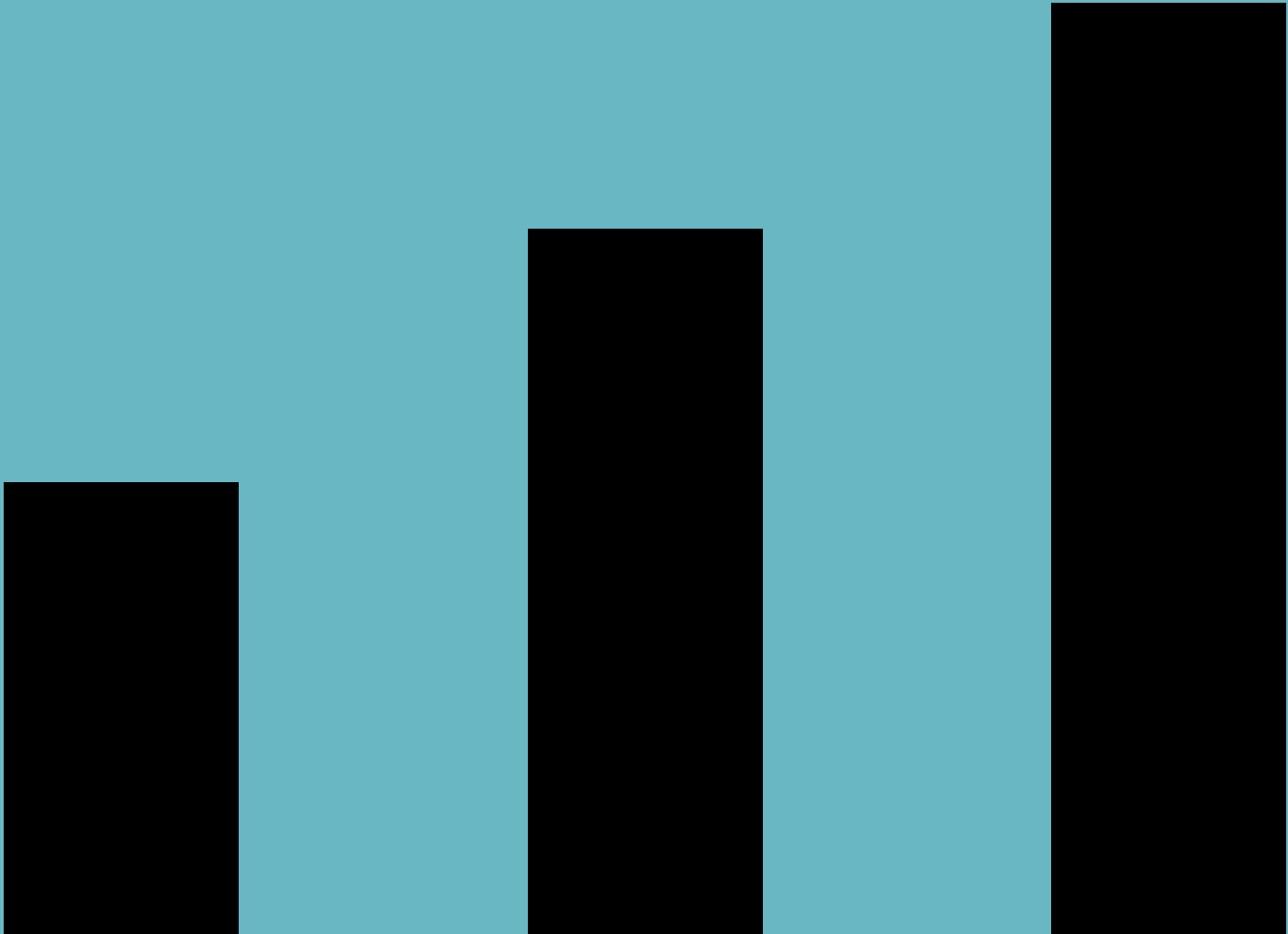


Carter Group Limited

Greenhouse Gas Emissions Overview for the Ōhoka
Residential Subdivision, Greater Christchurch
EAC19815



Category	Scope 1 Emissions (tCO ₂ e)	Scope 2 Emissions (tCO ₂ e)	Scope 3 Emissions (tCO ₂ e)
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Glossary

Greenhouse Gas (GHG)	Greenhouse gases (GHG) are gases that influence the way in which the Earth's atmosphere traps heat. Increasing levels of GHGs in the atmosphere are causing the phenomenon of climate change. (Refer to appendix 1 for further information).
Carbon Dioxide Equivalent (CO₂e)	A standard unit for measuring GHG Inventories. The impact of each different GHG is expressed in terms of the global warming potential (GWP) of one unit of carbon dioxide (CO ₂). Typically expressed in kilograms (kg CO ₂ -e) or tonnes (tCO ₂ -e).
Global Warming Potential (GWP)	A measure of a gas's ability to cause radiative forcing in the atmosphere (or climate change) relative to the ability of CO₂. For example, methane has a GWP of 28, thus 1kg of methane emitted is 28 times more potent than 1kg of CO₂.
Emission Factor	A metric that converts a specific emission source - such as a litre of diesel - into terms of CO ₂ or CO ₂ -e.
Sequestration	The removal and storage of carbon dioxide from the atmosphere, for example by vegetation (forestry).
Biogenic methane	Biogenic methane is that which is produced by living organisms. In the climate change sense, this means emissions resulting from biological processes in the waste and agriculture sectors.
Embodied carbon emissions	Embodied carbon emissions are from the production of materials and products that are used to develop an asset/ building.
Operational carbon emissions	Operational carbon emissions occur during the use stage of an asset or building's life and are from the energy and other resources used when operating the asset/building.
Net zero carbon	Net zero means achieving a balance between the greenhouse gas emissions produced by an entity (company, region or country) and those removed from the atmosphere (via sequestration).

Executive Summary

- 1 It is my opinion that the proposed residential subdivision and development of a commercial area adjacent to the existing Ōhoka township and urban area will contribute to a reduction in greenhouse gas emissions and does not result in significant adverse effects in this context. I consider that the proposal supports a reduction in greenhouse gas (GHG) emissions for the following reasons:
 - 1.1 The proposed layout of the subdivision supports transport emissions reduction by enabling active transport (walking and cycling) within the subdivision, and it is well located with respect to future district cycleways proposed for Waimakariri District.
 - 1.2 The proposed commercial area will provide essential goods and services, minimising travel distances for both new and existing Ōhoka residents, and thus effectively reducing transport emissions on a per resident basis.
 - 1.3 The compact and strategically planned nature of the proposed development is designed to satisfy demonstrated high residential demand for the Ōhoka area. This demand would otherwise be met via a proliferation of unmanaged rural lifestyle subdivision in the Ōhoka area and beyond, leading to greater dispersal of residents in locations further from activity centres, resulting in higher transport-related GHG emissions per resident.
 - 1.4 No reticulated LPG infrastructure will be provided for the site.
 - 1.5 Additionally, converting the site from dairy farming to residential use will result in a reduction in direct GHG emissions from the current land use. Dairy farming is a significant contributor to emissions in New Zealand, primarily due to methane produced by ruminant digestion and nitrous oxide from fertiliser use and effluent management. By removing dairy cattle and ceasing associated operations, this proposal directly eliminates an ongoing source of agricultural emissions.

Introduction

- 2 Carter Group Limited (CGL) has commissioned Lumen Limited (Lumen) to undertake a high-level assessment of GHG emissions for the Fast Track Application for a proposed residential subdivision of 154.4ha in Ōhoka, Canterbury.
- 3 The proposed subdivision site is adjacent to the existing Ōhoka township and urban area, and is bounded in large part by Bradleys Road, Mill Road and Whites Road.

Planning Context

- 4 Policy 1 of the National Policy Statement on Urban Development 2020 (NPS-UD) describes the attributes of “well-functioning urban environments”.
- 5 Of relevance to this assessment, NPS-UD Policy 1(e) requires that planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum: ...(e) support reductions in greenhouse gas emissions.
- 6 My understanding is that Policy 1(e) was included in response to the Climate Change Response (Zero Carbon) Amendment Act 2019 to support achievement of New Zealand’s GHG emissions targets¹ through the NPS-UD.

¹ Refer to Appendix 2 for further information regarding New Zealand’s GHG targets

- 7 I consider that the NPS-UD envisages that a variety of housing types and different price points will be provided in a variety of locations within urban environments by way of intensification of existing urban areas, as well as greenfield development.
- 8 Objective 3 of the NPS-UD seeks that district plans enable more people to live in areas of an urban environment where there is high demand for housing, or for business land in the area, relative to other areas within the urban development (among other criteria).
- 9 CGL has produced expert real estate and survey assessments, including the Statement of Evidence of Chris Jones (dated 5 March 2024)² and the Statement of Evidence of Carl Davidson (dated 13 June 2024)³ that demonstrate a high and consistent demand for housing in the Ōhoka area.
- 10 Mr. Jones assesses that buyers preferring Ōhoka who are unable to secure property in this location will likely:⁴
- 10.1 settle for and purchase a lifestyle block (which most will underutilise) to live in the area; or
 - 10.2 opt for alternatives such as Mandeville, Swannanoa, Fernside, Clarkville, Tai Tapu, West Melton, Marshlands or Oruhia which provide a similar offering to Ōhoka.
- 11 It stands to reason that declining the proposed development would likely lead to greater dispersal of residents in locations further from activity centres thus increasing reliance on private vehicles and resulting in higher transport-related GHG emissions. It would also likely result in a proliferation of unplanned rural lifestyle subdivision in the Ōhoka area.
- 12 In contrast, the proposed master-planned development offers a more consolidated, coordinated approach that aligns with the NPS-UD objectives of supporting well-functioning urban environments. Enabling future access to infrastructure and public transport is far more feasible in a concentrated development than in scattered lifestyle areas.
- 13 New, master planned greenfield residential developments can support emissions reductions in the following ways:
- 13.1 Through subdivision and housing designs that minimise emissions associated with infrastructure development.
 - 13.2 Through subdivision and housing designs that support reductions in the overall GHG footprint of future residents.
 - 13.3 Provision of good pedestrian and cycling infrastructure within the development area and supporting the enablement of public transport access for future residents.
 - 13.4 Incorporating the provision of commercial areas, and (as appropriate) other facilities such as recreation areas within the subdivision to reduce travel distances.

² Available at: https://www.waimakariri.govt.nz/__data/assets/pdf_file/0029/160679/Evidence-of-Chris-Jones-Ohoka-rezoning.pdf

³ Available at: https://www.waimakariri.govt.nz/__data/assets/pdf_file/0021/164631/STREAM-12D-E1-SUB-237-and-160-CARTER-RIDL-EVIDENCE-CARL-DAVIDSON-.pdf

⁴ Statement of evidence of Chris Jones for Hearing Stream 12: Rezoning request (5 March 2024) at [11], available at https://www.waimakariri.govt.nz/__data/assets/pdf_file/0029/160679/Evidence-of-Chris-Jones-Ohoka-rezoning.pdf

- 14 While public transport is not currently available, the development's scale, commercial hub, and strong walking/cycling links make future services more viable. In contrast, dispersed rural lifestyle development lacks these features and likely result in higher emissions and greater reliance on private vehicles.

15 The site is located adjacent to the existing Ōhoka township and urban area and is bounded in large part by Bradleys Road, Mill Road and Whites Road as shown in the figures 1 and 2 below.



Figure 1: Subdivision plan in the immediate context

- 16 The site is located approximately 25km from the centre of Christchurch City (defined as the Riverside Market location), 8km to central Kaiapoi and 10km to Rangiora.

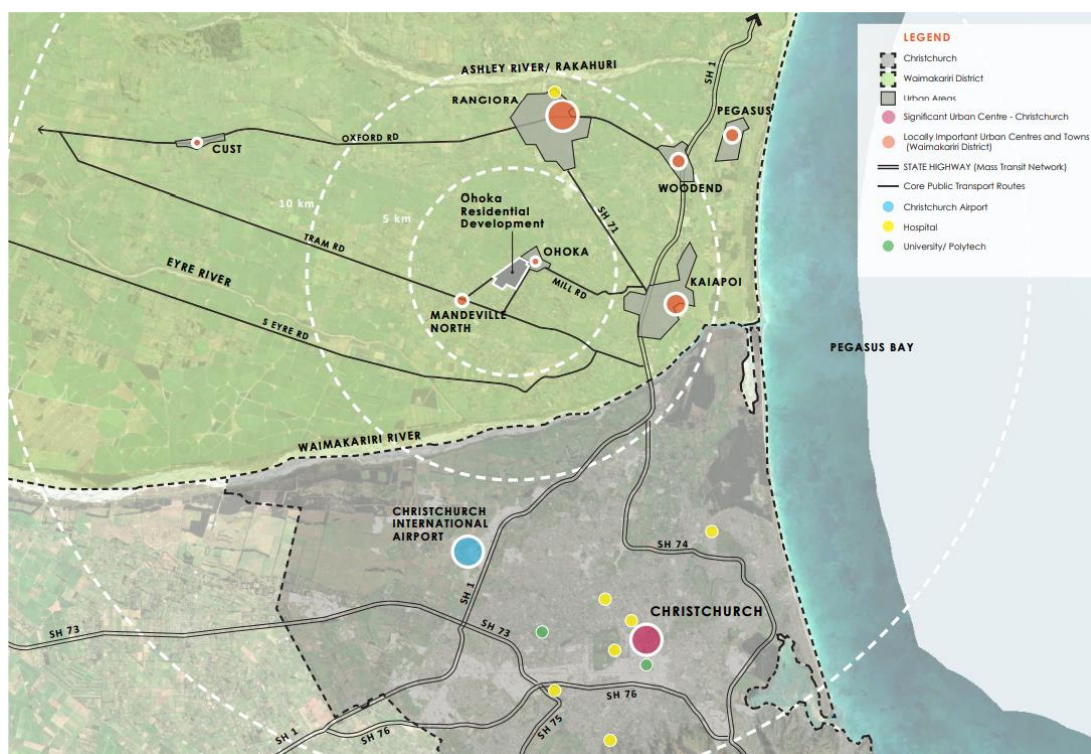


Figure 2: Location of the site in the wider context

- 17 The site subdivision plan envisages 875 houses and a commercial centre, a proposed polo ground and a proposed retirement village (of approximately 250 units).
- 18 Significant tree planting is planned along the site boundaries and streams. This includes:
- 18.1 a 10m wide vegetation buffer within a 15m building setback (except at road crossings and stormwater management areas) down Whites and Bradleys Roads
 - 18.2 Significant planting around the three waterways and two springs and groundwater seep.

Key Considerations/Observations from an Emissions Perspective

- 19 The existing site is currently used for dairy farming, which generates ongoing agricultural emissions – primarily methane and nitrous oxide – associated with livestock digestion, effluent, and fertiliser use. The proposed plan change will result in the permanent removal of these emissions from the site as it transitions to residential use.
- 20 There is relatively limited tree coverage at the current site, so the plantings planned as part of the subdivision plan can be expected to result in additional vegetation, thus more carbon dioxide sequestration (removal of CO₂ from the atmosphere) than occurs on the site currently.
- 21 Like any new subdivision development, GHG emissions will be emitted during different stages of the project:
- 21.1 Construction of the infrastructure required to support the development;

- 21.2 Construction of the dwellings and commercial buildings;
 - 21.3 Emissions arising from the occupation of the dwellings and commercial buildings – primarily emissions arising from energy usage; and
 - 21.4 Emissions from the travel-related activities of residents who live within the blocks.
- 22 While embodied emissions (from infrastructure construction and materials) can be significant, they are very complex to quantify accurately. This subdivision has been designed with features intended to help limit infrastructure-related emissions, such as:
- 22.1 A compact and efficient layout that limits infrastructure per dwelling
 - 22.2 Use of existing roads to access the site, reducing the need for new external road construction
 - 22.3 A flat site, minimising earthworks and associated fossil fuel use
 - 22.4 Provision for active transport connections in future stages.
- 23 Additionally, the site is relatively flat which limits the requirement for major earthworks and therefore the amount of fossil fuels that will be used in preparing the site for development.
- 24 The second major component of GHG emissions is the emissions associated with construction of the residential and commercial properties. The major contributing factor is the emissions that are “embodied” in materials that are used in the build.
- 24.1 Embodied carbon refers to the emissions generated during the production, transportation, and assembly of building materials. Materials such as concrete and steel have high embodied carbon due to their energy-intensive manufacturing processes. In contrast, timber has substantially lower embodied carbon, making it a more sustainable alternative in certain applications.
 - 24.2 While the subdivision developer does not control building design or material selection, there is an opportunity for individual builders and homeowners to reduce embodied emissions through thoughtful design choices and material use. The developer can encourage this.
- 25 When it comes to emissions from the energy use of residential properties, emissions can be minimised by encouraging⁵ energy efficient houses to be developed, ensuring that natural gas/LPG reticulated infrastructure is not provided as part of the development and encouraging the uptake of solar PV panels.

Emissions from Transportation

- 26 Emissions from transportation are primarily a function of mode of transport (i.e. vehicle type), distance travelled, and frequency of travel.
- 27 When considering trips to and from residential properties, this will include trips undertaken in passenger vehicles, public transport and trips undertaken by active transport (such as walking and cycling).

⁵ Rules mandating such requirements are not proposed, however they can be readily encouraged or promoted by the land developer and/or individual building companies.

- 28 It is also important to consider the locations that residents are likely to access on a frequent basis, including commercial areas, employment, and education.
- 29 Emissions from transportation of residents primarily arise from trips undertaken in vehicles that use fossil fuels (primarily passenger vehicles). Limiting the distance and frequency of trips undertaken in fossil fuel vehicles is key to supporting emissions reductions of a residential development.
- 30 There are opportunities to design the subdivision to support emissions reductions by incorporating EV charging for residents, including the provision of publicly accessible EV charging for the commercial area, establishing cycling and pedestrian pathways, and ensuring space is reserved for a Park N Ride area and future bus stop area to enable utilisation of public transport.
- 31 The developer can provide the framework for reduced transportation emissions through the subdivision design, however the uptake of public transport and the use of cycling infrastructure to travel outside the subdivision will depend also on public sector actions as well as the residents' choice of transport mode.

Travel to Commercial Areas

- 32 The nearest medium-sized supermarket is located at Mandeville (approximately 3-4km), whereas the nearest large supermarket (Pak N Save) is located 7.3km away. These distances are relatively larger distances compared to built-up urban areas.
- 33 There is a commercial centre planned for the development. I would anticipate that tenancies in the commercial area will likely be self-selected, accounting for their likely desirability and convenience to nearby residents, and that these tenancies will be well-utilised by residents. I expect that a small to mid-sized supermarket (like a Four Square) could work well in this location and would minimise the requirement for residents to travel further afield for their day-to-day needs.
- 34 By incorporating commercial areas into the subdivision layout, the long-term emissions associated with the travel of future residents will be reduced.
- 35 With walkways and cycleways being incorporated into the subdivision design, it is likely that active modes of travel will be well used by residents to access these facilities.
- 36 Additionally, the introduction of the proposed commercial area would likely benefit the existing residents of the Ōhoka area as well and could potentially reduce their travel-related emissions.

Travel to Employment

- 37 While a small number of residents can be expected to work in the new commercial area (and will be able to travel to work via active travel modes), other residents will commute for work (if not working from home), with the most likely destinations for employment being Christchurch, Rangiora and Kaiapoi.
- 38 Others may choose to work from home – a trend that has grown significantly in recent years. According to the 2023 Census, approximately 17.7% of employed adults (aged 15 and over) reported working mostly from home. This represents a 60% increase from 11.9% in 2018, and more than double the 8.5% reported in 2013.

- 39 The distance to central Christchurch is 25km, and is not suited to a cycling commute, meaning that the most common modes of travel are likely to be private vehicle travel (potentially car-pooled) and public transport.
- 40 There is currently no public transport that services the site; however, Park N Ride facilities exist at Kaiapoi and Rangiora with express services into central Christchurch.
- 41 The developer intends to reserve adequate space for a Park N Ride area and a future bus stop area within the development near the commercial area to enable utilisation of public transport in future.
- 42 I would expect there will be strong uptake of electric vehicles by those that are required to commute, as the economic incentive to purchase an EV is greater for those that have a longer commute (as the cost of charging an electric car at home is likely to be less than the cost of running a fossil-fuelled vehicle).
- 43 Additionally, the developer intends to implement a publicly accessible EV charger within the commercial area carpark.
- 44 These factors will serve to limit commuting emissions.

Travel to Education Centres

- 45 In terms of “education” trips, the site is relatively close (1.7 km) to Ōhoka Primary School, with a separated pathway that runs from the site to the school, along Mill Road. A 1.4m wide gravel path is provided on the southern side of this road between Bradleys Road and Whites Road. A 1.5m wide shared path on the southern side of Mill Road runs from east of Whites Road to Jacksons Road, which links to Ōhoka School. Ōhoka School caters for children up to year 8 (13-year-olds), so I expect that some trips to and from the existing school location from children who live in the development site would be via active modes (walking, scootering, or biking).
- 46 The site would be zoned for Kaiapoi High School, which is approximately 7.3 km distance, along a route that is not currently well suited to cycling, but which the Waimakariri District Council Walking and Cycling Network Plan indicates may be served by a cycle route along Mill Road in future (refer Figure 3 and my related discussion below).
- 47 There is an existing shuttle bus service that operates between the Ōhoka area and Kaiapoi High School, which would also help to limit the emissions related to travel to secondary education. For students enrolled at high schools in Christchurch, I note there is a dedicated bus service (Route 72) that starts in Rangiora and travels - via Kaiapoi - into Christchurch passing close to many of the larger schools in the city (including St Bede’s, Marian College, Papanui High School, St Andrew’s College, St Margaret’s College, Rangi Ruru and Christchurch Boy’s and Girl’s high schools).
- 48 Including space for a bus stop in the subdivision plans at the commercial area carpark, would further support the utilisation of school bus services to Kaiapoi High School, and it may be possible for an additional Christchurch schools’ bus to operate from (or travel through) the site in future.

Cycling

- 49 The subdivision plan includes the provision of shared paths along the Site frontage of Whites Road, Mill Road, and Bradleys Road, along with a cycle network within the Site.

- 50 As described in the Novo Group transport assessment, the Council's recommended Walking and Cycling Network Plan, which was adopted by council in 2022⁶, indicates future cycle paths connecting Ōhoka with other parts of the district. The site is well located within this future network. The relevant map showing future cycle paths is shown in Figure 3.

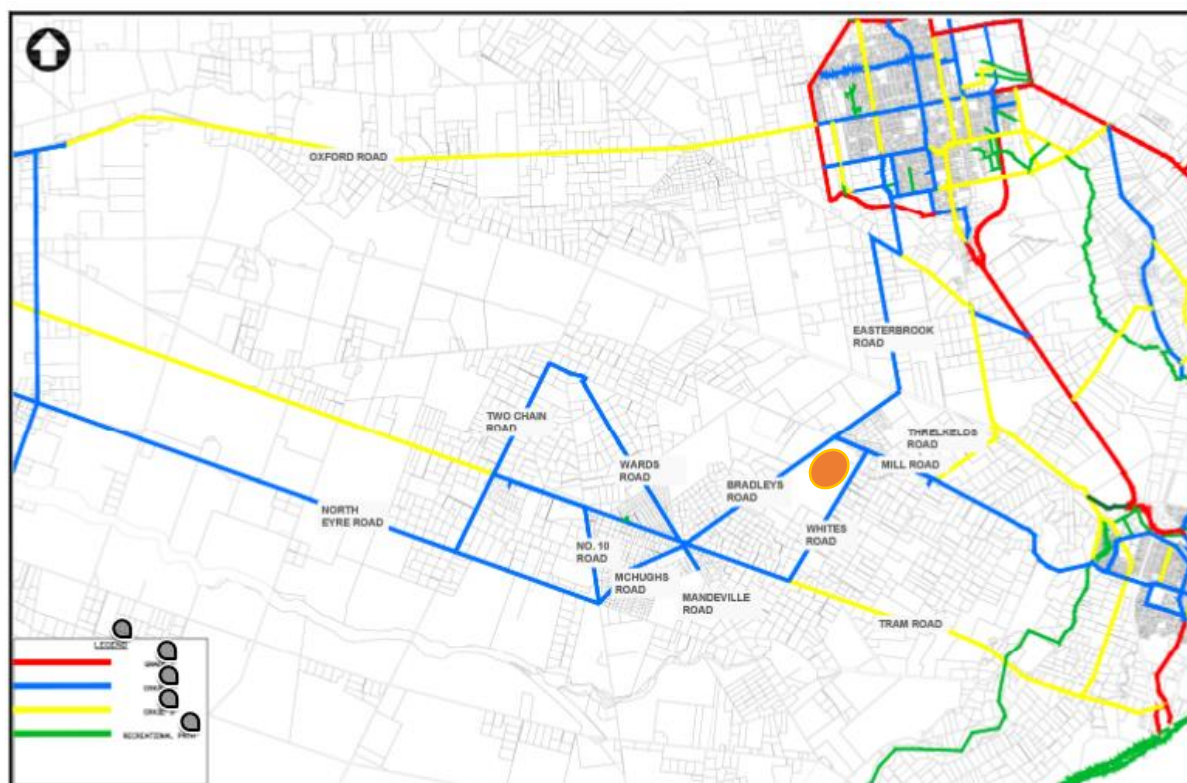


Figure 3 - Recommended Walking and Cycling Plan for Waimakariri District (2022). Location of Site shown in Orange

- 51 Encouragingly, this plan shows that direct access from the site to both Kaiapoi and Rangiora is envisaged in future, via Grade 2 routes (shown in blue) – defined as suitable for riders with basic (riding) competence skills.
- 52 I consider that 8km is a distance that is achievable on a flat-section of road for a commuter, particularly an e-bike rider, so there should be some uptake of cycling for residents of the site that work in Rangiora and Kaiapoi (particularly once cycle paths are developed).
- 53 These trips would not require any hills to be traversed and can be considered accessible via e-bike and e-scooter. Ideally, this off-road access to Rangiora and Kaiapoi should be designed with these more recent forms of micromobility in mind.
- 54 There has already been a substantial increase in the number of e-bikes⁷ in New Zealand, with an estimate of between 100,000 and 200,000 across the country and a reported 50,000 imports in 2021 alone.

⁶ <https://www.waimakariri.govt.nz/community-and-recreation/outdoor-activities/cycling>

⁷ <https://www.nzherald.co.nz/nz/on-your-bike-everything-you-need-to-know-about-ebikes/QOHXNWYVPA2Q6AIE7J46AVBWTU/>

- 55 I expect the rise of e-biking to continue, and I consider that Greater Christchurch is perfectly suited for this mode of transport and that we will see a significant proportion of trips in the region via e-bike over the next 10-20 years.
- 56 Research published by Waka Kotahi in 2021⁸ concludes “the usage of shared paths and separated cycle facilities will be three to eight times higher than for forecasts of pushbikes alone” and that “the growth in availability and ownership of micromobility will lead to an increase in public transport patronage by up to 7% in urban contexts and 9% in suburban contexts as a result of first/last mile micromobility use.”
- 57 The development of cycle paths to connect the site to Rangiora and Kaiapoi, as envisaged in the district cycling plan, would assist with an increase in both education and other trips via active modes.

Public Transport

- 58 Presently, there are no public transportation options which pass directly through Ōhoka (besides school-related services). This is explained by the relatively low numbers of residents in the area currently.
- 59 If the development proceeds, I expect that increased demand for public transport could result in the establishment of bus routes connecting Ōhoka to Christchurch City (via direct bus services from both Kaiapoi and Rangiora) and other nearby areas.
- 60 The subdivision plan can enable the provision of future public transport services by ensuring space for a bus stop is included in the plan (which it is).

⁸ Mode shift to micromobility. NZ Transport Agency research report 674, February 2021

Recommendations and Opportunities

- 61 This development incorporates several committed measures that support lower greenhouse gas (GHG). In addition, there are several further opportunities for reducing emissions that, while not part of the subdivision plan, could be voluntarily adopted by future residents, builders, or businesses.

Measures Committed to as Part of the Subdivision Include the Following:

- 61.1 Provision of a commercial area to meet some of the resident's day-to-day needs, reducing vehicle travel.
- 61.2 Establishing an integrated cycling and pedestrian network with connections to the wider area's network to support active travel.
- 61.3 Prohibition of reticulated LPG around the subdivision, reducing the lock-in of fossil fuel infrastructure.
- 61.4 Providing a publicly accessible EV charger in the carpark of the Commercial Area to support EV uptake.
- 61.5 Allocation of space for a future public transport stop within the carpark of the Commercial Area, improving the potential for more utilisation of public transport.
- 61.6 Providing for the provision of a Park N Ride area within the Commercial Area carpark, also allowing for more utilisation of future public transport.
- 61.7 Extensive tree planting - vegetation buffers along Whites Road and Bradleys Road, and significant planting around waterways.

Additional Opportunities for Emissions Reduction:

- 62 While not proposed as part of this subdivision plan, the following actions could be encouraged by the developer which would further support emissions reduction if voluntarily adopted:
- 62.1 The use of electric alternatives over bottled LPG for cooking, space heating and water heating. This need not extend to LPG use for barbeques as emissions associated with this are negligible.
 - 62.2 Installation of rooftop solar PV systems on houses and commercial premises to offset grid-electricity use.
 - 62.3 Energy-efficient building design. While not mandated, energy performance could be improved through passive solar design, insulation, and high-efficiency systems. Certification (e.g., Homestar or Green Star) could be encouraged but not required.
 - 62.4 Use of low-embodied carbon materials. Builders and homeowners can reduce construction emissions by selecting lower-impact materials like sustainably sourced timber.
 - 62.5 Additional tree retention and planting. Retain as many of the existing trees as practical when developing residential sites.
 - 62.6 Kerbside waste management - It is anticipated that standard Waimakariri council collection systems (waste, recycling, organics) will apply, supporting landfill diversion and emissions reduction.

Concluding Comments

- 63 For the reasons set out in this document, I conclude that the proposed residential subdivision and development of a commercial area adjacent to the existing Ōhoka township and urban area will support a reduction in greenhouse gas emissions and does not result in significant adverse effects in this context. The site supports a reduction in greenhouse gas emissions for the following reasons:
- 63.1 The proposed layout of the subdivision supports transport emissions reduction by enabling active transport (walking and cycling) within the subdivision, and it is well located with respect to future district cycleways proposed for Waimakariri District.
 - 63.2 The proposed commercial area will provide essential goods and services, minimising travel distances for both new and existing Ōhoka residents, and thus effectively reducing transport emissions on a per resident basis.
 - 63.3 The compact and strategically planned nature of the proposed development would satisfy residential demand for the area. This demand would otherwise be met via a proliferation of unmanaged rural lifestyle subdivision in the Ōhoka area and beyond, leading to greater dispersal of residents in locations further from activity centres, resulting in higher transport-related GHG emissions per resident.
 - 63.4 No reticulated LPG infrastructure will be provided for the site.
 - 63.5 Additionally, converting the site from dairy farming to residential use will result in a reduction in direct greenhouse gas emissions from the land itself. Dairy farming is a significant contributor to emissions in New Zealand, primarily due to methane produced by ruminant digestion and nitrous oxide from fertiliser use and effluent management. By removing dairy cattle and ceasing associated operations, this proposal directly eliminates an ongoing source of agricultural emissions.

Appendix 1: Overview of Greenhouse Gases

- 64 There are several gases that contribute to the problem of global warming, the most prevalent of these being carbon dioxide (CO₂), methane and nitrous oxide.
- 65 Each of these gases has differing abilities to trap extra heat in the atmosphere, and it is the trapping of this heat that leads to global warming.
- 66 When evaluating GHG emissions, it is useful to have a common measure to allow comparisons between gases.
- 67 As CO₂ is by far the most prevalent of the GHGs, it is standard practice when measuring emissions to determine the level of each gas emitted, and then convert these emissions into their carbon dioxide equivalent, or CO₂-e.
- 68 The global warming potential (GWP) of a gas is a measure of its ability to trap extra heat in the atmosphere over time relative to CO₂. This is most often calculated over a 100-year period and is known as the 100-year GWP.
- 69 The GWP of CO₂ is 1.

Appendix 2: Greenhouse Gas Emissions Context

- 70 The Paris Agreement is an international treaty on addressing climate change, adopted by 197 countries in 2015, including New Zealand.
- 71 Its overarching goal is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.
- 72 The agreement requires signatory countries to commit to interim emissions reduction targets (to 2030), with the long-term goal of achieving net zero emissions. Most developed countries, including New Zealand, have set a target of net zero by 2050.

New Zealand’s Response: Climate Change Legislation and Governance

- 73 In response, the New Zealand government passed the Climate Change Response (Zero Carbon) Act in late 2019. This act does four key things:
 - 73.1 Sets a series of emissions targets for New Zealand:
 - (a) Net zero emissions for all GHGs (excluding biogenic methane) by 2050.
 - (b) A 24-47% reduction in biogenic methane by 2050.
 - (c) A 10% reduction in biogenic methane emissions by 2030.
 - 73.2 Establishes a system of 5-year emissions budgets to act as stepping stones towards the long-term 2050 target.
 - 73.3 Requires the Government to develop and implement policies for climate change adaptation and mitigation.
 - 73.4 Establishes a new, independent Climate Change Commission to provide expert advice and monitoring to help keep successive governments on track to meeting long-term goals.

- 74 The Interim Committee was superseded and replaced by the independent Climate Change Commission (the Commission) in November 2019.
- 75 In May 2021 they produced a comprehensive report providing advice on how NZ should go about achieving emissions reductions: *Ināia tonu nei: a low emissions future for Aotearoa*⁹ report (June 2021). The report and associated documentation included:
- 75.1 A comprehensive report detailing recommendations for how NZ should best go about achieving emissions reductions.
 - 75.2 The development of a “demonstration pathway” that details the Commission’s core scenario/model for developing its recommended emissions budgets.
 - 75.3 Recommended net emissions budgets for the periods 2022-25, 2026-2030 and 2031-2035.
- 76 Key strategies for achieving the reduction targets, relevant to an urban context include the following:
- 76.1 increasing the mix of renewables in our electricity generation network;
 - 76.2 conversion of fossil fuelled industrial, manufacturing, and process heat to low emissions energy (electricity or biomass);
 - 76.3 electrification of our vehicle fleet;
 - 76.4 increasing the proportion of (personal) travel undertaken using active travel modes and public transport;
 - 76.5 reducing freight emissions; and
 - 76.6 minimising organic waste.

The First Emissions Reduction Plan (2022-2025)

- 77 Drawing on this advice, the Government then developed and released a comprehensive Emissions Reduction Plan (ERP)¹⁰, on 16th May 2022.
- 78 In April 2023, the Commission released an updated demonstration pathway, aligned with the confirmed ERP budgets.

The Second Emissions Reduction Plan (2026-2030) – Currently Applicable

- 79 In November 2023, the Commission provided advice on the direction of policy for the second emissions reduction plan (2026-2030). This advice contained a set of 27 recommendations.
- 80 The Government released a discussion document for the second emissions reduction plan in July 2024, followed by the final plan in December 2024¹¹.
- 81 The second ERP is the current applicable framework for assessing how developments support emissions reductions.

⁹<https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa>

¹⁰<https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/emissions-reduction-plan/>

¹¹ <https://environment.govt.nz/publications/new-zealands-second-emissions-reduction-plan/>

- 82 The second emissions plan is notably lighter on specific policies to reduce emissions than the first plan, with more emphasis on reducing “net” emissions than “gross” emissions.
- 83 The new plan has a greater reliance on new technology (particularly in agriculture) carbon removals (via forestry and other means) compared to the initial plan.
- 84 However, there are several key strategies for reducing gross emissions within the second emissions reduction plan, with relevance to urban areas. These include the following:
- Increasing renewable energy by reducing the consenting burden through Electrify NZ
 - Targeting 10,000 public EV chargers by 2030
 - Investing in resource recovery through the Waste Minimisation Fund
 - Improving organic waste and landfill gas capture
 - Improving public transport
 - Enabling heavy vehicle decarbonisation.