarised below:

- The sheds will have pop-holes located along the sides of the sheds, which will allow the birds (once they
 are 21 days old), to access the outside yard areas during the day. The pop-holes are operated
 automatically and will be closed during poor weather conditions.
- When the pop-holes are closed, the sheds are maintained at a negative pressure and ventilated via 12 roof fans and vents. Fresh air enters the sheds via vents in the sides of the sheds.
- When the pop-holes are open the sheds are ventilated passively.
- The sheds are operated on an 8 week cycle. Half of the birds are removed at day 31 of the cycle and the remainder at day 42.
- At the end of each cycle, the litter is removed from the sheds and the sheds are cleaned and disinfected prior to a new batch of chickens being introduced.
- The litter removed from the sheds is combusted in two purpose-built boilers in the site energy centre. Heat produced in the energy centre is used to heat the sheds and minimise the moisture content of the litter.
- The combustion of litter provides more heat than necessary to maintain the sheds at the optimum temperature. In hot ambient conditions, water sprays will be used to provide evaporative cooling. The evaporated water will be discharged with the ventilation air and T&T has stated that this should have no appreciable effect on the moisture content of the litter.
- Dead birds are collected each day, frozen and then periodically carted off-site.
- Dry pellet feed is conveyed from enclosed storage silos to feed pans within the sheds.
- Water is supplied via nipple drinkers fitted with drip trays to reduce water spillage.

2.3 Energy Centre

The main features of the energy centre, which have the potential to effect discharges to air from the site, are summarised below:

- Litter is transported from the sheds to one of three manure bays within the energy centre for storage.
 Vehicle entrances to the facility are closed automatically to maintain enclosure of the building.
- Up to six weeks supply of litter (approximately 1,700 tonnes (t)) will be stored.
- The energy centre is maintained under negative pressure to prevent fugitive discharges of odour. Air
 extracted from the buildings is used as inlet air for the combustion appliances, which provides thermal
 destruction of the odour prior to discharge.
- There will be two burner units each with a net thermal output of 2 MW. Each unit will be able to burn 920 kg/hr of litter and, in total, the energy centre will be able to combust up to 40 t of litter per day.
- The combustion appliances will be started up using LPG as fuel.
- The exhaust gases from the combustion appliances will be treated in bag filters and discharged via 2 x 16.75m high stacks.



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3 Emission Estimates

3.1 Primary Sources of Discharges to Air

The discharges to air from the farm include the following primary sources:

- Odour and dust from the shed roof vents when the pop-holes are closed;
- Odour and dust from the pop-holes when they are open;
- Odour and dust from the yard areas;
- Odour and dust from removal of litter from the sheds and transporting it to the energy centre;
- Odour and the products of combustion from the energy centre;
- Odour from the collection and treatment of wash water used to clean out the sheds; and
- Odour and dust from the storage and handling of feed.

The discharges to air from the sheds will vary with the progression of each batch of chickens due to a large number of factors including, the time of day and the season, the weather conditions, the moisture content of the litter, the ventilation rate in the sheds, the type of feed and the number and age of the birds.

3.2 Odour Emissions

3.2.1 Odour from the roof vents

T&T estimated the odour emission rates from the roof vents using guidance developed by the Environmental Protection Authority of Victoria (Vic EPA), for conventional tunnel-ventilated sheds and compared their estimate with measured values from a conventional broiler operation in Southbridge, Canterbury. The odour emission rates estimated by T&T compared well with the measured values. T&T noted that odour emission rates from conventional operations are expected to provide a conservative estimate of the odour emission rates from the roof vents of the proposed operation. Beca supports this assertion.

3.2.2 Odour from pop holes

T&T estimated the odour emission rates from pop-holes using the guidance developed by the Rural Industries Research and Development Corporation (RIRDC). The concentration value derived by T&T is a constant value that corresponds to odour measurements made at a conventional shed during the period before the first and second culls, when the bird mass is at a maximum and when the odour emission rate from the shed is expected to be at a maximum. The emission rate for odour from the pop-holes used by T&T is therefore considered to provide a conservative estimate of pop-hole odours taken over a complete batch cycle.

3.2.3 Scaling of odour emissions

T&T provided evidence in their report regarding the reduction in odours that is expected to result from the proposed heating system in the sheds. The heating system is expected to reduce the moisture content of the litter and the emission rate of ammonia from the sheds. The research² quoted by T&T found that the discharge of ammonia from sheds using the proposed heating system was reduced by an average 51% over

² Provided by energy centre supplier, BHSL



conventional sheds. T&T used this factor to scale the odour emission rates for conventional sheds to calculate a revised estimate of the expected odour emission rates from the proposed sheds.

The scaling of the odour emission rates by T&T assumed that the emission rate of odour from the sheds is directly proportional to the emission rate of ammonia. To test whether this assumption was valid, Beca reviewed the following published papers, which discuss the relationship between ammonia concentrations and odour emission rates from broiler farms.

- RIRDC (2015) "Odour and Ammonia Emission from Broiler farms"; and
- Lacey, Ronald & Mukhtar, Saqib & Carey, John & Ullman, Jeffrey. (2004). "A Review of Literature Concerning Odors, Ammonia, and Dust from Broiler Production Facilities: 1. Odor Concentrations and Emissions management". J. Appl. Poult. Res. 13. 500-508. 10.1093/japr/13.3.500.

These documents were inconclusive on the relationship between odour and ammonia concentrations, with some studies indicating a correlation and others unable to confirm a correlation. However, the RIRDC paper states that "Over a short period such as one hour, ammonia may be regarded as a tracer gas reflecting concentration changes induced by dilution and thus giving a rough indication of fluctuations in odour concentration".

The RIRDC study did, however, conclude that "moisture measurement studies indicated that odour concentrations were related to litter moisture levels".

T&T assumed in the "site specific management scenario" used for modelling the effects of the odour emissions on the environment, that the odour emissions will be 51% less than the calculated conventional shed emissions due to the use of the heating system.

However, this approach also makes the assumption that the management, design and odour emissions of the 'traditional' shed tested in the BHSL trial are comparable to the Vic EPA and RIRDC 'traditional' shed on which the modelled odour emissions are based, and that the reduction in odour emission observed in the BSHL sheds would also be observed in the Vic EPA and RIRDC emission rates, if such a management system was implemented.

Beca considers it reasonable that the odour emission rates will decrease substantially due to the mitigation measured proposed by Tegel. However, we could not confirm that odour emission rates would be reduced by a factor of 51%.

3.2.4 Overall assessment of odour emission rates used by T&T

Beca considers that, overall, the estimate odour emission rates used by T&T are likely to be reasonable for the following reasons:

- The estimates of odour emission rates used by T&T are based on measurements made at conventional sheds;
- The proposed sheds will use computerised climate control to monitor temperature, humidity and CO₂ levels in the sheds;
- The proposed sheds will have indirect heating which should reduce shed humidity, the moisture content of the litter and the ammonia concentrations in the sheds;
- Litter will be completely removed and replaced after each batch; and
- Nipple drinkers will be used, which reduce the moisture content of the litter.

However, there is some uncertainty in the derived emission rates due to the following factors:



- The relationship between ammonia concentrations and odour emission rates from the sheds was found to be inconclusive;
- We cannot confirm that odour emission rates would necessarily be reduced by 51% for the proposed shed technology compared to traditional methods; and
- The modelled emission rates for the proposed shed technologies have not been confirmed by any emission testing.

A discussion of the sensitivity of the odour predictions to the modelled emission rates is presented in Section 4.6 Odour Modelling and Risk Assessment Results.

3.2.5 Odour from the energy centre

T&T used information provided by the supplier of the combustion plant to assess the potential effects of the discharges from the energy centre. T&T scaled measured odour concentrations values from a similar combustion plant to take account of differences in the size of the two plants used in the supplier's tests and the quantity of waste chicken litter each burner unit is specified to use and also increased the odour emission rate further to allow for any variability in odour emissions. Beca is therefore satisfied that the odour emission rate used by T&T to model the effects of the odour discharges from the energy centre is conservative and, although the T&T report does not state it, the energy centre's contribution to the ground level concentration of odour is not expected to be significant compared to the odours discharged from the sheds.

3.2.6 Other odour sources

T&T did not specifically assess some other potential odour sources at the farm. These are discussed below.

3.2.7 Odour from the range areas surrounding the sheds

Research published by RIRDC in the paper "Free Range Chickens – Odour Emissions and Nutrient Management" notes that when "compared against shed odour emissions, it becomes clear that emissions from the range area are virtually of no consequence". Consequently, it is considered that the omission of odours from the range areas in the T&T assessment will not affect the results and conclusions of their report.

The low odour potential of these areas is consistent with observations made by Beca during a site visit to a Waikato free range poultry farm.

3.2.8 Removal of litter from the sheds

The removal and transport of used chicken litter from the sheds will generate a short term discharge of odour at the end of each batch. Guidance provided in "Broiler Farm Odour Environmental Risk Assessment Background to Technical Guidance (Vic EPA Background Document)" recommends that odours from shed cleanout should be considered in the dispersion modelling of odours from broiler sheds. However, this document notes that "very few odour measurements have been carried out and that it is unclear how accurate the measured values are". A review of the Vic EPA Background Document prepared by Pacific Environment Limited⁴ noted that "well managed sheds under appropriate farm management practices are not actively ventilated during cleanout, and if they are, odour is usually not offensive". Thus, the inclusion of post

⁴ Pacific Environment Limited "Development of Odour Environmental Risk Assessment Guidelines for Broiler Farms in Victoria: March 2013.



³ Environmental Protection Authority of Victoria "Broiler Farm Odour Environmental Risk Assessment Background to Technical Guidance" June 2012.

cleanout odour emission data will not add to the assessment process". The Pacific Environment review also noted that in their experience "most cleanout odour complaints are not attributable to the shed operations, but the way in which the manure is removed". Pacific Environment recommends that odours generated during shed cleanout are managed as follows:

- "Not ventilating the shed during cleanout,
- Only cleaning out during the day, and preferably during sunny conditions, and
- Once the trucks are loaded they should be covered and the manure immediately taken off site".

At Arapohue, the manure will not be taken off site but will be taken immediately to the manure storage sheds.

It is therefore recommended that conditions are included in the consent, or methods are included in a site management plan, which require the manure to be handled as recommended by Pacific Environment where practicable.

These recommendation are discussed in the Tegel response to NRC's s92 request for additional information (refer Section 6).

3.2.9 Collection and treatment of shed washwater

Odour generated from the collection and treatment of washwater used to clean out the sheds is expected to be of a similar hedonic tone (ie be of a similar character), to other odours on site but of a lower intensity. There may be potential for localised low intensity odours to be generated when the washwater is irrigated too close to nearby sensitive receptors. However, overall, Beca considers that the potential for the treatment and irrigation of wastewater to generate offensive odours is low.

3.2.10 Storage and handling of feed

Beca concurs with T&T's assessment that odour from the storage and handling of feed will have a low odour potential, if managed well.

3.3 Dust Emissions

Beca concurs with T&T's assessment of the potential effects of dust generated on site by the poultry farm and agrees that dust is unlikely to cause a nuisance beyond the boundary of the site.

The potential impact of dust emitted from the farm's proposed quarrying operation was not considered in the T&T report. However, these effects were assessed by T&T in Tegel's response (dated 18 May 2018) to the s92 request for further information from the NRC and KDC. The T&T assessment of these effects is discussed in the Section 6 of this report.

3.4 Combustion Emissions

T&T based their assessment of the effects of the emissions of the products of combustion from the energy centre on specified maximum emission concentrations provided by the supplier of the plant. The energy centre is designed to burn spent chicken litter and LPG. The boiler exhaust gases are to be treated with a bagfilter prior to discharge to the atmosphere.

The total emission rate of sulphur dioxide (SO₂) used by T&T of 0.19 g/s appears to have been based on the specifications given by the manufacturer. The Queensland Government Department of Agriculture and



Fisheries provides a value for the sulphur content of chicken litter of 0.6%⁵. Assuming all the sulphur in the litter is combusted and is converted to SO₂, at a chicken litter feed rate of 1840 kg/hr, the SO₂ emission rate could be up to 6.1 g/s. The implications of this difference in SO₂ emission rates on ambient air quality is discussed in Section 4.6 of this report.

Beca considers that the emission rates of nitrogen oxides (NO_x), and particulate matter inputted to the model, are reasonable.

⁵ https://www.daf.qld.gov.au/animal-industries/dairy/feed-and-nutrition/chicken-litter



4 Assessment Methodology

4.1 Overview

T&T used four different methods to assess the potential effects of the odour emissions from the site, ie: proposed mitigation methods; dispersion modelling; consideration of the FIDOL factors and a risk assessment. The consideration of mitigation measures, dispersion modelling and FIDOL factors are all consistent with the guidance provided in the MfE *Good Practice Guide for Assessing and Managing Odour*" (GPG Odour)⁶. The risk assessment method used by T&T is based on an assessment method recommended in the *Victorian Code for Broiler Farms* (*Vic Broiler Code*)⁷, and Beca considers that this provides an additional level of robustness to the overall assessment.

4.2 Odour Mitigation Methods

The T&T report compares the proposed odour mitigation methods with conventional methods. We concur with T&T's opinion that the mitigation measures proposed by Tegel represent a high standard of shed management, which should result in substantially less odours than that expected from a conventional shed management system.

4.3 Dispersion Modelling

4.3.1 Model inputs and assumptions

T&T modelled the ambient concentrations of odour for two emission scenarios: a site-specific management scenario and a conventional management scenario. The odour emission rates for the site-specific management scenario were 51% of the conventional management scenario.

The assumptions made in the T&T dispersion model are summarised and reviewed as follows:

- The use of the CALMET/CALPUFF modelling system is appropriate and takes into account the complex terrain at this site.
- The CALMET inputs are appropriate and are as follows:
 - Meteorological grid spacing = 0.2 km
 - Number of surface stations = 1 (Dargaville met station)
 - Upper air data = prognostic
- T&T reduced the CALPUFF model complexity by combining point and volume sources, which is considered to be reasonable and will not detract from the accuracy of the model results. The modelled momentum and buoyancy flux for the combined vent emissions will increase as a result of this simplification, which may improve the dispersion of discharges from the site, compared to dispersion from individual stacks. However, this effect is not expected to be large, considering the relatively large distance to sensitive receivers and the large number of sources at the site.

⁷ Victorian Government "Victorian Code for Broiler Farms 2009"



^{*} Ministry for the Environment "Good Practice Guide for Assessing and Managing Odour" 2016

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 The inputs to the model are consistent with the source parameters described in the T&T report and are considered to provide generally a good representation of the discharge and dispersion conditions that will be present on site.

4.3.2 Meteorological inputs to the model

T&T has used meteorological modelling methods to develop the meteorological input files for the dispersion model. This methodology is considered to be consistent with common dispersion modelling practices used in New Zealand and Australia.

T&T has developed meteorological inputs for the years 2012 and 2015. An analysis of the representativeness of the modelled meteorological years is provided in Appendix C of the T&T report. The wind direction and wind speed distribution (i.e. windroses) presented in Figure D1 indicate that wind flows vary between the years 2012 to 2016, but the modelled years (2012 and 2015) are generally representative of wind flow conditions which occur at the Dargaville meteorological monitoring station. The modelled year 2015 tends to show a higher proportion of south southwest winds compared to the other years considered.

Figure D2, Appendix C, of the T&T report shows there is a relatively good correlation between the observed and modelled wind flows for the year 2012. However, there appears to be a much lower correlation between the observed wind flows and those predicted for 2015. Lower average wind speeds are predicted for the year 2015 than those observed at the Dargaville monitoring station. Similarly, a higher proportion of winds from the south west are predicted to occur compared to those observed.

Overall, the derived meteorological input for the dispersion model are expected to provide a reasonable representation of the dispersion conditions which occur at the site. The meteorological inputs for the model year 2012 are considered to be more representative, compared to the 2015 prediction. As consequence, the air contaminant concentrations predicted for the simulated year 2012 are also expected to be more representative of expected air pollutant levels in the vicinity of the site, than those predicted for the 2015 simulated year 2012. However, it is unlikely that the conclusions reached in the T&T report would change if the assessment of effects was based solely on the 2012 predictions.

4.4 Odour Modelling Assessment Criteria

The criteria used by T&T to assess the results of the odour dispersion modelling are consistent with the recommendations provided in the MfE GPG Odour. The criteria of 5 OU/m³ (99.5%ile) is an indicator of potential chronic adverse odour effects and is considered to be appropriate for this assessment.

4.5 Risk Assessment

T&T has used the risk matrix specified by the Victorian Civil and Administrative Tribunal (VCAT) for the assessment of odour impacts associated with an expansion of an existing poultry farm in Victoria to assess the risk of odour emitted from the proposal[®]. The VCAT risk matrix assigns levels of risk to odour impacts based on modelling results ranging from negligible to high and deems a high risk of odour impacts to be

Barac v Strathbogie SC [2011] VCAT 1146 (20 June 2011)



unacceptable. T&T has equated the VCAT high risk category to be equivalent to an "offensive or objectionable odour", which Beca considers to be reasonable⁹.

The Environmental Protect Agency Victoria (Vic EPA) has recently published guidelines for the assessment of odour risks from broiler farms¹⁰. The Vic EPA guidelines define a similar odour risk matrix to that specified by the VCAT, although it is slightly more conservative in the assessment of the relative levels of odour risk.

4.6 Odour Modelling and Risk Assessment Results

The results of the site-specific model scenario and risk assessment reported by T&T demonstrate that the odour concentrations, due to emissions from the farm, may exceed the MfE GPG Odour criteria of 5 OU/m³ (99.5%ile) at four dwellings located to the south of the site, on occasions, and that three of these dwellings are at high risk of experiencing odour nuisance effects. The fourth dwelling was assessed as being at medium risk of experiencing odour nuisance effects and all other sensitive locations in the vicinity of the plant were assessed as being of low risk.

Since T&T prepared their report, all of the properties that have been identified by T&T as being at high or medium risk of being adversely affected by odours, have given their written approval to the application and consequently, any effects on these properties cannot be taken into account by NRC when making their decision to grant or decline consent¹¹.

We concur with T&T's interpretation of the odour modelling results and their assessment of the risk of offensive and objectionable odours occurring at the identified sensitive locations in the vicinity of the site, provided the modelled odour emission rates are achieved by the proposal.

As noted previously, there is a level of uncertainty in the modelled odour emission rates and therefore there is also a level of uncertainty in the predicted odour concentrations at nearby sensitive receptors. If emissions of odour from the sheds are higher than have been estimated by T&T, the risk of an odour nuisance effect occurring may also be higher than what is assessed in the T&T report.

An indication of the relative sensitivity of the odour risk assessment to the higher odour emission rates can be derived from the dispersion modelling results presented in Figure A7 of the T&T report¹². A summary of the number of sensitive receptors where the 99.5 percentile 1-hour average odour concentration are predicted to exceed the MfE guideline concentration of 5 OU/m³ for different odour emission rates (expressed as a percentage of the "conventional management" emission rate) is shown in Table 1. Only the sensitive receptors which have not provided written approval are considered in the table.

¹² Figure A7 shows the predicted concentration contour lines for the simulated year 2012 assuming conventional management



⁹ The VCAT 'high risk' category is approximately comparable to the MfE 99.5 percentile odour guideline limit of 5 OU/m³

¹⁰ Environmental Protect Agency Victoria, Jan 2017. Odour environmental risk assessment for Victorian broiler farms. Publication 1643

¹¹ Section 92 response prepared for Tegel by Tonkin and Taylor, 21 Dec 2017.

Odour Emission Rate Scenario	Number of sensitive receptors where the predicted 99.5 percentile 1-hour average odour guideline exceeds 5 OU/m ³
51% of the conventional shed emission rates (as assumed in the T&T report)	urupa
63 % of the conventional shed emission rates	urupa, marae, & 3 dwellings
71 % of the conventional shed emission rates	urupa, marae, & 7 dwellings
83 % of the conventional shed emission rates	urupa, marae, Arapohue School & 10 dwellings

Table 1. Estimate of the number of potentially affected sensitive receptors for different odour emission rates.

The results suggest that a greater number of sensitive receptors could potentially be impacted by discharges from the farm (compared to those identified in the T&T report) if the odour emission rates were higher than estimated by T&T. For example, the MfE guideline would be exceeded at a further four sensitive receptors if the emission rates were 24% higher than those modelled, and at a further eight sensitive receptors if the emission rates were 39% higher than those modelled. These increases are expected to be within the uncertainty of T&T's derived odour emission rates.

A greater level of assurance in the reliability of the modelling results would be demonstrated if emission testing results were available for a comparably designed and operated broiler shed to that being proposed. However, as this is not the case, it is recommended that, should consent be granted, a condition is included in the consent that requires the odour emission rates from the shed ventilation system to be measured when the first sheds are operational. The information from this testing will be able to be compared with the information used in the T&T assessment and if the measured emission rates exceed the rates assumed by T&T, it is recommended that Tegel be required to provide a report to NRC which details methods for reducing the emissions and/or the ambient concentrations of odour to levels at, or below those used in the T&T assessment.

One approach Tegel may need to consider is to stage the development in order to ensure that the actual effects of the full project do not exceed the predicted odour impacts. If this were to occur, it would be preferable that the sheds located furthest from the sensitive receptors were constructed first.

4.6.1 Kapehu Urupa

It is also noted that the potential odour effects at the Kapehu urupa, which is located 350m to the south west of Kapehu Marae, have not been considered in the T&T assessment report. Concerns associated with the potential odour effects at the urupa have been raised by a number of submitters.

The MfE GPG Odour categorises the urupa as having a high sensitivity to potential odour nuisance effects¹³. Therefore, a high amenity value would therefore be expected to be maintained at the site.

The results of the modelling show that the predicted odour concentrations at the urupa exceed the MfE guideline criteria of 5 OU/m³ (99.5%ile).

Based on the information provided in the T&T report we are unable to assess the potential risk (i.e. the probability) of visitors to the urupa being exposed to an observable odour. The risk of exposures would depend on the frequency and the duration of visitors to the urupa.

¹³ Based on Table 4 – 'Tourist, cultural, conservation' landuse category



However, it is likely that the risk of exposure at the urupa will be lower than what would occur at other sensitive receptors, such as at dwellings, the marae and the school during the daytime, which may be in continuous or semi-continuous use.

4.7 Assessment of Potential Health Effects from Combustion Emissions

T&T used the same modelling configuration to assess the potential health effects of the discharge of combustion contaminants as used to model the effects of the odour discharges. T&T assessed the results of the combustion discharge modelling against the relevant national and regional ambient air quality criteria, which is appropriate. The results of the T&T modelling demonstrated that the maximum concentrations of PM_{10} , SO₂ and nitrogen dioxide are expected to remain well below the relevant standard guideline values and any adverse effects on human health and the environment, resulting from the discharges, are expected to be negligible.

As noted in Section 3.4, the emission rate of SO₂ used as an input to the T&T model could be up to 32 times higher than the value estimated by T&T (up to 6.1 g/s), . Ambient concentrations of SO₂ predicted by modelling are directly proportional to the SO₂ emission rate. Consequently, the maximum ambient SO₂ concentrations may be 32 times higher than those reported by T&T and maximum 1 hour and 24 hour average SO₂ concentrations may reach 160 μ g/m³ and 80 μ g/m³, respectively. However, despite this discrepancy, the maximum ambient concentrations are still expected to remain well within the relevant health-based air quality criteria.

Beca therefore considers that no significant adverse health effects are expected to result from the discharge of combustion-related contaminants from the energy centre.



5 Broiler Farm Site Visit Observations

5.1 Overview

A Beca staff member undertook a site visit to an operating free range poultry farm on the 31 May 2017. The poultry farm is located in the Waikato region and is operated by a grower contracted to Tegel. The Beca staff member was accompanied by representatives from both Tegel and T&T during the visit.

The farm operates six broiler sheds and grows up to approximately 240,000 chicken at any time. The newest broiler shed is similar in design to the sheds proposed by Tegel for the Arapohue site. The Waikato shed incorporates 8 vertical ventilation fan units, compared to the 12 proposed for the Arapohue site sheds. The ventilation stacks also incorporate rain caps, which would influence the dispersion of any emitted odour.

The visit occurred at approximately day 31 in the shed cycle after half the population had been removed from the shed. The visit occurred at mid-morning during cool conditions and light winds.

5.2 Results from Site Visit

During the visit, odour was detected at approximately 60 m downwind of the shed. The odour, while identifiable, was low in intensity, and unlikely to be detected 150 -200 m from the shed. The odour was considered to have an 'animal feed' like character and the hedonic tone of the observed odour was considered to be "moderately unpleasant"¹⁴. The observed odour was considered to be consistent with rural agricultural practices.

The odour detected during the site visit supports the T&T assumption that odour emissions from the proposed sheds can be reasonably well-controlled (but not eliminated) by the proposed shed technology and the implementation of appropriate management procedures.

However, it is noted that downwind odour levels at the site will vary from those detected during the site visit, with respect to changes in meteorological conditions and the conditions in the broiler shed (e.g. growth cycle, litter condition). It is therefore difficult to draw any firm conclusions from this single site visit in respect of the proposed Arapohue site. It is also not possible to extrapolate the likely cumulative effects of air discharges from the proposed 33 sheds at Arapohue, from the Waikato farm site visit.

¹⁴ Hedonic tone is commonly assessed on a nine point scale which varies from - very pleasant, pleasant, moderately pleasant, mildly pleasant, neutral, mildly unpleasant, moderately unpleasant, unpleasant, to very unpleasant.



6 Section 92 Responses

6.1 Overview

NRC requested further information under section 92 of the RMA from Tegel, with regards to the proposed discharges to air in a letter dated 8 December 2017. A response to the request was prepared by T&T on behalf of Tegel in a letter dated 21 December 2017.

A further section 92 request from NRC and KDC was submitted to Tegel in a letter dated 30 April 2018. A response to the request was prepared by T&T on behalf of Tegel in a letter dated 18 May 2018.

A discussion of Tegel's responses to the requests for additional information relating to the proposed air discharges are summarised below.

6.2 December 2017 Section 92 Response

6.2.1 Request 4a

Beca has recommended that conditions to any consent should include contingency plans as set out in the five bullet points within Section 6 – Recommendations (Beca Technical Review). Does the applicant accept these recommendations and will the applicant be able to include contingency plans within an Odour Management Plan?

Tegel has indicated that contingency measures could be incorporated into either a dedicated air quality management plan (AQMP), or within a wider environmental management plan (EMP).

Beca agrees that the inclusion of contingency plans, in either an AQMP or EMP, is appropriate for the proposed activity. We also recommend that if a resource consent were to be granted, the requirement to prepare an AQMP or EMP should be one of the conditions imposed. We would suggest that a draft management plan was prepared prior to the commissioning of any of the poultry sheds.

6.2.2 Request 4b

Beca has recommended (Section 6 of the Beca Technical Review) that sheds are cleaned out using the procedures recommended by the Pacific Environment Limited document referred to in the review attached. Does the applicant agree within this statement and to what extent will the applicant be able to adopt the recommended procedures?

Pacific Environment Limited recommendations are detailed in Section 6 of the Beca Technical Review. Tegel has accepted the recommendations that the shed clean-out should only occur during the day, and once loaded, the manure truck will be covered when transporting waste to the energy plant.

Tegel has, however, expressed concern that if the sheds are not ventilated during clean-out, elevated temperatures may occur in the shed creating unsafe working conditions for the clean-out crews. Tegel has instead proposed reducing the ventilation rate to a minimum during cleanout to maintain safe working conditions rather than ceasing ventilation completely.

Beca agrees with Tegel's proposed ventilation procedure.



6.2.3 Request 4c

Beca has recommended (Section 6 of the Beca Technical Review) that to validate the emissions of *PM*₁₀ and SO₂ from the Energy Centre the emissions from the boilers are measured at least once following the commissioning of the boilers. Does the applicant agree with this recommendation and to what extent will the applicant be able to undertake these measurements, please comment on when the earliest opportunity to undertake the validation will be, and the frequency of on-going validations.

Tegel agrees that testing of the proposed emission testing would be useful to verify the modelled emission rates. However, Tegel has not proposed a testing timeframe, or whether they propose to undertake ongoing emission testing.

Beca recommends that testing of the PM₁₀ and SO₂ discharges from the energy centre takes place within six months of the boilers being commissioned and is repeated on an annual basis.

6.2.4 Request 4d

Pursuant to Schedule 4 Clause 6(1)(a) provide a description of any possible alternative locations or methods for undertaking the activity.

Tegel has received written approval for all owner/occupiers of residential dwellings that they have identified as being at high or medium risk by the dispersion modelling study. As consequence, T&T considers it unnecessary to consider alternative locations and methods under clause Schedule 4 Clause 6(1)(a).

However, Tegel has indicated in their May 2018 section 92 response that they will be presenting an assessment of alternative sites and methods as evidence at the Council hearing.

6.3 May 2018 Section 92 Response

6.3.1 Request 1

Please provide a cultural impact assessment assessing the effect of the proposal on Kāpehu marae and associated urupa.

Quarry – dust

Beca has reviewed the dust assessment presented in Appendix B of the section 92 response and agrees with T&T's assessment that the proposed separation distances between the quarry and the marae and urupa, and the implementation of the proposed dust mitigation methods are appropriate and will minimise the risk of dust nuisance effects beyond the site boundary.

Operation of the proposed poultry farm - dust

We also concur with T&T's assessment of dust nuisance effects from the operation of the farm, and agree that dust is unlikely to cause a nuisance beyond the boundary of the site.

Operation of the proposed poultry farm - odour

T&T's response referred to the proposed odour control methods and the results of the odour dispersion modelling. Based on the results of the modelling, T&T considers the frequency, intensity and duration of odour at the marae to be appropriate and unlikely to cause adverse effects.

A discussion of the assessment methodology and results are described in Sections 3 and 4 of this report.



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In paragraph 1.13 of the T&T response, a description of the analysis of the frequency and intensity of odours which are predicted to occur at the marae and urupa is discussed. This analysis was presented at Tegel's public open days.

The analysis appears to have categorised predicted 1-hour average odour concentrations against the general guidance provided by the UK Environmental Agency¹⁵, which is as follows.

"In very general terms, based on the "intensity" of the odour:

- 1 odour unit is the threshold of detection (in the laboratory);
- 3 odour units is the point at which the smell is recognisable, i.e. it could be recognised as pig odour;
- 5 odour units is noticeable (faint);
- 10 odour units is a distinct smell which can be intrusive.

However, we have concerns that the approach used by T&T does not provide an accurate assessment of likely odour intensities that will be experienced at these locations. The human response to odour is in the order of seconds. Over an hour, odour concentration can vary significantly with regard to source and meteorological conditions. The peak odour concentrations, which occur over any hour, can be substantially higher than the hourly average odour concentration. It is often these higher short term odour concentrations which cause the adverse nuisance effects.

Dispersion models, such as CALPUFF, are designed to predict 1-hour average concentrations. To account for sub-hourly variations in odour concentrations, a typical peak-to-mean factor is applied to the predicted 1-hour average predictions, or a peak-to-mean ratio is incorporated into the odour guideline criteria. A typical peak-to-mean factor could be of the order of 2.0.

The approach used by T&T does not account for these short term variations and therefore may underestimate the frequency and strength of the observable odours at these locations.

It is also noted that T&T did not use the same risk assessment method used in the T&T report to evaluate potential odour risks at these locations. It is our opinion that using the VCAT odour risk matrix would have provided an analysis which was more consistent with the previous assessment.

Tegel has also confirmed that, in response to concerns raised by submitter, they no longer propose to combust bird mortalities in the energy centre and has offered this as a consent condition.

6.3.2 Request 8

Please provide comment from a suitably qualified and experienced odour expert regarding the character and intensity of odour anticipated (beyond the sites who have provided written approval) and how odour estimates compared with that which could be reasonably expected from typical farming activities that are anticipated and provided for in a rural environment.

Beca agrees with T&T assessment that it is difficult to accurately quantify background odour levels. We also agree that the odours generated from the site are not inconsistent with the rural environment, where intensive framing activities can be expected to occur.

¹⁵ UK Environment Agency. 2005. Integrated Pollution Prevention Control (IPPC) Technical Note IPPC SRG 6.02 (framing). Odour management At Intensive Livestock Installations, p23



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A discussion of the assessment methodology and results are described in Sections 3 and 4 of this report.



7 Review of Submitter Concerns

7.1 Overview

Submissions from the public have been received by NRC with regards to the resource consent applications submitted to NRC and KDC.

Ten submitters were supportive of the resource consent applications and did not identify any air quality issues. Four submitters indicated that they were neutral towards the proposed development but also identified air quality issues. The Northland District Health Board (NDHB) was one of the neutral submitters.

One of the neutral submitters (reference no. NCR207) was supportive of a consent being granted provided appropriate environmental management plans were a condition of any consent.

However, a large number of submitters opposed the granting resource consents, based in part, on potential air quality impacts of the proposal. Submitters opposed to the proposal included the Aropohue School Board of Trustees (submission reference no. NRC9) and the Kāpehu marae (submission reference no. NRC304) prepared on behalf of the marae by Professor Mutu.

The locations of the submitters who opposed the application, that are located in the near vicinity of the site, are shown in Figure 1. Fourteen of these submitters are located within approximately 1.4 km of the site.



Figure 1. Location of submitters. The label corresponds to the NRC submission reference number.



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7.2 Common Concerns Raised by Submitters

A number of different air quality concerns were identified by the submitters who opposed the granting of the consent. A summary of the common air quality concerns identified by the submitters is provided in Table 2.

Table 2. Discussion of submissions with common air quality concerns.

Air quality issue identified by submitters	Discussion
Discharge from the energy centre will contain contaminants that will affect the quality of roof water collection	Overall, the deposition rate of particulate matter (and the contaminants bound to the particulate matter) emitted from the energy centre onto the roof of nearby building is expected to be very low.
	Low deposition rates can be expected because of the comparatively low PM_{10} concentrations predicted at the nearby dwellings, and also because of the size of the particulates emitted from the stack.
	The emitted particles from the boiler stack will have comparatively small diameters (i.e. <10 μ m). These particles tend to remain airborne and disperse in the environment rather than depositing to the ground or building surfaces, unlike larger dust particles.
	Beca considers it highly unlikely that discharges from the boiler would have an adverse effect on the collected roof water at nearby dwellings.
The discharge from the energy centre will affect people's health, particularly those with pre-	The results of the dispersion modelling show that air pollutant concentrations are unlikely to exceed any of the relevant air quality criteria limits.
existing health conditions. Concerns raised about the implications of the air discharge on the health of students.	The air quality criteria, against which the predicted pollutant concentrations have been compared, take into account the potential health effects on the more vulnerable members of the community, including children, the elderly, and people with pre-existing health conditions.
	Therefore based on the modelling predictions, Beca agrees with T&T's assessment that discharges from the energy centre are considered unlikely to have any adverse health effects provided the emissions are controlled as proposed.
The discharges from the energy centre will affect stock drinking water, food crops and milk	The potential effects of the discharges on soil, crop and stock water were not considered in the T&T assessment.
quality as a result of contaminants released into the environment.	However, based on the predicted contribution from the boilers to ambient pollutant concentrations, only very low levels of the emitted air contaminants are likely to be deposited to the ground or water bodies. It is unlikely that discharges from the proposed energy centre would have any measurable effect on contaminant concentrations in the soil, water, crops, or in the milk of dairy cows grazed on neighbouring land.
The variability in meteorological conditions was not adequately taken into account when	A discussion the meteorological input is given in Section 4.3.2 of this report, and in Appendix C of the T&T report.
assessing odour impacts. Particular concerns raised with regard to the frequency of foggy conditions and/or low temperatures, which will create conditions that will result in	There is expected to be some variation between years but overall, the modelling inputs developed by T&T are expected to be generally representative of dispersion conditions at the site.



Air quality issue identified by submitters	Discussion
odour impacts above those modelled by the applicant	The meteorological modelling predictions are expected to provide a reasonable assessment of the frequency of poor dispersion conditions that can be expected at the site, including those associated with fog and inversion conditions.
	As noted in Section 4.3.2, the model year of 2012 appears to provide a better representation of meteorological conditions at the site compared to the modelled year 2015.
Dust from the construction and operation of the sheds (including dander from chickens) was not adequately assessed and may affect people's roof water	Beca concurs with T&T's assessment of the potential effects of dust generated on site during the construction and operation of the farm that it is unlikely to cause a nuisance beyond the boundary of the site, provided good dust management practices are implemented at the site.
supplies.	The separation distances between the nearby dwellings and the sheds are considered sufficient to mitigate any dust nuisance effect.
Concerns raised about the unproven nature of the energy centre technology.	Beca considers the proposed boiler and emission control technology to be well- understood. Comparable boilers are in common usage in NZ.
	The bag filter emission control systems are generally considered to be the best available technology for the control of particulate emissions.
The odour assessment is based on unproven assumptions relating to the mitigation approaches and it is considered	The design of the proposed poultry sheds is based on the design of sheds which are currently operating overseas. Similar shed designs and controls are also currently in operation in NZ.
by a number of submitters that odour impacts will occur over an area exceeding the area predicated by the modelling work.	Beca agrees with T&T's assessment that the discharge of odour from the proposed sheds are likely to be lower than odour discharged from older 'traditional' poultry sheds. However, we consider that there is a level of uncertainty in the modelled odour emission rates.
	Higher odour emission rates to those assumed in the model could potentially increase the risk of an adverse odour effect occurring at the nearby sensitive receptors (refer Section 4.6).
Concerns about the potential impacts at the marae and urupa. Concerns raised included the potential odour nuisance effect, health effect from the energy	The potential impacts of odour and discharges from the energy centre on the marae are considered in the T&T report. The effects of odour discharges from the energy centre are considered to be appropriately assessed against the relevant air quality guidelines.
centre, and dust from the quarrying operations.	The effect of dust generated from the farm's quarrying operation are considered to be appropriately assessed in the section 92 response (dated 18 May 2018)
	The potential odour impacts at the urupa have not been directly assessed in the T&T report. The urupa is considered to be a highly sensitivity receptor where a high level of amenity value is expected to be maintained. A discussion of the potential effects at the urupa is presented in Section 4.6.1.
Concern with conclusions that rural communities are "generally insensitive" to odour and other	T&T's assessment of the sensitivity of rural areas is consistent with the guidance provided in the MfE GPG Odour (2016).
air pollutants from the proposed activities.	Rural areas are, in general, considered to be less sensitive to odour nuisance effects due to their lower occupancy rates, particularly at night (i.e. potential risk of exposure to nuisance odour is generally lower). Some agriculturally-related odours may also be considered less offensive in a rural environment when compared to the same odour experience within an urban context.



Air quality issue identified by submitters	Discussion
	T&T's assessment of highly sensitivity receptors is also consistent with the MfE GPG Odour recommendations. These receptors are identified as being nearby dwellings, school and the marae. People may be present at these locations for 24 hours a day and a high level of amenity is expected to be maintained at these locations.
	The NRC's Regional Air Plan (6.5.5) also recognises the sensitivity of dwellings to factory farming odours, some farming practices, and the burning of waste material.
	Overall, Beca agrees with T&T's assessments of the sensitivity of the receiving environment, but as noted above, we also consider the urupa to have a high sensitivity to odour nuisance effects. These effects were not directly assessed in the T&T report.
Environmental management plan for be developed for the site if a consent were granted	We agree with the submitter that a comprehensive air quality management plan should be a requirement if a resource consent was granted.

7.3 Northland District Health Board

The NDHB submission (submission no. NRC311) was neutral with regards to the granting of a resource consent to the proposal. However, the NDHB submission also raised a number of air quality concerns. These concerns are discussed in Table 3.

Table 3. Discussion of the NDHB submission

Air quality issue identified by NDoH	Discussion
The Victorian Code for Broiler Farms recommended separation distance from sensitive receptors is 1.38km.	A number of Australian regulatory authorities and industry groups have published recommended separation distances for poultry farming (and other industrial activities). The published separation distances are intended to help avoid potential odour and dust nuisance effects at nearby sensitive receptors.
	The published separation distances do not take into account site specific effects such as prevailing meteorological, topographical effects and control technologies. They are applied in all directions. Published separation distances are therefore usually conservative and are often used as an initial screening test to assess whether an adverse effect may occur and if a more detailed assessment is required.
	The Victorian Code for Broiler Farms uses a formula to estimate appropriate separation distances for farms with up to 400,000 birds. The maximum separation distance estimated using this approach is 686m for a 400,000 bird farm. (The recommended separation distances do not increase linearly with the number of chickens).
	The NDHB appears to have also used to this formula to estimate the separation distance for the proposed farm. However, the Victorian Code for Broiler Farms requires that for farms with more than 400,000 birds, or farms unable to achieve the recommended separation distance, a more detailed odour risk assessment should be undertaken using dispersion modelling methods. The assessment is to be undertaken in accordance with the Victoria EPA broiler farm odour risk assessment guidelines (publication 1509). T&T has undertaken a comparable risk assessment for the proposed project.



Air quality issue identified by NDoH	Discussion
	Similarly, the separation distances published by other regulatory agencies are not intended to be applied to farms with more than 300,000 to 500,000 birds. For instance, the South Australia separation distance for a free range chicken farm of up to 500,000 birds is approximately 780m.
Impact of climate change on dispersion conditions are not considered in the assessment.	The potential impact that climate change may have on the dispersion conditions at the site would be extremely hard to predict with any accuracy. The modelling approach taken by T&T is consistent with standard dispersion modelling practices and is considered to provide a reasonable representation of existing and future dispersion conditions at the site.
Representativeness of the Dargaville meteorological monitoring station to derived site meteorological conditions	The Dargaville EWS monitoring station is the closest meteorological station to the site. Although the station is located approximately 12km to the north east of the site, the meteorological conditions recorded at the monitoring station are expected to be comparable to those which occur at the site. The use of the Dargaville monitoring station data is therefore considered to be appropriate.
	It should be noted that the meteorological model predictions also take into consideration the localised effects that terrain feature and land use may have on wind flows at the site.



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8 Conclusions and Recommendations

8.1 Assessment of Effects

8.1.1 Energy Centre Effects

Based on the modelling predictions, Beca agrees with T&T's assessment and concludes that:

- Discharges from the proposed burner are unlikely to have any adverse health effects.
- Discharges from the boilers are unlikely to have an adverse effect on the rain water collected from roofs on nearby dwellings.
- The proposed bag filter emission control system is expected to achieve a high level of control on the particulates emitted from the burner.
- While it is noted that the emission rate of SO₂ from the Energy Centre estimated by Beca is 32 times higher than the value used by T&T, the maximum ambient concentrations of SO₂ are still expected to remain well within the relevant ambient air quality criteria.

8.1.2 Odour Nuisance Effects

In respect of the assessment of odour effects, the following conclusions are drawn:

- While a high standard of shed management is proposed that is likely to result in substantially less odour emissions than would be expected from older conventional sheds, Beca could not verify the reduction factor of 51% used by T&T. Therefore, there is some uncertainty in the modelled emission rates and the predicted ground level odour concentrations.
- The results of odour dispersion modelling carried out by T&T predict that the majority of sensitive receptors in the vicinity of the farm (that have not provided their written approval to the proposal), will be at a low risk of being adversely affected by offensive or objectionable odours, but there is a high risk of offensive or objectionable odours occurring on occasions at three properties to the south of the site and a medium risk at one further property to the south of the site. Beca concurs with this assessment of the dispersion modelling results but notes that these risks remain, even when the proposed mitigation measures have been taken into consideration.
- The assessment of effects has not directly considered the effects of odour on the neighbouring urupa, (other than briefly in the May 2018 section 92 response). The urupa is considered to be a highly sensitive receptor where a high level of amenity is expected.

It is noted that since T&T prepared their report, the owners/occupiers properties identified as being at high and medium risk of experiencing offensive or objectionable odours have given their written approval to the application. Therefore, any effects on these properties cannot be taken into consideration when making a decision on whether or not consent should be granted.

In Beca's opinion, the assessment methodology used by T&T to assess the potential effects of odour and the products of combustion from the proposed broiler chicken farm is appropriate and will provide a reasonable prediction of the likely effects of the proposal on air quality in the vicinity of the farm. The approach used is consistent with New Zealand and Australian guidelines.

However, there is some uncertainty in the modelled odour emission rates used by T&T to predict ambient odour concentrations. Potentially, a greater number of dwellings and the marae could experience adverse odour events if the emission rates are higher than those estimated.



8.1.3 Dust Nuisance Effects

In Beca's opinion, provided the proposed separation distances are maintained, and appropriate dust management methods are applied, no adverse dust nuisance effects are expected.

8.1.4 Submitter Air Quality Concerns

A relatively large number of submitters identified air quality concerns as a reason for opposing the application. Fourteen of these submitters are located within approximately 1.4 km of the site and two of these submitters are located adjacent to the site.

A range of air quality concerns were raised by the submitters, including the following;

- Health effects of the burner discharges to air, particularly with regards to sensitive members of the community,
- Odour nuisance effects,
- Dust nuisance effects,
- The potential impact of discharges from burners on roof water,
- The potential impact of discharges from burners on stock water, soil and crops,
- The potential impact of the proposed discharges on the Te Kāpehu marae and urupa,
- The representativeness of the meteorological inputs to the dispersion mode, and
- The unproven nature of the proposed burners and shed technologies

8.2 Recommendations

Beca recommends that:

- If consent were to be granted, conditions should be imposed that require Tegel to operate the sheds as described in the T&T report and that an Air Quality Management Plan (AQMP) should be prepared for the site. The AQMP should include contingency plans for the following situations:
 - Failure of the energy centre to combust all of the chicken litter produced on site and which may require excess chicken litter to be disposed of off-site;
- Failure of the energy centre to provide sufficient heating of the sheds to adequately control the moisture content of the sheds and to manage odour;
- When offensive or objectionable odours are observed beyond the boundary of the site;
- The disposal of multiple dead birds in the event of an outbreak of disease; and
- Odour associated with the wastewater storage and treatment system during upset conditions such as may occur due to shock loadings, overloading, mechanical failure, power cuts, extreme weather such as long periods of very hot weather, or rainfall which are outside usual design parameters.
- The sheds are cleaned out using the procedures recommended by Pacific Environment to minimise odour and these methods are incorporated into the AQMP, but notes that ventilation may be necessary to avoid unsafe working conditions.
- 3. To validate the emissions of PM₁₀ and SO₂ from the energy centre, the emissions from the boilers be measured at least once following commissioning of the burners and that the PM₁₀ emissions are tested annually.
- 4. To validate the emissions of odour from the broiler shed, the emissions from the sheds be measured as early as practical during the initial phase of the development and the measured emission rates are compared against the emission rates estimated by T&T.



5. If measured odour emission rates are higher than those estimated by T&T, Tegel be required to provide NRC with a report which details how the odour emission rates and subsequent ambient odour concentrations will be reduced to levels which do not exceed the emission rates and concentrations used by T&T in their assessment of effects. This may require staging of the development in order to ensure that the actual effects of the full project do not exceed the predicted odour impacts.



9 Proposed Resource Consent Conditions

Should consent be granted, Beca recommends the following conditions are included in the consent:

1.	The discharges of contaminants into air shall not cause;
	a. deposited or suspended particulate material which is offensive or objectionable beyond the property boundary; or
	b. odour which is offensive or objectionable beyond the property boundary; or
	c. noxious or dangerous effects on people, animals or the environment.
2.	The consent holder shall ensure that:
	a. all personnel working on the construction of the site are made aware of, and have access to the contents of this consent document; and
	 b. all personnel working at the broiler poultry farm operation are made aware of, and have access to the contents of this consent document, including the Air Quality Management Plan as required by Condition (19).
	Construction Emissions
3.	During construction, the consent holder shall undertake all practicable measures to minimise dust discharge beyond the property boundary, including, but not limited to:
	a. Limiting vehicle speeds on site over unconsolidated surfaces;
	b. The dampening down of unconsolidated surfaces by sprinklers or similar, as required; and
	c. Stabilisation of all exposed surfaces to prevent sediment mobilisation once earthworks are complete, or if the exposed area is not to be further worked on for a period of 30 consecutive days or more.
	Broiler Sheds
4.	The following controls shall apply to the broiler chicken sheds:
	a. The maximum number of broiler chickens shall not exceed 41,400 broiler chickens per shed, with a combined maximum of 1,325,000 broiler chickens housed in thirty three sheds at any one time.
	b. The poultry sheds shall only be heated indirectly using heating methods which do not add additional moisture to the shed.
	c. A computerised climate control system shall be used to continuously monitor and control environmental condition in the sheds. The system shall, at a minimum, continuously monitor temperature, relative humidity and carbon dioxide levels.



Tegel Foods - Technical Review of Assessment of Discharges to Air

5.	The discharges from the broiler poultry sheds via mechanical ventilation system shall be as follows:
	a. Each shed shall be fitted with a ventilation system comprising of at least12 roof-mounted chimney ventilation fans, with a chimney stack height of at least 1.7 metres above the roof
	apex of the shed and at least 6.50 metres above natural ground level.
	b. The discharge from the chimney ventilation fans shall be directed vertically into the air and shall not be impeded by any obstruction above the stack which would decrease the vertical efflux velocity.
6.	The consent holder shall undertake the following measures to minimise the discharge of contaminants to air from the broiler poultry farm operation:
	 Removal of all animal waste and litter from the broiler poultry sheds at the end of each growing cycle, with its removal from the site, or to the energy centre, within 24 hours of removal from the sheds;
	b. The animal waste and litter shall be stored at the energy centre in an enclosed building under negative pressure;
	c. During clean-out of the sheds, the mechanical ventilation during shed shall be minimised as far as practicable but sufficient to provide a safe environment for workers undertaking the cleanout;
	d. The trucks transporting the animal waste and litter offsite, or to the energy centre, shall be covered once loaded;
	e. Clean-outs shall occur during the day;
	f. Water shall be supplied to the broiler chickens using nipple drinkers and spill trays;
	g. Daily checks of the broiler poultry sheds for dead birds and feed spillages;
	h. Removal, freezing or off-site disposal of all dead birds from the broiler poultry sheds within 24 hours ;
	 Daily visual checks of the litter moisture in each broiler poultry shed and undertake any remedial action required to maintain optimal litter moisture levels;
	j. The use of formulated feed to minimise the generation of odour;
	k. Regular maintenance and monitoring of the ventilation systems.
7.	The consent holder shall keep records of all inspections and monitoring undertaken in accordance with Condition (6), and at the start and end dates of each growing period. These records shall be provided to the Northland Regional Council on request.
8.	The combined odour emission rate, defined in odour units per hour, from each broiler sheds shall not exceed the combined odour emission rates assumed in the Assessment of Effects on the Environment



	prepared by Tonkin & Taylor attached to the consent application and titled " <i>Free Range Broiler Farm, Arapohue: Air quality impact assessment</i> " (2017).
9.	a. The concentration and emission rate of odour in the discharge from the broiler sheds shall be measured within three months of the time when this consent is first exercised.
	b. A testing programme shall submitted to the Northland Regional Council for approval prior to commencing the testing programme.
	c. Testing and associated measurements shall be carried out by an organisation and a laboratory accredited by International Accreditation New Zealand for the tests and measurements involved.
	d. The results of the emission tests, and a description of the testing methods used shall be provided to the Northland Regional Council, within 20 working days following receipt of the results by the consent holder.
	e. The results of the testing shall be used to determine compliance against Condition 8.
	f. If the concentration and emission rates of odour in the discharge from the broiler shed exceeds the emission rates assumed in the Assessment of Effects on the Environment prepared by Tonkin & Taylor attached to the consent application and titled <i>"Free Range Broiler Farm,</i> <i>Arapohue: Air quality impact assessment"</i> (2017), the consent holder shall prepare a report which details the actions that will be taken to reduce the emission rates from the sheds to no more than the assumed emission rates and/or the measures that will be taken to reduce the effects of the odour emissions to no more than predicted in the consent application. The report shall be provided to the NRC within three months of receiving the emission test results.
	Energy Centre
10.	The total thermal output of the energy centre waste litter burners shall not exceed 4 megawatts (MW) and the quantity of waste litter combusted shall not exceed 1840 kilograms per hour.
11.	 a. The combustion gas from the waste litter burners shall be discharged to the atmosphere from chimney stacks with a height of at least 16.8 metres above natural ground level. b. The diameter of each stack shall be no more than 0.57 metres.
10	Displayas from all combustion processes shall be directed variably into the air and shall not be
12.	impeded by any obstruction above the stack, which decreases the vertical efflux velocity below that which would occur in the absence of such obstruction.
13.	a. The burners shall be serviced at least once every year, by a person competent in the servicing of such appliances. Service reports shall be prepared and retained, and copies shall be provided to the Northland Regional Council upon request.
	b. The bagfilter fitted to the energy centre exhaust shall be inspected and maintained in accordance with the manufacturer's recommendations.



14.	The concentration of total particulates discharged from the burners shall not exceed 10 milligrams per standard cubic metre measured at 0 degrees Celsius and 101.3 kilopascals and corrected to 12 percent carbon dioxide, on a dry gas basis.
15.	The concentration of sulphur dioxide discharged from the burners shall not exceed 50 milligrams per standard cubic metre measured at 0 degrees Celsius and 101.3 kilopascals and corrected to 12 percent carbon dioxide, on a dry gas basis.
16.	a. The concentration and emission rate of total suspended particulate matter and sulphur dioxide in the discharge shall be measured within three months of the time when this consent is first exercised.
	b. The concentration and emission rate of total suspended particulate matter in the discharge shall be measured at least once every 12 months.
	c. Measurement of the discharge of total suspended particulate and sulphur dioxide from the energy centre shall occur when the energy centre is operating at a rate of at least 75 percent of its maximum continuous rating.
	d. Testing and associated measurements shall be carried out by an organisation and a laboratory accredited by International Accreditation New Zealand for the tests and measurements involved.
17.	The method of sampling and measurement for total particulate matter shall comply with US EPA Method 5 or 17, or ISO 9096:2003, ASTM D3685-98, or an equivalent method. Results shall be adjusted to 0 degrees Celsius, 101.3 kilopascals, and 12 percent carbon dioxide or eight percent oxygen, on a dry gas basis, and as a mass emission expressed in kilograms per hour.
18.	The results of the emission tests for total suspended particulate and sulphur dioxide, and a description of the testing methods used shall be provided to the Northland Regional Council, within 20 working days following receipt of the results by the consent holder.
	Air Quality Management Plan
19.	This consent shall be exercised in accordance with an Air Quality Management Plan (AQMP). The objective of the AQMP shall be to avoid adverse effects on the environment from the discharge of contaminants to air from the establishment and operation of the broiler poultry farm. The AQMP shall include, but not be limited to, the following:
	 a. Details of how the shed ventilation systems will be operated to minimise odour, including volumetric flow rate and temperature control;
	b. Details of routine and contingency inspections of the sheds, chickens and litter;
	c. Details of how the litter will be managed to minimise odour and dust;
	d. Details of how dead chickens and feed spills will be dealt with to minimise odour and dust;
	e. Details of how chicken feed will be stored to minimise dust emissions;
	f. Details of the monitoring and removal of accumulated dust from around the sheds;



Tegel Foods - Technical Review of Assessment of Discharges to Air

	g. Details of the methods for cleaning the inside of the sheds and removal of litter following the removal of each batch of chickens;
	h. Contingency measures that will be taken in the event of odour or dust becoming offensive or objectionable beyond the boundary of the property on which the consent is exercised.
	i. Contingency measures for the disposal of excess waste litter if required.
	j. Contingency measures if the energy centre is unable to provide sufficient heating of the sheds to adequately control the moisture content of the sheds and to manage odour;
	k. Contingency measures to manage the odour associated with the wastewater storage and treatment system during upset conditions.
	I. Detail of the monitoring and maintenance of the waste litter burner;
	m. Details of the monitoring and maintenance of the energy centre bag filter.
20.	The Air Quality Management Plan will be submitted to the Northland Regional Council prior to the commissioning of any of the broiler sheds.
21.	The Air Quality Management Plan may be amended at any time. Any amendments shall be:
	a. For the purpose of improving the efficacy of any measures to minimise air discharges from the site and shall not result in reduced air quality;
	b. Be consistent with the conditions of this resource consent; and
	c. Submitted in writing to the Northland Regional Council, prior to any amendment being implemented.
22.	A record of any complaints relating to the discharge of contaminants to air generated from the broiler poultry farm shall be maintained and shall identify:
	a. The location where the contaminant(s) was detected by the complainant;
	b. The date and time when the contaminant(s) was detected;
	c. A description of the wind speed and wind direction when the contaminant(s) was detected;
	d. The most likely cause of the contaminant(s) detected; and
	e. Any action taken by the consent holder to minimise or cease the contaminant(s) detected by the complainant.
	f. The record of complaints shall be provided to the Northland Regional Council by 31 July of each year, and otherwise on request by the Northland Regional Council



APPENDIX B:

KDC COMMENTS REGARDING THE WHAKAHARA DRAINAGE DISTRICT



Dear David

Tegel Foods Limited - Poultry Farm – Whakahara Drainage District

My name is Matthew Smith and I have a Diploma of Engineering (Civil) from United. I am the Four Waters Planning and Design Engineer and was previously a Stormwater Engineer for Kaipara District Council (KDC). I have over two years' experience as a stormwater engineer. I work closely with Wayne Crump our Land Drainage Co-ordinator who has held this position for 10 years and has an intimate knowledge of the workings of all the land drainage systems. Wayne also works closely with the committees and people who make up the land drainage districts within the Kaipara District.

The KDC Land Drainage Bylaw 2008 is applicable to the proposed Tegel poultry farm development. Part 17 of the KDC General Bylaws 2008 regulates various activities within land drainage areas. The Land Drainage Bylaw was created for the purposes of formalising Council's responsibilities to the communities and to properly care, maintain and manage the land drainage networks. Item 1702 outlines the issues surrounding the connection of private drains to a land drainage district and that it can only be done with the approval of Council. Item 1715 details the erection of stopbanks within the drainage district and that this can only be done with the prior consent of Council, and that Council can impose terms and conditions.

As discussed via teleconference with you and Ruben Wylie (NRC Reporting Planner) on Monday 25 June 2018, the main points to note regarding our findings from the Tonkin & Taylor Limited (T+T) Flooding Assessment dated September 2017 in Appendix B of AEE Volume 2 are:

 Paragraph 7.1 of the T+T section 92 response dated 18 May 2018 includes the following statement: "T+T coastal engineers will contact Wayne Crump to make sure he has access to these assessments and will work with him to address any concerns prior to the hearing."

Neither Wayne Crump, myself or anyone in the Four Waters Department at KDC have been formally approached by T+T since our email to Charlie Sherratt at T&T dated 29 August 2017.

2 As far as we are aware, there has been no communication with the remaining members/property owners of the Whakahara Drainage District in regards to the continued operation of the drainage

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district. While Tegel Food Limited (Tegel) are purchasing the existing district representative's farm this does not absolve this responsibility.

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- 3. We have viewed T+T's calculations in sections 7 and 8 of Technical Report B and understand that they are designing to the 2% Annual Exceedance Probability (AEP) calculation based on a 50 year future horizon for sea level rise and the 1% AEP storm with associated climate change predictions. Whilst this is satisfactory for building purposes it does not appropriately model the effects of the drainage district in the 1% AEP event in 100 years with associated 100 year Sea Level Rise (SLR) as per the IPCC 8.5 model that is currently approved in the IPCC's Fifth Assessment Report (2013). This is what KDC are expected to design to and forecast from this point forward as per the documentation provided by Ministry for the Environment (MfE) which is referenced in the Regional Plan 3.13 and in the District Plan for land use consents.
- 4. If Tegel are to proceed with installing stopbanks for the 2065 AEP inundation level then KDC will accept this, as long as there are no habitable buildings behind the stopbanks and that it is clearly identified on the consent that this is the defined design horizon.
- T+T are showing minor effects on surrounding properties during a stopbank breach event. We accept this as the tide will find its own level whether this property is open or not.
- 6. In regards to inundation from a storm event, they have modelled the 2% AEP in 50 years to show that there will be a 10mm increase of water level on the surrounding countryside with these stopbanks in place. We can use this information to explain the future effects to drainage district members.
- 7. When the entire district is flooded the perception from the public to see flood waters from behind the Tegel stopbanks would be negative. Tegel cannot make flooding worse on the lower properties and will have to wait for the tide to recede like the remainder of the district. It would need approval from the drainage district as a whole to allow them to pump water out at this time.
- Tegel should consider becoming a large contributor within the existing drainage district and increase the level of service here as a whole to everyone's benefit, thus providing the protection and level of service they require.
- 9. Tegel are looking to institute their own flood protection system. This will not exempt them from targeted land drainage rates going forward as the Four Waters Planning and Design Team prepare the district to combat climate change and sea level rise. This will need to be identified via an advice note.

Yours faithfully

Matthew Smith Four Waters Planning and Design Engineer

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RM170441 – Proposed Poultry Farm Tegel Foods Limited Resource Consent Application

Section 42A Hearing Report

Hearing commencement date: Wednesday 8 August 2018

Hearing Location: Lighthouse Function Centre, Dargaville

Commissioners:

Ms Sharon McGarry (Chair)

Dr Rob Lieffering

Mr Reginald Proffit

Mr Mark Farnsworth

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Available Online:

Kaipara	District	Council	Tegel	Application	webpage:	
https://www.kaipara.govt.nz/Our+Council/Consultation+and+Public+Notices/Public+Notices/Tegel.html						

Abbreviations used in this report:

ADP	Accidental Discovery Protocol
AEE	Assessment of Environmental Effects
AEP	Annual Exceedance Probability
CMP	Construction Management Plan
ESCP	Erosion and Sediment Control Plan
HNZPT	Heritage New Zealand Pouhere Taonga
KDC	Kaipara District Council
KDC s42A	The Kaipara District Council Section 42A report – this report
KDP	Kaipara District Plan 2013
LAR	Limited Access Road
MfE GPG	Ministry for the Environment Good Practice Guide for Assessing and Managing Odour 2016
NESAQ	Resource Management (National Environmental Standards for Air Quality) Regulations 2004
NESCS	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
NPS Freshwater	National Policy Statement for Freshwater Management 2014 (amended 2017)
NRC	Northland Regional Council
NRC s42A	The Northland Regional Council Section 42A Report – Author Ruben Wylie
NZARAP	New Zealand Antimicrobial Resistance Action Plan 2017
NZCPS	New Zealand Coastal Policy Statement 2010
NZTA	New Zealand Transport Agency
OU/m ³	Odour units per cubic metre
pRP	Proposed Regional Plan for Northland 2017
RAQP	Regional Air Quality Plan for Northland
RL	Reduced Levels
RMA	Resource Management Act 1991
RPS	Regional Policy Statement for Northland 2016
RWSP	Regional Water and Soil Plan for Northland 2014 (updated 2016)
SH12	State Highway 12
T&T	Tonkin & Taylor
Tegel	Tegel Foods Limited – The Applicant

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Preamble

From: David Badham, Planning Consultant, Kaipara District Council Reporting Planner

To: Hearing Commissioners - Ms Sharon McGarry (Chair); Dr Rob Lieffering; Mr Reginald Proffit and; Mr Mark Farnsworth

Subject: Section 42A Hearing Report for RM170441

Date: 11 July 2018

Applicant: Tegel Foods Ltd

Proposal: To construct and operate a free-range broiler poultry farm accommodating up to a maximum of 1.325 million chickens at any one time in Arapohue, Dargaville. The proposal includes associated earthworks and servicing works.

District Plan land use consent under the Operative Kaipara District Plan is sought for earthworks; infringements to the 300m setback distance from the intersection between SH12 and Whakahara Road; storage of hazardous substances; and works on a road that have not been given approval by NZTA or KDC.

Statement of Staff Qualifications and Experience

David Badham – Kaipara District Council Reporting Planner

Qualifications & Experience

This s42A report has been prepared by David Eric Badham. I am the Whangarei Office Manager and a Senior Planner at Barker & Associates. I hold a Bachelor of Planning with Honours (1st Class) from the University of Auckland. I have been a Full Member of the New Zealand Planning Institute since April 2015. I am of Ngāti Whātua Ōrākei and Ngāti Whātua o Kaipara descent. I have no vested interest in the outcome of this resource consent application nor any conflict of interest to declare.

I have over seven years' experience as an environmental planner. During this time, I have been employed in various resource management positions in local government and private companies including experience with:

- a. Statutory resource consent planning in the Northland and Auckland regions.
- b. Consideration of submissions and formulation of policy and policy advice for Whangarei District Council.
- c. Providing planning advice, preparing Cultural Impact Assessments and engaging in consultation on behalf of iwi organisations.
- d. Monitoring and compliance of consent conditions in operational mining environments in Queensland Australia.

Expert Witness – Code of Conduct

I confirm that the evidence on planning matters that I present is within my area of expertise and I am not aware of any material facts which might alter or detract from the opinions I express. I have read and agree to comply with the Code of Conduct for expert witnesses as set out in the Environment Court Consolidated Practice Note 2014. I have also read and am familiar with the Resource Management Law Association / New Zealand Planning Institute "Role of Expert Planning Witnesses" paper. The opinions expressed in this evidence are based on my qualifications and experience, and are within my area of expertise. If I rely on the evidence or opinions of another, my evidence will acknowledge that position.

1.0 Scope of the Report

 This report is prepared under the provisions of section 42A of the Resource Management Act 1991 ("RMA"). Section 42A(1) of the RMA provides for a Council Officer or consultant to prepare a report of relevant information provided by the applicant or any person who made a submission on any matter described in s.39(1) of the RMA, and allows the decision-maker to consider the report at the hearing.

2.0 Site & Surrounds Description

2. The site is located at 5763 State Highway 12, Arapohue, approximately 12km south of the Dargaville township. The site is approximately 250 hectares in area. Further description of the site and surrounding locality is provided in Section 3 of the Assessment of Environmental Effects ('AEE'). I have undertaken site visits to the subject site and surrounding area on 30 October 2017 and again on 28 May 2018 which have confirmed the description provided in the AEE.

3.0 The Proposal

Application Documentation

3. This s42A report will refer to the 'application', which comprises the following documents¹:

Volume 1: AEE Report

- Assessment of Effects on the Environment prepared by Tonkin & Taylor Ltd, dated October 2017 (which includes drawings and other Appendices); and
- Whakahara Proposed Broiler Farm Development Report prepared by Te Roroa Whatu Ora & Manawhenua Trust Board, dated September 2017.

Volume 2: Technical Reports

- Geotechnical Assessment prepared by Tonkin & Taylor Ltd, dated September 2017;
- Flooding Assessment prepared by Tonkin & Taylor Ltd, dated September 2017;
- Groundwater Assessment prepared by Tonkin & Taylor Ltd, dated September 2017;
- Civil Preliminary Design report prepared by Tonkin & Taylor Ltd, dated September 2017;
- Air Quality Impact Assessment prepared by Tonkin & Taylor Ltd, dated October 2017;
- Hazardous Substances Assessment prepared by Tonkin & Taylor Ltd, dated September 2017;
- Integrated Transport Assessment prepared by Tonkin & Taylor Ltd, dated September 2017;
- Archaeological Assessment prepared by CFB Heritage Ltd, dated 25 August 2017;
- Acoustics Assessment titled 'Assessment of Environmental Effects' prepared by Marshall Day Acoustics, dated 18 September 2017;
- Landscape and Visual Amenity Effects Assessment prepared by Boffa Miskell, dated 9 October 2017; and
- Erosion and Sediment Control Plan prepared by Tonkin & Taylor Ltd, dated September 2017.

Further Information Responses

¹ Copies of the application documents can be accessed at the KDC website. See the link provided in the table of contents.

- Pre-Notification Further Information Response prepared by Tonkin & Taylor Ltd, dated 13 December 2017; and
- Post-Notification Further Information Response prepared by Tonkin & Taylor Ltd, dated 18 May 2018. This includes the following additional technical reports:
 - a. District Economic Impacts of Proposed Broiler Farm in Arapohue, Dargaville prepared by Insight Economics, dated 16 May 2018; and
 - Arapohue Quarry Noise & Vibration Assessment of Environmental Effects prepared by Marshall Day Acoustics, dated 17 May 2018.
- Clarifications on Post-Notification Further Information Response prepared by Tonkin & Taylor Ltd, dated 15 June 2018.

Summary of the Proposal

4. The Applicant, Tegel Foods Limited ('Tegel') seeks to develop a free-range poultry broiler farm in Arapohue, Dargaville. The proposal is described in Section 4 of the AEE prepared by Tonkin & Taylor Ltd ('T&T'), dated October 2017, and in the accompanying specialist reports. Further amendments to the proposal have also been made. An overview of the proposal is provided below, with further detail provided in the application.

Buildings and Structures

- 5. 32 poultry sheds are proposed in four groups of eight, and each group will operate as a separate farm (four farms in total with eight sheds per farm). A maximum of 1.325 million chickens would be stocked on the site at any one time. The sheds are located on the flat western portion of the site, adjoining State Highway 12 ('**SH12**'), and are 4.5m in height and approximately 2,760m² in area each. An approximately 42m wide 'free range area' separates each shed. Each shed includes a small annex room to house pumps and equipment, and a sheltered 'winter garden' area which will function as a sun room during unfavourable weather conditions.
- 6. Ancillary buildings and structures include four silos, a silo pad, and four water storage tanks for each shed. In addition, four utility sheds and two storage containers are proposed. The utility sheds will contain staff office facilities and provide for storage.
- 7. Four single-storey dwellings are proposed in the eastern part of the site, for workers' accommodation.
- 8. An Energy Centre building is proposed to the east of the poultry sheds and has a maximum height of 8.9m.² The Energy Centre will house litter burners and storage for litter, and will heat the poultry sheds by way of burning litter.
- 9. Two separate bunds are proposed around the buildings to provide for flood protection. The bunds will vary in height to up to 2.5m maximum and have a 2.5m wide crest. The bunds will be

²." A definition of "height" is provided in chapter 24 of the Kaipara District Plan. The "rolling height method" is used. A diagram of how the rolling height limit works is provided. The proposed Energy Centre building is calculated as 8.9m in height utilising this method.

constructed from limestone quarried from the northernmost part of the site with any shortfall provided from imported fill (see *Earthworks* section below).

10. The site is currently utilised as a dairy farm for approximately 650 cows, with a dairy shed located near the centre of the site. It is proposed that this operation will remain but be reduced in size to approximately 150 cows. The existing shed and infrastructure will be retained on the site, with new roading to provide access to it.

Access and Parking

- 11. The existing site access from SH12 is proposed to be relocated approximately 25m to the north and widened. The existing accesses to the existing dwellings on the site will be retained. An internal road network is proposed to service the poultry farms and existing dairy farm.
- 12. A total of 65 parking spaces are proposed on the site including 12 for the dwellings; 3 for the existing milking sheds; 10 for the Energy Centre; and 40 interspersed between the poultry sheds. The 10 spaces for the Energy Centre will also be used for visitor parking.
- 13. A total of 24 loading bays are proposed around the poultry sheds. These will be utilised for the delivery and collection of shavings, feed, and chickens.

Earthworks

- 14. Earthworks are required to facilitate the construction of the building foundations, internal roads, and bunds. A total of approximately 429,200m³ of earthworks (cut and fill) is proposed, broken down as follows:
 - 44,800m³ stripped topsoil to be re-spread;
 - 6,600m³ supplementary topsoil required (to be imported from off site);
 - 50,000m³ fill required from the quarry (originally proposed to be 117,500m³ but revised by way of the 18 May 2018 further information response);
 - 59,400m³ of General fill (sourced onsite)
 - 8,100m³ imported running course for internal roads
 - 45,700m³ onsite cut to fill
 - Total earthworks volume = 429,200m³ ³;
- 15. The bunds are proposed to be constructed from limestone sourced from the existing quarry in the northern part of the site. The quarry was originally proposed to be expanded to the northern property

³ T+T have outlined that further geotechnical investigations have recently been completed to determine whether suitable material could be obtained on site to source the outstanding 59,400 m³ needed for general fill. T+T are currently finalising the details of the proposed change in earthworks locations and have advised that they will provide KDC and NRC with the relevant information and plans. This has not been provided in time for the drafting of this s42A Report.

boundary adjacent to the Kāpehu marae, however a 100m setback from the common boundary was introduced into the proposal through the further information response dated 18 May 2018.⁴

16. The earthworks are proposed to be carried out in a staged approach with the two northern farms (Farms 1 and 2) and infrastructure being constructed in the first two-year period, and the two southern farms (Farms 3 and 4) and infrastructure in the following two-year period.

Water Supply

17. Water for the proposed poultry farm will be primarily sourced from rainwater harvesting from the shed roofs. However the applicant also proposes to install up to three production bores and take up to 325m³/day and 48,425m³/year of groundwater to supplement the roof water collection supply when required e.g. during long dry spells. The proposed workers' accommodation dwellings are proposed to have self-sufficient rainwater supply.

Wastewater and Washwater

- 18. The wastewater flows from the dwellings and utility sheds are proposed to receive primary and secondary treatment and be discharged by drip irrigation to the bunds surrounding the farms.
- 19. Washwater will be generated at the end of the chicken growing cycle when the sheds are cleaned in preparation for the next batch of chickens. The washwater will be collected by catchpits and disposed of by spray irrigation into dedicated irrigation paddocks.⁵

Stormwater

20. Stormwater from roads, ranging areas, and paddocks is proposed to be discharged by way of overland flow to the drainage canal network. Stormwater from roofs will be collected and used for water supply.

Further Information Requests

21. Prior to notification, on 17 November 2018 Kaipara District Council ('KDC') sent a further information request to Tegel pursuant to section 92 of the RMA.⁶ Tegel responded to this request on 13 December 2017.⁷ Full copies of the pre-notification s92 request and response from Tegel are available on the KDC website.⁸ A summary of the pre-notification KDC further information request and response from Tegel is provided below:

• NESCS

KDC Request: an assessment against the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (**'NESCS**').

⁴ See additional discussion under the heading "Further Information Requests"

⁵ Resource consent has not been sought for the discharge of wash water. The applicant is relying on rule 16.1 of the RWSP and Rule C.6.3.1 of the pRP to allow for the discharge as a permitted activity and the NRC s42A report has determined that they have provided sufficient information to demonstrate compliance with the requirements of these rules.

⁶ Referred to throughout this report as the "Pre-notification s92 Request"

⁷ Referred to throughout this report as the "Post-notification s92 Response"

⁸ See link in the Table of contents

Tegel Response: T+T confirmed that the NESCS was not relevant and resource consent was not required under the regulations.

Economic Effects

KDC Request: an assessment from a suitably qualified and experienced person detailing the economic effects of the proposed development.

Tegel Response: T+T provided an initial letter from the Finance Manager for the Agriculture Division at Tegel Foods. This was supported by a further email from Tegel Environmental Manager, Emma Coote, dated 18 December 2018, which stated that Tegel would commission an economist to undertake an assessment of the economic effects in early 2018 prior to the hearing.

Activity Compliance

KDC Request: more details to determine compliance / non-compliance with the following Kaipara District Plan Rules:

- a. Rule 12.10.2a Indigenous Vegetation Clearance
- b. Rule 12.10.3a Dwellings
- c. Rule 12.10.4 Commercial and Industrial Buildings
- d. Rule 12.10.5 Height
- e. Rule 12.10.9 Separation Distance for Noise Sensitive Activities in the Rural Zone
- f. Rule 12.10.19 Potentially Contaminated Land
- g. Rule 12.10.26 Fire Safety

Tegel Response: T+T provided information which confirmed that the proposal will comply with all the above rules except Rule 12.10.4 as two of the sheds breach the minimum setback distance.

Offered Conditions of Consent

KDC Request: more detail on proposed condition 5 for a Farm Management Plan: KDC would expect the requirements of the management plan to be separated out and the conditions to clearly specify the objectives and minimum requirements/bottom lines.

Tegel Response: T+T advised that the condition is based on current operations which work under a single farm management plan and that in their view, it is unnecessary to separate the management plans and is easier to implement and comply with a comprehensive management plan rather than multiple separate plans.

KDC Request: clarification of proposed condition 6 regarding existing vegetation to be retained and a Landscape Mitigation Plan: the existing vegetation to remain is unclearly defined/identified and the mechanism of ensuring their retention is not specified.

Tegel Response: T+T provided a plan that clearly shows the vegetation to be retained where practical, and confirmed that in their view, a resource consent condition will provide sufficient protection.

KDC Request: confirmation of whether the following recommendations outlined in the technical reports are to be implemented and would be accepted as conditions of consent:

- a. Geotechnical recommendations in section 10 of the geotechnical assessment;
- b. Measures regarding the control and management of hazardous substances in section 4 of the hazardous substances assessment;
- c. Measures to mark out/protect the identified archaeological sites on the subject site;
- d. Design considerations outlined in section 6 of the noise assessment;
- e. Recommendations in section 10 of the landscape and visual effects assessment;

Tegel Response: T+T responded to each of the above queries as follows:

- a. The geotechnical recommendations are considered to be a building consent issue covered by the Building Act, and not within the scope of the RMA;
- b. Accepted by the Applicant and can be conditioned;
- c. Proposed to permanently fence off the archaeological sites and the following consent condition is proposed: *"Prior to commencement of construction, the two identified pa sites located on the site shown on drawing 1003839-010 attached as Appendix D of the resource consent application are to be permanently fenced off".*
- d. Accepted by the Applicant and will be addressed in the Farm Management Plan through a section on operational noise;
- e. The recommendations have largely been adapted into the design of the proposed farm and a number are covered under other technical reports. Tegel consider that the layout of the farm is consistent with the landscape assessment.

• Assessment of Cultural Values

KDC Request: clarification as to whether additional assessment from Te Roroa Archaeologist, Mr Michael Taylor, has been undertaken given that the conclusion of the Whakahara Proposed Boiler Farm Development Report states that additional archaeological assessment may be required for the unrecorded sites. KDC request a copy of the assessment if so.

Tegel Response: T+T confirmed that the area of the site that may require further assessment is located away from any of the proposed physical works and that therefore no additional assessment has been undertaken at this stage.

KDC Request: clarification of which Accidental Discovery Protocol ('**ADP**') is proposed as there are two slightly different versions provided in the Development Report versus the archaeological assessment.

Tegel Response: T+T confirmed that the ADP provided in the Development Report is the proposed version.

Geotechnical Assessment

KDC Note: the peer review of the geotechnical report did not raise any queries or clarifications, however the peer reviewer, Mr Andy Mott from Stantec, recommended that ground investigation and assessment is undertaken as part of detailed design and not during construction. KDC included these recommendations to confirm whether the applicant's geotechnical engineer agrees and/or has any comments.

Tegel Response: T+T advised that the above is not considered to be appropriate as a resource consent condition and that the adequacy of the approach and investigations undertaken as part of the detailed design will be addressed during the building consent phase. Notwithstanding this, T+T confirmed that additional geotechnical investigations and testing were being undertaken at the time, with results to be provided as part of the building consent application.

• Water Supply

KDC Request: clarification of the location of PB3 on the water supply drawing; a summary of calculations for rain water harvesting to show average bore make-up volume required; information on how treatment plant discharges will be managed to minimise environmental effects; an amendment to the report to clarify that the treated water reservoir will have an overflow and scour, and where it is likely to discharge to; and confirmation of whether the bores will be constructed with secure well heads to prevent contamination of the aquifer.

Tegel Response: T+T provided responses to all of the above queries which were considered to be acceptable to peer reviewer, Mr Richard Slight from Stantec.

Stormwater

KDC Request: confirmation of whether the channel sizing caters for reduced hydraulic gradient due to the flood gate head losses; and provision of the 10% AEP storm event calculations.

Tegel Response: T+T provided responses to all of the above queries which were considered to be acceptable to peer reviewer, Mr Richard Slight from Stantec.

22. Following notification and a review of submissions, a second joint further information request was sent to Tegel on 30 April 2018 on behalf of KDC and Northland Regional Council ('**NRC**').⁹ T+T responded on behalf of Tegel on 18 May 2018.¹⁰ Full copies of the post-notification s92 request and response from Tegel are available on the KDC website.¹¹ A summary of the post-notification further information request and response from T+T is provided below:

Cultural Impact Assessment

KDC Request: a cultural impact assessment assessing the effects of the proposal on Kāpehu Marae and the associated urupā¹².

⁹ Referred to throughout this report as the "post-notification s92 request"

¹⁰ Referred to throughout this report as the "post-notification s92 response"

¹¹ See link in the Table of contents

¹² Means cemetery in Māori

Tegel Response: T+T confirmed that it is liaising with Kāpehu marae stakeholders and has recently engaged a cultural expert, and anticipate providing an assessment of cultural effects on the marae and urupā prior to the hearing. A CIA was not provided in the response, rather T&T assessed the physical effects of the works on the basis of their technical reports.

Consideration of Alternatives

KDC Request: a description of any possible alternative locations or methods for undertaking the activity (pursuant to section 6(1)(a) of the Fourth Schedule of the RMA).

Tegel Response: T+T advised that they do not consider that an assessment of alternatives is required as, in their view, the proposal will not result in significant adverse effects on the environment. However, T+T advised that an assessment of alternatives would form part of the evidence to be presented at the hearing.

Economic Assessment

KDC Request: an assessment from a suitably qualified and experienced person detailing the economic effects (both positive and adverse) of the proposed development.

Tegel Response: T+T provided an economic assessment by Fraser Colegrave from Insight Economics. Their assessment considers that the construction of the activity will generate \$10 million in district GDP, employment for 147 people-years, and \$7.2 million in household incomes; and that the ongoing operational impacts will generate \$2.8 million in GDP, employment for 47 people, and \$2.4 million in household incomes.

Noise and Vibration Assessment

KDC Request: an assessment by a suitably qualified and experienced acoustic engineer regarding the noise and vibration effects of the proposed quarry operations on site.

Tegel Response: T+T provided an assessment from Marshall Day Acoustics which concluded that the quarry application will be able to comply with the noise and vibration standards.

KDC Request: a response from a suitably qualified and experienced acoustic engineer to point 6.A of the submission from the Northland Public and Population Health Unit (which questioned the lack of consideration of likely special audible characteristics from ventilation fans).

Tegel Response: T+T provided a letter from Marshall Day Acoustics, dated 17 May 2018, which considered that the main special audible characteristics that are commonly encountered in practice are tonality and impulsiveness, and that the proposal and ventilation fans will not generate these types of impulsive noise levels.

Antimicrobial Resistance Plan

KDC Request: an assessment of whether the New Zealand Antimicrobial Resistance Action Plan is a relevant consideration for the resource consent application.

Tegel Response: T+T provided a brief assessment of the NZARAP which included a description of the document and its purpose and stated that T+T accepts and supports the NZARAP and has directed efforts and practices towards meeting its objectives.

KDC Land Drainage Bylaw

KDC Request: an assessment of the proposed flood control work against the requirements of the Kaipara District Council Land Drainage Bylaws 2008 and confirmation of whether appropriate approval has been obtained from Council for any aspects of the proposed flood control work regulated by the Bylaw.

Tegel Response: T+T advised that they will work with Wayne Crump from KDC to work to resolve any concerns prior to the hearing, and that the technical reports provided with the application are considered to be consistent with the outcomes sought under the Bylaw.

Odour Assessment

KDC Request: comment from a suitably qualified and experienced odour expert regarding the character and intensity of odour anticipated (beyond those sites the owners or occupiers of which have provided written approval) and how odour estimates compare with what could be reasonably expected from typical farming activities that are anticipated and provided for in a rural environment.

Tegel Response: T+T provided a letter dated 18 May 2018 in response to this query. They advised that odour from the site will primarily be generated from the degradation of organic matter, which can be generated from a range of rural activities such as storage and use of silage feed, dairy effluent and storage, offal pits and fallen stock. They consider that the odour concentrations are predicted to remain within the specified assessment criterion and that the character of the odour will not be inconsistent with the rural environment.

Outcome of Consultation with New Zealand Transport Agency

KDC Request: information relating to the outcome of any consultation with the New Zealand Transport Agency (NZTA) in respect of the effects of the proposed flood control work on State Highway 12.

Tegel Response: T+T confirmed that ongoing consultation with NZTA has been undertaken but did not provide a record of any correspondence. They noted that NZTA has made a neutral submission which raised no issues in relation to flooding.

23. A number of matters in the above further information response required clarification and a list of queries were sent to Tegel on 29 May 2018 on behalf of KDC and NRC. T+T responded on 15 June 2018.¹³ Full copies of the email outlining the clarifications sought and the response from T+T are available on the KDC website.¹⁴ A summary of the queries and response from T+T is provided below:

Cultural Effects

KDC Request: confirmation of who Tegel is liaising with at Kāpehu marae, and whether the assessment of potential cultural effects would be provided within a reasonable timeframe prior to the circulation of the s42A reports for each Council.

¹³ Referred to throughout this report as the "Post-notification s92 clarification request."

¹⁴ See link in the Table of contents

Tegel Response: T+T advised that they were are working with whanau and stakeholders and tūpāpaku of the urupā. Specific names were not provided. Tegel advised that the CIA would be provided by 5 July 2018.¹⁵

• Earthworks

KDC Request: confirmation of where the remainder of fill will be sourced from; updated cut and fill volumes; and expected annual quarry volume following completion of the capital works, given that the extent of earthworks for the quarry is proposed to decrease from 117,500m³ to 50,000m³.

Tegel Response: T+T provided updated earthworks information following changes to the design since the application was lodged, with further information to be provided at a later date to inform the s42A reports.

Protected Ridgeline

KDC Request: explanation of the meaning of the 'protected ridgeline' shown on the Quarry Plan.

Tegel Response: T+T clarified that this ridgeline is a ridgeline that Boffa Miskell advised should be retained to avoid adverse landscape effects of the quarry expansion on the surrounding landscape.

Dust Management Plan

KDC Request: clarification of whether the mitigation measures outlined in the dust impact assessment have been offered as conditions of consent (where appropriate); and further detail of the wind break/screen, vegetative screen planting, and whether a draft Dust Management Plan is proposed to be presented at the hearing.

Tegel Response: T+T confirmed that a Dust Management Plan will be provided as a condition of consent and will include specific details on the wind break/screen. Tegel propose to plant a 6m wide planting strip along the north and north eastern boundaries of the quarry and offer a condition of consent in this regard.

Chicken Mortalities

KDC Request: wording for a condition of consent that chicken mortalities will not be burned on-site.

Tegel Response: T+T offered the following draft condition wording: "*The onsite litter burner shall* not include the combustion of chicken mortalities or waste material generated from offsite."

• Pā Sites

KDC Request: clarification of whether blessing of the pā sites and appropriate fencing of the archaeological sites is offered as a condition of consent and what the extent of fencing offered is.

Tegel Response: T+T confirmed the consultation with mana whenua is ongoing and the above is yet to be decided, and will be guided by mana whenua.

¹⁵ Due to deadlines for internal reviews and printing requirements, T+T were advised that receiving the CIA by 5 July 2018 was too late to allow consideration within the KDC and NRC s42A reports. Accordingly, the reports have been prepared based on the information provided at the time of drafting, which does not include the CIA Tegel have referenced here.

Employment

KDC Request: explanation of the source/justification of the economic assessment's assertion that the activity will create ongoing employment for 39 people.

Tegel Response: T+T explained that the figure is made up of 32 direct employees (employed directly by the farm) and seven flow-on employees (flow-on effects of local spending by future farm employees).

Quarry Noise Assessment

KDC Request: confirmation of whether the hours of operation in section 3.0 are offered as a condition of consent/mitigation measure.

Tegel Response: T+T confirmed that the proposal would comply with New Zealand Standard NZS6803:1999 "Acoustics - Construction Noise".

KDC Request: clarification of whether the quarry operations will be limited to the equipment listed in section 3.0 "There will be NO drilling and blasting, crushing and screening or impact rock breaking" and whether this is offered as a restriction/mitigation measure.

Tegel Response: T+T proposed that compliance with the noise standards outlined in NZS6803:1999 will be achieved by appropriately managing noise and also precluding the use of drilling/blasting in any case.

KDC Request: explanation of how it was determined that the extraction of limestone in the quarry is a construction activity.

Tegel Response: T+T explained that the extraction of limestone will only occur during the construction of the farm and is therefore considered to be a construction activity, and noise compliance has been assessed as a "long term" duration construction activity.

KDC Request: confirmation of whether the statement that the quarry will not be used during the operation of the farm in section 4.0 is offered as a condition of consent/mitigation measure.

Tegel Response: T+T confirmed that the quarry is proposed to be used for construction purposes only and not for ongoing maintenance of the development, but that this is not offered as a consent condition and that consent is sought for a specified 50,000m³ of limestone.

KDC Request: confirmation of whether the statement that the quarry will not be operated during hui or other important events in section 6.3 is offered as a condition of consent/mitigation measure, and how this would work in practice.

Tegel Response: T+T noted that mana whenua consultation was ongoing and that their intention is to restrict operation of the quarry during hui and tangi, and that the wording of a consent condition is a work in progress and would need to be agreed in consultation with Kāpehu stakeholders.

4.0 Reasons for Consent

Kaipara District Plan (Operative November 2013) Assessment

- 24. The subject site is located within the Rural Zone in the Kaipara District Plan (**'KDP'**). Furthermore, the flat western portion of the site is identified as a Flood Susceptibility Area due to its location in a low-lying area in close proximity to the Northern Wairoa River.
- 25. Section 5.3 of the AEE provides a list of the reasons for consent under the KDP. These were assessed and confirmed in the notification report. Accordingly, it is considered that resource consent is required for the following reasons:
 - (a) Rule 12.10.1a Excavation and Fill in the Rural Zone. The site is subject to flood hazards and the volume of earthworks exceeds the permitted volumes of 5,000m³ or 1,000m³ within 6 m of the bank of a river. Therefore, consent is required as a restricted discretionary activity.
 - (b) Rule 12.10.4 Commercial and Industrial Buildings.

The proposed poultry sheds are considered commercial buildings under the KDP. Three of the proposed sheds and the bunding in the south-western corner of the site do not meet the permitted activity standards and therefore consent is required as a **restricted discretionary activity**.

(c) Rule 12.10.7 – Setbacks in the Rural Zone.

Three of the sheds located in the south-western corner of the site, as well as the proposed bund, do not meet the 300 m setback distance from the intersection of SH12 and Whakahara Road. Therefore, consent is required as a **restricted discretionary activity.**

(d) Rule 12.10.21 – Hazardous Substances.

The storage of LPG, detergents and sanitisers exceed the permitted volumes under Appendix 25D of the KDP and therefore consent is required as a **discretionary activity**.

(e) Rule 11.10.2 – Road construction and works in or on a road not undertaken by the Council or NZ Transport Agency.

Approval for works on SH12 has not yet been obtained by NZTA or KDC and therefore consent is required as a **restricted discretionary activity**.

26. Overall, the proposal requires **discretionary activity** resource consent under the KDP, this being the most stringent activity classification under the relevant rules.

Northland Regional Plans Assessments

27. A number of resource consents are required under the Northland Regional Plans. Appropriate resource consents have been applied for to NRC as per the NRC staff s42A Report.

NES Contaminated Soils

28. Council is required by law to implement this National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health ("**NESCS**") in accordance with the Act. The

standards are applicable if the land in question is, or has been, or is more likely than not to have been, used for a hazardous activity or industry and the applicant proposes to subdivide or change the use of the land, or disturb the soil, or remove or replace a fuel storage system.

29. T&T have provided an assessment of the NESCS at point 1 of the KDC pre-notification s92 Response. On the basis of this response, it is concluded that the proposed poultry farm does not require resource consent under the NESCS.

5.0 Notification, Submissions & Written Approvals

Notification

- 30. The applicant requested full public notification pursuant to section 95A(3)(a) of the Act.
- 31. Table 1 below outlines the chronology of events relevant to the notification of RM170441.

Table 1 – Chronology of Events – RM170441					
Event	Date				
Date lodged	20 October 2017				
KDC pre-notification S92 request	17 November 2017				
Tegel pre-notification S92 response	13 December 2017				
Date of public notification of RM170441	7 February 2018				
Closing date for submissions	7 March 2018				
NRC / KDC post-notification S92 request	30 April 2018				
Tegel post-notification S92 Response	18 May 2018				
Hearing commencement date	8 August 2018				

Submissions

- 32. In total 2515 submissions were received. A breakdown of submissions is provided below:
 - 8 in support;
 - 4 neutral;
 - 2503 in opposition; and
 - 330 whom wish to be heard.
- 33. A summary of submissions and full copies of the submissions are available on the KDC website.¹⁶

Written Approvals

34. The application is supported by written approvals from the following parties in Table 2:

¹²⁷

¹⁶ See link in the Table of contents.

Table 2 Written Approvals Received				
Name of Affected Person	Address			
Lorraine Exley and David Brendan Dennis	65 Whakahara Road, Arapohue, Dargaville			
Phil Lewis Langdon and Maree Susan Chapman	89 Whakahara Road, Arapohue, Dargaville			
Edith Frances Perreau and Kerry Michael Perreau	5793 State Highway 12, Arapohue, Dargaville			
Michael Shane and Beverly Elaine Lardner	5802 State Highway 12, Mititai			
Darryl Tregidga and Joanne Tregidga	5562 State Highway 12, Arapohue, Dargaville			
Rochelle Dianna Jillett and Paul Geoffrey Sorensen	5590 State Highway 12, Arapohue, Dargaville			
Peter Anthony Jillett and Gay Lynette Jillett and JBL Trustee Ltd as trustees of the Whakahara Trust	5590 State Highway 12, Tokatoka			

35. A map showing the location of these properties relative to the site is included in **Attachment 1**.

Procedural Issues

36. KDC's records show that late submissions were received after the closing of the notification period from the following parties outlined in Table 3. I recommend that the Commissioners accept these late submissions:

Table 3 Late Submissions						
Submission number	Date Received	Submitter Name				
C276	08/03/2018	Debra Adolph				
C277	08/03/2018	Varine Paterson				
C275	08/03/2018	Simon Woodcock				
C267	09/03/2018	Yeshe Dawa				
C508	14/03/2018	Fiona Togia				

C512	28/03/2018	Ray Wearmouth

6.0 Statutory Context – Resource Management Act 1991 – Section 104

- 37. The proposal is subject to Section 104 of the RMA which sets out the matters that the Council must have regard to when considering an application for resource consent and any submissions received. As a discretionary activity, Section 104B sets out a consent authority's discretion in determining a decision.
- 38. With regard to Section 104(3)(a)(i), there are no known issues in the consent application or as a result of the submission process that raise questions of trade competition or the effects of trade competition.
- 39. With regard to Section 104(3)(a)(ii), the consent authority must not have regard to the effects on those persons who have given written approval to the application. The parties who have provided written approval are listed in Table 2 and shown relative to the site in the map in **Attachment 1**. Any effects on these parties must be disregarded and therefore have been in the assessment undertaken below.
- 40. For the purpose of this application, the remainder of this report will address the following matters under Section 104, which a consent authority, in this case via delegation to the Hearing Commissioners, must have regard to in making a decision.
- 41. Under Section 104(1)(a), the actual and potential effects on the environment of allowing the activity must be assessed. This includes an assessment of matters that may fall under Section 104(2) as adverse effects that may be disregarded where they are permitted by a national environmental standard or plan ('permitted baseline'). This assessment in section 7, has also been undertaken with regard to the definition of 'effect in Section 3 of the RMA which includes:
 - (a) any positive or adverse effects; and
 - (b) any temporary or permanent effect; and
 - (c) any past, present or future effect; and
 - (d) any cumulative effect which arises over time or in combination with other effects
 - regardless of the scale, intensity, duration, or frequency of the effect, and also includes-
 - (e) any potential effect of high probability; and
 - (f) any potential effect of low probability which has a high potential impact.
- 42. Pursuant to section 104(1)(ab), any measures that the applicant has offered or agreed to ensure positive effects to offset or compensate for any adverse effects that may result from allowing the activity must be considered. Such measures offered or agreed to by Tegel have been given due consideration in the assessment of environmental effects undertaken below.
- 43. Under Section 104(1)(b), the following relevant provisions require consideration and have been assessed under section 8 of this report:
 - NESCS under Section 104(1)(b)(i), although it is noted that the proposal is considered a permitted activity pursuant to these provisions;

- Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 Section and Resource Management (National Environmental Standards for Air Quality) Regulations 2004 104(1)(b)(ii);
- National Policy Statement for Freshwater Management under Section 104(1)(b)(iii);
- New Zealand Coastal Policy Statement under Section 104(1)(b)(iv);
- Operative Northland Regional Policy Statement (RPS) under Section 104(1)(b)(v);
- Northland Regional Water and Soil Plan and Northland Regional Air Quality Plan under Section 104(1)(b)(vi);
- Proposed Northland Regional Plan under Section 104(1)(b)(vi); and
- Kaipara District Plan under Section 104(1)(b)(vi);
- 44. Under Section 104(1)(c), any other matters that may be relevant or reasonably necessary to determine the application require consideration. This is provided in section 9.

7.0 Actual & Potential Effects on the Environment (S104(1)(a))

Permitted Baseline

- 45. In accordance with section 104(2) of the Act, a consent authority may disregard an adverse effect that is permitted by a Plan and NES. The permitted baseline can be used to define the environment against which the degree of adverse environmental effects of a proposed activity will be considered. There are three categories to the permitted baseline test, these being:
 - What lawfully exists on the site at present;
 - Activities (being non-fanciful activities) which could be conducted on the site as of right; i.e. without having to obtain resource consent; and
 - Activities which could be carried out under a granted, but as yet unexercised, resource consent.

What lawfully exists on site at present

- 46. A description of what lawfully exists on the site at present is provided in section 3 of the AEE.
- 47. There is an existing resource consent granted by NRC on 3 May 2011 to discharge treated dairy farm wastewater from the dairy shed, feed pad and calf shed to an unnamed tributary of the Northern Wairoa River.¹⁷ That consent was assessed and granted based on the consent holder milking a maximum of 700 cows each day and undertaking a spring calving regime.

Activities (being non-fanciful activities) which could be conducted on the site as of right

48. For a council to apply its discretion under Section 104(2) and adopt any permitted baseline, the permitted activity from which a comparison of effects is drawn must be non-fanciful and realistic. There are

¹⁷ See Appendix G of AEE Volume 1 for a copy of this consent.

permitted standards within the KDP that can be realistically applied to the consideration of the proposed development.

- 49. The KDP is an effects-based plan¹⁸, whereby the effects of an activity, rather than the activity itself, are managed in the KDP provisions. As such specific activities are not generally identified as being permitted or requiring resource consent, rather performance standards are utilised to define an acceptable level of potential environmental effects. The operation of the proposed poultry farm will constitute 'intensive farming' as it is defined in Chapter 24 of the KDP.¹⁹ There are restrictions regarding the separation distance between intensive farming undertaken in the Rural Zone and adjoining zones²⁰ and for the establishment of noise sensitive activities in the Rural Zone.²¹ The proposed development complies with both of these restrictions. The proposed development does not however comply with other effects-based rules in the Rural Zone relating to earthworks, setbacks, hazardous substances and traffic. Therefore, in my opinion, the permitted baseline cannot be realistically applied to the 'intensive farming' activity that is proposed to be undertaken on the subject site.
- 50. The KDP²² permits the construction of dwellings on the site (up to a maximum of one per 12ha of net site area). Tegel have proposed to construct 4 additional dwellings in addition to the five existing dwellings on the site. This will readily comply with the permitted level of dwellings on the site anticipated in the Rural Zone and will comply with the relevant bulk and location requirements of the Rural Zone. I consider that this is a realistic permitted baseline that can be applied to the consideration of any effects of the proposed dwellings.
- 51. There is no general building coverage control in the Kaipara District Plan that applies to the subject site. There is a specific control for commercial and industrial buildings²³ with which the proposed buildings do comply with. The proposed buildings also comply with the relevant height limit.²⁴ Three of the proposed 32 poultry sheds along with a portion of the proposed bund²⁵ will not comply with the minimum 300m setback from the State Highway / Whakahara Road intersection²⁶. Notwithstanding this breach of the setback, the bulk and location of the proposed buildings on the subject site are anticipated in the KDP for the subject site.

Granted, but as yet unexercised resource consents

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¹⁸ See section 1.3.1 of Chapter 1 of the KDP.

¹⁹ The rearing and/or breeding of animals for commercial purposes which is not dependent on the soil characteristics of the site on which it is located and/or which is mainly under building cover, and/or which is dependent on the importation of energy or materials onto the site to sustain its viability and includes such activities as poultry, pig and rabbit farming and dog breeding. This definition does not include the keeping of animals or any of the above activities on a non-commercial basis as an accessory use and does not include activities such as the rearing of calves which occur for a limited time only and are part of normal pastoral farming activities.

²⁰ 12.10.11d)

²¹ 12.10.9d)

²² Rule 12.10.3a)

²³ Rule 12.10.4a 5000m² or 10% of the net site area. However overall resource consent is required pursuant to 12.10.4.b as three of the proposed sheds and the bunding in the south-western corner of the site do not meet the permitted activity standards for building setbacks in 12.10.7

²⁴ Rule 12.10.5 - 10m height limit utilising the rolling height method.

²⁵ Which is considered a 'building' under the KDP definition

²⁶ Rule 12.10.7f)

- 52. NRC granted Tegel a resource consent on 13 February 2018 to install and maintain up to five investigation bores and three production bores for the water supply requirements of a poultry broiler farm and dairy farm.²⁷ It is unknown whether this consent has been exercised yet.²⁸
- 53. There are no other granted but as yet unexercised resource consents that are applicable to the subject site.

Air Quality Effects

- 54. The proposed poultry farm operations will cause the discharge of contaminants to air associated with the following activities:
 - Combustion of shed litter and LPG within the Energy Centre building;
 - The discharge of odour associated with the proposed poultry sheds and ranging areas between farms; and
 - The discharge of dust during the construction and operation of the proposed poultry farm, including dust associated with the use of the quarry during construction.
- 55. Air quality effects²⁹ including odour have been identified as a key issue in submissions. A number of submissions identify concerns with the level of odour resulting from the proposed poultry farm, the potential for offensive and objectionable odour in the receiving environment and the lack of certainty regarding the modelling undertaken by T+T on behalf of Tegel.
- 56. The AEE is supported by an Air Quality Assessment prepared by T+T dated September 2017 which provides a technical assessment of the potential air discharge sources, the contaminants of concern and the effects of the air discharges on human health and the environment.
- 57. NRC commissioned Beca Limited to undertake a peer review of the Air Quality Assessment.³⁰ The Beca Review identifies and discusses the key air quality concerns identified by submitters, provides an assessment of the applicant's response to further information requests and makes recommendations for consent conditions should consent be granted. A copy of the Beca Review is attached to the NRC s42A Report.

Dust Generation Effects

58. Tegel has not sought resource consent for the discharge of dust associated with the construction and operation of the proposed facility and is relying on the permitted activity rules for dust generation under

²⁷ NRC Reference AUT.039779.01.01

²⁸ During a site visit 28 May 2018 it appeared that a drilling of a bore was being undertaken on site, but it was not clear whether this formed part of the NRC production bore consent.

²⁹ Air quality is typically a matter that is addressed by regional authorities. However, it is accepted that air quality is also an amenity issue which falls within the jurisdiction of local authorities. An assessment is undertaken within this section with regard to the effects of the air discharges on the environment.

³⁰ This included undertaking an initial peer review prior to notification in December 2017 - Beca Limited (5 December 2017) Tegel Foods

⁻ Review of Technical Assessment of Discharges to Air. The updated review version is Beca Limited (25 June 2018) Tegel Foods – Technical Review of Assessment of Discharges to Air. This is referred to throughout this s42A Report as the "Beca Review"

the KDP and applicable regional plans. This includes dust associated with the quarry which will be utilised during the construction period for sourcing 50,000m³ of construction material.³¹

- 59. Beca have concurred with the assessment undertaken in the Air Quality Assessment that dust generated on site is unlikely to cause a nuisance beyond the boundary of the site provided that the proposed separation distances are maintained and appropriate dust management methods are applied.³²
- 60. I rely on the findings of the Beca Review and the Air Quality Assessment, and consider that any adverse dust effects will be no more than minor and acceptable.

Energy Centre combustion

- 61. The proposed Energy Centre is designed to burn chicken litter and LPG with boiler exhaust gases to be treated with a bag filter prior to discharge to the atmosphere. The potential health effects of the discharge of combustion contaminants need to be considered.
- 62. The Air Discharge Assessment bases its assessment of the emissions of the products of combustion from the Energy Centre on maximum concentrations provided by the supplier. Beca have agreed that the predicted emission rates of PM¹⁰ and NO_x estimated by T+T are reasonable, however Beca have estimated that the emission rate of SO₂ for the Energy Centre is higher than the value used by T+T.³³ Despite this discrepancy, Beca have concluded that the maximum ambient concentrations are still expected to remain within health-based criteria and any discharges from the proposed Energy Centre are unlikely to have any adverse health effects or effects on rain water collected from roofs on nearby dwellings.
- 63. On the basis of the Air Discharge Assessment and Beca Review, I consider that the potential effects of the discharge of contaminants to air from the proposed energy centre are likely to be no more than minor and acceptable.

Other minor sources of odour

- 64. The Beca Review has discussed odour generation from the following sources that were not specifically assessed within the Air Quality Assessment:
 - Odour from the range areas surrounding the sheds;
 - Removal of litter from the sheds; and
 - Collection and treatment of shed washwater.³⁴
- 65. Beca have not identified any concerns with the odour effects associated with the above additional potential odour sources. Subject to appropriate conditions of consent as recommended by Beca, I consider that the potential adverse odour effects associated with range areas, removal of litter and collection and treatment of shed wastewater will have no bearing as to the overall conclusions reached with regard to odour nuisance effects.

³¹ See further discussion of quarry operations under the heading "Noise and Vibration Effects"

³² See Section 3.3 and 8.1.3 of the Beca Review.

³³ Up to 32 times higher.

³⁴ See section 3.2.7 to 3.2.10 of the Beca Review.

Odour Nuisance Effects

- 66. The Air Quality Assessment utilises a method that considers the extent of the proposed poultry farm operation and the growth of the chickens over a typical production cycle. Utilising an atmospheric dispersion model, the Assessment then compares estimated odour emissions within the receiving environment utilising two scenarios:
 - A conventional management scenario which utilises guidance from Victoria, Australia³⁵ and estimated odour emissions over the batch cycle for the amount of chickens proposed; and
 - A site-specific scenario which assumes a reduced odour emission rate of 51% of the conventional management scenario based on the reductions in ammonia associated with the use of the Energy Centre on site to control climate in the proposed sheds. It is the findings of the site-specific management scenario that are utilised in the Air Quality Assessment to assess the air quality / odour effects of the proposal.
- 67. Section 7 of the Air Quality Assessment provides an assessment of the effects of odour emissions. This includes the identification of a number of proposed mitigation measures³⁶ under the site-specific scenario when compared to conventional alternative measures which will have direct beneficial effects on reducing odour. The modelling results for both scenarios are included in Appendix A of the Air Quality Assessment based on two modelled meteorological scenarios for 2012 and 2015 (see **figures 1** and **2** below for findings of the site-specific scenario). The results of this modelling are then assessed against the guideline values contained within the Ministry for the Environment Good Practice Guide for Assessing and Managing Odour ('MfE GPG').

³⁵ Environmental Resource Management Australia. 2012. Broiler Farm Odour Environmental Risk Assessment - Background to Technical Guidance. Technical Report for EPA Victoria.

³⁶ Primarily achieved by controlling the temperature and moisture content of litter at levels outside the optimum range for anaerobic degradation. A full table of proposed odour mitigation measures is included in Section 4.1 Air Quality Assessment.



Figure 1 – Spatial distribution of peak odour concentrations resulting from the proposed poultry farm – site specific management scenario, 2012 model year (99.5th percentile 1- hour average odour concentrations, 1 OU/m3 contour increments)³⁷



Figure 2–Spatial distribution of peak odour concentrations resulting from the proposed poultry farm – site specific management scenario, 2015 model year (99.5th percentile 1- hour average odour concentrations, 1 OU/m₃ contour increments)). Green triangles represent sensitive receptors. Kāpehu marae and Arapohue School are indicated by squares.³⁸

³⁷ Duplicated from figure A5 in Appendix A of the Air Quality Assessment.

³⁸ Duplicated from figure A6 in Appendix A of the Air Quality Assessment

- 68. A threshold where the 99.5 percentile 1-hour average odour concentrations are predicted to exceed the MfE CPG guideline concentration of 5 OU/m³ has been used in the Air Quality Assessment for identifying when a sensitive receptor would be exposed to a high risk of offensive or objectionable odour. Where odour is predicted to be less than the 5 OU/m³ threshold, it has been considered within the Air Quality Assessment that odour is unlikely to be considered offensive or objectionable. Where a limit of 5 OU/m³ is exceeded at sensitive receivers, Tegel's approach has essentially been to obtain written approval from these properties.³⁹ Taking into account these written approvals, T+T have stated that significant adverse odour nuisance effects are unlikely beyond the properties from which written approvals have been obtained.⁴⁰
- 69. The Beca Review has reviewed the odour emission estimates undertaken in the Air Quality Assessment. It is apparent that there is a level of agreement from Beca that the estimated odour emission rates utilised in the Air Quality Assessment are reasonable.⁴¹ However, Beca have stated that there is some uncertainty in the derived emission rates due to the following factors:
 - *"The relationship between ammonia concentrations and odour emission rates from the sheds was found to be inconclusive;*
 - We cannot confirm that odour emission rates would necessarily be reduced by 51% for the proposed shed technology compared to traditional methods; and
 - The modelled emission rates for the proposed shed have not been confirmed by any emission testing"⁴²
- 70. From Beca's comments above, it is apparent that there is some uncertainty associated with the assumptions utilised by T+T within the Air Quality Assessment to differentiate the emission rates from the conventional management scenario and the site-specific management scenario. In other words, Beca has not been able to verify the 51% reduction in odour emission rates assumed by T+T for the site-specific management scenario. This 51% reduction is a crucial assumption in the modelling results for the site-specific management scenario, which T+T and Tegel have utilised to identify where offensive and objectionable odour may occur for sensitive receptors within the receiving environment.
- 71. Beca have provided further discussion regarding the implications of the uncertainty with the derived emission rates in Section 4.6 of the Beca Review. Beca emphasise that there is a level of uncertainty. If these rates are higher than what is estimated within the Air Quality Assessment, then there is a risk that odour levels will exceed the 5 OU/m³ threshold at a number of additional sensitive receivers than have been identified in the original emission models and beyond those properties from which Tegel have obtained written approvals.
- 72. Odour modelling is a complex process but is generally accepted as an appropriate tool to utilise in understanding odour effects. There appears to be no disagreement between Beca and T+T as to the use of the odour modelling or the methodology used. The key unresolved issue is that Beca have

³⁹ See map in **Appendix 2** for location of all parties who have provided written approval.

⁴⁰ See section 4.d. of T+T NRC pre-notification s92 response dated 21 December 2017

⁴¹ See section 3.2.4 of the Beca Review

⁴² See section 3.2.4 of the Beca Review.

identified uncertainty as to the reliability of the assumptions used to provide guidance on the site-specific scenario that has been used for comparison with the MfE GPG Guideline values. The potential consequence is that if the assumed odour reduction used in the Air Quality Assessment has been overestimated, a number of nearby properties containing sensitive receptors who have not provided written approval may be subject to offensive and objectionable odour. This is outlined in Table 1 of the Beca Review which is duplicated below.⁴³

Table 1. E	stimate of t	he number of	potentially	affected	sensitive	receptors (for different	t odour e	mission rates.

Odour Emission Rate Scenario	Number of sensitive receptors where the predicted 99.5 percentile 1-hour average odour guideline exceeds 5 OU/m ³
51% of the conventional shed emission rates (as assumed in the T&T report)	urupa
63 % of the conventional shed emission rates	urupa, marae, & 3 dwellings
71 % of the conventional shed emission rates	urupa, marae, & 7 dwellings
83 % of the conventional shed emission rates	urupa, marae, Arapohue School & 10 dwellings

- 73. The Beca Review has identified that the Air Quality Assessment has not considered the potential odour effects at the urupā.⁴⁴ Beca identify that the urupā is characterised as having high sensitivity to potential odour effects under the MfE CPG. Subsequently a high amenity value should be expected to be maintained at the site. The emission modelling undertaken by T+T (see figures 1 and 2) has predicted that the odour concentrations will exceed the 5 OU/m³ threshold at the urupā. Beca have outlined that there is insufficient information available to assess the potential risk of visitors of the urupā.⁴⁵
- 74. Detail is given in the submission from Kāpehu marae regarding the use of the urupā. The submission identifies that:⁴⁶

"Kāpehu urupā is the ancient burial ground of the whānau of Kāpehu. It is our beloved holder of the last physical remains of our loved ones. As you enter the urupā, you enter an area of extremely high tapu and must cleanse yourself of that tapu as you leave the urupā (using water). The urupā is deliberately set on high ground overlooking our traditional territories in the Northern Wairoa and the territories of our close whanaunga. This is where we bring our loved ones after they have lain on Kāpehu marae or Naumai marae or other marae in the district, where they return to and join the peace and tranquility of their whanaunga and tūpuna (ancestors) as their pain, suffering and hardship in the world of the living ceases. This is where those they leave behind come to repeatedly in the days, weeks, months and years after their passing to draw comfort and ease their pain in quiet solitude as they remember and commune with all their whanaunga and tupuna lying there. Whānau spend many hours in our urupā with some even sleeping there."

⁴³ See table 1 page 12 of the Beca Review

⁴⁴ See section 4.6.1 of the Beca Review

⁴⁵ Beca do however state that it is likely that the risk of exposure would be lower than other sensitive receptors which may be in continuous or semi-continuous use.

⁴⁶ C246 – submission from Professor Margaret Mutu, chairperson, Kāpehu marae. See page 4 discussion regarding the urupā

75. At the time of drafting this report, no cultural impact assessment assessing the cultural effects on Kāpehu marae and the associated urupā is available. Coupled with the odour modelling showing the odour levels exceeding the 5 OU/m³ threshold at the urupā and the uncertainty associated with the derived emission rates used for the odour model, I consider that there is a lack of certainty with respect to the actual or potential adverse effects of odour on the urupā which could be significantly adverse and unacceptable if the urupā is subject to a high level of use.

Conclusion

76. On the basis of the Beca Review, and given the scale of the proposed activity and the consequence should odour effects be greater than those estimated in the Air Quality Assessment, I consider that there is insufficient certainty to demonstrate that odour associated with the proposed poultry farm is unlikely to exceed MfE CPG guidelines at sensitive receivers for which no written approval has been provided. I consider that this level of uncertainty is unacceptable and, on this basis, it is my opinion that the proposed poultry farm has the potential to cause unacceptable significant adverse effects on neighbouring properties, Kāpehu marae and the urupā.

Cultural Effects

- 77. The subject site is adjoined to the north by Kāpehu marae and an associated urupā. A number of submissions, including one on behalf of Kāpehu marae,⁴⁷ identify concerns with the potential cultural effects of the proposed development. These submissions raise a number of potential concerns relating to effects of the proposed poultry farm development on Kāpehu marae and urupā including: noise; odour; dust; quarrying; landscape and visual amenity; archaeology and animal welfare. Physical effects relating to these matters are addressed elsewhere in the assessment of environmental effects undertaken in section 7 of this s42A report. Further concerns are also expressed in submissions regarding the potential adverse cultural effects on the tapu of Kāpehu marae and urupā. This section focuses on the potential cultural effects of the proposal on Kāpehu marae and urupā and more broadly the relationship of Māori with their culture and traditions with their ancestral lands and waahi tapu.
- 78. T+T initially provided their assessment of cultural effects in the AEE.⁴⁸ The AEE is also supported by a report from Te Roroa Whatu Ora and Manawhenua Trust Board titled Whakahara Proposed Broiler Farm Development Report September 2017.⁴⁹ The Te Roroa report does not refer to it being a cultural impact assessment ('CIA').
- 79. Both the Te Roroa report and T+T assessment largely focus on the potential effects on the archaeological pa sites located within the hilly area to the east of the subject site.⁵⁰ The Te Roroa report acknowledges the presence of the Kāpehu marae and provides some commentary regarding the historical background of the marae.⁵¹ The Te Roroa report makes four recommendations based on Te

⁴⁷ C246 – submission from Professor Margaret Mutu, chairperson, Kāpehu marae

⁴⁸ See section 6.11.2 of the AEE Volume 1, page 49.

⁴⁹ See Appendix M – AEE Volume 1.

⁵⁰ P08/28 and P08/32 – potential effects on these sites have been assessed under the heading "Archaeological Effects" within this s42A Report.

⁵¹ See heading "Historical Māori" in Appendix M – AEE Volume 1, page 5.

Roroa archaeology values.⁵² This centres on an Accidental Discovery Protocol ("**ADP**") being applied, which Tegel have accepted and offered as a mitigation measure.⁵³ The Te Roroa Report also explicitly states that⁵⁴:

"Any other values associated to the project by interest groups, including tangata whenua, can only be determined by them."

- 80. Details regarding pre-lodgement consultation with Kāpehu marae are included within the AEE. T+T outline that they met with the Kāpehu marae chairperson on 16 August 2017 and discussed the proposed development.⁵⁵
- 81. Prior to notification NRC distributed the application to iwi and hapu on behalf of both Councils.⁵⁶ These groups are listed below along with their response:
 - Te Uri o Hau an email was sent to NRC dated 2 November 2017 stating that, at the time Environs Holding Ltd (Te Uri O Hau), had no issue with the resource consent as the location of the subject site is not within their rohe.⁵⁷ No submission has been received on behalf of Te Uri or Hau.
 - Te Rūnanga o Ngāti Whātua no reply was received by KDC prior to notification. However, a submission has been made by Te Ha Oranga,⁵⁸ the Iwi Hauora provider for Te Rūnanga o Ngāti Whātua.
 - Te Roroa no response was provided to the NRC email seeking comment. However, it is noted that Te Roroa had prepared the report referenced previously. No submission has been received on behalf of Te Roroa.
- 82. NRC sent a copy of the application and supporting documents to Kāpehu marae on behalf of both Councils on 11 November 2017.⁵⁹ NRC received a response from Kāpehu marae on 22nd November 2017 outlining a number of concerns with the application.⁶⁰ These concerns are generally repeated and expanded on in the Kāpehu marae submission.
- 83. Following the notification period, NRC and KDC issued a joint section 92 request asking, among other matters, that Tegel provide a CIA assessing the effects of the proposal on Kāpehu marae and associated

⁵² See heading "Recommendations" in Appendix M – AEE Volume 1, page 6.

⁵³ See discussion under heading "Archaeological Effects" within this KDC s42A Report.

 $^{^{\}rm 54}$ See heading "Recommendations" in Appendix M – AEE Volume 1, page 6.

⁵⁵ See section 8.3.1 AEE Volume 1, page 68.

⁵⁶ As lead authority for the consent application, NRC distributed a copy of the application to the relevant iwi and hapu that have registered an interest in the area based on advice from their internal Māori Liaison officer.

⁵⁷ Rohe roughly translates boundaries of interest. Since the November email from Te Uri o Hau, correspondence has been received from Te Uri O Hau outlining that they have been engaged by Tegel to prepare a CIA for the proposed development. This CIA was not available at the time of drafting the s42A report so has not been taken into account in this assessment. Consideration will need to be given to this CIA should it be available prior to or at the hearing.

⁵⁸ C244 – Written by Antony Thompson on behalf of Te Ha Oranga.

⁵⁹ An extensive timeline is provided in Appendix 1 of the submission from Kāpehu marae C246.

⁶⁰ KDC did not receive a copy of this email and were not aware of the concerns expressed by Kāpehu marae until during the notification period. Therefore, additional information was not sought by KDC via the pre-notification s92 request.

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urupā.⁶¹ T+T responded to this outlining that they had engaged a cultural expert and were liaising with Kāpehu marae stakeholders in order to provide the requested CIA prior to the hearing.⁶² In the interim T+T provided a response to the potential adverse physical effects raised in the Kāpehu marae submission including the proposed quarry operations; odour; noise; landscape and visual amenity; archaeology and; animal bird welfare.⁶³

- 84. Following receipt of this reply from T+T, correspondence was received from the Kāpehu marae chairperson identifying concerns with this response. KDC and NRC sought clarification regarding who Tegel were liaising with at Kāpehu marae and when the CIA would be available.⁶⁴ Tegel outlined that this assessment would be provided to KDC and NRC on 5 July 2018.⁶⁵
- 85. At the time of drafting this s42A report, no CIA assessing the effects on Kāpehu marae and the associated urupā is available. Based on the submission of Kāpehu marae, and in particular the odour assessment undertaken which shows the urupā as falling within the 5 OU/m³ odour model contour, and the uncertainty associated with the 51% reduction potentially extending the 5 OU/m³ contour further to include Kāpehu marae, I consider that the proposed poultry farm development could result in potentially significant adverse cultural effects. However, in the absence of a CIA to properly evaluate and understand the magnitude of these effects, in my opinion, it is difficult to draw any firm conclusions regarding the potential cultural effects of the proposal on Kāpehu marae and urupā and more broadly on the relationship of their culture and traditions with their ancestral lands and waahi tapu. T+T have outlined on behalf of Tegel that a CIA will be provided prior to the hearing, but at the time of writing this report, this CIA was not available for incorporation into the KDC or NRC s42A reports. It is also anticipated that Kāpehu marae representatives (and others) will provide additional evidence at the hearing which will further assist.
- 86. On this basis, I consider that there is currently insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā, and that these could potentially be significantly adverse and unacceptable. However, I acknowledge that Tegel and submitters are likely to provide further information and evidence at the hearing that may assist in coming to a conclusive position on cultural effects.

Landscape & Visual Effects

- 87. The application is supported by a Landscape and Visual Effects Assessment prepared by Boffa Miskell dated 9 October 2017⁶⁶ and subsequent further assessment provided in the further information responses from the applicant.
- 88. The BM Report recommends a number of landscape and visual mitigation measures that have been integrated into the design of the proposed development. These include the overarching construction

⁶¹ See point 1 of post notification KDC and NRC s92 Request dated 30 April 2018

⁶² See paragraph 1.1 of T+T post notification s92 response.

⁶³ These matters are addressed elsewhere in section 7. Animal welfare is assessed in section 9.

⁶⁴ See email outlining further clarifications on further information request dated 29 May 2017.

⁶⁵ As outlined previously, due to practicalities of incorporating new information into the KDC and NRC s42A reports and reporting / review and printing deadlines, this date was not deemed a reasonable date to allow incorporation into the s42A reports.

⁶⁶ Referred to throughout as the "BM Report"

methodology, treatment of cut slopes and on-site bunds, establishment of vegetation, landscape severance and built structures. The BM Report concludes that provided these recommended measures are implemented/adopted, the adverse landscape and visual effects are no more than minor.

- 89. The BM Report was peer reviewed prior to notification by Landscape Architect Rebecca Skidmore from R. A. Skidmore Urban Design Limited. This review raised a number of questions / clarifications by Ms Skidmore of the BM Report. These questions were addressed in a further letter from Boffa Miskell dated 7 December 2017 which was submitted to Council along with the Tegel pre-notification s92 response dated 13 December 2017.
- 90. A final peer review statement from Ms Skidmore dated 11 June 2018 is attached (Attachment 2). Ms Skidmore visited the subject site on 2 November 2017 and has undertaken a comprehensive review of the BM Report in conjunction with relevant submissions. Ms Skidmore has confirmed that she is in full agreement with the analysis provided in the BM report and subsequent information provided, and that there are no matters of disagreement within the scope of her expertise as it relates to the BM Report. Ms Skidmore has identified a number of aspects requiring control by conditions in section 7 of her review and recommends that these matters should be addressed by conditions of consent should consent be granted.
- 91. Ms Skidmore concludes in section 8 of her review:

"The Site is located within a modified rural environment. Together with the additional information and amendments to the proposal provided following lodgement of the resource consent, I generally agree with the Boffa Miskell assessment of landscape and visual amenity effects.

As set out above, I consider a number of conditions are necessary to ensure adverse landscape and visual effects are suitably avoided and mitigated. If the identified mitigation measures are successfully implemented, I consider the adverse landscape and visual effects resulting from the proposal will be no more than minor.

92. I rely on the findings of the BM Report and peer review from Ms Skidmore. Provided that the identified mitigation measures are successfully implemented, I conclude that any adverse landscape and visual effects will be no more than minor and therefore acceptable.

Traffic Effects

93. The AEE is supported by an Integrated Transport Assessment ("ITA") prepared by T+T dated September 2017. The ITA assesses the transport effects for the proposal focusing on effects on State Highway 12, local effects and construction traffic.

Existing Situation and Proposed Access

- 94. The subject site is accessible directly from State Highway 12 via five existing vehicle accessways. SH12 is classified as a Primary Collector road by the New Zealand Transport Agency ("**NZTA**").⁶⁷ The ITA estimates that SH12 currently has an Annual Average Daily Traffic count of 1804 vehicles per day, with 10% being heavy vehicles.⁶⁸ On average, the existing farm operations on the subject site are estimated to contribute 18 vehicles per day or 26 equivalent car movements.
- 95. The proposal will see the properties main access off State Highway 12 relocated 25m north along the State Highway. The original access will be closed as agreed between the applicant and NZTA. The new relocated access is proposed to be the main access for the site, through which all traffic will enter and exit for both the proposed poultry farm and reduced dairy farm operations. All of the other existing entrances onto the State Highway will remain to service the existing dwellings to the rear / north east of the subject site.⁶⁹ The ITA reports that there is no significant crash history within the area of the State Highway between the two closest intersections (Mititai Road to the north and Whakahara Road to the South).⁷⁰

State Highway 12

- 96. The ITA estimates that the proposal will result in a maximum of 59 vehicles per day visiting the site via SH12, increasing average daily traffic movements to/from the site by 41 vehicles per day when compared to the existing dairy farm operations on site.⁷¹ This is an increase of approximately 2% in the Annual Average Daily Traffic count on the State Highway. A number of mitigation measures are outlined in the ITA which have been accepted and offered by Tegel.⁷² The ITA states that the effects in terms of traffic safety and efficiency to road users will be minimal as the majority of traffic does not share the same travel times.
- 97. On this basis and subject to the proposed mitigation measures being implemented, the ITA concludes that the potential to increase the risk of conflict, delay and frustration on State Highway 12 is effectively removed.
- 98. The ITA states that NZTA are considered to be an affected party in relation to the proposed SH12 access.⁷³ I agree that NZTA should be considered affected. Feedback from NZTA was not provided within the application. A submission from NZTA was made which supports in part the application.⁷⁴ The submission states that NZTA support the relocation and upgrade of the main access to the site, but do

⁷⁴ Submission # C235

⁶⁷ The section of SH12 is classified as a Limited Access Road ("**LAR**") under the Government Roading Powers Act 1989. It is understood that under the LAR powers, NZTA have the ability to decline or require the upgrade of an access to a Limited Access Road for new activities.

⁶⁸ See section 3.1 of ITA, page 4

⁶⁹ See section 4 of ITA, page 7

⁷⁰ See section 3.3 of ITA, page 4 and second paragraph of the Executive Summary.

⁷¹ It is noted that this figure is based on vehicles per day (one way trips). Table 4.3 of the ITA states that this will equate to 118 movements (two-way trips) or 258 ECM (Equivalent Car Movements). An explanation of the term ECM is provided in the glossary of terms at the beginning of the ITA.

⁷² See section 6 of ITA, page 19. This includes relocating the existing access and providing a sealed entrance designed to the appropriate Austroads standard and provide a right turn bay into the site.

⁷³ See section 5.2 of ITA page 17.

not support the lack of improvements to other Crossing Places for the site. NZTA has sought specific relief in the form of conditions of consent and / or advice notes relating to the relocation and upgrading of the main accessway and upgrades or closure of other crossing points for the subject site. It is not clear whether Tegel has accepted these conditions of consent sought by NZTA. This is a matter that, in my opinion, will need to be addressed at the hearing.

Local amenity impacts

- 99. Concern has been expressed in a number of submissions regarding the adverse amenity effects (such as noise and headlights at night) of additional traffic on SH12. This primarily relates to increases in traffic and in particular heavy traffic entering and exiting the subject site.
- 100. The ITA has highlighted that the highest concentration of traffic associated with the proposal will be during the morning between 6am 8am, with the highest concentration of heavy traffic being when mature chickens are transported from the farm between the hours of 10pm and 5am. Trucks will be slowing down and accelerating within 500m either side of the main access. Beyond this distance, trucks are expected to be moving at highway speed. I accept this rationale and consider that there could be potential adverse effects on dwellings within this 500m area where trucks slow down and accelerate.
- 101. The ITA identifies that the closest dwelling that is likely to experience adverse amenity effects from heavy vehicle access is located at 5727 SH12. However, this property forms part of the subject site and the dwelling will be used for the farm manager's residence, so any effects on the owners and occupiers of this dwelling can be disregarded.⁷⁵ The nearest occupied dwelling that is not part of the site is 750m north of the proposed main entrance to the subject site at 5796 State Highway 12. It is acknowledged that any effects on the owners and occupiers of this property can also be disregarded as they have given written approval.⁷⁶

Construction Traffic

- 102. As stated in the ITA, the proposal will generate additional vehicle movements to the site during the construction phase of the proposal.⁷⁷ The ITA states that the majority of this traffic will remain on site for extended periods to undertake earthworks and that construction traffic is only expected to affect the State Highway during delivery periods for specific activities; such as concrete deliveries for slab pouring, or steel deliveries prior to building construction. The ITA identifies that a Construction Management Plan ('CMP') will be prepared prior to construction commencing, which will provide further detail and mitigation measures for additional construction traffic.
- 103. As stated above, a submission from NZTA was made that seeks specific relief in the form of conditions of consent relating to the provision of a Traffic Management Plan surrounding the proposed construction works. It is not clear whether Tegel has accepted these conditions of consent sought by NZTA. This is a matter that, in my view, will need to be addressed at the hearing.

Conclusion

⁷⁵ See map in **Attachment 1**.

⁷⁶ Ibid.

⁷⁷ See section 7.1.3 of ITA, page 20 and 21.

- 104. I rely on the ITA for the assessment of traffic safety effects. On the basis of the ITA, including the proposed mitigation measures, and subject to suitable agreement being reached with NZTA with regard to upgrading and closure of other access points, I consider that any adverse traffic safety effects on the State Highway will likely be mitigated to a no more than minor and acceptable level.
- 105. In terms of the local amenity effects of the additional traffic movements, I agree with T+T that these will be primarily focused 500m either side of the intersection when trucks will be slowing down and accelerating as they access and exit the site. Tegel have obtained written approval of the nearest sensitive receivers that could be adversely affected by this, and beyond that I agree that any adverse traffic amenity effects are likely to be no more than minor and acceptable.
- 106. I consider that site specific management controls, to be identified via a Construction Management Plan and Traffic Management Plan, can be implemented to mitigate any potential adverse effects relating to construction traffic.

Natural Hazards - Flooding Effects

107. The subject site and large parts of the wider receiving environment along the banks of the Northern Wairoa River are identified as being within a Flood Susceptibility Area in the KDP Planning Maps (see figure 3 and 4 below). The Flood Susceptibility Area applies to the majority of the subject site within the low-lying area where the proposed poultry farm development will occur. This does not apply to the higher ground to the east of the subject site.



Figure 3 – Flood susceptibility areas from the KDP⁷⁸

⁷⁸ Duplicated from figure 3-1, page 3 T+T Flooding Assessment dated September 2017 in Appendix B of AEE Volume 2.


Figure 4 - Subject site and current day 1% AEP coastal inundation extent (2.9m RL). Mapped extent from NRC GIS data for present day Coastal Flood Hazard Zone.⁷⁹

108. The AEE is supported by a Flooding Assessment prepared by Tonkin and Taylor dated September 2017 which confirms that the subject site is flood prone with major flooding possible as a result of coastal inundation and fluvial flooding of the Wairoa River. The Flooding Assessment provides an assessment of effects of flooding on the proposed development, mitigation and the potential flow on effects of flooding on surrounding properties. I understand that the Flooding Assessment has been reviewed by relevant NRC staff, including the Natural Hazards Advisor, and no concerns relating to the methodology or findings have been raised.

Flood Mitigation Measures

109. The primary proposed mitigation measure to protect the proposed poultry farm development from coastal inundation and fluvial flooding, is to construct two separate bunds around the Farms.⁸⁰ The crest level of these bunds is proposed to be 3.8m RL⁸¹ which will provide 500mm of freeboard to the 2065

⁷⁹ Duplicated from NRC s42A report. This data is considered to be more accurate than the KDC flood susceptible mapping data which is based on high level soil mapping.

⁸⁰ Further mitigation is outlined in section 6 of the Flooding Assessment.

⁸¹ Reduced Levels

2% AEP⁸² flood level.⁸³ It is also noted that the crest height of the proposed bunds will protect against current day 1% AEP flood events (2.9m RL) and provide protection against coastal inundation taking into account sea level rise throughout the estimated service life of the proposed poultry farm.

- 110. Two pumping stations are also proposed to be installed within the northern bunded area and the southern bunded area. These pumping stations will pump stormwater directly into the open channel next to each bund and are designed to maintain the current day 1% AEP flood levels within the bunded areas.
- 111. The Flooding Assessment⁸⁴ highlights that the farm is proposed to have a design life of up to 50 years (e.g. a 50 year period as required under the Building Act). Further explanation from a planning perspective of the use of a 50 year planning horizon would be beneficial as it is generally understood to be best practice that consideration is given to a 100 year planning horizon when considering natural hazards and the influence of climate change. This is particularly relevant for a land use consent application that is for an unlimited term and there is no suggestion within the application that the proposed poultry farm operations will be decommissioned or cease after a 50-year period.

Effects on internal flood levels

- 112. The Flooding Assessment highlights that the adverse effects within the bunded areas will be managed by requiring finished floor levels of the proposed buildings to be 300mm above the 1% AEP flood levels. This results in minimum finished floor levels of 2.0m OTP⁸⁵ for the northern bunded area and 1.9m for the southern bunded area.
- 113. Due to the lost storage volume within the proposed bunded areas, there will be in an increase of the 1% AEP flood level from 1.8m RL to 1.9m RL in the unbudded area on site. The Flooding Assessment estimates that the level will still be below the minimum SH12 crest level of 2.35 m RL.
- 114. I rely on the Flooding Assessment conclusions as it relates to internal flood levels. On this basis, I consider that the effects associated with the bund construction internally are likely to be no more than minor and acceptable.

Effects on external flood levels

- 115. The proposed bunds will result in a reduction in the flood storage area contained within the existing floodplain as it will result in floodwater being diverted to adjoining properties. This has potential to cause adverse flooding effects on surrounding properties as flood levels in the area outside the bunds may increase.⁸⁶
- 116. The Flooding Assessment has assessed flood effects during a coastal flooding event and during a 1% AEP rainfall event.⁸⁷

⁸² Annual Exceedance Probability

⁸³ This flood level has been calculated based on the 2016 T+T Report prepared for NRC titled "Coastal Flood Hazard Zones for Select Northland Sites

⁸⁴ See section 4 page 5

⁸⁵ One Tree Point

⁸⁶ This is raised in a number of submissions also.

⁸⁷ See section 8.2 of the Flooding Assessment

- 117. For a coastal flooding event, the Flooding Assessment estimates that the water available is essentially limitless, and therefore concludes that the bunding of the site will have no effect on the peak flood levels on adjacent flood prone land.
- 118. During a 1% AEP rainfall event, the Flooding Assessment estimates that there will be an increase in peak flowrate through the SH12 culvert from 11.5m³ to 12.6m³. This may result in a small increase in flood level, downstream of the SH12. The Flooding Assessment estimates that this could be 10mm for a short duration (up to 2.5 hours) during periods when the modelled 1% AEP rainfall event occurs during a high tide.
- 119. Following notification, clarification was sought from Tegel as to the outcome of consultation with NZTA in respect of the effects of the proposed flood control work on SH12.⁸⁸ T+T responded highlighting that NZTA has been provided with a copy of the full resource consent application and associated technical assessments and have made a neutral submission on the application relating purely to access matters. I accept that NZTA have not raised any issues with regard to flood levels on SH12.
- 120. The Flooding Assessment does not comment on the effects of the flood control work on properties immediately to the north and south of the subject site. NRC reporting planner Ruben Wylie sought clarification on the flooding impacts within those locations. Clarification was provided by T+T as follows:⁸⁹
 - The critical 1% AEP event for the site is caused by coastal inundation rather than rainfall. In a coastal inundation event, bunding the site will have no effect on surrounding flood levels.
 - The estimated increase in flood levels on the site as a result of rainfall events (by 100mm) will be contained within the site along the southern and eastern boundaries as the height of the existing embankments are above 2m RL, therefore having no effect on properties to the south of the site.
 - The northern boundary to the site has a small section with a level of 1.85 m RL. There is the
 possibility that a 50 mm depth of floodwater over the unbunded area of the site is partly displaced
 north of the site during the post developed situation. This may result in a small (less than 50 mm)
 increase in flood level to the property north of the site, assuming that the existing flood level north
 of the site is similar to the existing flood level estimated within the site.
 - The displacement of floodwater to the northern site could be avoided by building up a small length of the embankment along the northern boundary.
- 121. In the absence of any expert evidence to the contrary, I rely on the Flooding Assessment as it relates to the assessment of effects on external flood levels outside of the subject site. On this basis, I consider that that the effects of the flooding mitigation proposed, the diversion of flood waters and the loss of flood storage are likely to be no more than minor and acceptable.

Whakahara Drainage District

⁸⁸ See point 9. of post notification s92 request dated 18 May 2018

⁸⁹ Personal comms between Ruben Wylie and T+T dated 9 July 2018

122. The subject site forms part of the Whakahara Drainage District (see Figure 4 below). Private flood control works within a drainage district have the potential to affect the integrity and operation of any existing scheme. The Flooding Assessment has concluded that the proposed development will result in an increase in 1% AEP flood levels of 10mm within the land situated to the west of the State Highway. Land to the east of the subject site within the upper catchment is elevated and is unlikely to be affected as the proposed poultry farm development will occur downstream within the flood plain. T+T have advised that land to the south is unlikely to be affected in terms of flood levels and that for land to the north, flood levels may increase by less than 50mm owing to the height of the existing embankment being slightly lower than the expected maximum flood levels.⁹⁰



Figure 5 – Whakahara Drainage District (yellow outline) and the subject site (blue shading)⁹¹

123. The Kaipara District Council Land Drainage Bylaws 2008 is applicable to the proposed development. Part 17 of the KDC General Bylaws 2008 regulates various activities within Land Drainage Areas.⁹² The relevant clauses of these bylaws require prior consent from KDC for the erection of any defence against waters or any damage to any council drain or private drain connected with a KDC drain.

⁹¹ Duplicated from NRC reporting planners s42A Report.

⁹² See this link for copy of bylaw - <u>https://www.kaipara.govt.nz/Our+Council/Policies+Bylaws+and+legislation/Bylaws.html</u> Attention is drawn to clauses 1715.1 and 1708.1

- 124. Clarification was sought from Tegel regarding whether they were aware of these requirements and Tegel were encouraged to make contact with the relevant staff in KDC to confirm the process for regulating the proposed flood control work under the KDC Bylaw.⁹³ T+T responded to this outlining that contact had been made prior to lodgement with relevant KDC staff and that further contact by T+T coastal engineers would be undertaken to address any concerns prior to the hearing.⁹⁴
- 125. At the time of preparing this section 42A report, no further contact had been made with KDC staff regarding the bylaw. A letter from KDC Stormwater Engineer, Mr Matthew Smith, is attached (see Attachment 5). This letter raises a number of concerns regarding the effect of the proposed flood mitigation measures on the integrity of the Whakahara Drainage District which are relevant and, in my opinion, require a response from T+T coastal / flooding engineers either prior to or during the hearing.
- 126. Notwithstanding the concerns raised in Mr Smith's letter, I acknowledge that approval under the drainage bylaw is a separate process to the resource consents being sought by Tegel and considered within this s42A Report. However, if approval under the bylaw is not forthcoming, I consider that it has the ability to effectively frustrate the resource consent (if granted) for the proposed poultry farm. I consider this is an important matter that needs to be resolved by Tegel in conjunction with the resource consent process, otherwise there is a possibility that they may not be able to implement the consent for the proposed bunds.

Conclusion

- 127. In the absence of any expert evidence to the contrary, I rely on the T+T Flooding Assessment and consider that overall it demonstrates that the proposed drainage and flood control measures are appropriate and will not result in adverse flooding levels internally within and externally outside of the subject site. On this basis, I conclude that the adverse flooding effects are likely to be no more than minor and acceptable.
- 128. I consider that further clarification should be provided by T+T engineers regarding the concerns expressed in the letter from Mr Smith and in relation to obtaining approval under the KDC Land Drainage Bylaws 2008. I accept that these concerns primarily relate to the integrity of the drainage district, and consider that it is appropriate that a response be provided prior to or during the hearing.

Groundwater Effects

129. Tegel proposes to take up to 325m³ and 48,425m³/year of groundwater via three production bores. The groundwater take is subject to a discretionary consent requirement from NRC.⁹⁵ There are no requirements within the KDP for groundwater takes as this is a matter which falls within the jurisdiction of NRC and is appropriately determined as part of those consents. Nonetheless as a discretionary activity consideration is briefly given below to the groundwater effects of the proposed poultry farm development and associated proposed groundwater take.

⁹³ See point 7 of post notification s92 Assessment

⁹⁴ See paragraph 7.1 of T+T post notification s92 repsonse

⁹⁵ Rule 25.1.1 of the Regional Water and Soil Plan for Northland and Rule C.5.1.10 of the Proposed Regional Plan for Northland

- 130. The AEE is supported by a Groundwater Assessment dated September 2017 prepared by T+T. This is also supplemented by a s92 response to the NRC pre-notification further information request.⁹⁶
- 131. An assessment of effects on groundwater is included in the NRC reporting planner's s42A report. I adopt this assessment for the purposes of this s42A report. I agree that on the basis of the information provided by Tegel, including the Groundwater Assessment, and subject to the imposition of appropriate conditions on the NRC groundwater consent, that any adverse effects of the proposed activity associated with the groundwater take will be no more than minor and acceptable.

Site Suitability (Geotechnical) Effects

- 132. The proposal will involve large volumes of earthworks and the construction of buildings and structures on land known to be soft ground.
- 133. The AEE is supported by a Geotechnical Assessment dated September 2017 prepared by T+T. This report summarises and presents the geotechnical assessments and site investigations for the proposed site. The report concludes that, from a geotechnical perspective, the site is suitable for the proposed poultry farm development provided that the recommended additional work⁹⁷ is undertaken to support detailed design.
- 134. KDC engaged Stantec⁹⁸ to peer review the geotechnical assessment prior to notification. The Stantec review did not identify any items requiring clarification but did recommend that the ground investigation and assessment is undertaken as part of detailed design and not during construction.
- 135. Clarification was sought from Tegel as to the status of the recommendations in the Geotechnical Assessment and whether they were offered as conditions of consent.⁹⁹ T+T responded and stated that the recommendations were considered to be a building consent issue and that Tegel does not consider that these recommendations should be proposed as conditions of any resource consent.¹⁰⁰ T+T did note that, despite this position, Tegel is currently undertaking additional geotechnical investigations and testing at the site which will be included in the building consent application.¹⁰¹
- 136. I do not agree with this position. In my view, it is clear that the conclusion reached in the geotechnical assessment is reliant on the additional work being undertaken to support detailed design of the development of the poultry farm. I accept that the building consent and resource consent processes are separate processes under different legislation. However, they are interrelated, and it is common practice in my experience, for resource consent conditions to reference additional investigations or work to be undertaken prior to building consent lodgement or approval. I consider that it is appropriate that these recommendations for additional investigations are included as conditions of consent that are required

⁹⁶ See T+T NRC pre-notification further information response dated 22 December 2017.

⁹⁷ See section 10 of the Geotechnical Assessment. This recommends undertaking additional investigations prior to the detailed design of the poultry farm development including confirming in situ strengths around shed locations; a full scale trial pad; specific assessments for possible sites in the hills for tanks and; confirming that limestone is sufficiently impermeable.

⁹⁸ The initial peer review was undertaken by Andy Mott.

⁹⁹ See KDC pre-notification section 92 Request point 5a.

¹⁰⁰ See T+T pre-notification section 92 response point 5a, page 5.

¹⁰¹ See T+T pre-notification section 92 response point 5b, page 6.

to be met prior to the granting of building consent. This will mean that there is a clear trigger at the time of any building consent application to ensure that the additional investigations are undertaken in accordance with the recommendations of the Geotechnical Assessment.

- 137. Notwithstanding the above, Stantec have prepared a final peer review statement dated 8 June 2018 (Attachment 4).¹⁰² This letter concludes that the signatories from Stantech agree with the preliminary conclusions outlined in the Geotechnical Investigation and that there are no outstanding geotechnical items requiring clarification.
- 138. Based on the T+T Geotechnical Assessment and peer review from Stantec, and subject to conditions requiring further additional investigations being undertaken as part of detailed design for the proposed development, I agree that the subject site is suitable for the proposed development from a geotechnical perspective.

Noise & Vibration Effects

- 139. There are a number of elements to the potential noise and vibration effects for the proposed development. These broadly relate to the noise and vibration effects resulting from the construction phase of the proposal, and the effects from the ongoing operation of the poultry farm.
- 140. The AEE is supported by a Noise and Vibration assessment dated 18 September 2017 prepared by Mr Pete Ibbotson from Marshall Day Acoustics.¹⁰³ This report addresses the potential noise effects of the construction and operation of the proposed poultry farm. Operations considered include, ventilation, energy centre, traffic and chicken noise.
- 141. The Marshall Day noise assessment identifies that the relevant noise criteria are located in Rules 12.10.14 and 12.10.15 of the Rural Zone Chapter of the KDP.
- 142. The assessment is informed by an ambient sound survey carried out in the area surrounding the site on Wednesday 23 and Thursday 24 August 2017 during daytime, late daytime, late evening and night-time. These background noise measurements illustrate that the area is generally quiet during the night period, with higher levels of background noise during the daytime period. The predominant source of noise in the area is traffic on State Highway 12.¹⁰⁴
- 143. A noise model was used to calculate predicted noise levels from the proposed poultry farm at the nearest noise affected properties utilising four scenarios. The predicted day and night time noise levels from this analysis demonstrated that the operation of the proposed farm would comfortably comply with the daytime and night time noise limits within Rule 12.10.14 of the KDP.
- 144. In terms of construction noise, given the significant distance between the construction location and the surrounding dwellings, the Marshall Day noise assessment concludes that there is negligible risk that construction activity could breach the daytime noise limits for construction activities. Accordingly, the

¹⁰² This letter is signed by Nigel Miller – Principal Geotechnical Engineer and Andy Mott – Senior Engineering Geologist

¹⁰³ Reference Rp 001 20170847. Referred to throughout as "the Marshall Day noise assessment"

¹⁰⁴ See section 4.0 of the Marshall Day Report

report concludes that construction activities occurring within the site will readily comply with the KDP noise limits within Rule 12.10.15.

- 145. The Marshall Day noise assessment has also recommended further mitigation measures for noise and concludes that subject to these measures, the operation will meet the duties set out in Section 16 of the RMA.¹⁰⁵ These measures have been accepted by Tegel.¹⁰⁶
- 146. A number of submissions have identified concerns with the noise effects of the proposal. This includes concerns about the noise from the proposed poultry farm operations, lack of an assessment of the noise effects of the proposed quarry operations in the north western corner of the site and specific concern regarding the lack of consideration of special audible characteristics from ventilation fans.

Quarry

- 147. A further information request was made with regard to noise and vibration.¹⁰⁷ This included a request for a specific assessment regarding the proposed quarry operations on site and to address the consideration of the special audible characteristics from ventilation fans.
- 148. A further noise and vibration report for the "Arapohue Quarry" prepared by Marshall Day dated 17 May 2018 has been provided.¹⁰⁸ This report provides supplementary details and assessment of the noise and vibration effects of the operation of the quarry. Since lodgement, Tegel have confirmed that the quarry will be used to source 50,000m³ of material for construction works and the use of the quarry will cease once the capital works are completed e.g. the quarry will not be used for ongoing maintenance.¹⁰⁹ The Quarry noise assessment details that the quarry operation will be classified as a construction activity in accordance with NZS6803:1999 Acoustics Construction noise and will be considered to be a "long term" duration activity alongside the overall construction of the proposed poultry farm.
- 149. Clarification was sought from T+T regarding the classification of the quarry operations as a "construction activity."¹¹⁰ T+T confirmed that the extraction of limestone from the quarry will only occur during the construction of the proposed poultry farm and is therefore considered to be a construction activity.¹¹¹ Further clarification was sought as to whether this restriction would be offered as a condition of consent e.g. the quarry will be decommissioned / no longer used following completion of the construction of the proposed poultry farm sheds.¹¹² T+T confirmed that it was not offered as a consent condition.¹¹³
- 150. Following the responses from T+T outlined above, I have had the opportunity to obtain and review a copy of NZS 6803:1999. There is no definition of construction activity within the standard, however there

¹⁰⁵ See page 18 of Marshall Day Report

¹⁰⁶ See page 6 of Pre-notification S92 Response

¹⁰⁷ See the post-notification section 92 request dated 30 April 2018

¹⁰⁸ Reference – Rp 001 20170847 – referred to throughout as the "Quarry noise assessment

¹⁰⁹ T+T Response to further clarifications dated 15 June 2018, page 2. This has decreased from 117,500m³ originally proposed.

¹¹⁰ See point 10 of the post-notification s92 clarification request dated 18 May 2018

¹¹¹ See point 10.1 of the T+T post-notification s92 clarification response dated 15 June 2018

¹¹² See point 11 of the post-notification s92 clarification request dated 18 May 2018

¹¹³ See point 11.1 of the T+T post-notification s92 clarification response dated 15 June 2018

is a definition of construction work. The scope of the standard is outlined in section 1. This includes section 1.3 which states:

"1.3

This Standard covers sound from construction work which is of a limited duration. Where the sound from construction activity is part of the overall sound emission from an ongoing land use activity, then the sound should be assessed using NZS 6802 or other appropriate Standards.

Examples of activities this Standard can be used to assess are:

- (a) A new container crane at a port;
- (b) A haul road for metal to be used in a batching plant during concrete work for a dam;
- (c) A perimeter drain or a noise bund around an open cast mine or quarry or installation of relocatable noise barriers;
- (d) Demolition of a structure, alterations or additions to buildings, road reconstruction or realignment.

Examples of activities to which this standard is not intended to apply are:

- (e) Ongoing activities from a site, for example **<u>quarry</u>**, landfills;
- (f) Manufacture of plant, equipment or facilities on one site which are transported off the site, for example sites used for the ongoing construction of pre-fabricated buildings or building components." [My Emphasis Added]
- 151. As per the above, it appears that quarries are not intended to be considered under NZS 6803: 1999, however this is qualified by the term "ongoing activities from a site." "Ongoing" is not defined in NZS 6803: 1999. As such, presumably it would take the normal dictionary wording of "continuing; still in progress."¹¹⁴ Under section 7.2.1 of the Standard, "long-term" means construction work at any one location with a duration exceeding 20 weeks." There is no maximum period beyond 20 weeks for the classification of "long-term" construction work.
- 152. On this basis I accept the T+T position that the NZS 6803: 1999 is applicable to the use of the quarry for the construction of the proposed poultry farm development. However, I consider that, if consent is granted, it should include a condition of consent stating that the quarry will no longer be used following completion of the construction of the proposed poultry farm sheds. In my view, such a condition would be appropriate, as ongoing operation of the quarry following the completion of the construction would not be appropriate to consider under NZS 6803:1999.
- 153. The quarry noise assessment utilises a similar methodology to original Marshall Day noise assessment. It identifies the relevant noise criteria as being Rule 12.10.15 of the KDP. It is informed by ambient noise measurements taken during a site survey on 10 May 2018 in order to understand the proposed quarry operation in relation to Kāpehu Marae. Sound levels of quarry machinery are provided which are then used to calculate noise levels at nearby receiver locations being Kāpehu Marae and Kāpehu Urupā.

¹¹⁴ https://en.oxforddictionaries.com/definition/ongoing

These measurements demonstrate that the noise from the quarry operations would readily comply with the construction noise limits in Rule 12.10.15 during set timeframes.¹¹⁵ Tegel have offered a condition of consent requiring compliance with the New Zealand standard NZS6803:1999 "Acoustics – Construction Noise" in order to ensure that these limits are complied with.¹¹⁶

- 154. In terms of vibration, the quarry noise assessment concludes that the vibration from the quarrying activity represents a negligible risk of cosmetic building damage and should not result in amenity effects on visitors or occupants within the marae.
- 155. Notwithstanding this compliance, Tegel have also indicated that they are willing to volunteer a condition to not operate the quarry during hui or other important Marae events. I agree that such a condition would be worthwhile given the disruption that quarry operations could create and the potential adverse effect this could have on the ability to undertake customary practices at Kāpehu Marae. Tegel have provided no wording as this needs to be agreed with Kāpehu Marae stakeholders. I consider that this needs to be resolved at the hearing in order to ensure that such a condition, if it can be agreed between the relevant parties, is practicable and enforceable.

Special audible characteristics

156. Mr Ibbotson from Marshall Day has also provided a letter in response to the Northland District Health Board submission¹¹⁷ regarding special audible characteristics.¹¹⁸ In this he concludes that it is unlikely that special audible characteristics will occur, and that Council can be satisfied that the risks of tones and modulation is low and that there is no risk of non-compliance. In the absence of any expert evidence to the contrary, I accept Mr Ibbotson's conclusion.

Conclusion

157. On the basis of the Marshall Day noise assessment, quarry noise assessment and letter from Mr Ibbotson I consider that the proposed poultry farm will comply with the relevant noise and vibration limits established in the KDP. Appropriate conditions of consent can be imposed to ensure that any actual or potential adverse noise and vibration effects will be no more than minor and acceptable and that the operation will meet the duties set out in Section 16 of the RMA. Clarification is required regarding the potential wording of a condition regarding hui and other important events at Kāpehu Marae, but I accept that this can be canvassed further at the hearing.

Archaeological Effects

158. The AEE is supported by an Archaeological Assessment prepared by CFG Heritage dated 25 August 2017.¹¹⁹ This identifies that there are two identified archaeological sites¹²⁰ located on the subject site and a number of further identified archaeological sites in the wider area.¹²¹

¹¹⁵ See section 6.3 of quarry noise assessment - 0630 to 2000 hours Monday to Friday and 0730 to 1800 Saturday Sunday

¹¹⁶ See paragraph 9.1 – 9.2 T+T Response to further clarifications dated 15 June 2018, 5

¹¹⁷ Submission c260 – see summary of subs available online.

¹¹⁸ See letter titled Kaipara District Council S92 Request dated 17 May 2018 attached to Tegel post-notification s92 response.

¹¹⁹ Reference 17-0792

¹²⁰ P08/28 and P08/32 - figures 2 of the Archaeological Assessment provides a locational map of these two sites.

¹²¹ See figure 1 of Archaeological Assessment for a map showing archaeological sites recorded in the vicinity.

- 159. A field survey was undertaken as part of the Archaeological Assessment. This focused primarily on the river flats where the proposed poultry farm sheds and infrastructure are concentrated and the two previously recorded archaeological sites. The survey found no archaeological evidence within the river flats and the assessment concluded that it is unlikely that any archaeological material would be found in these paddocks. P08/28 is a small pa, located in the northern portion of the subject site. This pa has been heavily modified by the creation of a farm track along its western edge. P08/32 is a much less certain site with potential evidence of infilled kumara pits and is located to the south of P08/28. Both sites were recorded off aerial photographs of the area in 1982.
- 160. The Archaeological Assessment concludes that there should be no archaeological constraints on the proposed development provided that any infrastructure related to the construction of the proposed poultry farm is located at least 50m away from recorded archaeological sites P08/28 and P032¹²² and that any development should take place under an Accidental Discovery Protocol ("ADP").
- 161. Clarification was sought regarding the ADP to be applied as a slightly more restrictive ADP was also recommended in the Te Roroa Report.¹²³ T+T clarified that the Te Roroa ADP would be utilised.¹²⁴ Clarification was also sought as to whether the Applicant proposed to mark out / protect the identified archaeological sites on the subject site. A condition of consent offering to fence the two pa sites was also offered.¹²⁵ However, T+T have since clarified that ongoing discussions with mana whenua will inform whether the fencing will be offered and the appropriate wording of such a condition.¹²⁶
- 162. An electronic link to a copy of the application was sent to Heritage New Zealand Pouhere Taonga ("HNZPT") on 31 October 2017. As the autonomous Crown Entity with statutory responsibility under the Heritage New Zealand Pouhere Taonga Act, HNZPT is the lead agency for heritage protection. A response from Mike Butler¹²⁷ was received via email on 7 November 2017. This stated:

"7. The proposal has been discussed with our Northland Area Office who recommend following the recommendations of the archaeologist in the archaeological assessment contained within the AEE"

- 163. No submission was received from HNZPT during notification, therefore it is considered that Mr Butler's response above is the current position of HNZPT on the potential heritage effects of the proposal.
- 164. On the basis of the CFG archaeological assessment, the Te Roroa report, the response from HNZPT and the imposition of recommended conditions of consents, I consider that any actual or potential

¹²² The design of the proposed buildings and infrastructure has resulted in a separation distance of over 50m from the identified archaeological sites.

¹²³ AEE Volume 1 Appendix M - Whakahara Proposed Broiler Farm Development Report – September 2017 dated September 2017 – see page 6-7 for recommended ADP.

¹²⁴ See Tegel Pre-notification s92 Response, dated 13 December 2017, page 6.

¹²⁵ Ibid.

¹²⁶ See Tegel Post-notification s92 clarification response, page paragraph 6.1 page 4.

¹²⁷ HNZPT Heritage Advisor Planning

adverse effects on identified and potentially unidentified archaeological sites can be sufficiently avoided and mitigated to a less than minor and acceptable level.

Hazardous Substances

- 165. The storage of bulk LPG tanks and other hazardous substances forms part of the proposed development. The storage and use of these hazardous substances on the site has the potential to cause adverse effects on people and the environment in the event of a fire, spill or other unforeseen incident. A number of submissions have generally raised concern regarding the storage and use of hazardous substances on the subject site as part of the proposed development.
- 166. As lodged, the application was supported by a Hazardous Substances Assessment prepared by T+T dated September 2017.
- 167. This assessment was subject to a review prior to notification by National Environmental Science Specialist Dr Paul Heveldt from Stantec, which resulted in a number of substantive matters that required specific response from T+T. These matters were responded to in the Tegel pre-notification section 92 response dated 13 December 2017. This included a revised Hazardous Substances Assessment prepared by T+T dated December 2017.
- 168. The revised Hazardous Substances Assessment has been reviewed by Dr Heveldt. A brief statement from Dr Hevledt is attached (see **Attachment 3**). Dr Heveldt has concluded that the revised document is satisfactory in content and detail to provide appropriate controls on the hazardous substance aspects of the proposal.
- 169. On the basis of the revised T+T Hazardous Substances Report and peer review from Dr Heveldt, I consider that any potential adverse effects on human health and the environment associated with the use and storage of hazardous substances can be managed to an acceptable level with the mitigation measures offered by the Applicant.

Earthworks Effects

- 170. Approximately 147,100m³ of earthworks are required to enable the construction of the building foundations, internal roads, and flood protection bunds, the majority of which is in relation to the proposed extraction of limestone from the existing quarry on-site.
- 171. The visual effects of the proposed earthworks have been addressed in the Landscape and Visual Effects section above, where it was concluded that provided the mitigation measures recommended in the BM Report are adopted, the adverse visual effects of the proposed development (including those associated with the proposed earthworks) will be either less than minor or no more than minor.
- 172. To address the physical effects of the proposed earthworks, the application is supported by an Erosion and Sediment Control Plan ('**ESCP**') prepared by T+T, dated September 2017.
- 173. The ESCP outlines the controls and procedures to be implemented during construction of the proposed development to minimise the effects of sediment generation and discharge to the receiving environment. More specifically, the ESCP proposes a number of erosion and sediments control measures, including; clean water diversion channels or bunds, stabilising the entrance to the site, installation of silt fences, staging works and associated stabilisation, dewatering, temporary fluming and dust control.

- 174. This ESCP was peer reviewed by National Environmental Science Specialist, Dr Paul Heveldt from Stantec New Zealand, which resulted in a number of clarifications sought and requests made for further detail to be provided. These matters were responded to in the Tegel pre-notification section 92 response
- dated 13 December 2017.
- 175. The additional information provided has been reviewed by Dr Heveldt. A brief statement from Dr Hevledt is attached (see **Attachment 3**) which concludes that the submitted ESCP and additional information is satisfactory in content and detail to provide appropriate erosion and sediment controls on the proposed earthworks.
- 176. On the basis of the ESCP and additional information provided and peer review from Dr Heveldt, I consider that any potential adverse effects associated with the proposed earthworks will be minor and can be managed to an acceptable level by site management conditions of consent.

Reverse Sensitivity Effects

177. A definition of Reverse Sensitivity is provided in the KDP in Chapter 24 – Definitions as follows:

"Reverse sensitivity is used to refer to the effects of an existing activity being limited or constrained from the establishment of newer more sensitive activities in the vicinity. For example, the operation of rural land use activities (such as piggeries) being constrained by complaints of noise or odour impacts from nearby residents or others"

- 178. In this instance, the other non-residential activities adjoining the subject site, are low intensity rural production activities. Four new dwellings are proposed within the subject site, but these are located centrally within the elevated eastern portion of the subject site a significant distance from any adjoining land uses. As such I consider that the proposed poultry farm is not producing any new land uses that would result in reverse sensitivity effects for neighbouring properties.
- 179. It is also worth discussing Rule 12.10.9(1)d) in the KDP. This requires a separation distance of 300m be maintained between a noise sensitive activity and intensive farming on a site under separate ownership. As outlined previously, the proposed poultry farm is considered to meet the definition of intensive farming under chapter 24 of the KDP. The implication of granting the proposed poultry farm development would therefore be that any new noise sensitive activity (including a dwelling) within 300m on neighbouring properties would require a restricted discretionary resource consent under the KDP, where they presently this may not be required.¹²⁸ No consideration is provided within the AEE on this matter and I accept that this does not constitute a reverse sensitivity effect. Rather this is an issue of fairness, and in particular whether it is reasonable to create a situation where the ability of surrounding properties to be developed in the future for what would otherwise be currently considered permitted activities, is restricted.
- 180. Notwithstanding this matter, it is my opinion that the proposed poultry farm is not producing any new land uses that would result in reverse sensitivity effects for the operation of other activities in the vicinity.

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¹²⁸ It is noted that Rule 12.10.9 also applies for other activities such as "dairying shed", "mining or quarrying" etc which may apply to the current uses of the site.

Amenity Effects

181. "Amenity values" is defined in section 2 of the RMA as:

"means those natural and physical qualities and characteristics of an area that contribute to peoples' appreciation of its pleasantness, aesthetic coherence and recreational attributes."

- 182. As such the amenity values and neighbourhood characteristics of an area can be described as those special attributes, relating particularly to natural and physical characteristics, that make an area or neighbourhood unique. Nonetheless, amenity vales are a subjective concept, and are reliant on context and personal perspective, with amenity values being directly experienced and articulated by those people living in the neighbourhood or area in question.
- 183. The RMA definition of amenity values is duplicated in chapter 24 of the KDP. No specific guidance is given in the KDP as to the definition of amenity values associated with the Rural Zone. However, reference can be made to the chapter 12 provisions which provide useful context when considering amenity values in the Rural Zone:

"12.4.2 The impact of uncontrolled subdivision and land use has the potential to adversely affect rural character and amenity of the District.

Rural areas are characterised by farming, open spaces and natural landforms with remnants of indigenous bush, woodlots and a low intensity of development and built form. It is these characteristics which contribute to rural amenity. The form or density of subdivision and land use activities can adversely affect rural character and amenity."

"12.5.2 To maintain the rural character and amenity, including the:

- Sense of openness;
- Low dominance of built form;
- Pasture and Commercial Forest Areas;
- Areas of indigenous vegetation and significant fauna; and
- Unmodified natural landforms."

"12.6.4 By requiring all subdivision to contribute to the retention of rural character and amenity.

The coastline and rural hinterland areas contribute significantly to the natural character and amenity of the rural environment. Such areas generally experience low dominance of building bulk and colour, particularly along the West Coast and on ridgelines where there is presently little or no development. The enhancement of the natural environmental values in these areas is encouraged (e.g. through the provision of landscaping, and identification of suitable buildings locations), where appropriate, and can be achieved through mitigation measures associated with subdivision and development proposals."

184. I consider that the subject site and receiving environment exhibits many of the characteristics outlined in the above provisions, to the extent that it reflects a level of rural amenity consistent with a typical rural

environment. This includes the presence of rural activities that are reasonably expected to occur within a productive rural environment.

- 185. A number of submitters have raised concerns with the effects of the proposed development on the rural amenity values of the receiving environment. To summarise, the main concern expressed is that the proposed chicken farm represents the introduction of a farming operation that is industrial in scale, involving the concentration of over one million chickens in a location which would result in concentrated adverse effects (including odour, noise and visual effects).
- 186. The nature of the effects assessment within section 7 of this s42A report is that a consideration of amenity effects has already been undertaken under a number of different headings. Reference is made to these previous assessments below with an overall conclusion provided at the end of this section.

Odour

- 187. Air quality effects or odour are, in part, an amenity issue. The effects of odour discharges are primarily governed by NRC through the relevant provisions of the Regional Air Quality Plan for Northland. There are no specific consent requirements under the KDP for the odour and discharges anticipated to occur for the proposed development. However, KDC has an overall responsibility to manage and assess the impacts of land use on local character and amenity. High levels of odour have the potential to be considered offensive or objectionable and can have unacceptable significant adverse effects on amenity values.
- 188. An assessment on odour has been undertaken previously in this report. The Beca Review has identified that there is some uncertainty over the appropriate derived odour emission rates. If these rates are incorrect, there is potential for odour levels to exceed the criterion of 5 OU/m³ (as the 99.5th percentile) at additional properties beyond those which have given their written approval. I consider that this would likely constitute offensive and objectionable odour which could have potentially significant and unacceptable adverse amenity effects on these properties.
- 189. Current odour modelling undertaken by T+T also shows the urupā would fall within the criterion of 5 OU/m³ (as the 99.5th percentile). Subject to understanding the use of the urupā by whanau visiting their tupuna, there is potential that the proposed poultry farm could result in offensive and objectionable odour on the urupā which could, in my opinion, result in significant and unacceptable adverse amenity effects.

Dust

- 190. Dust generated by land use activities can affect amenity values within the receiving environment. Dust has been assessed previously under the heading Air Quality Effects.
- 191. I concur with the Beca Review that dust generation on site is unlikely to cause adverse amenity effects beyond the boundary of the site provided that the proposed separation distances and dust management measures are applied as offered by Tegel. On this basis, I consider that any adverse amenity effects associated with dust generation will be no more than minor and acceptable.

Noise and Vibration

192. Noise and vibration can impact on amenity values within the receiving environment. Noise and vibration has already been assessed previously in this s42A report.

193. I rely on the Marshall Day Noise Assessment to conclude that the proposed poultry farm will comply with the relevant noise and vibration limits established in the KDP. On this basis, I consider that appropriate conditions of consent can be imposed to ensure that any actual or potential adverse noise and vibration effects on amenity values will be less than minor and acceptable and that the operation will meet the duties set out in Section 16 of the RMA.

Traffic

194. Local Traffic amenity effects are assessed under the heading Traffic Effects. Tegel has obtained written approval from all property owners and occupiers that I would consider to be subject to more than minor adverse traffic amenity effects. Any adverse traffic amenity effects beyond these properties would, in my opinion, be no more than minor and acceptable.

Landscape and Visual

195. Landscape and visual elements form part of an amenity of the rural environment as is acknowledged in the KDP. Landscape and visual effects have already been assessed previously in this s42A report. I acknowledge that the proposed poultry farm will result in a change in the visual aesthetic of the area, however this change in itself is not precluded by the KDP, nor does the KDP necessarily consider that the proposed scale of the built form will be inappropriate within the rural context of the subject site and surrounding area. Ultimately, I rely on the assessments provided in the BM report and Skidmore Peer review and provided that the identified mitigation measures are successfully implemented, I consider that any adverse landscape and visual effects on amenity values will be no more than minor and therefore acceptable.

Conclusion

- 196. In my opinion Tegel have provided sufficient information to demonstrate that the potential amenity effects associated with dust, noise and vibration, traffic and landscape and visual matters will be no more than minor and acceptable, subject to suitable conditions of consent.
- 197. The outstanding amenity issue, in my view, is the uncertainty associated with the appropriate derived odour emission rates used and the potential amenity effects on the urupā which falls within the 5 OU/m³ threshold. The uncertainty associated with derived odour emission rates could result in unacceptable levels of objectionable odour at other properties within the receiving environment also who have not provided written approval.

Positive Social & Economic Effects

- 198. The pre-notification s92 requested an assessment from a suitably qualified and experienced person detailing the economic effects of the proposed development. A letter from the Finance Manager of the Agriculture Division at Tegel was provided with the pre-notification s92 response from Tegel. Tegel further outlined that a full economic assessment would be provided prior to the hearing.
- 199. A number of submissions questioned the potential social and economic effects of the proposed development, in particular the claims made within the AEE that the proposal would have positive effects on the local and regional economy as a result of the construction and operation of the proposed poultry farm.

200. Following a review of the submissions on the application, a further request was made for an assessment of economic effects from a suitably qualified and experienced person. An economic assessment from

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- of economic effects from a suitably qualified and experienced person. An economic assessment from Fraser Colegrave from Insight Economics was provided with the post-notification section 92 response from Tegel dated 18 May 2018. Mr Colegrave has utilised the "multiplier analysis" to estimate the oneoff effects of constructing and developing the poultry farm along with the ongoing, annual effects of the farm once it is established.
- 201. Mr Colegrave estimates that the design and construction of the farm will generate a one-time boost equal to \$10 million in district GDP and \$7.2 million in household incomes. This is representative of employment for 147 people years (i.e. 49 people for 3 years).¹²⁹
- 202. Mr Colegrave estimates that the ongoing operation of the farm will generate annual economic effects equal to \$2.8 million in GDP and \$2.4 million in household incomes with employment for 47 people.¹³⁰
- 203. On the basis of these findings, Mr Colegrave concludes that the construction and operation of the farm will likely make significant and sustained contributions to district GDP, incomes and employment.
- 204. Clarification was sought from Mr Colegrave regarding the level of uncertainty or margin of error within the reported economic effects. Mr Colegrave confirmed via email¹³¹ that the multiplier analysis method utilised does not provide any error estimates directly and that the analysis incorporates different assumptions which contain some degree of uncertainty. He confirmed that Insight Economics had quite high confidence in the ongoing operational effects, but a lower level of confidence in the one-off, upfront effects. To account for these uncertainties Mr Colegrave confirmed that the analysis undertaken was conservative and that the impacts are highly likely to exceed estimates, with only a minor chance of true effects being overstated.
- 205. In my opinion Mr Colegrave's conclusions appear to be justified based on the analysis undertaken. In the absence of any evidence to the contrary, I consider that the proposed poultry farm will have significant positive social and economic effects with regard to both the construction phase and ongoing, annual effects once the farm is established.

Consideration of Alternatives

- 206. Section 6(1)(a) of the Fourth Schedule of the Act requires that an assessment of the activity's effects on the environment must include a description of any possible alternative locations or methods for undertaking the activity if it is likely that the activity will result in any significant adverse effect on the environment. In addition, section 105(1)(c) requires that a consent authority have regard to any possible alternative methods of discharge, including discharge into any other receiving environment.
- 207. In the post notification further information request, Tegel were requested to provide a description of possible alternative locations or methods for undertaking the activity given the potential for significant adverse effects.¹³²

¹²⁹ Insight Economic assessment, pg 4

¹³⁰ Ibid, pg 5

¹³¹ Personal comms between Fraser Colegrave and NRC Reporting planner dated 14/6/2018

¹³² See point 2 of pre-notification s92 request dated 30 April 2018

208. T+T responded on behalf of Tegel as follows:

"We do not consider an assessment of alternatives under Schedule 4 is required under the RMA as the proposed poultry farm will not result in significant adverse effects on the environment, including those relating to cultural effects. Nor do KDC require an assessment of alternatives to prepare the s42A report or to continue processing the resource consent application.

However, for completeness, an assessment of alternative sites and methods considered will form part of Tegel Corporate evidence and Planning evidence presented at the Council hearing, and will outline that over the past two years, Tegel and T+T have undertaken a significant amount of work to find a site suitable for the development of a 32 shed free range poultry farm."¹³³

- 209. On the basis of the Beca Review, I consider that there is uncertainty regarding the derived odour emission rates used and therefore the potential for offensive and objectionable odour to occur for additional sensitive receptors beyond those who have provided written approval. At the time of preparing this s42A report, there is also uncertainty regarding the cultural effects of the proposed poultry farm development in the absence of a CIA to properly evaluate and understand the cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu.
- 210. In light of these findings, I consider that a consideration of alternatives is necessary under the Act. T+T have outlined that an alternative site assessment will form part of Tegel's evidence at the hearing. The implication of providing this at the hearing is that no assessment of alternative locations or methods for the proposed poultry farm development has been provided in time for consideration within this section 42A report.

8.0 Relevant Policy Statements, Plans or Proposed Plans (s104(1)(b))

- 211. In this section I undertake an assessment of the statutory provisions that I consider to be of relevance to the consideration of the application for resource consent for the proposed poultry farm development.¹³⁴
- 212. Below I undertake a sequential assessment¹³⁵ of the relevant provisions of the following documents in accordance with how they are ordered in s104(1)(b). I have addressed themes with regard to each document with the relevant provisions I have referred to being included in Attachment 6:¹³⁶
 - Resource Management (National Environmental Standards for Air Quality) Regulations 2004 ('NESAQ');

¹³³ See paragraph 2.1 and 2.2 of post-notification T+T section 92 response dated 18 May 2018.

¹³⁴ By not addressing other objectives and policies, I do not tender my agreement (or otherwise) with other planning witnesses, noting rather that I have not specifically considered the provision.

¹³⁵ While my approach to assessing the relevant provisions of each document creates some repetition, I consider that it represents the most logical way to work through the respective statutory planning documents and enables a more nuanced consideration of some of the particular policy wording.

¹³⁶ To avoid unnecessary duplication, where I agree with the statutory assessment undertaken in section 7 of the AEE Volume 1 or the assessment within the NRC s42A Report, I have adopted that assessment.

- Resource Management (Measurement and Reporting of Water Takes) Regulations 2010;
- National Policy Statement for Freshwater Management 2014 (amended 2017) ('NPS Freshwater);
- New Zealand Coastal Policy Statement 2010 ('NZCPS');
- Regional Policy Statement for Northland 2016 ('RPS');
- Regional Air Quality Plan for Northland ('RAQP');
- Regional Water and Soil Plan for Northland 2014 (updated 2016) ('RWSP');
- Proposed Regional Plan for Northland 2017 ('**pRP'**); and
- Kaipara District Plan 2013 ('**KDP**').

Resource Management (National Environmental Standards for Air Quality) Regulations 2004

- 213. The NESAQ establish restrictions which aim to set guaranteed minimum levels of health protection for New Zealanders. Under the RMA, regional councils and unitary authorities are responsible for administering the NESAQ. These regulations are applicable as they relate to the combustion-derived discharge of contaminants (e.g. PM₁₀ NO₂ and SO₂) from the Energy Centre.
- 214. An assessment against the relevant regulations in the NESAQ is provided in section 7.1.2 of the AEE. I adopt that assessment with the following additional comment made with regard to the emission rate of SO₂ in the Beca Review. Beca have identified that the emission rate of SO₂ used as an input into the T+T model could be up to 32 times higher than the value estimated. Despite this, Beca have recognised that the maximum ambient concentrations are still expected to remain well within the relevant health-based air quality criteria within Regulation 20 of the NESAQ.¹³⁷
- 215. Overall, I concur with the AEE that there is no impediment to the granting of consent for the air discharges under the relevant Regulations in the NESAQ.

Resource Management (Measurement and Reporting of Water Takes) Regulations 2010

216. The Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 apply to holders of water permits which allow fresh water to be taken at a rate of 5 litres/second or more. In its NRC pre-notification s92 response, T+T confirmed the applicant would take water at a rate of 5 litres/second. The proposal will therefore be subject to the above regulations, which impose certain requirements relating to the measurement, recording and reporting of water take volumes. Should consent be granted, conditions on the NRC consent in accordance with those requirements will be required.

National Policy Statement for Freshwater Management 2014

217. The NPS Freshwater directs regional councils, in consultation with their communities, to set objectives for the state of fresh water bodies in their regions and to set limits on resource use to meet these objectives. The NPS Freshwater is generally focused on the development of policy and provisions for

¹³⁷ See section 4.7 of Beca Review

the management of freshwater through regional plans, however, some interim policy direction is given for the assessment of resource consents prior to new management frameworks being developed.

- 218. The NPS Freshwater Management is applicable given the proposed ground water take application and farming activities included as part of the proposed poultry farm development.
- 219. An assessment against the NPS Freshwater is provided in section 7.1.4.1 of the AEE. I adopt this assessment and concur that overall the proposal is considered to be consistent with the relevant provisions of the NPS Freshwater.

New Zealand Coastal Policy Statement 2010

- 220. The NZCPS guides local authorities in their management of the coastal environment. Potential effects of groundwater abstraction on the ecological and natural character values of the coastal environment and coastal hazards require assessment under the NZCPS.
- 221. The site does not fall within the mapped area of the coastal environment under the RPS, however it is subject to coastal hazards such as coastal inundation due to its location adjacent to the Northern Wairoa river. Policy 1 of the NZCPS requires recognition that the coastal environment includes areas at risk from coastal hazards.¹³⁸ Accordingly, in my opinion an assessment against the coastal hazards related provisions¹³⁹ of the NZCPS is necessary.

Coastal hazard risks and climate change

- 222. The AEE has identified the relevant coastal hazard provisions under the NZCPS as Objective 5 and policies 1, 24, and 25. I agree that these provisions are relevant and applicable to the consideration of the proposed poultry farm development. As outlined in my assessment of effects in section 7 of this report, I rely on the T+T Flooding Assessment for the consideration of coastal hazard effects and consider that overall it demonstrates that the proposed drainage and flood control measures are appropriate and will not result in adverse flooding levels internally within and externally outside of the subject site. On the basis of this report and considering the direction within the NZCPS, I agree with the assessment in the AEE in the following respects:
 - The T+T Flooding Assessment appropriately identifies the areas of the subject site that are potentially affected by coastal hazards. This appears to be based on the latest reports available to NRC and KDC which account for climate change and sea level rise.
 - The proposed dwellings avoid identified coastal hazard risk areas as they have been located in the elevated eastern portion of the site, outside of the identified areas subject to coastal hazards.
 - No habitable buildings are located within the areas subject to coastal hazards and Tegel has outlined suitable mitigation measures for buildings (the poultry farm sheds) within the low-lying

¹³⁸See Policy 1 clause d of the NZCPS. The western half of the subject site is specified as flood susceptible in KDC planning maps and subject to coastal inundation and fluvial flooding. The Flooding Assessment has been undertaken to determine the level of coastal hazard risk.

¹³⁹ These provisions are listed in Attachment 6

areas subject to coastal hazard risks. This includes providing adequate freeboard, bunding the site to mitigate against coastal inundation (tsunami) and further protection through dewatering pumps.

- 223. As noted in the assessment of natural hazards flooding effects in section 7 of this report, T+T appear to have utilised a 50 year design life for the proposed farm.¹⁴⁰ Within Policy 24 and Policy 25 require consideration of coastal hazards over a 100 year period. It is not clear whether the 50 year design life for the proposed farm buildings promoted is consistent with the policy direction in the NZCPS.
- 224. I also have a slightly different opinion to the AEE on policy 25(e), which discourages the use of hard protection structures, and promotes the use of alternatives such as natural defences. The bunding proposed is classified as a hard protection structure designed to reduce risk to the proposed poultry farm development during a 2% AEP coastal inundation event. The AEE, states that:

"This level of protection cannot be achieved through soft protection options. The existing stopbank along the Wairoa River and SH12 are likely to be overtopped during a 2% AEP coastal inundation event and therefore cannot be relied on to adequately manage risk to the site."¹⁴¹

- 225. Given the context of the subject site and receiving environment, I consider that it is doubtful that natural defences would present a viable alternative, however a more robust assessment of alternatives to the proposed hard protection structures has not, in my opinion, been provided. I consider that this would be useful to reach a clear conclusion on whether there are any viable alternatives to the hard protection structures proposed, and I would encourage further detail to be provided on this matter by T+T Coastal Engineers prior to or during the hearing.
- 226. Notwithstanding this additional detail on alternatives, I rely on the T+T Flooding Assessment and on the basis of its findings, and consider that the bunding and stormwater pumps are an effective method for controlling floodwaters and protecting the safety of people and buildings on site, while not adversely increasing the potential for flooding on surrounding properties.
- 227. Overall, subject to clarification regarding policy 25(e) and justification for the 50 year design life, I agree with the AEE, that the proposal is consistent with the NZCPS in relation to coastal hazards.

Northland Regional Policy Statement

228. The RPS was made operative on 9 May 2016.¹⁴² The RPS sets out policies and methods to achieve integrated management of Northland's natural and physical resources.

Tangata Whenua

165

¹⁴⁰ See section 4 page 5 of the Flooding Assessment.

¹⁴¹ See table 7.2 on page 57

¹⁴² except for the provisions that relate to the use of genetic engineering and the release of genetically modified organisms to the environment, as they were subject to legal challenge at the time. The provisions relating to the release of GMOs are not relevant to the consideration of the proposed poultry farm development.

- 229. Tegel have undertaken some consultation with tangata whenua, including Te Roroa and initial conversations with Kāpehu marae.¹⁴³ Kāpehu marae representatives have, in submissions and follow up correspondence, expressed dissatisfaction regarding this consultation with Tegel and the consultation with NRC and KDC following lodgement. Following the close of submissions, there is also conflicting advice from Tegel and Kāpehu marae representatives regarding ongoing consultation. At the time of drafting this s42A report, it is very difficult to conclude whether adequate consultation in accordance with the direction in the RPS has been undertaken. I anticipate that this will be a key matter to be addressed in the hearing.
- 230. Policy 8.1.2 essentially duplicates section 6(e), 7(a) and section 8 of the RMA. I have addressed these in section 10 of this report.
- 231. At the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, which could potentially be significant and unacceptable.
- 232. In the absence of this information, I cannot reach a conclusion on whether the proposal is consistent with the provisions within the RPS regarding tangata whenua.

Economic well-being

- 233. The RPS directs that Northland's resources are sustainably managed in a way that is attractive for business and investment that will improve the economic well-being of Northland.
- 234. Regard has been given to the social, cultural and economic benefits of the proposed poultry farm development. Based on the Insight Economics assessment, I have concluded that there will be significant positive social and economic effects during the construction and operation of the poultry farm in terms of job creation and increased spend in the area.
- 235. I consider that the proposed poultry farm development finds support in the RPS economic well-being provision.

Groundwater

- 236. An assessment of effects on groundwater is included in the NRC reporting planner's s42A report. I adopt that assessment for the purposes of this s42A report. I agree that on the basis of the information provided by Tegel, including the T+T Groundwater Assessment, and subject to the imposition of appropriate conditions on the NRC groundwater consent, any adverse effects of the proposed activity associated with the groundwater take will be no more than minor and acceptable.
- 237. This conclusion extends to the groundwater provisions in the RPS and I consider that the proposed development is consistent with the relevant policy direction provided within the RPS.

Renewable Energy

¹⁴³ It is also understood that Te Uri o Hau have been contacted by Tegel to provide a CIA, despite previously indicated to KDC that the subject site did not fall within their rohe.

- 238. An assessment of the renewable energy policy direction is included in table 7.3 of the AEE.¹⁴⁴
- 239. I adopt that assessment and agree that the proposed poultry farm will utilise innovative renewable energy generation for the operation of the proposed poultry farm.

Natural hazards / flooding

- 240. An assessment of the Natural hazards / flooding provisions in the RPS is provided in table 7.3 of the AEE.¹⁴⁵ I generally agree with the assessment undertaken, however make the following additional comment.
- 241. Policy 7.2.2 gives priority to the use of non-structural measures (including soft protection measures) over the use of hard protection structures when managing hazard risk. Hard protection structures may be considered appropriate when non-structural measures cannot provide the level of hazard risk reduction that the proposed asset is seeking to achieve. I do not consider that Tegel have presented a sufficient assessment to demonstrate that the proposed bunds (which are considered hard protection structures) are the only means to protect the proposed development or to rule out alternative responses to the flooding hazard. I consider that a more robust consideration of alternatives would be useful to reach a clear conclusion on whether there are any viable alternatives to the hard protection structures proposed, and would encourage further detail to be provided on this matter by T+T Coastal Engineers prior to or during the hearing.

Reverse sensitivity

- 242. Objective 3.6 gives policy direction regarding reverse sensitivity conflicts and seeks that activities (such as existing primary production and industrial and commercial activities) important for Northland's economy, are protected from the negative impacts of new subdivision, use and development.
- 243. In this instance, the other non-residential activities adjoining the subject site, are low intensity rural production activities. Four new dwellings are proposed within the subject site, but these are located centrally within the elevated eastern portion of the subject site a significant distance from any adjoining land uses. As such it is considered that the proposed poultry farm is not producing any new land uses that would result in reverse sensitivity effects on existing non-residential activities on other properties within the receiving environment.

Regional Air Quality Plan for Northland

- 244. The RAQP assists NRC, together with the resource users of Northland, to promote the sustainable management of the region's air resources and to maintain the existing high air quality the region experiences.
- 245. The proposed activity will result in discharges of contaminants to air. I am satisfied that the applicant and Becca peer review have demonstrated that the combustion discharges from the Energy Centre will remain well within the relevant health-based air quality criteria and will not cause adverse health effects as a result.

¹⁴⁴ See page 58 of the AEE. I have also identified objective 3.9 as being relevant.

¹⁴⁵ See page 58-59 of the AEE. I have also identified 7.1.3 as being relevant.

- 246. The key air quality issue, in my view, is odour. While the applicant has advised of a number of mitigation measures to reduce the odour generation from the facility in the site-specific scenario, uncertainty remains as to the extent of this odour reduction. If these estimated rates are incorrect, the proposed odour discharge has the potential to cause significant adverse effects on the owners and occupiers of neighbouring properties whom have not provided their written approval. On this basis, I consider that the proposed activity is inconsistent with Objectives 6.6.1 and 6.6.2 of the RAQP and policy 6.15.1.
- 247. Policy 6.7.5 of the RAQP promotes a precautionary approach to the granting of resource consents where the effects of air discharges are unknown or not well understood and may be significant. As is demonstrated in the Beca Review, there is uncertainty regarding the odour generation rates used which has the potential to result in significant adverse effects on neighbouring properties. Therefore in my opinion, a precautionary approach is warranted. Beca have identified Tegel could provide further detail regarding an adaptive management approach to address uncertainty in the derived odour emission rates, such as staging the farm development and initiating a monitoring regime to demonstrate that the expected odour reduction for the site-specific scenario is accurate. It is also understood that Tegel will be providing a CIA prior to the hearing to address potential cultural effects. However, there is currently insufficient information to enable an adaptative management approach to be implemented through conditions of consent.

Regional Water and Soil Plan for Northland 2014

248. The RWSP manages the effects of land use activities on water and soil resources throughout Northland by imposing specific controls on discharges, land uses, and the taking, use, damming and diversion of water.

Tangata Whenua

- 249. The management of natural and physical resources in Northland is required to be undertaken in such a manner that recognises and provides for the traditional and cultural relationships that tangata whenua have with land and water. The provisions relating to tangata whenua values are not confined to one section of the plan, but are instead interwoven into individual sections relating to specific activities.
- 250. Concerns have been expressed in submissions from Kāpehu marae representatives regarding the consultation undertaken with Tegel and consultation with KDC and NRC following lodgement. At the time of drafting this s42A report, I consider that it is difficult to conclude whether adequate consultation has been undertaken. I anticipate that this will be a key matter to be addressed in the hearing.
- 251. At the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, which could potentially be significant and unacceptable.
- 252. In the absence of this information, I cannot reach a conclusion on whether the proposal is consistent with the provisions within the RAQP regarding tangata whenua values.

Groundwater

- 253. The provisions of the RWSP provide direction on how groundwater quality, quantity and conservation ought to be managed within the Region, having specific regard to ensuring that effects on other groundwater users, surface water users and values are avoided, remedied or mitigated.
- 254. The majority of the proposed poultry farm will be serviced by rainwater harvesting and supplemented by groundwater abstraction, thereby reducing the volume of groundwater required to service the development and aligning with the relevant provisions of Section 9 and 10 of the RWSP.
- 255. In addition and as stated above, I adopt the NRC reporting planner's assessment for the purposes of this s42A report. I agree that on the basis of the information provided by Tegel, including the T+T Groundwater Assessment, and subject to appropriate conditions on the NRC groundwater consent, any adverse effects of the proposed activity associated with the groundwater take will be no more than minor and acceptable.
- 256. On this basis, I consider that the proposed development is consistent with the relevant policy direction provided within the RWSP relating to groundwater.

Servicing & Hazardous Substances

- 257. The RWSP provides direction on the treatment and disposal of waste and stormwater, with specific provisions relating to effluent containing high levels of organic content, hazardous substances and low impact stormwater management design.
- 258. The application is supported by a Hazardous Substances Assessment, which has been peer reviewed by Dr Heveldt. A brief statement from Dr Hevledt is attached (see **Attachment 3**), which has concluded that the revised Hazardous Substances Assessment is satisfactory in content and detail to provide appropriate controls on the hazardous substance aspects of the proposal.
- 259. In addition, based on the T+T geotechnical assessment and peer review from Stantec, and subject to further additional investigations being undertaken as part of detailed design for the proposed development, I am satisfied that the subject site is suitable for the proposed development from a geotechnical perspective and that appropriate water supply, wastewater and stormwater services can be provided on site without resulting in unacceptable adverse effects on the environment.
- 260. For these reasons, I consider that any potential adverse effects on human health and the environment associated with the use and storage of hazardous substances, discharge of waste, and the disposal of stormwater can be managed to an acceptable level with the mitigation measures offered by the Applicant.
- 261. Accordingly, I consider that the proposed development is consistent with the relevant policy direction provided within the RWSP relating to servicing and hazardous substances.

Earthworks

262. The RWSP looks to protect the Region's soils resource from degradation or loss resulting from unsustainable land uses and practices. The conservation of the soil resource is encouraged and effects on water bodies and their margins and levels of erosion and sedimentation are closely monitored.

- 263. To address the potential adverse effects of the proposed soil disturbances, the applicant has included an erosion and sediment control plan with the application, which was subsequently peer-reviewed by National Environmental Science Specialist, Dr Paul Heveldt from Stantec New Zealand.
- 264. Following peer review, Dr Heveldt subsequently concluded that the submitted ESCP and additional information provided is satisfactory in content and detail to provide appropriate erosion and sediment controls on the proposed earthworks.
- 265. While there are minor clarifications sought regarding duration and proposed earthworks volumes, I consider that the proposal is consistent with the policy direction of the RWSP relating to earthworks and land disturbance.

Natural Hazards – Flooding

- 266. The RWSP places restrictions on development and land use activities undertaken within floodplains and requires the consideration of effects resulting from the maintenance and construction of land drainage and flood control schemes.
- 267. An assessment of the natural hazards / flooding provisions in the RWSP is provided in table 7.3 of the AEE addressing the potential effects of flooding on the proposed development, mitigation and the potential flow on effects of flooding on surrounding properties.
- 268. Based on the technical advice provided in this assessment, I am of the opinion that the proposed drainage and flood control measures are appropriate and will not result in adverse flooding levels internally within and externally outside of the subject site. On this basis, it was concluded that the adverse flooding effects are likely to be no more than minor and acceptable.
- 269. On this basis, I consider that the proposed development and associated flood protection works will ensure the protection of individuals, communities and their properties and therefore align with the objectives and policies of the RWSP relating to natural hazards.

Proposed Northland Regional Plan 2017

- 270. The pRP seeks to manage the use, development, and protection of Northland's natural and physical resources. It seeks to combine the current operative regional plans into a single regional plan for the Northland Region. The plan was notified in September 2017, prior to the lodgement of the resource consent application for the proposed poultry farm development. As such the rules in the pRP have legal effect and Tegel have sought necessary consents under them. Consideration of the objectives and policies of the pRP is also required pursuant to section 104(1)(b)(vi).
- 271. The pRP provisions currently remain untested and subject to wide ranging submissions which have yet to be heard and may be subject to notable changes.¹⁴⁶ For this reason, it is my opinion that the provisions of the pRP should be afforded minimal weight in the assessment of the proposal. This is reflected in my assessment below.

Air Quality

 $^{^{\}rm 146}$ I understand the hearings for the pRP are scheduled to begin in August 2018.

- 272. Policy direction for air quality is provided in D.3 of the pRP. This provides general direction for considering discharges to air.
- 273. As outlined previously, based on the T+T Air Quality Assessment and Beca Review, I am satisfied that the discharge of contaminants from the Energy Centre will remain well within the relevant health based air quality criteria within NESAQ.¹⁴⁷
- 274. In my opinion, the main outstanding issue relating to Air Quality is the uncertainty identified by Beca regarding the appropriate derived emission rates and as a result, uncertainty relating to the odour concentrations predicted to be received at a number of sensitive receivers that have not currently provided written approval. The pRP odour provisions direct consideration to the current environment and surrounding zoning in the KDP including existing amenity values. The effect of odour on existing amenity values could potentially be significantly adverse and unacceptable. Given the potential for these significant adverse odour effects, I consider that a precautionary approach is warranted until these uncertainties are addressed.

Tangata Whenua

- 275. The pRP provides high level direction regarding the management and protection of tangata whenua values and consultation with tangata whenua in resource consent processes. These are not addressed within the AEE.¹⁴⁸
- 276. Concerns have been expressed in submissions from Kāpehu marae representatives regarding the consultation undertaken with Tegel and consultation with KDC and NRC following lodgement. At the time of drafting this s42A report, I consider that it is difficult to conclude whether adequate consultation has been undertaken. I anticipate that this will be a key matter to be addressed in the hearing.
- 277. At the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, which could potentially be significant and unacceptable.
- 278. In the absence of this information, I cannot reach a conclusion on whether the proposal is consistent with the provisions within the pRP regarding tangata whenua values.

Social, cultural and economic benefits

- 279. The pRP directs that regard must be given to the social, cultural and economic benefits of activities. This is consistent with the sustainable management purpose of the Act in Part 2.
- 280. Regard has been given to the social, cultural and economic benefits of the proposed poultry farm development. Based on the Insight Economics assessment, I have concluded that there will be significant positive social and economic effects during the construction and operation of the poultry farm in terms of job creation and increased spend in the area.

Historic heritage

¹⁴⁷ See section 4.7 of Beca Review

¹⁴⁸ See section 7.1.6.3 and table 7.6 of the AEE.

- 281. The pRP directs the appropriate management of adverse effects on historic heritage.
- 282. I am satisfied that the proposed development will adequately avoid any adverse effects on identified archaeological sites within the subject site. Any potentially unidentified archaeological sites appear to be unlikely based on the Archaeological Assessment, however any risk of accidental discovery can be managed by suitable conditions of consent.
- 283. I consider that this is consistent with the policy framework within the pRP relating to the management of historic heritage.

Groundwater

- 284. An assessment of effects on groundwater is included in the NRC reporting planner's s42A report. I adopt that assessment for the purposes of this s42A report. I agree that on the basis of the information provided by Tegel, including the T+T Groundwater Assessment, and subject to appropriate conditions being imposed on the NRC groundwater consent, any adverse effects of the proposed activity associated with the groundwater take will be no more than minor and acceptable.
- 285. This conclusion extends to the groundwater provisions in the pRP and I consider that the proposed development is consistent with the relevant policy direction provided within the pRP.

Earthworks

286. An assessment against the relevant earthworks provisions in the pRP is provided in table 7.6 of the AEE.¹⁴⁹ I adopt that assessment here, and agree that the ESCP, as peer reviewed by Stantec, has outlined suitable mitigation measures to avoid the discharge of sediment to surface water on the site and to maintain water quality.

Natural hazards – Flooding

- 287. An assessment of the Natural hazards / flooding provisions in the pRP is provided in table 7.6 of the AEE.¹⁵⁰ I generally agree with the assessment undertaken, however make the following additional comment.
- 288. D.6.1 requires that new hard protection structures may be considered appropriate when alternative responses (including soft protection measures) are demonstrated to be impractical or have a greater adverse effect on the environment. I do not consider that Tegel have presented a sufficient assessment to demonstrate that the proposed bunds are the only means to protect the proposed development or to rule out alternative responses to the flooding hazard. I consider that a more robust consideration of alternatives would be useful to reach a clear conclusion on whether there are any viable alternatives to the hard protection structures proposed and would encourage further detail to be provided on this matter by T+T Coastal Engineers prior to or during the hearing.

¹⁴⁹ See page 63 of the AEE.

¹⁵⁰ Ibid.

Kaipara District Plan under Section 104(1)(b)(vi)

- 289. The KDP manages the effects of the use, development and protection of natural and physical resources within the District.
- 290. An assessment of the key themes of the relevant objectives, policies and outcomes of the KDP is provided below, with full text of objectives, policies and assessment criteria provided in **Attachment 6**.

Strategic Direction for the District

- 291. Chapter 3 of the KDP provides an overview of the general strategic direction and management of future land use and development within the District. Relevant provisions from chapter 3 are included in **Attachment 6**.
- 292. This includes high level direction regarding minimising the ad hoc expansion of residential and business activities in the rural heartland where such activities have the potential to give rise to adverse effects on sensitive receiving environments. Direction is given within the relevant provisions in chapter 3 to ensure emissions, discharges and effects from these activities are managed so that adverse effects on the surrounding environment, including existing settlement areas, are comprehensively addressed.
- 293. As outlined previously, the operation of the proposed poultry farm will constitute 'intensive farming' and the proposed poultry farm sheds are considered commercial buildings in the KDP. The assessment of environmental effects undertaken in section 7 of this report has highlighted that the proposed poultry farm development will give rise to a number of potential adverse effects on the receiving environment, as well as significate positive economic effects.
- 294. The majority of these effects can, in my opinion, be appropriately managed or mitigated through conditions of consent to a no more than minor and acceptable level. However, I have identified uncertainty in terms of the extent of the odour effects and consider that there is insufficient information, at the time of preparing this s42A report, in terms of the cultural effects of the proposed development. In both of these instances, I have concluded that these effects could be potentially significantly adverse and unacceptable on sensitive receiving environments, including neighbouring residences and Kāpehu marae and associated urupā.
- 295. As such, as currently presented, I do not consider that sufficient detail and certainty is provided to conclude that the proposed poultry farm development is consistent with the strategic direction for the District outlined in Chapter 3.

Rural Character & Amenity

- 296. The maintenance of rural character and amenity values is a key focus of the Rural Zone Chapter 12 in the KDP. The KDP seeks the maintenance of character and amenity values in the rural environment without unduly restricting productive rural activities while providing for more intensive and innovative site-specific development where it results in better environmental outcomes.
- 297. I consider that the proposed poultry farm development will result in a visual change in character of the site and immediately adjoining environment through the introduction of a level of built structures onto the site, which is largely characterised by open pasture. I acknowledge that the proposed poultry farm will result in a change in the visual aesthetic of the area, however this change in itself is not precluded

by the KDP, nor does the KDP necessarily consider that the proposed scale of the built form will be inappropriate within the rural context of the subject site and surrounding area. Ultimately, I rely on the assessments provided in the BM report and Skidmore Peer review and provided that the identified mitigation measures are successfully implemented, I consider that any adverse landscape and visual effects on amenity values will be no more than minor and therefore acceptable.

- 298. The key character and amenity issue, in my opinion, is odour.
- 299. There is a theme in Chapter 12 acknowledging the importance of farming activities to the social and economic well-being of the district. Implicit in this, is the understanding that those who live in rural areas should anticipate the consequences of the rural activities that are undertaken within them. Disagreeable odour is one possible consequence and can arise from activities such as stock effluent and silage. As such, I consider that a reasonable level of odour can and should be anticipated in a rural environment, however it does not mean that it is not a relevant amenity factor. The concern, in my opinion, is not that any level of odour will be generated, but rather the potential for concentrated and intensified odour that will severely reduce amenity values within the receiving environment.
- 300. The Beca Review has demonstrated that there is uncertainty regarding the derived odour emission rates used by T&T in their dispersion modelling. If the derived odour emission rates are even slightly incorrect, there is a potential that anticipated odour levels could exceed levels that would be considered offensive and objectionable and constitute a significant adverse effect on neighbouring sensitive receivers who have not provided their written approval. These sensitive receivers, including the urupā and potentially Kāpehu marae, private dwellings and the Arapohue school could experience significantly compromised levels of amenity as a result. This would not, in my opinion, be consistent with the direction regarding rural character and amenity values in the KDP.

Landscape Values

- 301. Chapter 18 of the KDP outlines provisions to recognise landscape values and protect outstanding landscape values.
- 302. The subject site does not contain any outstanding natural landscapes. However, Maungaraho ONL is located to the east of the subject site. Subject to appropriate conditions of consent, I am satisfied that the BM Report and peer review from Ms Skidmore have demonstrated that the adverse effects of the proposed poultry farm development on the landscape values associated with the subject site and the ONL are acceptable.
- 303. As such, I conclude that the proposal will be consistent with the relevant policy framework in Chapter 18.

Tangata Whenua

304. Chapter 5 of the KDP provides objectives and policies for district wide issues for the tangata whenua of the Kaipara District and how these should be addressed within the District Plan. There are no rules directly linked to these provisions in chapter 5, rather they are covered by other methods within and outside of the District Plan.

- 305. Tegel have undertaken some consultation with tangata whenua, including Te Roroa and initial conversations with Kāpehu marae.¹⁵¹ No concerns with this consultation appear to have been raised, following lodgement of the application, by Te Roroa. However, Kāpehu marae representatives have, in submissions and follow up correspondence, expressed dissatisfaction regarding this consultation with Tegel and the consultation with NRC and KDC following lodgement. Following the close of submissions, there is also conflicting advice from Tegel and Kāpehu marae representatives regarding ongoing consultation. At the time of drafting this s42A report, it is very difficult to conclude whether adequate consultation has been undertaken. I anticipate that this will be a key matter to be addressed in the hearing.
- 306. Applicable iwi management plans are considered in section 9 of this s42A report.
- 307. At the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, and these effects could potentially be significantly adverse and unacceptable.
- 308. In the absence of this information, I cannot reach a conclusion on whether the proposal is consistent with the provisions within the KDP regarding tangata whenua values.

Historic Heritage

- 309. Chapter 17 of the District Plan outlines provisions for the management of historic heritage in the Kaipara District, including archaeological sites, heritage sites and areas, and areas of significance to Māori. These provisions are relevant, in my opinion, due to the location of two recorded archaeological sites on the eastern portion of the property and due to the location of the urupā and marae adjacent to the subject site.
- 310. I am satisfied that the proposed development will adequately avoid any adverse effects on identified archaeological sites within the subject site. Any potentially unidentified archaeological sites appear to be unlikely based on the Archaeological Assessment, however any risk of accidental discovery can be managed by suitable conditions of consent. I consider that this is consistent with the policy framework within Chapter 17 relating to the management of archaeological sites
- 311. It has not however currently clear if the proposal will adequately protect the urupā¹⁵² from inappropriate use and development. The current T+T odour modelling shows the urupā as being located within the 5 OU/m³ threshold area that Tegel have used to identify properties who may be adversely affected by odour. Further, the Beca Review has highlighted that there is uncertainty regarding the derived odour emission rates used. If this is incorrect, the 5 OU/m³ threshold may also be exceeded for Kāpehu marae. Such an outcome would not, in my opinion, by consistent with the relevant direction within Chapter 17.

Transport Network

¹⁵¹ It is also understood that Te Uri o Hau have been contacted by Tegel to provide a CIA, despite previously indicated to KDC that the subject site did not fall within their rohe.

¹⁵² Which would, in my view, constitute a waahi tapu site of spiritual, cultural or historical significant to Māori.

- 312. As outlined in the effects assessment in section 7, on the basis of the ITA, including the proposed mitigation measures, and subject to suitable agreement being reached with NZTA with regard to upgrading and closure of other access points, I am satisfied that the proposal will adequately provide for the provision of safe and practicable access to the State Highway while appropriately mitigating any potential adverse amenity effects in the local environment to an acceptable level.
- 313. As such, I consider that the proposal is consistent with the relevant provisions in the KDP relating to the transport network.

Hazardous Substances

- 314. Chapter 8 of the KDP provides provisions regarding the use, management and storage of hazardous substances within the District. These provisions seek to prevent or mitigate adverse effects of land use activities that involve the management of hazardous substances. These provisions are relevant as large volumes of hazardous substances (e.g. LPG) will be stored and used on the subject site as part of the proposed poultry farm development.
- 315. I rely on the assessment of the T+T Hazardous Substances Report and the peer review from Dr Heveldt. On this basis, I am satisfied that any potential adverse effects on human health and the environment associated with the use and storage of hazardous substances can be managed to an acceptable level.
- 316. As a result, I conclude that the proposal will be consistent with the relevant policy framework in Chapter8.

Servicing & Infrastructure

- 317. Chapter 12 also includes a number of provisions designed to ensure that the servicing of new subdivision and development does not adversely affect the environment.
- 318. Based on the T+T geotechnical assessment and peer review from Stantec, and subject to further additional investigations being undertaken as part of detailed design for the proposed development, I am satisfied that the subject site is suitable for the proposed development from a geotechnical perspective and that appropriate water supply, wastewater and stormwater services can be provided on site without resulting in unacceptable adverse effects on the environment.
- 319. As a result, I conclude that the proposal will be consistent with the relevant policy framework in Chapter 12 regarding servicing and infrastructure.

Natural hazards

- 320. Chapter 7 of the KDP provides policy direction regarding natural hazards. This is relevant to the proposal, as the subject site is identified as being flood prone on the KDP flood maps with site specific assessment also confirmed in the T+T Flooding Assessment.
- 321. I rely on the T+T Flooding Assessment and on the basis of its findings, consider that the mitigation measures proposed are an effective method for controlling floodwaters and protecting the safety of people and buildings on site, while not adversely increasing the potential for flooding in surrounding properties.
- 322. On this basis, I consider that the proposal is consistent with the policy direction provided in Chapter 7.

Economics and Innovation

- 323. There are enabling provisions within the Rural Zone chapter 12 that encourage innovative development and provide some flexibility for a range of other non-rural activities that can appropriately locate in the Rural Zone.
- 324. The Tegel poultry farm development will utilise innovative technology. This includes the use of the Energy Centre building to burn litter from the sheds and the use of solar panels to provide power and reduce the reliance on external energy sources. Water supply will also primarily be provided by the collection and treatment of rainwater.
- 325. I consider that the Proposal finds some support in these provisions.

Reverse Sensitivity

326. Chapter 12 includes provisions which give policy direction regarding reverse sensitivity conflicts. This focuses on avoiding reverse sensitivity effects associated with the establishment of sensitive activities adjacent to existing land uses. In this instance, the other non-residential activities adjoining the subject site, are low intensity rural production activities. Four new dwellings are proposed within the subject site, but these are located centrally within the elevated eastern portion of the subject site a significant distance from any adjoining land uses. As such it is considered that the proposed poultry farm is not producing any new land uses that would result in reverse sensitivity effects for neighbouring properties.

Conclusion

327. In my opinion, the bulk of the proposal is consistent with the relevant provisions within the relevant statutory planning documents. In particular, I consider that the proposal finds support from provisions that support economic and social well-being and encourage renewable energy use. However, in my assessment above, I have identified common themes in the relevant statutory planning documents regarding air quality, amenity values and tangata whenua cultural values. Based on the evidence and information available, I consider that the poultry farm development as currently proposed, is inconsistent with these common themes in the relevant statutory documents relating to air quality, amenity values and tangata whenua cultural values.

9.0 Other Matters

Animal Welfare

- 328. A central theme in submissions are concerns expressed about animal welfare relating to the care and living conditions for chickens on in the proposed poultry farm.
- 329. Animal welfare standards are established in the Animal Welfare Act 1999 and the 2012 Animal Welfare (Meat Chicken) Code of Welfare which was developed as a minimum standard for all poultry operators. Compliance with these minimum standards is appropriately addressed under that legislation and separate from the resource consent process for the proposed poultry farm. Concerns regarding animal welfare are not a relevant resource management consideration under the RMA and should not be taken into account in the consideration of Tegel's application for resource consent.

Antimicrobial action plan

- 330. A number of submissions referenced the New Zealand Antimicrobial Resistance Action Plan 2017 ("NZARAP")¹⁵³ and expressed concerns at alleged practices within the poultry industry leading to increased antibiotic resistance.
- 331. The NZARAP establishes objectives and methods to manage antimicrobial resistance, which has been identified as having a global threat to public health and human health. The plan is managed by the Ministry of Health and Ministry for Primary Industries.
- 332. Clarification was sought from Tegel as to the applicability of the NZARAP.¹⁵⁴ T+T responded stating that this is not a relevant consideration for the resource consent application.¹⁵⁵ This position is supported for similar reasons as to why animal welfare is not a relevant consideration, and it is considered that concerns about the NZARAP should not be taken into account in the consideration of Tegel's application for resource consent. T+T have however noted that Tegel, for the benefit of submitters, will briefly outline their internal processes followed and their involvement in the NZARAP at the hearing.¹⁵⁶

lwi / hapu management plans

- 333. Within the Kaipara District there are two iwi / hapu management plans that are of relevance to the consideration of the proposal. These are the Te Uri o Hau Environmental Plan dated 2011 and Te Roroa lwi Environmental Policy Document dated 2009. In my opinion, it is appropriate to consider these as other matters pursuant to section 104(c) of the Act.
- 334. Te Uri o Hau's planning document is entitled "Te Uri o Hau Kaitiakitanga o Te Taiao". This document in Part 4 outlines issues, objectives and policies in relation to freshwater; air; takutai moana (Marine and Coastal Area and Harbours); customary fisheries; oyster reserves; the land; growth and development; waahi tapu and waahi taonga; minerals; biodiversity; marine mammals and cultural landscapes. Part 4 has a focus on kaitiakitanga through the process of preparing and implementing the Plan. Te Uri o Hau, were sent a copy of the application prior to notification by NRC. A response was received outlining that the subject site was outside of their rohe, a map of which is provided in the Te Uri o Hau Environmental Plan. As a result of this communication with Te Uri o Hau, I assume that no conflicts with their Environmental Plan have been identified by them.¹⁵⁷
- 335. Te Roroa's planning document is entitled "Nga Ture mo Te Taiao o Te Roroa Te Roroa lwi Environmental Policy Document." The document includes sections where issues, objectives, policies and methods are set out in respect of waahi tapu and cultural landscapes; traditional and customary materials; land (changing land uses - forest clearances, conversion to farmland and exotic forestry,

¹⁵³ Ministry of Health and Ministry for Primary Industries. 2017. New Zealand Antimicrobial Resistance Action Plan. Wellington: Ministry of Health.

¹⁵⁴ Post notification s92 request dated 30 April 2018 point 6.

¹⁵⁵ T+T Post-notification s92 response dated 18 May 2018 paragraph 6.1, page 6.

¹⁵⁶ Ibid, paragraph 6.2, page 6.

¹⁵⁷ During the drafting of the s42A report, I was contacted by a representative from Environs Holdings Limited a subsidiary of the Te Uri o Hau Settlement Trust outlining that they had been engaged by Tegel to provide a CIA. This was not available in time to be considered within this report.

urban settlements); marae and kainga; Treaty settlement land; soils and minerals; utilities, amenities and infrastructure; waste management; public access; water; indigenous biodiversity; exotic plantation forestry; biosecurity and bio-prospecting; climate change; and genetic engineering. The Applicant has directly engaged with Te Roroa who have provided a report focusing on the archaeological sites on the subject site which recommended archaeological conditions to ensure the protection of these sites. No concerns were identified by Te Roroa regarding other matters outlined in their Environmental Policy Document.

10.0 Part 2 Matters

Davidson Appeal

- 336. In considering Part 2 matters, it is pertinent to acknowledge the decision of the High Court in RJ Davidson Family Trust v Marlborough District Council [2017] NZHC 52 ('the Davidson Case'). The High Court decision was appealed to the Court of Appeal and the latter court's decision is awaited by resource management practitioners with interest.
- 337. My understanding of the Davidson Case is that the court found that the phrase "subject to Part 2" in s104(1) of the Act does not direct consideration of part 2 matters, unless there is invalidity, incomplete coverage or uncertainty of meaning in the relevant statutory document.
- 338. In this case the relevant regional plans (RWSP and RAQP) predate the superior planning instruments, the RPS and NZCPS, and I have therefore undertaken specific consideration of the provisions of the RPS and NZCPS in my previous assessment in section 9.
- 339. The pRP has been prepared after the NZCPS and RPS so presumably its provisions have been developed to give effect to the NZCPS and RPS. However, in my opinion, the provisions of the pRP remain untested and subject to wide ranging submissions which have yet to been heard and may result in notable changes. For this reason, the provisions of the pRP should be afforded minimal weight in the assessment of the proposal.
- 340. For completeness and taking into account the timing of the development of the RWSP, RAQP and pRP, I have provided my own assessment of Part 2 matters below, which can be referred to by the Commissioners if they consider this necessary and appropriate. I also record here, that the outcome of my assessment and conclusion I reach below would not be different if the "overall broad judgement" approach were not to be applied.

Section 5 – Sustainable Management Purpose of the RMA

- 341. Section 5(1) states that the purpose of the RMA is to promote the sustainable management of natural and physical resources, with sustainable management defined in section 5(2).
- 342. I accept that the Tegel poultry farm will utilise innovative technology such as rainwater harvesting and onsite energy production via the Energy Centre which will result in comparably better environmental outcomes when compared to conventional poultry farm technology. I also accept the poultry farm will have significant positive economic and social effects through employment and flow on effects to the local economy during construction and operation of the poultry farm. Tegel have also offered a range of measures to avoid remedy or mitigate adverse effects on landscape and visual, traffic, natural hazards,

groundwater, site suitability, noise and vibration, hazardous substances, earthworks and reverse sensitivity to an acceptable level.

343. However, my assessment previously details that there is uncertainty regarding the odour effects of the proposed poultry farm and that these could be potentially significantly adverse and unacceptable on a number of sensitive receivers who have not provided their written approval. Furthermore, at the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, and these effects could potentially be significantly adverse and unacceptable.

It is often stated that the RMA is not a 'no effects' statute. Invariably, a proposal of any significant scale such as the proposed poultry farm development will result in some form of lasting effect. If Tegel are able to address the uncertainty regarding the extent of odour effects and if cultural effects were adequately addressed, I consider that, on balance, the proposal *could* be found to be achieving the sustainable management purpose of the Act. However as currently presented, I am not satisfied that the proposed poultry farm development will meet the sustainable management purpose of the Act.

Section 6 – Matters of National Importance

- 344. Section 6 of the Resource Management Act sets out matters of national importance that a consent authority must recognise and provide for. I consider that the following matters of national importance are relevant:
 - 6(e) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga
 - 6(f) the protection of historic heritage from inappropriate subdivision, use, and development
 - 6(h) the management of significant risks from natural hazards.
- 345. 6(e) At the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, and these effects could potentially be significantly adverse and unacceptable. A conclusion of significant cultural effects would not be consistent with Section 6(e) of the RMA.
- 346. 6(f) The subject site includes two identified archaeological sites. I am satisfied that, subject to conditions, the proposed poultry farm development will avoid any adverse effects on these archaeological sites and manage any potential adverse effects on potentially unidentified archaeological sites on the subject site.
- 347. 6(h) Based on the T+T Flooding Assessment, I am satisfied that the proposed poultry farm development will appropriately manage the significant risks from natural hazards including flooding and coastal inundation. This is consistent with section 6(h).

Section 7 – Other Matters

348. Section 7 of the Resource Management Act sets out other matters a consent authority must have particular regard to. I consider that the following other matters are relevant:
- 7(a) kaitiakitanga;
- 7(aa) the ethic of stewardship;
- 7(b) the efficient use and development of natural and physical resources;
- 7(c) the maintenance of amenity values;
- 7(f) maintenance and enhancement of the quality of the environment;
- 7(g) any finite characteristics of natural and physical resources;
- 7(i) the effects of climate change;
- 7(j) the benefits to be derived from the use and development of renewable energy.
- 349. 7(a) and (aa) In my view, there is currently insufficient information to determine the effects of the proposal on kaitiakitanga and the ethic of stewardship. This is something that will need to be addressed at the hearing.
- 350. 7(b) In the absence of an alternatives assessment, and noting the uncertainties relating to the derived odour emission rates, in my opinion, it is currently uncertain as to whether the proposal will constitute an efficient use of natural and physical resources.
- 351. 7(c) and (f) The key amenity issue, in my opinion, is odour. The Beca Review has demonstrated that there is uncertainty regarding the derived odour emission rates used by Tegel in their dispersion modelling. If the derived odour emission rates are even slightly incorrect, there is a potential that anticipated odour levels could exceed levels that would be considered offensive and objectionable and constitute a significant adverse effect on neighbouring sensitive receivers who have not provided their written approval. This would not constitute the maintenance or enhancement of amenity values or the quality of the environment.
- 352. 7(g) In my opinion, the proposal has had particular regard to the finite characteristics of natural and physical resources as the poultry farm will incorporate rainwater harvesting, solar panels and the energy centre which will reduce reliance on other finite forms of energy and resources.
- 353. 7(i) The T+T flooding assessment and design provided has, in my opinion, appropriately had particular regard to climate change.
- 354. 7(j) The proposed poultry farm will utilise innovative renewable energy generation for the operation of the proposed poultry farm.

Section 8 – Treaty of Waitangi

- 355. Section 8 of the Resource Management Act requires a consent authority to take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). The principles of the Treaty include the principle of partnership, the principle of active protection and the principle of rederess.
- 356. Kāpehu marae representatives have, in submissions and follow up correspondence, expressed dissatisfaction regarding the consultation with Tegel and the consultation with NRC and KDC following lodgement. Following the close of submissions, there is also conflicting advice from Tegel and Kāpehu marae representatives regarding ongoing consultation. At the time of drafting this s42A report, it is very

difficult to conclude whether adequate consultation has been undertaken in accordance with the principles of partnership and active protection. I anticipate that this will be a key matter to be addressed in the hearing.

357. It is also unclear, based on the information available at the time of drafting this s42A Report, whether the proposal will allow Māori the ability to exercise rangatiratanga over their taonga and the ability to develop resources in the future.

11.0 Conclusion & Recommendation

Conclusion

- 358. This report has considered the statutory requirements of section 104 of the RMA. My assessment details that while Tegel can appropriately avoid or mitigate the majority of adverse effects, there is uncertainty regarding the odour effects of the proposed poultry farm and that these could be potentially significantly adverse and unacceptable on a number of sensitive receivers who have not provided their written approval. Furthermore, at the time of preparing this s42A report, I consider that there is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, and these effects could potentially be significantly adverse and unacceptable.
- 359. These conclusions flow through to the assessment of the relevant statutory documents which has identified common themes in these provisions regarding air quality, amenity values and tangata whenua cultural values. In my view based on the preceding analysis, the poultry farm development as currently proposed, cannot be found to be consistent with these common themes in the relevant statutory documents nor can it meet the sustainable management purpose of the Act outlined in Part 2.
- 360. There are possible responses to these matters that Tegel could provide at or prior to the hearing. In particular, Beca have identified that Tegel could provide further detail regarding an adaptive management approach to address uncertainty in the derived odour emission rates, such as staging the farm development and initiating a monitoring regime to demonstrate that the expected odour reduction for the site-specific scenario is accurate. It is also understood that Tegel will be providing a CIA prior to the hearing to address potential cultural effects. However, neither of these are available at the time of drafting this s42A report and I have consequently undertaken my assessment based on the information and evidence available at the time of preparing it.
- 361. Overall, based on the evidence presented by the applicant at the time of preparing this s42A report, the peer reviews undertaken by the technical experts engaged by council, and the submissions received, it is my opinion that consent for the proposal should be **refused**. A recommendation to refuse the application with summary reasons as to why this recommendation is made is provided below.
- 362. In the event that the Hearing Commissioners decide that consent can be granted, I am able to provide or comment on a set of draft conditions for the KDC resource consent prior to or at the hearing.

Overall Recommendation

Recommendation

363. <u>THAT</u> pursuant to sections 104 and 104B of the Resource Management Act 1991, it is recommended that the land use consent application, RM170441, lodged by Tegel Food Limited, for the construction and operation of a free-range broiler poultry farm on the subject site at 5763 and 5802 State Highway 12, Arapohue, Dargaville, be **refused** by the Hearings Panel.

Reasons for the Recommendation

- 364. Pursuant to section 113 of the Resource Management Act 1991 the reasons for this recommendation are as follows:
 - a. There is uncertainty regarding the odour effects of the proposed poultry farm and these effects could be potentially significantly adverse and unacceptable on a number of sensitive receivers who have not provided their written approval.
 - b. There is insufficient information to properly evaluate the potential cultural effects on Kāpehu marae and urupā and more broadly the relationship of their culture and traditions with their ancestral lands and waahi tapu, and these effects could potentially be significantly adverse and unacceptable.
 - c. In considering the relevant planning provisions under Section 104(1)(b), the proposal finds support from provisions that support economic well-being and renewable energy. However, the evidence and information provided indicates that the proposal is inconsistent with key themes throughout the relevant statutory documents relating to air quality, amenity values and tangata whenua cultural values.
 - d. The proposal does not achieve the sustainable management of natural and physical resources due to the potential for significant adverse odour effects and insufficient information in terms of effects on Māori cultural values.

Section 37 Time Extension Recommendation

Recommendation

365. <u>THAT</u> pursuant to section 37A(4) of the RMA, a 35 working day extension is made to allow the hearing to commence on 8 August 2018.

Reasons for the Recommendation

- 366. Pursuant to section 103A(2) of the RMA, a hearing must be completed no later than 75 working days after the closing date for submissions on the application.
- 367. Submissions closed on 7 March 2018. Therefore pursuant to section 103A(2), a hearing was required to be held on or before 25 June 2018. Pursuant to section 37A(4) a consent authority may extend the maximum timeframes specified up to twice the maximum timeframes if special circumstances apply (including special circumstances existing by reason of the scale or complexity of the matter).
- 368. I consider that the following special circumstances apply:
 - a. The scale and complexity of the proposed poultry farm development is unprecedented. If constructed and operational, the proposed poultry farm will house 1.325 million chickens at any

one time on the subject site. This would constitute a free-range poultry farm that is bigger than any developed before in New Zealand.¹⁵⁸

- b. The resource consent application for the proposed Tegel Poultry Farm has attracted a significant level of public interest, evident in over 2,500 submissions being received for both the KDC and NRC consent applications. Receiving, collating, reviewing and summarising such a high volume of submissions has taken considerable time for KDC and NRC staff, significantly longer than would usually be the case.
- 369. The above, in my opinion, demonstrate that special circumstances apply to justify an extension of the statutory timeframes to allow a hearing to commence on 8 August 2018.

Report Prepared by:

10 July 2018

David Badham KDC Reporting Planner Barker & Associates

Date

Reviewed by:

10 July 2018

.....

Jessica Hollis Planning and Policy Manager Kaipara District Council

Date

 $^{^{\}rm 158}$ See third paragraph of executive summary of the AEE.

Attachment 1 – Location of parties who have given written approval



Attachment 2 – Rebecca Skidmore Peer Review Statement



Kaipara District Council

Peer Review Comments

Peer Reviewer:	Rebecca Skidmore			
Area of Expertise:	Landscape and Visual Effects			
Date:	18 June 2018			
Application Details:	A resource consent application by Tegal Foods Ltd. to establish and operate a free range broiler farm at Arapohui, Dargaville			
Peer Reviewers Reference:	Council Ref. RM170441 My ref.: 17032			
Documents Reviewed:	 The Application AEE by Tonkin + Taylor (October 2018); 			
	 The Landscape and Visual Amenity Effects Assessment by Boffa Miskell (Technical Report J, 9 October 2017); 			
	 The Section 92 response from Tonkin and Taylor including Appendix D (a letter from Boffa Miskell Dated 7 December 2017); 			
	 A further Section 92 response following the close of submissions (a letter from Tonkin and Taylor dated 18 May 2018); 			
	 Relevant submissions. 			



1 Introduction and Area of Expertise

- 1.1 I am an Urban Designer and Landscape Architect. I hold a Bachelor of Science degree from Canterbury University, Christchurch, a Bachelor of Landscape Architecture (Hons.) degree from Lincoln University, Christchurch and a Master of Built Environment (Urban Design) degree from Queensland University of Technology in Brisbane, Australia. I am a director of the consultancy R. A. Skidmore Urban Design Limited and have held this position for approximately fifteen years.
- 1.2 I have approximately 22 years' experience in practice in both local government and the private sector. In these positions I have assisted with district plan preparation and I have reviewed a wide range of resource consent applications throughout the country. These assessments relate to a range of rural, residential and commercial proposals.
- 1.3 In my current role I regularly assist local authorities with policy and district plan development in relation to growth management, urban design, landscape, and amenity matters. I also have considerable experience in carrying out character assessments.
- 1.4 I am an independent hearings commissioner.
- 1.5 I regularly provide expert evidence in the Environment Court. I have appeared as the Court's witness in the past.
- 1.6 I visited the site and surrounding environs on the 2nd November 2017.
- 1.7 I have reviewed the relevant submissions. A number raise general concerns about visual effects and the effects of the proposal on the character of the area. The submission by Pof. Mutu raises concerns about the visual effects of the proposal on the nearby Urupa. The matters raised in submissions have been considered in carrying out the review.
- 2 Site Description / Receiving Environment
- 2.1 The subject site (the "Site") and its surrounding context is described in Section 4 of the Landscape and Visual Amenity Effects Assessment by Boffa Miskell (the "BM report"). The report is accompanied by a useful set of plans and photographs that assist an understanding of the characteristics of the Site and its relationship to the surrounding context. I agree with the analysis provided of the Site and its context.
- 2.2 Section 6 of the report provides an overview of the statutory context for considering the proposal. This section includes an overview of the identification of the nearby outstanding natural landscape and outstanding natural feature (Mt Maungaraho) as

identified in the Northland Regional Policy Statement and Kaipara District Plan (as an ONL only).

2.3 Section 7 of the BM report provides a characterisation of the Site and concludes that its sensitivity to change is relatively low for the majority of the Site. I agree with that conclusion.

3 Adequacy of Information

- 3.1 The BM report provided some description of mitigation planting proposed, but no specificity was provided. In response to a request for further information (letter from Boffa Miskell dated 7/12/17) additional detail was provided. This included:
 - A plan identifying areas of vegetation to be retained;
 - A landscape plan clearly identifying the areas of proposed planting;
 - The addition of planting (a depth of 6m) along the boundary adjacent to the proposed quarry, comprising a mix of native species;
 - Further detail of the proposed planting of the bunds with the inclusion of stands of trees between the bunds and the adjacent roads. The information provided included an indicative cross section to demonstrate the planting proposed.
- 3.2 A request was also made for further detail of the proposed colour finish of the buildings. The response by Tonkin +Taylor ("T+T") noted that the Applicant was working with Boffa Miskell and Tegal's shed manufacturer to determine the final colour finish of the buildings and details would be provided once finalised. A further response was provided in the subsequent Section 92 response following the close of submissions. Recommendations from Boffa Miskell which included three alternative colour schemes were set out in a letter dated 13/12/17) included in the Section 92 response (dated 18/05/18) as Appendix G.
- 3.3 Following the close of submissions and in response to a request for further information, the letter by T+T (dated 18/05/18) confirmed that the proposed quarry operation has been amended to reduce its scale by setting it back from the Kapehu Marae boundary by a minimum of 100m. Further clarification was provided in the later letter from T+T (dated 15/06/18) that the planting previously proposed is still intended to be implemented in association with the amended quarry extent.



4 Matters of Agreement Within the Scope of Expertise

- 4.1 There is full agreement with the analysis provided in the BM report and subsequent information provided. This includes:
 - The description and analysis of the Site and surrounding context;
 - The identification of the viewing catchment and groups comprising the potential viewing audience;
 - The assessment that natural character effects on the Wairoa River will be very low;
 - The analysis of landscape effects. However, I note that suitable conditions will be required to ensure mitigation proposed will be achieved;
 - The analysis of visual effects. As above, I note that suitable conditions will be required to ensure mitigation proposed will be achieved.
- 5 Matters of Disagreement Within the Scope of Expertise
- 5.1 There are no outstanding matters of disagreement.

6 Analysis of Effects

Landscape Effects

- 6.1 Since the BM report was prepared, amendments have been made to the extent of the quarry proposed. The reduction in the scale of the quarry activity now proposed will further reduce the landscape effects arising from landform modification.
- 6.2 In terms of the assessment provided in relation to vegetation modification, I consider the additional information provided give greater clarity and certainty around the extent of vegetation modification and the potential for proposed planting to assist to integrate the buildings into their wider setting. In particular, the planting around the energy centre building is suitable to ensure it sits into the adjacent hill slope and will make a positive contribution to the wider vegetation patterns. While providing visual screening and flood protection to the broiler farm buildings, the proposed bunds create an extensive and regular form that will be relatively prominent in the low lying, flat landscape. The planting proposed will assist to reduce the apparent engineered landform. Stands of

trees planted adjacent to the bunds will also provide vertical elements that provided a visual foil to the horizontal expanse of the landforms.

- 6.3 The BM assessment of the proposal acknowledges that the site forms part of a working landscape that has undergone considerable modification over time. I agree with the assessment provided regarding the effect on rural character. While the proposal will result in an intensity and form that is not apparent in the wider landscape, the location of the broiler farm activity within the property concentrates the change in character to a portion of the lower area of the property, enabling the balance area to retain its existing rural character. The scale of building proposed is generally consistent with that enabled in the Rural zone. While two of the buildings are located within the 300m setback requirement from the intersection of State Highway 12 and Whakahara Road the adverse effects of this aspect of the proposal on rural character have been appropriately mitigated through the planting strategy proposed.
- 6.4 While somewhat industrial in the concentration and form of the proposed broiler farm activity, in the context of rural activities enabled in the zone, I agree that with the successful implementation of mitigation planting, the adverse effects on landscape character arising from the proposal will be low.
- 6.5 I agree with the assessment set out in the BM report that adverse effects on the identified ONL and ONF of Mt Maungaraho will be low.
- 6.6 The Boffa Miskell report assesses the effects on the natural character values of the Wairoa River as being very low. I agree with that assessment.

Visual Effects

- 6.7 I generally agree with the assessment of visual effects set out in the BM report.
- 6.8 In my opinion, the additional setback of the quarry from the marae boundary, together with the additional planting proposed along the boundary, will further reduce the adverse visual effects resulting from the quarry when viewed from the Marae and nearby urupa. The 'Quarry Setback' plan (drawing 1003839-203) contained in Appendix A to the further information letter by T+T (dated 18/05/18) shows this setback together with the identification of a 'protected ridgeline'. Point 3 of the T+T letter dated15/06/18 notes that, in order to avoid adverse landscape effects, the ridgeline will be maintained with earthworks not extending beyond this line.
- 6.9 In my opinion the additional detail around the proposed planting, provided as additional information, provides a more certain framework to ensure appropriate mitigation of adverse visual effects is achieved.

7 Aspects Requiring Control by Conditions

Skidmore

urban design ltd

- 7.1 The application AEE included a suite of recommended conditions (Appendix H). Condition 6 relates to the colour finish of buildings. Condition 6 (incorrectly numbered) and Condition 7 relate to the retention of existing vegetation and requirement for the preparation of a Landscape Mitigation Plan. In my opinion these conditions need to be updated and expanded in response to the additional information provided and matters identified in the BM assessment and my review. Should consent be granted, it is recommended that the following matters are addressed by conditions:
 - Requiring buildings to be finished in one of the three colour schemes set out in the Boffa Miskell letter dated 13/12/17;
 - Require retention of the vegetation shown on the BM plan titled 'Key Areas of Site Vegetation';
 - Require detailed planting plans to be submitted to the Council for approval. The planting plans should be consistent with the BM "Proposed Landscape Plan" (LV14, dated 7/12/17) and "Typical Bund Planting (LV15, dated 7/12/17) and the accompanying details set out in the BM letter (dated 7/12/17). The plans should be accompanied by implementation and maintenance schedules. The approved plans should be implemented prior to commencement of the broiler farm operation. All planting should be maintained in a healthy state in perpetuity. Planting that dies or becomes diseased should be replaced;
 - The final location of specimen tree planting adjacent to the bunds and indicated on the "Proposed Landscape Plan" should be agreed on site by a registered Landscape Architect to ensure mitigation of adverse visual effects from surrounding areas is achieved;
 - All planted areas should be fenced off from stock;
 - Ensure the quarry operation does not extend beyond the 100m boundary setback or 'protected ridgeline' depicted on the 'Revised Quarry Set Back' plan (T+T Ref. 1003839-203).

8 Conclusions and Recommendations

8.1 The Site is located within a modified rural environment. Together with the additional information and amendments to the proposal provided following lodgement of the resource consent, I generally agree with the Boffa Miskell assessment of landscape and visual amenity effects.



8.2 As set out above, I consider a number of conditions are necessary to ensure adverse landscape and visual effects are suitably avoided and mitigated. If the identified mitigation measures are successfully implemented, I consider the adverse landscape and visual effects resulting from the proposal will be no more than minor.

10 - Der

Rebecca Skidmore Urban Designer/Landscape Architect June 2018

Attachment 3 – Stantec Hazardous Substances and ESCP Peer Review Statement

Resource Consent Application RM170441: Tegel Foods Ltd Free Range Broiler Poultry Farm -Hazardous Substances and Erosion and Sediment Control Issues

This report has been prepared for the benefit of Kaipara District Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the report may be made available to Kaipara District Council and other persons for an application for permission or approval or to fulfil a legal requirement.

Rev. No.	Date	Description	Prepared By	Checked By	Reviewed By	Approved By

1 Background

In November 2017 Stantec New Zealand (Stantec) was requested by Kaipara District Council (KDC) to carry out technical reviews of several aspects of the above resource consent application. As part of this work "Technical Report F – Hazardous Substances Assessment" and "Technical Report K – Erosion and Sediment Control" were each reviewed.

In each case a series of comments were made and these were duly conveyed to the applicant (and thence to their consultants Tonkin + Taylor Ltd (T+T)) for consideration and response.

In each case the two Technical Reports were amended as suggested. Further comment has now been sought by KDC for the reviewer to confirm that the changes made are adequate to address the various matters raised or if further reservations are still held about the substance and detail of the reports.

2 Hazardous Substances Issues

Besides various procedural and largely editorial comments with respect to the technical report dealing with this subject, a number of more substantive matters were raised that required specific responses from T+T, as the applicant's consultant regarding this subject. In particular:

- A detailed site plan was requested that indicates the various areas on the site where hazardous substances will be stored. Such a plan was subsequently provided and this is sufficient in detail to be accepted as a satisfactory response to this request.
- A Table within the report has been amended and enhanced, in response to matters of detail raised about a more comprehensive schedule of hazardous substances to be held on site and the ready availability of relevant Safety Data Sheets for these substances. This is now satisfactory.
- The matter of safe transportation of hazardous substances, particularly load security assurance, has now been appropriately dealt with.

The amended Hazardous Substances Assessment report has now been further reviewed and the reviewer records that it is now satisfactory in coverage and detail and meets the intended purpose with respect to providing for comprehensive best practice management of hazardous substances.

3 Erosion and Sediment Control Issues

The Stantec peer reviewer noted that the matter of treatment of sediment-laden stormwater run-off within the worked area associated with site development had not been adequately dealt with. The response by the applicant's consultant has been to include considerably greater detail on this aspect and this is now sufficient, in both extent and procedural detail, to amend this particular deficiency identified in the original document.

The general matter of progressive stabilization of exposed soil surfaces was not adequately covered in the draft document but subsequent amendments are satisfactory and the matter can now be considered suitably dealt with.

4 Note on Submissions Received

None of the submissions received on the application have commented, either specifically or indirectly, on the aspects of hazardous substances management or erosion and sediment control.

5 Summary

Following peer review by Stantec of the technical documents submitted with the Tegel Foods Ltd resource consent application for hazardous substances management and erosion and sediment control respectively, review comments were provided to the applicant and, ultimately, to the authors of these two reports.

The comments and suggestions made have all been acted upon by the applicant's consultant and the resulting finalized documents, in each case, are satisfactory in content and detail to provide appropriate controls on these aspects of the proposal.

Paul Heveldt National Environmental Science Specialist Stantec New Zealand

Attachment 4 – Stantec Geotechnical Peer Review Statement





08 June 2018

Kaipara District Council The Hub 6/6 Molesworth Drive Kaipara MANGAWHAI 0505

Attention: Kaipara District Council

Dear Kaipara District Council:

Stantec New Zealand (Stantec) has been requested by Kaipara District Council (KDC) to undertake a resource consent review of the Geotechnical Assessment report prepared for the proposed Tegel Foods Free Range Broiler Farm at Arapohue, south of Dargaville, Northland.

We reviewed the referenced report prepared in September 2017 by Tonkin + Taylor Ltd. This report represents a preliminary evaluation of the suitability of the site for ground conditions.

We agree with the preliminary conclusions outlined in the report and there are no outstanding geotechnical items requiring clarification.

Yours sincerely,

Nigo mille

Nigel Miller Principal Geotechnical Engineer Stantec New Zealand

Andy Mott Senior Engineering Geologist Stantec New Zealand

Stantec New Zealand Level 3 MWH House 111 Carlton Gore Road Newmarket, Auckland 1023

PO Box 13-052 Armagh Christchurch 8141 TEL +64 9 580 4500

Please visit www.stantec.com to learn more about how Stantec design with community in mind.

03 July 2018

David Badham Barker and Associates

Email: davidb@barker.co.nz



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42 Hokianga Road Private Bag 1001, Dargaville 0340 Northland, New Zealand

p 09 439 3123 p 0800 727 059 f 09 439 6756 e council®kaipara.govt.nz www.kaipara.govt.nz

Dear David

Tegel Foods Limited - Poultry Farm – Whakahara Drainage District

My name is Matthew Smith and I have a Diploma of Engineering (Civil) from Unitec. I am the Four Waters Planning and Design Engineer and was previously a Stormwater Engineer for Kaipara District Council (KDC). I have over two years' experience as a stormwater engineer. I work closely with Wayne Crump our Land Drainage Co-ordinator who has held this position for 10 years and has an intimate knowledge of the workings of all the land drainage systems. Wayne also works closely with the committees and people who make up the land drainage districts within the Kaipara District.

The KDC Land Drainage Bylaw 2008 is applicable to the proposed Tegel poultry farm development. Part 17 of the KDC General Bylaws 2008 regulates various activities within land drainage areas. The Land Drainage Bylaw was created for the purposes of formalising Council's responsibilities to the communities and to properly care, maintain and manage the land drainage networks. Item 1702 outlines the issues surrounding the connection of private drains to a land drainage district and that it can only be done with the approval of Council. Item 1715 details the erection of stopbanks within the drainage district and that this can only be done with the prior consent of Council, and that Council can impose terms and conditions.

As discussed via teleconference with you and Ruben Wylie (NRC Reporting Planner) on Monday 25 June 2018, the main points to note regarding our findings from the Tonkin & Taylor Limited (T+T) Flooding Assessment dated September 2017 in Appendix B of AEE Volume 2 are:

 Paragraph 7.1 of the T+T section 92 response dated 18 May 2018 includes the following statement: "T+T coastal engineers will contact Wayne Crump to make sure he has access to these assessments and will work with him to address any concerns prior to the hearing."

Neither Wayne Crump, myself or anyone in the Four Waters Department at KDC have been formally approached by T+T since our email to Charlie Sherratt at T&T dated 29 August 2017.

2. As far as we are aware, there has been no communication with the remaining members/property owners of the Whakahara Drainage District in regards to the continued operation of the drainage



district. While Tegel Food Limited (Tegel) are purchasing the existing district representative's farm this does not absolve this responsibility.

- 3. We have viewed T+T's calculations in sections 7 and 8 of Technical Report B and understand that they are designing to the 2% Annual Exceedance Probability (AEP) calculation based on a 50 year future horizon for sea level rise and the 1% AEP storm with associated climate change predictions. Whilst this is satisfactory for building purposes it does not appropriately model the effects of the drainage district in the 1% AEP event in 100 years with associated 100 year Sea Level Rise (SLR) as per the IPCC 8.5 model that is currently approved in the IPCC's Fifth Assessment Report (2013). This is what KDC are expected to design to and forecast from this point forward as per the documentation provided by Ministry for the Environment (MfE) which is referenced in the Regional Plan 3.13 and in the District Plan for land use consents.
- 4. If Tegel are to proceed with installing stopbanks for the 2065 AEP inundation level then KDC will accept this, as long as there are no habitable buildings behind the stopbanks and that it is clearly identified on the consent that this is the defined design horizon.
- 5. T+T are showing minor effects on surrounding properties during a stopbank breach event. We accept this as the tide will find its own level whether this property is open or not.
- 6. In regards to inundation from a storm event, they have modelled the 2% AEP in 50 years to show that there will be a 10mm increase of water level on the surrounding countryside with these stopbanks in place. We can use this information to explain the future effects to drainage district members.
- 7. When the entire district is flooded the perception from the public to see flood waters from behind the Tegel stopbanks would be negative. Tegel cannot make flooding worse on the lower properties and will have to wait for the tide to recede like the remainder of the district. It would need approval from the drainage district as a whole to allow them to pump water out at this time.
- 8. Tegel should consider becoming a large contributor within the existing drainage district and increase the level of service here as a whole to everyone's benefit, thus providing the protection and level of service they require.
- 9. Tegel are looking to institute their own flood protection system. This will not exempt them from targeted land drainage rates going forward as the Four Waters Planning and Design Team prepare the district to combat climate change and sea level rise. This will need to be identified via an advice note.

Yours faithfully

Matthew Smith
Four Waters Planning and Design Engineer

Attachment 6 – Relevant Objectives and Policies under RMA s104(1)(b)

Attachment 7: Reference provisions from Policy Statements, Plans or Proposed Plans (s104(1)(b))

National Policy Statement for Freshwater Management

Objective B1

To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water.

Objective B3

To improve and maximise the efficient allocation and efficient use of water

Objective B5

To enable communities to provide for their economic well-being, including productive economic opportunities, in sustainably managing fresh water quantity, within limits.

Policy B7 and direction (under section 55) to regional councils

By every regional council amending regional plans (without using the process in Schedule 1) to the extent needed to ensure the plans include the following policy to apply until any changes under Schedule 1 to give effect to Policy B1 (allocation limits), Policy B2 (allocation), and Policy B6 (overallocation) have become operative:

1. When considering any application the consent authority must have regard to the following matters:

a. the extent to which the change would adversely affect safeguarding the lifesupporting capacity of fresh water and of any associated ecosystem and

b. the extent to which it is feasible and dependable that any adverse effect on the life supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.

- 2. This policy applies to:
 - a. any new activity and

b. change in the character, intensity or scale of any established activity – that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).

3. This policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.

New Zealand Coastal Policy Statement

Objective 5

To ensure that coastal hazard risks taking account of climate change, are managed by: • locating new development away from areas prone to such risks; • considering responses, including

managed retreat, for existing development in this situation; and • protecting or restoring natural defences to coastal hazards.

Policy 1 Extent and characteristics of the coastal environment

- Recognise that the extent and characteristics of the coastal environment vary from region to region and locality to locality; and the issues that arise may have different effects in different localities.
- 2) Recognise that the coastal environment includes:
 - (a) the coastal marine area;
 - (b) islands within the coastal marine area;
 - (c) areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these;
 - (d) areas at risk from coastal hazards;
 - (e) coastal vegetation and the habitat of indigenous coastal species including migratory birds;
 - (f) elements and features that contribute to the natural character, landscape, visual qualities or amenity values;
 - (g) items of cultural and historic heritage in the coastal marine area or on the coast;
 - (h) inter-related coastal marine and terrestrial systems, including the intertidal zone; and
 - (i) physical resources and built facilities, including infrastructure, that have modified the coastal environment.

Policy 24 Identification of coastal hazards

(1) Identify areas in the coastal environment that are potentially affected by coastal hazards (including tsunami), giving priority to the identification of areas at high risk of being affected. Hazard risks, over at least 100 years, are to be assessed having regard to:

(a) physical drivers and processes that cause coastal change including sea level rise;

(b) short-term and long-term natural dynamic fluctuations of erosion and accretion;

(c) geomorphological character;

(d) the potential for inundation of the coastal environment, taking into account potential sources, inundation pathways and overland extent;

(e) cumulative effects of sea level rise, storm surge and wave height under storm conditions;

(f) influences that humans have had or are having on the coast;

(g) the extent and permanence of built development; and

(h) the effects of climate change on:

(i) matters (a) to (g) above;

(ii) storm frequency, intensity and surges; and

(iii) coastal sediment dynamics; taking into account national guidance and the best available information on the likely effects of climate change on the region or district.

Policy 25 Subdivision, use, and development in areas of coastal hazard risk

In areas potentially affected by coastal hazards over at least the next 100 years:

(a) avoid increasing the risk10 of social, environmental and economic harm from coastal hazards;

(b) avoid redevelopment, or change in land use, that would increase the risk of adverse effects from coastal hazards;

(c) encourage redevelopment, or change in land use, where that would reduce the risk of adverse effects from coastal hazards, including managed retreat by relocation or removal of existing structures or their abandonment in extreme circumstances, and designing for relocatability or recoverability from hazard events;

(d) encourage the location of infrastructure away from areas of hazard risk where practicable;

(e) discourage hard protection structures and promote the use of alternatives to them, including natural defences; and

(f) consider the potential effects of tsunami and how to avoid or mitigate them.

Operative Northland Regional Policy Statement

Tangata Whenua

Objective 3.12 Tangata whenua kaitiaki role is recognised and provided for in decision-making over natural and physical resources.

Policy 8.1.1 - Tangata whenua participation

The regional and district councils shall provide opportunities for tangata whenua to participate in the review, development, implementation, and monitoring of plans and resource consent processes under the Resource Management Act 1991.

Policy 8.1.2 - The regional and district council statutory responsibilities

The regional and district councils shall when developing plans and processing resource consents under the Resource Management Act 1991 (RMA):

(a) Recognise and provide for the relationship of tangata whenua and their culture and traditions with their ancestral land, water, sites wāhi tapu, and other taonga;

(b) Have particular regard to kaitiakitanga; and

(c) Take into account the principles of the Treaty of Waitangi including partnership.

Economic wellbeing

Objective 3.5 – Enabling economic wellbeing

Northland's natural and physical resources are sustainably managed in a way that is attractive for business and investment that will improve the economic wellbeing of Northland and its communities.

Policy 5.1.1 - Planned and co-ordinated development

Subdivision, use and development should be located, designed and built in a planned and coordinated manner which: (b) Is guided by the 'Regional Urban Design Guidelines' in Appendix 2 when it is urban in nature;

(c) Recognises and addresses potential cumulative effects of subdivision, use, and development, and is based on sufficient information to allow assessment of the potential long-term effects;

(d) Is integrated with the development, funding, implementation, and operation of transport, energy, water, waste, and other infrastructure;

(e) Should not result in incompatible land uses in close proximity and avoids the potential for reverse sensitivity;

(f) Ensures that plan changes and subdivision to / in a primary production zone, do not materially reduce the potential for soil-based primary production on land with highly versatile soils, or if they do, the net public benefit exceeds the reduced potential for soil-based primary production activities; and

(g) Maintains or enhances the sense of place and character of the surrounding environment except where changes are anticipated by approved regional or district council growth strategies and / or district or regional plan provisions.

(h) Is or will be serviced by necessary infrastructure.

Note: in determining the appropriateness of subdivision, use and development (including development in the coastal environment – see next policy), all policies and methods in the Regional Policy Statement must be considered, particularly policies relating to natural character, features and landscapes, heritage, natural hazards, indigenous ecosystems and fresh and coastal water quality.

Groundwater

Objective 3.3 Ecological flows and water levels

Maintain flows, flow variability and water levels necessary to safeguard the lifesupporting capacity, ecosystem processes, indigenous species and the associated ecosystems of freshwater.

Objective 3.10 Use and allocation of common resources

Efficiently use and allocate common natural resources, with a particular focus on:

- (a) Situations where demand is greater than supply;
- (b) The use of freshwater and coastal water space; and
- (c) Maximising the security and reliability of supply of common natural resources for users.

Policy 4.3.3 – efficient allocation and use of water - Allocate and use water efficiently within allocation limits.

Policy 4.3.4 – Recognise and promote the benefits of water harvesting, storage, and conservation measures.

Renewable Energy

Objective 3.9 - Security of energy supply

Northland's energy supplies are secure and reliable, and generation that benefits the region is supported, particularly when it uses renewable sources.

Policy 5.2.1 – Managing the use of resources

Policy 5.4.1 - Recognising and providing for the benefits of renewable electricity generation activities and supporting the sustainable use and development of Northland's renewable energy resources.

Recognise and provide for the national significance of renewable electricity generation activities, including the national, regional and local benefits and support the sustainable use and development of Northland's renewable energy resources.

Natural Hazards - Flooding

Objective 3.13 – Natural hazard risk

The risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and our regional economy are minimised by:

(a) Increasing our understanding of natural hazards, including the potential influence of climate change on natural hazard events;

(b) Becoming better prepared for the consequences of natural hazard events;

(c) Avoiding inappropriate new development in 10 and 100 year flood hazard areas and coastal hazard areas;

(d) Not compromising the effectiveness of existing defences (natural and man-made);

(e) Enabling appropriate hazard mitigation measures to be created to protect existing vulnerable development; and

(f) Promoting long-term strategies that reduce the risk of natural hazards impacting on people and communities.

(g) Recognising that in justified circumstances, critical infrastructure

Policy 7.1.1 – General risk management approach

Subdivision, use and development of land will be managed to minimise the risks from natural hazards by:

(a) Seeking to use the best available information, including formal risk management techniques in areas potentially affected by natural hazards;

(b) Minimising any increase in vulnerability due to residual risk;

(c) Aligning with emergency management approaches (especially risk reduction);

(d) Ensuring that natural hazard risk to vehicular access routes and building platforms for proposed new lots is considered when assessing subdivision proposals; and

(e) Exercising a degree of caution that reflects the level of uncertainty as to the likelihood or consequences of a natural hazard event.

Policy 7.1.2 - New subdivision and land use within 10-year and 100-year flood hazard areas

New subdivision, built development (including wastewater treatment and disposal systems), and land use change may be appropriate within 10-year and 100-year19 flood hazard areas provided all of the following are met:

(a) Hazardous substances will not be inundated during a 100-year flood event.

(c) A minimum freeboard above a 100-year flood event of at least 500mm is provided for residential buildings.

(d) Commercial and industrial buildings are constructed so as to not be subject to material damage in a 100 year flood event.

(e) New subdivision plans are able to identify that building platforms will not be subject to inundation and / or material damage (including erosion) in a 100-year flood event;

(f) Within 10-year flood hazard areas, land use or built development is of a type that will not be subject to material damage in a 100-year flood event; and

(g) Flood hazard risk to vehicular access routes for proposed new lots is assessed.

Policy 7.1.3 - New subdivision, use and development within areas potentially affected by coastal hazards (including high risk coastal hazard areas)

Within areas potentially affected by coastal hazards over the next 100 years (including high risk coastal hazard areas), the hazard risk associated with new use and development will be managed so that:

(a) Redevelopment or changes in land use that reduce the risk of adverse effects from coastal hazards are encouraged;

(b) Subdivision plans are able to identify that building platforms are located outside high risk coastal hazard areas and these building platforms will not be subject to inundation and / or material damage (including erosion) over a 100-year timeframe;

(c) Coastal hazard risk to vehicular access routes for proposed new lots is assessed;

(d) Any use or development does not increase the risk of social, environmental or economic harm (from coastal hazards);

(e) Infrastructure should be located away from areas of coastal hazard risk but if located within these areas, it should be designed to maintain its integrity and function during a hazard event;

(f) The use of hard protection structures is discouraged and the use of alternatives to them promoted; and

(g) Mechanisms are in place for the safe storage of hazardous substances

Policy 7.1.6 - Climate change and development

When managing subdivision, use and development in Northland, climate change effects will be included in all estimates of natural hazard risk, taking into account the scale and type of the proposed development and using the latest national guidance and best available information on the likely effects of climate change on the region or district.

Policy 7.2.2 - Establishing the need for hard protection structures

Priority will be given to the use of non-structural measures over the use / construction of hard protection structures when managing hazard risk. New hard protection structures may be considered appropriate when:

(a) The level of hazard risk reduction that the proposed structural asset is seeking to achieve is appropriate and cannot reasonably be achieved through non-structural options; OR

(b) They will provide protection for concentrations of vulnerable existing development and the works form part of a long-term hazard management strategy that represents the best practicable option for the future; and

(c) The financial costs of non-structural measures (compared to the costs of the hard protection structure that will achieve the desired level of hazard risk reduction) are too high for the community; and

(d) It can be demonstrated that the benefits of mitigation outweigh the adverse effects and that the form and location of the hard protection structure is such that any adverse effects on the environment are minimised.

Hard protection structures, when considered necessary to protect private assets, should not be located on public land unless there is significant public or environmental benefit in doing so.

Reverse Sensitivity

Objective 3.6 Economic activities - reverse sensitivity and sterilisation

The viability of land and activities important for Northland's economy is protected from the negative impacts of new subdivision, use and development, with particular emphasis on either:

- (a) Reverse sensitivity for existing:
- (i) Primary production activities;
- (ii) Industrial and commercial activities;
- (iii) Mining*; or
- (iv) Existing and planned regionally significant infrastructure; or
- (b) Sterilisation of:
- (i) Land with regionally significant mineral resources; or
- (ii) Land which is likely to be used for regionally significant infrastructure.

*Includes aggregates and other minerals.

Proposed Northland Regional Plan

Objective F.0.1 Manage the use, development, and protection of Northland's natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while:

1) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations, and

- 2) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems, and
- 3) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Air Quality

Policy D.3.1 General approach to managing air quality

When considering resource consent applications for discharges to air:

1) apply the best practicable option when managing the discharge of contaminants listed in the National Environmental Standards Air Quality, and

2) consider applying the H.3 'Chimney height requirements' when assessing the best practicable option for stack discharges, and

3) consider the use of air dispersion modelling where the effects of a discharge are likely to be significant on the surrounding environment, and

4) take into account the New Zealand Ambient Air Quality Guidelines 2002 when assessing the effects of the discharge, and

5) take into account the cumulative effects of air discharge and any constraints that may occur from the granting of the consent on the operation of existing activities, and

6) recognise that discharges to air may have adverse effects on natural character, and

7) take into account the current environment and surrounding zoning in the relevant district plan including existing amenity values, and

8) consider the following factors when determining consent duration:

a) scale of discharge including effects, and

- b) regional and local benefit, and
- c) location including proximity to sensitive areas, and
- d) alternatives available, and

9) use national guidance produced by the Ministry for the Environment, including:

- a) Good Practice Guidance on Odour, 2016, and
- b) Good Practice Guidance on Dust, 2016, and
- c) Good Practice Guidance on Industrial Emissions, 2016.

Policy D.3.2 Burning and smoke generating activities

When considering resource consent applications for the burning of waste or burning associated with an energy generation process:

1) avoid outdoor burning of waste materials in urban areas unless:

a) there is a significant public benefit, or

b) alternative options have been explored, are demonstrated to be impractical and adverse effects are no more than minor, and

2) recognise that air discharges from crematoria and the cremation of human remains can be culturally sensitive to tangata whenua, and

3) recognise the need for the security of supply of energy in the region, which may include nonrenewable sources, and

4) require that a smoke management plan is produced as part of any resource consent where there is a likelihood that there will be objectionable and offensive discharges of smoke across the property boundary of where the activity is to take place. The smoke management plan must include:

a) a description of adjacent smoke sensitive areas, and

- b) details of materials to be burnt, and
- c) expected weather conditions, and
- d) approximate length of time the burn will take, and

e) how the burn will be attended, and

f) details of good management practice that will be used to control smoke to the extent that adverse effects from smoke at the boundary of the site are managed.

Policy D.3.3 Dust and odour generating activities

When considering resource consent applications for discharges to air from dust and/or odour generating activities:

1) require a dust and/or odour management plan to be produced where there is a likelihood that there will be objectionable and offensive discharges of dust and/or odour across the property boundary of where the activity is to take place. The dust and/or odour management plan must include:

a) a description of dust/odour generating activities, and

b) adjacent dust sensitive areas and/or odour sensitive areas, and

c) details of good management practice that will be used to control dust and/or odour to the extent that adverse effects from dust and/or odour at the boundary of the site are managed, and

2) take into account any proposed use of low dust generating blasting mediums when assessing the effects of fixed or mobile outdoor dry abrasive blasting or wet abrasive blasting.

Tangata Whenua

Policy D.1.1 When an analysis of effects on tangata whenua and their taonga is required

A resource consent application must include in its assessment of environmental effects an analysis of the effects of an activity on tangata whenua and their taonga if one or more of the following is likely:

1) adverse effects on mahinga kai and access to mahinga kai, or

2) any damage, destruction and loss of access to wāhi tapu, sites of customary value and other ancestral sites and taonga which Māori have a special relationship with, or

3) adverse effects on indigenous biodiversity where it impacts on the ability of tangata whenua to carry out cultural and traditional activities, or

4) the use of genetic engineering and the release of genetically modified organisms to the environment, or

5) adverse effects on taiapure, mataitai or Maori non-commercial fisheries, or

6) adverse effects on protected customary rights, or

7) adverse effects on Sites and Areas of Significance to Tangata Whenua mapped in the Regional Plan.

Note: The continued inclusion of clause 4 in this policy depends on the outcome of the appeals on the matter in the Regional Policy Statement.

Policy D.1.2 Requirement of an analysis of effects on tangata whenua and their taonga

An analysis of the effects of an activity on tangata whenua and their taonga in a resource consent application must:

1) include such detail as corresponds with the scale and significance of the effects that the activity may have on tangata whenua and their taonga, and

2) have regard to (but not be limited to):

a) any relevant planning document recognised by an iwi authority (lodged with the council), and

b) the outcomes of any consultation with tangata whenua with respect to the consent application, and

c) statutory acknowledgements in Treaty Settlement legislation, and

3) follow best practice, and

4) specify the tangata whenua community on whose behalf the assessment is being made, and

- 5) be evidence-based, and
- 6) incorporate, where appropriate, mātauranga Māori, and

7) identify and describe all the cultural resources and activities that may be affected by the activity, and

8) identify and describe the adverse effects of the activity on the cultural resources and cultural practices (including the effects on the mauri of the cultural resources, the cultural practices affected, how they are affected, and the extent of the effects), and

9) identify, where possible, how to avoid, remedy or mitigate the cultural effects of the activity that are more than minor, and

10) include any other relevant information.

Policy D.1.3 Affected parties

The following persons must be considered an affected person with regard to notification where the adverse effects on the following resources and activities are minor or more than minor:

Person	Resource or activity		
The tangata whenua entity identified in an analysis of the effects undertaken in accordance with policy D.1.2 'Requirements of an analysis of effects on tangata whenua and their taonga'	Cultural resources or activities identified in an analysis of effects undertaken in accordance with policy D.1.2 'Requirements of an analysis of effects on tangata whenua and their taonga'		
The committee of management of a taiapure	Taiāpure		
The Māori committee, marae committee or the kaitiaki with responsibility for the mataitai	Mataitai		
The Tangata Kaitiaki/Tiaki appointed by the provisions of the Fisheries (Kaimoana Customary Fishing) Regulations 1998 for the relevant rohe moana	Non-commercial Măori fisheries		

Policy D.1.4 Managing effects of Places of Significance to Tangata Whenua

Resource consent for an activity may only be granted if the adverse effects from the activity on the values of Places of Significance to Tangata Whenua in the coastal marine area and water bodies are avoided, remedied or mitigated so they are no more than minor.

Policy D.1.5 Places of Significance to Tangata Whenua

For the purposes of this plan, a Place of Significance to Tangata Whenua in the coastal marine area or a water body:

1) is:

- a) a historic heritage resource, or
- b) ancestral land, water, site, wāhi tapu, or other taonga, and
- 2) is either:

a) a Site or Area of Significance to Tangata Whenua, which is a single resource or set of resources identified, described and contained in a mapped location, or

b) a Landscape of Significance to Tangata Whenua, which is a collection of related resources identified and described within a mapped area, with the relationship between those component resources identified, and

3) has one or more of the following attributes:

a) historic associations, which include but are not limited to:

i) stories of initial migration, arrival and settlement, or

ii) patterns of occupation, both permanent and temporary or seasonal occupation, or

iii) the sites of conflicts and the subsequent peacemaking and rebuilding of iwi or hapū, or

iv) kinship and alliances built between areas and iwi or hapū, often in terms of significant events, or

v) alliances to defend against external threats, or

vi) recognition of notable tupuna, and sites associated with them, or

b) traditional associations, which include but are not limited to:

i) resource use, including trading and trading routes between groups (for instance – with minerals such as matā/obsidian), or

ii) traditional travel and communication linkages, both on land and sea, or iii) areas of mana moana for fisheries and other rights, or

iv) use of landmarks for navigation and location of fisheries grounds, or

v) implementation of traditional management measures, such as rāhui or tohatoha (distribution), or

c) cultural associations, which include but are not limited to:

i) the web of whanaungatanga connecting across locations and generations, or

ii) the implementation of concepts such as kaitiakitanga and manākitanga, with specific details for each whanau, hapū and iwi, or

iii) respect for authority, such as rangatiratanga, and respect for relationships, such as tuakanatanga, or

d) spiritual associations which pervade all environmental and social realities, and include but are not limited to:

i) the role of the atua Ranginui and Papatūānuku, and their offspring such as Tangaroa and Tāne, or

ii) the recognition of the wairua of those with us and those who have passed away, or

iii) the need to maintain the mauri of all living things and their environment, and

4) must:

a) be based on traditions and tikanga, and

b) be endorsed for evidential purposes by the relevant tangata whenua community, and

c) record the values of the place for which protection is required, and

d) record the relationship between the individual sites or resources (landscapes only), and

e) record the tangata whenua groups determining and endorsing the assessment, and

f) geographically define the areas where values can be adversely effected.

Policy D.2.5 Recognising community and tangata whenua values

When considering a resource consent application:

1) have particular regard to issues, uses, values, objectives and outcomes identified in an operative plan or strategy adopted by council that has followed a consultation process carried out in accordance with the consultative principles and procedures of the Local Government Act 2002, and

2) have regard to the values of the local community and tangata whenua.

Policy D.2.6 Managing adverse effects on historic heritage

Manage the adverse effects of an activity on historic heritage by:

1) recognising that historic heritage sites and historic heritage areas in coastal and fresh water identified in I 'Maps' have been identified in accordance with Policy 4.5.3 of the Regional Policy Statement for Northland, and

2) recognising the following as being significant adverse effects to be avoided in accordance with Policy 4.6.2 of the Regional Policy Statement for Northland:

a) the destruction of the physical elements of historic heritage, and

b) relocation of the physical elements of historic heritage, and

c) alterations to the form and appearance of the physical elements of historic heritage, and

d) loss of context to the surroundings of historic heritage sites or areas, taking into account the scale of any proposal, and

3) recognising that despite (2), there will not be significant adverse effects if:

a) the historic heritage is irreparably damaged and there are significant health and safety risks if it were to remain, or

b) alterations, repair or maintenance will not result in the loss, or significant degradation of any values contributing to it being historic heritage in accordance with Policy 4.5.3 of the Regional Policy Statement, or

c) the context of the historic heritage in its present location has already been lost and any damage to the historic heritage during relocation can be avoided, and

4) determining the likely adverse effects of proposals by taking into account:

a) the historic heritage values of the site or area as described in the site or area reports where available (refer to the regional council website), and

b) the outcomes of any consultation with:

i) Heritage New Zealand, the Department of Conservation or any other appropriate body, and

ii) tangata whenua in instances where historic heritage has identified values of significance to tangata whenua, and

c) an historic heritage impact assessment produced by a suitably qualified professional, and

5) recognising that methods of avoiding, remedying or mitigating adverse effects may include:

a) careful design, scale and location proposed in relation to historic heritage values, including proposed use and development adjacent to historic heritage, and

- c) reversing previous damage or disturbance to historic heritage, and
- d) improving the public use, value, or understanding of the historic heritage, and

e) the development of management and restoration plans, and

f) gathering and recording information on historic heritage by a suitably qualified professional.

Social, Cultural and Economic Benefits

Policy D.2.2 Social, cultural and economic benefits of activities

When considering resource consents, regard must be had to the social, cultural and economic benefits of the proposed activity.

Groundwater

Policy D.4.5 Maintaining overall water quality

An application for a resource consent that would allow a water quality standard or sediment quality standard to be exceeded or further exceeded will generally be declined. Resource consent may be granted if existing beneficial water quality dependent values of water are not adversely affected.

Policy D.4.10 Discharge of hazardous substances to land or water

1) Where a substance is approved under the Hazardous Substances and New Organisms Act 1996 to be discharged to land or water, good management practices must be used to avoid, as far as practicable, adverse effects on:

- a) non-target organisms, and
- b) the use and consumption of water by humans or livestock, and
- c) accidental spillage, and

2) where a substance is not approved under the Hazardous Substances and New Organisms Act 1996 to be applied to land or into water, activities involving the use, storage or disposal of hazardous substances must be undertaken using the best practicable options to:

a) as a first priority, avoid a discharge (including accidental spillage) of hazardous substances onto land or into water, including reticulated stormwater systems, and

b) as a second priority, ensure, where there is a residual risk of a discharge of hazardous substances, including any accidental spillage, it is contained on-site and does not enter surface water bodies, groundwater or stormwater systems.

Policy D.4.13 Achieving freshwater quantity related outcomes

Manage the taking, use, damming, and diversion of fresh water so that:

1) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh and coastal water are safe-guarded, and

2) the natural hydrological variation of outstanding freshwater bodies and natural wetlands are not altered, and

3) rivers have sufficient flow variability to maintain habitat quality, including to flush rivers of deposited sediment and nuisance algae and macrophytes, and

4) flows and water levels support sustainable mahinga kai, and

5) saline intrusion in, and land subsidence above, aquifers is avoided, and

6) recreational and amenity values associated with fresh water are maintained.
Policy D.4.17 Allocation limits for aquifers

1) The allocation limits in Clause 2 apply to:

a) rules in this plan that permit any activity involving the taking and use of fresh water from aquifers, and

b) applications for water permits for the taking and use of fresh water from aquifers, but do not apply to applications for water permits for the taking and use of fresh water under rules C.5.1.7 'Takes existing at the notification date of the plan - controlled activity' and C.5.1.9 'Takes existing at the notification date of this plan - discretionary activity'.

2) The quantities of fresh water that can be taken from aquifers must not exceed:

a) for the Aupouri aquifer, the catchment-specific allocation limits in Table 12 'Allocation limits for the Aupouri aquifer management unit', and

b) for coastal aquifers, an allocation limit of whichever is the greater of:

i) a default allocation limit of 10 percent of the average annual recharge, or

ii) the quantities authorised to be taken by:

1) permitted rules in this Plan,

2) resource consents at the date of public notification of this Plan less any resource consents subsequently surrendered, lapsed, cancelled or not replaced, and

3) resource consents for unauthorised takes that existed at the notification date of this Plan, and

c) for other aquifers, an allocation limit of whichever is the greater of:

i) a default allocation limit of 35 percent of the average annual recharge, or

ii) the quantities authorised to be taken by:

1) permitted rules in this Plan, and

2) resource consents at the date of public notification of this Plan less any resource consents subsequently surrendered, lapsed, cancelled or not replaced, and

3) resource consents for unauthorised takes that existed at the notification date of this Plan.

Policy D.4.22 Reasonable and efficient use of water - other uses

A resource consent application to take water for any other use of water must include an assessment of reasonable and efficient use by demonstrating that water will not be wasted and identify any opportunities for re-use or conservation.

Policy D.4.23 Conditions on water permits

Water permits must include conditions that:

1) clearly define the take amount in instantaneous take rates and total volumes, including by reference to the temporal aspects of the take and use, and

2) require that the water take is metered and information on rates and total volume of the take is provided electronically to the regional council, and

3) for water permits for takes equal to or greater than 10 litres per second, require the water meter to be telemetered to the regional council, and

4) clearly define when any restrictions and cessation of the water take must occur to ensure compliance with freshwater water quantity limits set in this plan, and

6) specify when and under what circumstances the permit will be reviewed pursuant to Section 128(1) of the RMA, including by way of a common review date with other water permits in a catchment.

Earthworks

Policy D.4.31 Managing the effects of land-disturbing activities

Earthworks, vegetation clearance and cultivation must:

1) be done in accordance with established good management practices, and

2) avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects on:

a) human drinking water supplies, and

b) areas of high recreational use, and

c) aquatic receiving environments that are sensitive to sediment or phosphorus accumulation.

Natural Hazards - Flooding

Policy D.4.25 Activities affecting flood control schemes

Avoid activities that are likely to:

1) compromise the functional integrity of flood control schemes, or

2) impede access to flood control schemes for maintenance purposes.

Policy D.4.26 New land drainage

Land drainage activities that require consent must:

- 1) maintain bed and bank stability, and
- 2) ensure that peatlands are not adversely affected, and
- 3) ensure that significant adverse effects on groundwater levels are avoided, and
- 4) ensure the effects of ground subsidence from de-watering are avoided, and
- 5) recognise the values of existing wetlands, and
- 6) maintain existing

Policy D.6.1 Appropriateness of hard protection structures

New hard protection structures may be considered appropriate when:

1) alternative responses to the hazard (including soft protection measures, restoration or enhancement of natural defences against coastal hazards and abandonment of assets) are demonstrated to be impractical or have greater adverse effects on the environment, or

2) they are the only practical means to protect existing or proposed:

a) regionally significant infrastructure, or

b) core local infrastructure (district parks and reserves, network infrastructure and local roads), or

c) concentrations of existing vulnerable development, and

d) they provide a better outcome for the local community, district or region, compared to if the hard protection structure was not built, and the works form part of a long-term hazard management strategy, which represents the best practicable option for the future.

Policy D.6.2 Design and location of hard protection structures

New hard protection structures must:

1) be located as far landward as possible in order to retain as much of the existing natural defences as possible, and

2) be designed and constructed by a suitably qualified and experienced professional, and

3) incorporate the use of soft protection measures where practical, and

4) be designed to take into account the nature of the coastal hazard risk and how it might change over at least a 100-year time-frame, including the projected effects of a sea level rise of one metre by 2115 (100 years).

Policy D.6.4 Flood hazard management - flood defences

Recognise the significant benefits that flood defences play in reducing flood hazard risk to people, property and the environment.

Policy D.6.5 Flood hazard management - development within floodplains

Development in flood hazard areas and rivers (including high risk flood hazard areas) must not increase the risk of adverse effects from flood hazards on other property or another person's use of land or property.

Regional Air Quality Plan for Northland

Objective 6.6.1 The sustainable management of Northland's air resource including its physical, amenity and aesthetic qualities by avoiding, remedying or mitigating adverse effects on the environment from the discharge of contaminants to air.

Objective 6.6.2 The maintenance and, where necessary, enhancement of the quality of the environment so that it is free from noxious, dangerous, offensive or objectionable adverse effects associated with discharges to air, such as odour, dust, smoke and poor visibility.

Policy 6.7.1 To maintain the existing high standard of ambient air quality in the Northland region, and to enhance air quality in those instances where it is adversely affected, by avoiding, remedying or mitigating adverse effects of activities discharging contaminants to air.

Policy 6.7.2 To avoid, remedy or mitigate the adverse effects generated by discharges of contaminants to air including cumulative or synergistic/interactive effects.

Policy 6.7.4 To manage the discharge of hazardous, noxious and dangerous contaminants to air in a manner that ensures any adverse environmental effects, including on human health, are avoided, remedied or mitigated.

Policy 6.7.5 Where the effects of activities are unknown or not well understood, to adopt a precautionary approach to the granting of resource consent applications for the discharge of contaminants to air where it is considered that the effects of such discharges on the environment may be significant.

Policy 6.7.6 Where necessary, apply the best practicable option to discharges of contaminants to air, while complying with the other policies in this Plan.

Policy 6.7.7 To recognise that discharges of contaminants to air may adversely affect other receiving environments.

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Policy 6.7.10 To promote the integrated management of natural and physical resources in order to avoid, remedy or mitigate the adverse effects of discharges of contaminants to air.

Policy 6.15 To ensure that the discharge of contaminants to air should not result in offensive or objectionable odours that could adversely affect people and communities.

Policy 6.9.1 To avoid, remedy or mitigate any noxious, dangerous, offensive or objectionable effects of discharges of dust into the air.

Policy 6.11.1 To avoid or minimise the burning of waste materials.

Policy 6.11.2 To avoid, remedy or mitigate the adverse effects of discharges to air generated from the burning of waste materials.

Policy 6.11.3 To ensure that burning of fuels or waste materials do not create noxious, dangerous, offensive or objectionable adverse effects from smoke, odour or particulate emissions or affect the general amenity of residences, public places and work places.

Policy 6.15.1 To ensure that the discharge of contaminants to air should not result in offensive or objectionable odours that could adversely affect people and communities.

Regional Water and Soil Plan for Northland

Tangata Whenua

Objective 6.3.1 The management of the natural and physical resources within the Northland region in a manner that recognises and provides for the traditional and cultural relationships of tangata whenua with the land and water.

Objective 12.5.4 Avoid, remedy or mitigate the adverse effects of activities so as to achieve the protection of areas of significant indigenous vegetation, significant habitats of indigenous fauna, natural character of water bodies and their margins; and to recognise and provide for waahi tapu and other sites of significance to tangata whenua.

Policy 6.4.1 To recognise and, as far as practicable provide for the relationship of Maori and their culture and traditions with respect to the use, development and protection of natural and physical resources in the Northland region.

Policy 6.4.3 To have particular regard for kaitiakitanga and consider options for the involvement of tangata whenua in monitoring the use, development and protection of resources within the Northland region.

Policy 9.5.13 To recognise, and as far as practicable, provide for the cultural and spiritual values held by the tangata whenua for the resource when considering applications for the taking, using, damming or diverting of water from surface water resources.

Policy 10.5.8 When allocating groundwater, to recognise, and as far as practical, provide for the cultural and spiritual values held by the tangata whenua for the groundwater resources and associated surface water resources.

Policy 12.6.12 To have regard to the cultural and spiritual values held by the tangata whenua for the resource when considering applications for land disturbance activities.

Groundwater

Objective 10.4.1 The sustainable use and development of Northland's groundwater resources while avoiding, remedying or mitigating actual and potential adverse effects on groundwater quantity and quality.

Objective 10.4.2 The sustainable management of groundwater resources in conjunction with the sustainable management of surface water resources.

Objective 10.4.3 The management of groundwater resources so that the potential adverse effects of land subsidence are avoided.

Policy 10.5.1 To ensure the sustainable use of groundwater resources, by avoiding groundwater takes that exceed recharge which result in any of the following:

(a) Saltwater intrusion or reduced groundwater quality;

(b) A lowering of the groundwater table below existing efficient bore takes;

(c) A lowering of the temperature of geothermal waters in geothermal aquifers and springs;

(d) Adverse effects on surface water resources in terms of Policy 10.05.07.

Policy 10.5.4 When allocating groundwater resources, to take into account any reduction in recharge that may occur in time, as a result of land uses over groundwater recharge areas.

Policy 10.5.6 To avoid cumulative adverse effects arising from small takes, that limit the use or quality of groundwater aquifers.

Policy 10.5.9 To avoid, remedy or mitigate any ground subsidence as a result of groundwater takes, use or diversion, where this is likely to cause adverse flooding, drainage problems, or building damage.

Policy 10.5.10 To ensure bore construction, maintenance, alteration and closure is undertaken in a manner which prevents:

(a) The contamination of groundwater in one aquifer from another aquifer, or from contaminated or potentially contaminated sites;

(b) The loss of pressure in confined aquifers;

(c) Water wastage in flowing artesian conditions;

(d) Uncontrolled release of geothermal pressure and fluids;

(e) As far as practicable, other adverse effects on groundwater quality and quantity.

Servicing & Hazardous Substances

Objective 8.6.1 The effective treatment and/or disposal of contaminants from new and existing discharges in ways which avoid, remedy or minimise adverse effects on the environment and on cultural values.

Objective 8.6.2 The reduction and minimisation of the quantities of contaminants entering water bodies, particularly those that are potentially toxic, persistent or bio-accumulative.

Policy 8.7.1 To require all new discharges of sewage or discharges with a high organic content to be:

(a) By land disposal; or

(b) To water, if after reasonable mixing:

(i) it does not cause a discernible adverse change in the physiochemical and/or microbiological water quality of the receiving water at the time of discharge; and

(ii) it is the best practicable option (as defined by Section 2 of the Act).

Policy 8.7.3 To ensure there are adequate separation distances between water bodies and discharges to land to avoid or mitigate adverse effects on water quality.

Policy 8.7.4 To promote effective effluent treatment and disposal systems which are:

(a) Low maintenance and low risk;

(b) Land based, where the soil types, available disposal areas, back-up facilities and pumping systems are adequate; Disposal of solid waste, including hazardous wastes is an issue for both regional and District Councils. Liaison and co-ordination of efforts between the Councils is required to achieve the objectives.

Policy 8.9.1 To avoid the cumulative adverse effects of sewage discharges, particularly in areas subject to concentrated development, a high water table, poorly draining soils, very free draining soils, or in areas which are ecologically and/or culturally sensitive.

Policy 8.11.1 To require the best practicable option for point source and non-point source discharges from agriculture that maintain and enhance surface water and groundwater quality

Policy 8.17.1 To manage the diversion and discharge of stormwater in a way that provides safeguards against flooding and maintains or enhances water quality.

Policy 8.17.4 To promote best practice for stormwater management design, including low impact options.

Policy 8.17.5 To promote stormwater management practices that avoid or minimise the discharge of contaminants from industrial and trade premises into stormwater drainage systems.

Policy 8.17.6 To encourage activities to operate in accordance with industry standards and/or environmental guidelines where these are intended to avoid, remedy or mitigate the adverse effects of stormwater contamination.

Policy 8.17.7 To permit the discharge of stormwater from hazardous substance storage areas and industrial or trade premises if sufficient safeguards are adopted to avoid, remedy or mitigate the potential adverse effects associated with stormwater contamination.

Policy 12.6.2 To avoid, remedy or mitigate adverse effects of land use activities on water bodies and their margins, particularly on water quality, water flows and levels, aquatic ecosystems and riparian habitats.

Policy 9.5.15 To encourage water users to:

(a) Undertake rainwater collection and storage, including rainfall runoff.

(b) Efficiently use and minimise the wastage of surface water taken and used for any purpose.

(c) Investigate alternative water sources and water use strategies for use during low flow periods.

Earthworks

Objective 12.5.1 The protection of the soil resources including soil quality and soil quantity, from degradation or loss as a result of unsustainable land use and land use practices.

Policy 12.6.1 To promote soil conservation as an integral part of all land use and development activities by:

(a) Encouraging sustainable land use practices;

(b) Addressing on-site and off-site water and soil problems;

(c) Addressing actual and potential erosion problems;

(d) Maintaining soil quality (depth, structure, water holding capacity, organic matter and fertility) as far as practicable.

Policy 12.6.2 To avoid, remedy or mitigate adverse effects of land use activities on water bodies and their margins, particularly on water quality, water flows and levels, aquatic ecosystems and riparian habitats.

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Policy 12.6.3 To avoid or reduce the discharge of sediment to all surface waters and to minimise soil losses from land use activities, particularly on erosion prone land.

Natural hazards / flooding

Objective 11.4.2 Flood control of floodplains that protects individuals, communities and their properties.

Policy 11.5.3 To avoid, remedy or mitigate adverse environmental effects resulting from the maintenance of existing land drainage and flood control schemes, and any new works associated with those existing schemes.

Policy 11.5.5 To promote structures and works that are effective in controlling floodwaters and in mitigating the effects of flooding and minimising erosion whilst avoiding, remedying or mitigating adverse environmental effects.

Policy 11.5.7 To recognise the role that wetlands and low-lying areas of land play in the management of floodwaters.

Policy 11.5.9 To encourage land uses on floodplains that do not result in adverse environmental effects or increased risks to people, properties or communities arising from the passage of floodwaters across floodplains.

Policy 11.5.12 To manage areas subject to land drainage and flood control schemes through long duration resource consents that are supported by management plans prepared in accordance with Appendix 17.

Kaipara District Plan under Section 104(1)(b)(vi)

Strategic Direction for the District

Objective 3.4.2 To minimise the ad hoc expansion of residential and business activities in the rural heartland, where such activities have the potential to give rise to adverse environmental effects and issues of reverse sensitivity.

Objective 3.4.3 To restrict growth of residential and business activities in inappropriate locations where such activities have the potential to give rise to adverse effects on sensitive receiving environments.

Objective 3.4.4 To ensure emissions, discharges and effects of residential and business development are managed so that adverse effects on the surrounding environment, including existing settlement areas, are comprehensively addressed.

Policy 3.5.3 By providing for a diverse range of residential and business opportunities in appropriate locations that enable their effects to be effectively managed.

Policy 3.5.5 By ensuring infrastructure and servicing (e.g. transport, stormwater and sewerage reticulation and treatment systems and networks) for new development areas are designed and provided for at the outset of development, so that any adverse effects on the environment or existing systems are adequately avoided, remedied or mitigated.

Policy 3.5.6 By requiring new residential and business development to comprehensively consider (on a catchment wide basis) potential:

a) Adverse effects on the natural character of the coastal environment, lakes, rivers, wetlands or their margins;

b) Adverse effects on areas of significant indigenous vegetation or significant habitats of indigenous fauna;

c) Adverse effects on outstanding natural features, landscapes and heritage resources;

e) Conflicts with areas where natural hazards could adversely affect the physical resources of residential and business development or pose risks to people's health and safety;

f) Conflicts with finite resources which can reasonably be expected to be valuable for future generations 9including highly productive and versatile soils and aggregate resources). (For example, where residential and business development could adversely affect the availability of finite resources); and

g) To identify mechanism to avoid, remedy or mitigate such impacts.

Rural Character and Amenity

Objective 12.5.2 To maintain the rural character and amenity, including the:

- Sense of openness;
- Low dominance of built form;
- Pasture and Commercial Forest Areas;
- Areas of indigenous vegetation and significant fauna; and
- Unmodified natural landforms

Objective 12.5.5 To avoid, remedy or mitigate adverse effects on the quality of the rural environment without unduly restricting productive rural activities e.g. farming and forestry

Policy 12.6.3c By providing for more intensive and innovative site-specific subdivision and development where this results in better environmental outcomes.

Policy 12.6.5 By avoiding, remedying or mitigating the adverse effects of subdivision and development (including ribbon development) on the natural environment values of the rural area.

Objective 12.5.7 To recognise farming, forestry, mineral extraction and processing, renewable energy generation, industrial and commercial activities and network utilities that enable people and communities to provide for their social, economic and cultural wellbeing.

Objective 12.5.9 To maintain sites and buildings during development to avoid adverse visual amenity effects

Policy 12.6.7 By avoiding, remedying or mitigating the adverse effects of activities which pose the greatest threat to remaining areas of significant indigenous vegetation and significant habitats of indigenous fauna, and rural amenity (e.g. vegetation clearance, excavation and fill, the bulk and location of buildings and structures).

Policy 12.6.15 By requiring site and building development to demonstrate how adverse visual amenity effects will be addressed over the duration of the development.

Objective 20.5.4 To manage adverse effects of activities within and in close proximity to reserves and open spaces, in order to avoid, remedy or mitigate adverse effects on the environment.

Policy 20.6.6 By managing activities adjoining and in close proximity to reserves.

Rural Outcome 12.8.1 The character (including social, environmental and natural values) of the rural environment will be maintained.

Rural Outcome 12.8.3 Rural production activities will continue to be provided for in the Rural Zone.

Rural Outcome 12.8.5 The maintenance and enhancement of those values that contribute to Visual Amenity of the rural environment.

Rural Outcome 12.8.10 Site development works, avoid, remedy, or mitigate adverse environmental effects (including on visual amenity) of site development works.

Landscape Values

Objective 18.5.1 To protect Outstanding Natural Landscapes from inappropriate subdivision, use and development, including in terms of the type, scale, design, intensity and location of any subdivision, use and development

Objective 18.5.4 To maintain the distinctiveness, diversity and complexity and sense of place of landscapes across the District.

Policy 18.6.1 To recognise and protect Outstanding Natural Landscapes from inappropriate subdivision, use and development by:

a) Identifying and confirming the extent, values and characteristics of Outstanding Natural Landscapes;

b) Protecting natural and physical features and natural systems (such as landforms, indigenous vegetation and watercourses) that contribute to the character and values of Outstanding Natural Landscapes;

c) Managing the potential adverse effects of activities including earthworks, vegetation clearance and the location, scale, design and external appearance of buildinds, structures and accessways;

d) Protecting the character and values of features and landscapes by managing the potential significant adverse effects of locating inappropriate significant built elements outside Outstanding Natural Landscapes;

e) Recognising the importance of views of Outstanding Natural Landscapes;

f) Avoiding significant adverse effects that would compromise the values and characteristics of Outstanding Natural Landscapes, particularly when viewed from public places including public roads;

g) Recognising the on-going contribution to the social and economic wellbeing of the District derived from activities and maintaining appropriate opportunities for these within Outstanding Natural Landscapes. These activities include farming, forestry operations and renewable energy activities and associated electricity transmission activities; and

h) Encouraging and recognising the wider benefits of sensitive development that protects Outstanding Natural Landscapes.

Policy 18.6.2 To consider, at the time of resource consent applications, the potential adverse effects of subdivision, use and development on landscape values and the diversity of landscape types.

Tangata Whenua

Objective 5.5.1 To involve Tangata Whenua as partners in policy development and implementation and decision making under the District Plan

Policy 5.6.1 Recognising the partnership with Tangata Whenua by:-

1) Consultation is undertaken with Te Uri o Hau and Te Roroa on those matters that may affect their taonga, or their use, development and protection of the natural and physical environment (recognising Kaitiaki); and

2) Ensuring that active consideration is given to the impacts of development on taonga. This includes Tangata Whenua involvement in consent processing / hearings.

Policy 5.6.3 Recognising Iwi Management Plans in consents and decision making

Objective 5.5.2 To recognise the importance of providing for the relationship of Maori, including their culture and traditions, with their ancestral lands, water, sites, waahi tapu and other taonga.

Policy 5.6.2 By recognising and protecting the values of Areas of Significance to Maori

Historic Heritage

Objective 17.4.1 To identify, protect (and where possible enhance) features which are of archaeological value to the District from inappropriate subdivision, use and development.

Policy 17.5.5 By avoiding or mitigating adverse effects on any archaeological sites resulting from inappropriate subdivision, use and development

Objective 17.4.2 To protect waahi tapu and other sites of spiritual, cultural or historical significant to Maori from inappropriate subdivision, use and development.

Objective 17.4.4 To protect heritage resources and associated values, and in appropriate circumstances their surrounds from inappropriate subdivision, use and development.

Policy 17.5.2 By encouraging and where practicable requiring the protection of sites and features of historic significance to the District from inappropriate subdivision, use and development.

Objective 17.4.6 To recognise the relationship that heritage resources may have with the land surrounding that resource.

Objective 17.4.7 To encourage consultation with the New Zealand Historic Places Trust, local historical societies and Tangata Whenua

Policy 17.5.8 By protecting the spiritual, cultural or historical values of Areas of Significance to Maori from inappropriate subdivision, use and development and that the effect on cultural, spiritual and historical values is taken into account in the assessment of applications and Tangata Whenua are acknowledged as Kaitiaki for these areas.

Transport Network

Objective 11.5.1 To maintain a safe and efficient Transport Network that enables the District to communicate, connect and do business with minimal conflicts between the environment, adjoining land uses, traffic and people.

Policy 11.6.1 By managing the design and construction of the Transport Network to avoid, remedy or mitigate effects on the environment.

Policy 11.6.3 By providing for the effective integration of land use and transport planning decision to achieve a sustainable land transport system.

Policy 12.6.16 By requiring the provision of safe and practicable vehicular access from a public road to each site.

Policy 12.6.17 By requiring the provision of safe and practicable vehicular access from a public road to each site.

Hazardous Substances

Objective 8.5.1 To avoid, remedy or mitigate the adverse effects of the use, storage, transportation and disposal of hazardous substances on human health and safety, and on physical resources and property.

Objective 8.5.2 To avoid, remedy or mitigate the adverse effects of the use, storage, transportation and disposal of hazardous substances on land, air, water and natural ecosystems.

Policy 8.6.1 By ensuring that activities involving the use or storage of hazardous substances are designed, constructed and managed to avoid the risk of unintended fire and explosion, protect human and environmental health and adverse effects on the environment.

Policy 8.6.2 By ensuring that the storage and transportation of hazardous substances is undertaken in a manner that reduces the risk of accidental leaks and spills.

Policy 8.6.3 By requiring that hazardous substances are appropriately disposed of at specialist facilities to avoid any adverse effects on the environment.

Policy 8.6.4 The appropriate identification and assessment of both activity specific and possible cumulative risks with other activities involving hazardous substances.

Servicing and Infrastructure

Objective 12.5.4 To ensure that the servicing of new subdivision and development does not adversely affect the environment, in particular sensitive receiving environments.

Policy 12.6.9 By avoiding, remedying, or mitigating adverse effects on the environment by requiring the landowner or developer to provide roading and on-site services for water supply, wastewater disposal or stormwater disposal for sites in the Rural areas, unless the provision of reticulated services is identified as an alternative to on-site systems.

Policy 12.6.12 By requiring subdivision and development to demonstrate adequate service provision (including maintenance) and ensure the costs of any service upgrades are borne by the development.

Policy 12.6.13 By ensuring that where sites are not connected to a public water supply, wastewater disposal or stormwater disposal system, suitable provision can be made on each site for an alternative water supply or method of wastewater disposal or stormwater disposal, which can protect the health and safety of residents and can avoid any significant adverse effects on sensitive receiving environments.

Rural Outcome 12.8.8 The provision and maintenance of required levels of capacity, efficiency and safety of services and infrastructure.

Natural Hazards

Objective 7.5.1 To control subdivision and development so that it does not induce natural hazards or exacerbate the effects of natural hazards.

Objective 7.5.4 To consider natural hazards at the time of any subdivision, land use or development or when there is a significant change in land use proposed (for example a new Growth Area).

Policy 7.6.1 By considering the potential for development, subdivision and land use activities including:

- i. Vegetation clearance;
- ii. Draining of wetlands;
- iii. Changes in overland flow paths and stormwater;
- iv. Changes to riparian margins;
- v.Earthworks;
- vi.Buildings and building setbacks; and
- vii.Land reclamation;

To exacerbate any natural hazard on-site or off-site, and avoiding such activities, unless it can be demonstrated that the adverse effects can be mitigate, remedied or avoided.

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Policy 7.6.3 By considering the potential adverse impacts of development on flood flow paths of rivers and the efficient functioning of natural drainage systems in subdivision, land use and development.

Policy 7.6.4 By taking into account climate change and sea level rise, as predicted by the Intergovernmental Panel of Climate Change or Royal Society of NZ, when assessing development in areas potentially affected.

Economics and Innovation

Objective 12.5.10 To encourage innovative development and integrated management of effects between subdivision and land use which results in better environmental outcomes than more conventional or traditional subdivision, use and development

Policy 12.6.14 By providing flexibility for subdivision and development density, as well as for a range of activities (industrial, commercial and residential etc.) that can be appropriately located in the Rural Zone and meet the environmental conditions appropriate to that Zone.

Rural Outcome 12.8.4 A diversity of land use activities and efficient use of the Rural Zone resources.

Rural Outcome 12.8.9 The creation of a rural environment which provides for the social and economic needs of the District's communities through the sustainable management of natural and physical resources.

Reverse Sensitivity

Objective 12.5.6 To provide for a range of activities in the Rural Zone which are located, designed and operated in such a way as to avoid, remedy or mitigate reverse sensitivity effects on existing land uses in the vicinity.

Policy 12.6.10 By maintaining opportunities for the diversity of rural land use, without significant interference from adjacent residential, lifestyle or rural – residential activities.

Policy 12.6.11 By requiring activities locating in the Rural Zone to be sites and designed to avoid, remedy or mitigate reverse sensitivity effects on existing adjoining land uses.

Assessment Criteria

Rule 11.10.2 – Road Construction and works in or on a road not undertaken by the Council or NZ Transport Agency (where Rule 11.10.1 does not apply)

Where an activity doesn't meet 1(a)-(c) inclusive then the following matters will be considered:

- i. Whether the works adversely affect sight distances or road safety;
- ii. Whether the works prevent a previously possible turning movement to or from a vehicle crossing, frontage of an underdeveloped site with no alternative access or intersection;
- iii. Whether the works will result in a change in the number of through lanes within a road;
- iv. Whether the works will involve altering the level of the road by more than 150mm;
- v. Whether the works will involve earthworks of 1000m³ or more;
- vi. Whether the works will involve reductions in the capacity of storm water systems present within the road or road reserve; and
- vii. Whether the works comply with all other provisions relating to activities within the Transport Network and the Kaipara District Council Engineering Standards 2011.

Note 1: If an activity does not comply with (2) (a)-(c) then it shall be considered under the relevant matters for assessment identified in the Plan relating to the non-compliance.

Rule 12.10.1a – Excavation and Fill

Where an activity is not permitted by this Rule, Council has restricted its discretion over the following matters when considering and determining an application for resource consent:

- i. Whether building consent has been issued and has already assessed the proposed earthworks (in such cases the matters considered under the Building Act 2004 will not be reconsidered here);
- ii. Machinery to be used and hours of operation;
- iii. Effects on the locality, particularly the character and amenity values of adjoining sites/land uses;
- iv. Effects on ecological values and in particular any Sites of Ecological Significance as defined by the criteria listed in Appendix 25G;
- v. Effects of excavation related traffic on the safety and efficiency of the road network and on the amenity of dwellings on adjoining land;
- vi. Effects on landscape and heritage values;
- vii. The extent to which the proposal will affect the values of any Outstanding Natural Landscape identified in Map Series 2;
- viii. The extent to which the works meet the requirements of the performance standards in Rule 12.10.1 or the Kaipara District Council Engineering Standards 2011 ;
- ix. Effects of dust and noise on sensitive receivers;
- x. If located in an Overlay, the extent to which the values identified in the Objectives and Policies for Overlays (Chapter 4) are present on the site, and the extent to which the proposal is compatible with those values;
- xi. Effects on cultural and heritage values (as defined in Chapter 17), including any consultation has been undertaken with Tangata Whenua as appropriate;
- xii. The consistency of the proposal with relevant Objectives and Policies contained in Part A and Part C of the Plan with managing the values of the District including but not limited to those outlined in Chapters 2, 6,7,8 and 17;
- xiii. Any effects on the integrity of the electricity transmission line; and
- xiv. The volume, area and location of the works, including temporary activities such as:
 - Stockpiles;
 - Timing of the works;
 - Site remediation;
 - The use of mobile machinery near transmission line which may put the line at risk;
 - Compliance with New Zealand Electrical Code of Practice 34:2001; and
 - Outcomes of any consultation with any relevant network operator.

In granting any Consent under this Rule, Council will require (as a Condition on that Consent) an Excavation and Fill Management Plan to be lodged by the Consent Holder, which is to contain the following information (to the satisfaction of Council):

i. Details of the location and form of earthworks proposed on a site, including volume, area affected and height of any excavation or fill;

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- ii. A plan showing relevant existing and proposed contours and location of any adjacent bush shrub land and wetland areas, water bodies and the Coastal Marine Area;
- iii. An assessment of the site's ecological, landscape amenity and heritage values, including details on any recorded archaeological sites and registered historic places, historic areas and waahi tapu, and the need for an archaeological-historic places site survey of the area to be developed; iv) Measures directed at mitigating any adverse effects of the activity on the ecological, heritage and landscape values of the site, adjacent watercourses and the Coastal Marine Area;
- iv. Details of appropriate methods proposed to manage sediment runoff and prevent erosion such as silt traps and earth bunds;
- v. Where earthworks are within a known area of instability or flood hazard the application will be required to be accompanied by an engineering assessment; and
- vi. Details of methods proposed to manage construction traffic.

For the purposes of this rule a Development Plan shall include:

- i. A scale map showing the area to be mined or quarried and including surface contours, hydrologic features, the location of buildings and other structures and spoil disposal or top soil stockpiling, areas and/or buildings to be used for retailing, roading, parking, vehicle wash-down, surface drainage patterns and sedimentation or other detention ponds or berms, the location of any scheduled items from this Plan and the landscape sensitivity of the site;
- ii. The anticipated volume of material to be removed from or brought to the mine or quarry on a monthly and annual basis and the number of truck movements to and from the site;
- iii. The estimated number of people, including employees, on site and services and buildings for them;
- iv. The number of parking spaces provided on site, and total number of vehicle movements to and from the site on an average daily basis;
- v. The methods for controlling erosion and sedimentation on site;
- vi. The staging of the mine or quarry;
- vii. The methods and staging for rehabilitating the site as mining or quarrying is completed including the species of vegetation to be used and a landscaping plan, and identification of any structures or buildings to be removed or to remain permanently on the site and the resulting contour and drainage pattern of the rehabilitated land and the distance from public viewing;
- viii. The methods to be employed to control the effects of dust and debris on site;
- ix. The methods to be employed to control the effects of noise and vibration on site;
- x. A statement giving details of consultation, including consultation with Tangata Whenua, which was carried out and the results of that consultation, including any written approval to the Development Plan by neighbouring landowners;
- xi. Method of containing tailings.

Except that this rule does not apply to a quarry or mine defined by "normal rural practice".

Note 1: A report may be required by a suitably qualified engineer to demonstrate that the work will not have an adverse effect on downstream or upstream flooding.

Note 2: Any relevant operator of the Electricity Transmission Network will be considered an affected party in relation to any Resource Consent applications.

Note 3: Applicants will be encouraged as part of preparing a consent application under this Rule to consult with affected landowners.

Note 4: A description of the landscape features is provided in Appendix 18A. The values associated with the Outstanding Natural Landscapes are described in the Kaipara District Landscape Technical Report (2010).

Rule 12.10.4 – Commercial and Industrial Buildings

Where an activity is not permitted by this Rule, Council has restricted its discretion over the following matters when considering and determining an application for resource consent:

- i. Building location, including alternatives considered;
- ii. Size and shape of the site;
- iii. Extent of visual intrusion of the building from beyond the site, particularly from the road and public places including the Coastal Marine Area and the effect on skylines and ridgelines;
- iv. Proposed landscaping in accordance with any Council adopted Design Guidelines;
- v. Effects on the locality, particularly the rural character and amenity values;
- vi. If located within an Overlay, the extent to which the values identified in the objectives and policies for Overlays (Chapter 4) are present on the site, and the extent to which the proposal is compatible with those values; and
- vii. Effects on Landscape and heritage values;
- viii. The extent to which the proposal will affect the values of any Outstanding Natural Landscape identified in Map Series 2 and if applicable the extent to which the subdivision, use or development meets the additional assessment criteria contained in Appendix 18B;
- ix. Effects on the safety and efficiency of vehicles and pedestrians using the site and affected roads and private ways;
- x. Safety of the building and people using it during flood events or tidal inundation including possible egress during flood events or tidal inundation;
- xi. The extent to which the development complies with the requirements of the relevant performance standards or the Kaipara District Council Engineering Standards 2011;
- xii. The extent to which the stormwater generated from impermeable surfaces associated with the building may contribute to erosion or a reduction in the water quality of the receiving environment;
- xiii. Whether a sustainable potable water supply is able to be provided to service the development; xiv) Effects on natural character;
- xiv. The functional requirements of the building and activity; and
- xv. The extent to which the activity will affect any heritage values identified in Appendix 17.1 and 17.2 of the Plan.

Note 1: A description of the landscape features is provided in Appendix 18A. The values associated with the Outstanding Natural Landscapes are described in the Kaipara District Landscape Technical Report (2010).

Rule 12.10.7 – Setbacks

Where an activity is not permitted by this Rule, Council has restricted its discretion over the following matters when considering and determining an application for resource consent:

- i. The outlook and privacy of adjacent and adjoining neighbours;
- ii. Extent of visual intrusion and dominance of any buildings from beyond the site, particularly from the road and public places including the Coastal Marine Area and the effect on skylines and ridgelines;
- iii. Whether proposed landscaping is in accordance with any relevant Council adopted Design Guidelines;
- iv. Whether the proposed landscaping is in accordance with the design principles of the Mangawhai Structure Plan (pages 46 49) for Policy Area Three;
- v. Effects on the locality, particularly the rural and natural character and amenity values;
- vi. If located within an Overlay, the extent to which the values identified in the objectives and policies for Overlays (Chapter 4) are present on the site, and the extent to which the proposal is compatible with those values; and
- vii. The extent to which the proposal will affect the values of any Outstanding Natural Landscape identified in Map Series 2 and if applicable the extent to which the subdivision, use or development meets the additional assessment criteria contained in Appendix 18B;
- viii. Effects on landscape and heritage values;
- ix. Effects on ecological values and in particular any Sites of Ecological Significance as defined by the criteria listed in Appendix 25G;
- x. Effects on public access;
- xi. Effects on natural hazards, including the design and construction of hazard protection works on land adjacent to the Coastal Marine Area, rivers and lakes;
- xii. Protection of the conservation, ecological, recreation, access and hazard mitigation values of Esplanade Reserves or Strips;
- xiii. Where buildings are located in close proximity to State Highways or Rail (level crossings) whether the approval of the respective roading or rail control authority has been provided and the extent to which the placement of the building affects traffic and/or rail safety;
- xiv. The functional requirements of the building and activity; and
- xv. The extent to which the activity will affect any heritage values identified in Appendix 17.1 and 17.2 of the Plan.

Note 1: A description of the landscape features is provided in Appendix 18A. The values associated with the Outstanding Natural Landscapes are described in the Kaipara District Landscape Technical Report (2010).

Rule 12.10.21 – Hazardous Substances

Where activity is not permitted by this Rule, Council will have regard to the following matters when considering an application for Resource Consent:

- i. The proposed site and layout, with a description of the nature and scale of the proposed facility and associated operations;
- ii. Location, type and quantities of hazardous substances involved;
- iii. Site drainage and off-site infrastructure (e.g. drainage type and capacity);

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- iv. Identification of on-site hazards, failure modes and exposure pathways from the proposed facility including a description of the environment potentially affected;
- v. Transport of hazardous substances on and off the site, mode and route selection;
- vi. The sensitivity of the surrounding human, natural and physical environment, and proposed measures to protect them (including wildlife habitats and water bodies);
- vii. Separation distances from water bodies, coastal water, neighbouring activities and people potentially at risk from the hazardous facility, including consideration of the proximity to people oriented activities (e.g. child care, education facilities, rest homes, hospitals);
- viii. Potential cumulative or synergistic effects, within the site and the locality;
- ix. The presence or otherwise of natural hazards which could adversely influence the inherent risks from a hazardous facility to the environment;
- x. The extent to which alternative locations and methods have been considered;
- xi. Hazard and risk analysis;
- xii. Management of wastes containing hazardous substances;
- xiii. Proposed contingency measures and emergency plans;
- xiv. Proposed monitoring and maintenance schedules; and
- xv. Any consultation, assessment or responses received from the New Zealand Fire Service