

Before the Selwyn District Council

under: the Resource Management Act 1991

in the matter of: Proposed Private Plan Change 80 to the Operative District Plan

and: **Two Chain Road Limited**
Applicant

Evidence of Paul Farrelly (greenhouse gas emissions)

Dated: 5 October 2022

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EVIDENCE OF PAUL FARRELLY

INTRODUCTION

- 1 My full name is Paul Michael Farrelly.
- 2 I have a BE Civil Engineering (Hons) from University of Canterbury. I started my career as a traffic and road safety engineer, and have subsequently had over 25 years' commercial experience working across a number of industries. Over the past 10 years I have worked in the energy and carbon field.
- 3 In the past 3 years I have worked for Lumen, an engineering consultancy, as a Principal Consultant in their dedicated energy and carbon team. In this capacity I have developed greenhouse gas (*GHG*) inventories for a significant number of organisations, in a broad range of sectors. This includes infrastructure companies, an airport, several electricity distribution businesses (*EDBs*), manufacturers, consulting firms and retail businesses. Through this work I am well versed in calculating GHG emissions.
- 4 I am familiar with private plan change 80 (*PC80*).

CODE OF CONDUCT

- 5 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the Code of Conduct for Expert Witnesses contained in Part 7 of the Environment Court Practice Note 2014. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

- 6 My evidence covers the following:
 - 6.1 Greenhouse gas (*GHG*) emissions from existing land use; and
 - 6.2 Future anticipated GHG emissions arising from PC80.

SUMMARY OF EVIDENCE

- 7 PC80 supports GHG emissions reductions primarily as it will enable the mode shift of a substantial number of South Island freight

movements from road to rail. Freight that is transported by rail emits just 20%¹ of the equivalent of freight transported by truck.

- 8 The rezoning proposal supports the New Zealand government's target of reducing emissions from freight transport by 35 per cent by 2035 as it can enable significantly improved efficiency of freight movement through the Canterbury region.
- 9 Development of the site will result in a significant increase in employment opportunities within Rolleston. This is likely to reduce the average commuting distance for employed residents of Rolleston, as the site is far closer to the centre of Rolleston than alternative locations of employment within Christchurch City.
- 10 The site is expected to have good accessibility via active modes of travel, especially if suitable pedestrian and cycling access is provisioned for in the redevelopment of the Dunns Road Crossing/SH1 intersection. This, combined with the site's close proximity to residential areas of Rolleston is expected to result in a significant proportion of commuting to be via active (zero-emissions) travel modes.
- 11 Employee related emissions could be further reduced by way of the introduction of a local Rolleston bus network that could transport workers from the Southern side of Rolleston to their place of work.
- 12 The development sites are expected to be well suited to solar power, and the 'green-field' nature of the site and proximity to electrical infrastructure allows for suitable electrical infrastructure to be deployed to enable electrical charging of vehicles – both passenger and delivery vehicles. This can be expected to result in a more rapid uptake of lower emissions vehicles compared to alternative industrial locations.

INTRODUCTION TO GREENHOUSE GASES

- 13 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.
- 14 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.

¹ Ministry for the Environment. (2020). Measuring emissions: a guide for organisations: 2020 detailed guide. <https://environment.govt.nz/assets/publications/files/measuring-emissions-detailed-guide-2020.pdf>

- 15 When evaluating GHG emissions, it is useful to have a common measure to allow comparisons between gases.
- 16 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.
- 17 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.
- 18 The GWP of CO₂ is 1.
- 19 Methane is a short-lived GHG and has a GWP that is 28-36 times that of carbon dioxide over a 100-year time frame. Over a shorter year time frame its impact is much more significant, with its impact estimated at 84 times that of carbon dioxide over a 20-year period.
- 20 New Zealand is committed to reducing GHG emissions substantially in the coming years. The Climate Change Response (Zero Carbon) Amendment Act 2019 sets in legislation the following targets for the country:
 - 20.1 reduce net emissions of all greenhouse gases (except biogenic methane) to zero by 2050; and
 - 20.2 reduce emissions of biogenic methane to 24–47 per cent below 2017 levels by 2050, including to 10 per cent below 2017 levels by 2030.
- 21 In response to the Zero Carbon Act, the Government has developed a comprehensive Emissions Reduction Plan (*ERP*), which was released on 16th May 2022. This sets out how New Zealand will achieve the emissions reduction targets and identifies a comprehensive set of actions and additional targets that will support achievement of the overall goals.
- 22 The ERP has been heavily guided by advice provided by the climate change commission, in their *Ināia tonu nei: a low emissions future for Aotearoa* report (June 2021).
- 23 Key strategies for achieving the reduction targets include:
 - 23.1 increasing the mix of renewables in our electricity generation network;
 - 23.2 conversion of fossil fuelled industrial, manufacturing and process heat to low emissions energy (electricity or biomass);

- 23.3 electrification of our vehicle fleet;
- 23.4 increasing the proportion of (personal) travel undertaken using active travel modes and public transport;
- 23.5 reducing freight emissions; and
- 23.6 reducing agricultural emissions through a mix of lower herd numbers and technological innovations.

NATIONAL POLICY STATEMENT ON URBAN DEVELOPMENT

- 24 The National Policy Statement on Urban Development 2020 (*NPS*) requires decision makers to consider whether proposals “support reductions in greenhouse gas emissions”.
- 25 When considering the GHG emissions of a proposed development or land change it is appropriate to consider the life-cycle emissions of the proposed development, and the net change in emissions compared to the emissions arising from the current land use.
- 26 It is notable that the NPS does not specify a geographical boundary in which the effect of GHG emissions should be considered.
- 27 Therefore, I consider that supporting reductions in greenhouse gas emissions could be considered at several different levels – local, regional, national, or global.
- 28 The ultimate purpose of reducing GHG emissions is to limit global warming. In the context of this purpose, it should not matter where or how emissions reductions are supported.
- 29 New Zealand has a growing population and a need to develop facilities and employment opportunities for this population.
- 30 It is important that decisions on where to locate new commercial developments in New Zealand consider their overall net impact on New Zealand’s total GHG emissions, compared to other potential locations.
- 31 In the context of GHG emissions arising from commercial developments, I believe that GHG assessments should be primarily based on how the development’s net life cycle emissions (that is an evaluation of emissions before and after the development) compares to alternative development options within New Zealand, as opposed to whether the development, in of itself reduces GHG emissions.

- 32 Considerations must also be made for the impact that the proposed development will have on total emissions at a regional, or national level.
- 33 It is important to note that it is extremely difficult to predict future GHG emissions with any precision, given changes (technology, population, behavioural) that could occur in future.
- 34 Any calculation of future greenhouse gases arising from a development requires one to make assumptions about the future, based on information that exists today.
- 35 In particular, the future transport related emissions associated with PC80 are a function of many factors that we cannot predict with any certainty today.
- 36 For instance, we cannot with any certainty predict exactly what businesses will choose to locate in the PC80 development, nor where the employees of businesses that establish themselves in the PC80 land may reside, nor how they may choose to travel to their workplace so therefore we cannot accurately calculate what future employee commuting related emissions are.
- 37 A degree of judgement and logic is required when assessing future emissions, however many assumptions need to be made.
- 38 Given this, a specific calculation of future emissions has not been made as part of this analysis, and instead we focus on taking a "big picture" look at how the development impacts on GHGs at a higher level.
- 39 For instance, it is acknowledged that there is currently a shortage of employment opportunities in Rolleston which is one of the reasons why Rolleston residents commute to Christchurch. It is logical to expect that the creation of more employment in Rolleston, such as by the development of PC80, will result in less commuting to Christchurch (and lower relative emissions) than would be the case if such developments did not proceed. However, it is not feasible to accurately model the extent of future emissions reductions that would occur because of this.

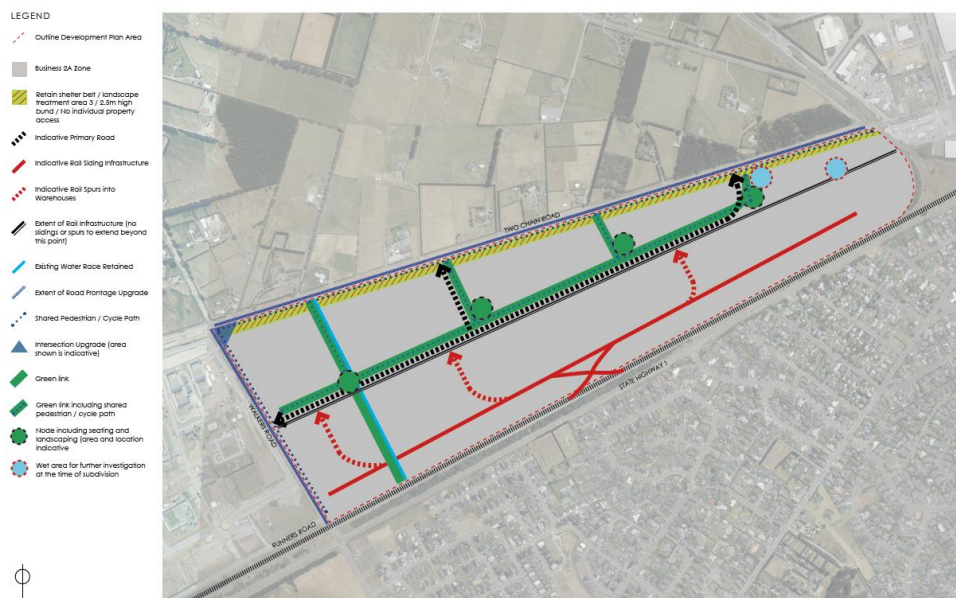
OVERVIEW OF TWO CHAIN ROAD DEVELOPMENT

- 40 Although there are at this stage no specific tenants committed for the site, the proposed rezoning is expected to attract industrial activities to the site.
- 41 The Applicant has advised that a possible range for employment numbers on the area of land covered by the proposed zone could potentially reach 1,900- 2,000 at full development. This would

represent between 8.1-8.6% of the current Selwyn District workforce.

- 42 Because the site is adjacent to the Main South Rail Line, one possibility is for the site to be developed as a rail hub for logistics/manufacturing/industrial-type businesses, providing an opportunity for businesses locating on the site to directly access the South Island rail network via several proposed rail sidings to be constructed on the site, as evidenced by the Outline Development Plan (*ODP*), shown in Figure 1.
- 43 It is also reasonable to expect that some supporting businesses (for instance food and beverage outlets, which are permitted under the Operative District Plan 22.10.1.3 (e) and GIZ-R9 rules) may choose to locate in the development area, given the relatively high number of employees likely to be employed there.

Figure 1: Proposed Outline Development Plan



EMISSIONS FROM EXISTING LAND USE

- 44 When considering a proposed development's impact on GHG emissions, it is first important to establish the level of emissions arising from the existing use of the land.
- 45 I visited the area of PC80 on 23 July 2022. The land is largely flat, and mostly open with some areas with partial tree coverage. There is a small pine forestry block covering approximately 4 hectares at the North-western end of the site.
- 46 The technical report assessing the potential loss of productive land lists the current land uses as (i) low stocking rate grazing for dairy cows or yearling steers and bulls on winter feed, oats and grass or kale; (ii) a 12-horse training establishment; and (iii) sheep and small livestock grazing on some of the lifestyle blocks.
- 47 The most significant emissions from the current land use arise from the methane associated with the livestock. However, given the relatively low levels of stocking, these emissions are relatively minor.
- 48 The low tree coverage across the site means that there is limited level of carbon sequestration currently occurring on the land. A similar, or greater level of sequestration could likely be achieved through the retention of as many existing trees as possible as the Two Chain Road land is developed, and through additional plantings, which will occur in order to meet the requirements of the ODP (i.e. plantings along the zone's northern boundary and road boundaries).

- 49 Overall the emissions associated with the existing land use are relatively low, and there would be relatively little change to the amount of sequestration from trees before and after the development occurs.

EMISSIONS FROM PROPOSED LAND USE

- 50 Like any new commercial development, GHG emissions will be emitted during different stages of the project:
- 50.1 Construction of the infrastructure required to support the development;
 - 50.2 Construction of the commercial buildings; and
 - 50.3 Emissions arising from the operations of the businesses based in the buildings – primarily energy usage.
- 51 Emissions will also arise from travel associated with the businesses that choose to locate in the development – via:
- 51.1 Commuting of employees who work at the premises;
 - 51.2 Travel of customers to and from the sites; and
 - 51.3 The transportation of goods (inbound and outbound) to the premises.
- 52 In terms of GHG emissions from infrastructure work (i.e. prior to the construction of the commercial premises):
- 52.1 The site is relatively flat which limits the requirement for earthworks and therefore the amount of fossil fuels that will be used in preparing the site for development.
 - 52.2 Some soil may need to be removed from the sites, however given the cost of disposal of soil, I expect there will not be unnecessary removal of soil from the site. I've been informed by the applicant that any excess soil will likely be used to form the proposed landscaping bund along the northern boundary.
 - 52.3 In terms of materials for infrastructure, there is currently limited scope to avoid the use of GHG producing construction materials, however lower emissions materials are being developed all the time, and it is likely that by the time development commences some lower emissions materials could be specified by the developer.

- 52.4 The bulk of materials required in the development are anticipated to be roading-related (concrete/asphalt), water piping and electrical infrastructure.
- 52.5 One advantage of the site compared to other potential green-field industrial sites is that the materials required for construction could be transported to the site using rail, which would minimise the transport related emissions (compared to delivery by truck).
- 53 The second major component of GHG emissions is the emissions associated with construction of the commercial properties. The major contributing factor is the emissions that are “embodied” in materials that are used in the build.
- 53.1 Embodied carbon relates primarily to the energy used to create the building materials. Examples of materials with high embodied carbon are concrete and steel, compared to timber which has comparatively low embodied emissions.
- 53.2 There are two main ways of reducing embodied carbon in a commercial property: 1) construct the building using lower-carbon materials, 2) reduce the size of the building.
- 54 When it comes to emissions from operational energy use, the type of activity that the tenant undertakes will largely dictate this, but the location can influence the emissions. The main factors influencing operational energy emissions are 1) how energy efficient a building is, 2) the type of energy that is used in the building (electricity, LPG), 3) the size of the building and 4) the use of on-site renewables (e.g. solar PV).
- 55 Emissions at Two Chain Road can be minimised by encouraging² energy efficient buildings to be developed, ensuring that natural gas/LPG infrastructure is not provided as part of the development and encouraging the uptake of solar PV panels.
- 56 New industrial properties offer the potential to be much more energy efficient than traditional NZ properties, due to better building materials, the installation of energy efficient lighting, insulation (where appropriate) and the ability to ensure that buildings are oriented to maximise the potential outputs of rooftop solar, as well as ensuring that appropriate electrical infrastructure is provided to allow electric vehicle charging.
- 57 I note that significant new electrical infrastructure is being developed in the vicinity of Two Chain Road, with Transpower and

² Rules mandating such requirements are not proposed, however they can be readily encouraged or promoted by the land developer and/or commercial developers.

Orion working to establish a new Grid Exit Point (GXP) in Norwood and a new zone sub-station in Burnham (close to the proposed site). This can be expected to allow for substantial electrical capacity to be provided at Two Chain Road, which could make the location attractive to manufacturers – especially exporters who face challenges in decarbonising their existing operations (e.g. switching from fossil fuel process heat) due to electrical capacity limitations in their current location.

- 58 Electrical lines losses can also be expected to be low because of Two Chain Road's proximity to the new zone sub-station at Burnham. Lines losses refer to the electricity that is lost in the transmission and distribution of electricity from its point of generation to where it is used. Lines losses directly contribute to emissions because a greater amount of electricity must be generated if lines losses are higher. Losses are generally a function of the distance of a user's premises to the high voltage network. With the proposed site being close to the Burnham sub-station, lines losses can be minimised, relative to other potential development areas.
- 59 There is a growing awareness of the value of energy efficient industrial buildings and so I would expect that new buildings in the development area would be built to a high standard.
- 60 An ideal industrial site for solar is a flat site, that is free of obstructions and unlikely to be built out in the future.
- 61 As such I consider the sites at Two Chain Road would be ideal for rooftop solar, and furthermore it may be possible to locate solar panels on land adjacent to the buildings.
- 62 Taking these factors into account, I expect that properties built in the proposed development would be relatively energy efficient compared to other commercial developments of the same nature, with the advantage that Two Chain Road is located close to a zone sub-station and therefore electrical lines losses would be relatively low.

EMISSIONS FROM TRANSPORTATION

- 63 Emissions from transportation are a function of mode of transport (i.e. vehicle type), distance travelled, and frequency of travel.
- 64 Emissions from transportation primarily arise from trips undertaken in vehicles that use fossil fuels.
- 65 When considering trips to and from an industrial property this will include trips that are undertaken in passenger vehicles (by staff and customers), any trips to and from the site undertaken in commercial

vehicles, particularly trucks, and the use of machinery (such as forklifts) for day-to-day operations.

- 66 The need for commercial vehicles on site (such as forklifts) is not unique to the development proposed at Two Chain Road and would occur regardless of the location of the development, however the fact that the site is likely to have adequate electrical capacity means that there could be expected to be a faster uptake of electric commercial vehicles at this site compared to sites that are electrically constrained (for instance sites in metro areas are often electrically constrained).
- 67 As indicated earlier, it is possible that the site will be developed as a rail hub for logistics/manufacturing/industrial-type businesses, providing opportunity for businesses locating on the site to directly access the South Island rail network via several rail sidings to be constructed on the site.
- 68 Retail development is not permitted under the proposed GIZ zoning, so I anticipate there will be limited vehicle movements associated with customers travelling to visit business in the Two Chain Road area, as compared to what can typically be anticipated where retail development is anticipated.
- 69 Given the likely nature of businesses that will operate on this site, it is reasonable to expect that the movement of freight to and from the development will be the most significant contributor to transport emissions. Freight movement is discussed in more detail below.

EMPLOYEE TRAVEL

- 70 It is difficult to accurately model or predict the level of travel-related emissions that will arise from employee travel to a proposed development, as we cannot know where the staff may reside.
- 71 With fuel prices currently at record levels, and seemingly set to remain high in future, there is an economic incentive for employees to minimise their travel costs as much as possible. There are several ways this can be achieved in practice: (1) An employee can seek employment closer to where they live, (2) the employee can move to a location closer to their place of employment, (3) the employee can opt to travel via lower cost modes (e.g., walking or cycling). And in some cases, depending on the nature of work, the employee can also opt to work from home more frequently.
- 72 Given the above, it is reasonable to assume that a significant proportion of the people that will be employed in businesses within Two Chain Road will live nearby. Most of these people are likely to live in Rolleston.

- 73 The road distance from the centre of Rolleston township (assumed to be the intersection of Lowes and Tennyson Street) to the centre of the proposed block is approximately 4.4km, which contrasts to an assumed commute distance to Christchurch of approximately 18km. 18km is derived based on an assumption that those Rolleston residents who currently commute to Christchurch (and would be likely to be employed in new businesses at Two Chain Road) are, on average, more likely to work in the South Western parts of the city where much of Christchurch's manufacturing and warehousing operations are located. I have taken the intersection of Curletts and Blenheim Roads to be an approximation for the centre of such activity within Christchurch City.
- 74 By providing more employment within Rolleston, it is likely that Rolleston residents will opt to work in or around Rolleston where possible.
- 75 As such, I would expect that the creation of more jobs within Rolleston would be expected to reduce the total commuting emissions within Greater Christchurch.
- 76 Over the lifetime of the development, an increasing proportion of passenger trips will be undertaken in electric vehicles (EVs), which have around 90% lower emissions (per km) than equivalent internal combustion engine vehicles. Given this, developers should ensure that there is sufficient charging infrastructure for when these vehicles become more popular.
- 77 I note the comments of Mr Collins in respect of transport accessibility for the site, as follows:

"The current and future transport accessibility of PPC80 can be summarised as:

- The [current] accessibility by active modes (walking and cycling) is poor. This is to be expected given its current rural location. The existing accessibility of PPC80 by public transport is low. The existing Route 820 bus service travels on Two Chain Road, between Burnham and Lincoln via Rolleston. This service runs approximately hourly, between 7am and 9pm on weekdays, between 7am and 6pm on Saturdays, and between 10am and 5pm on Sundays. The future accessibility by active modes is likely to be good, with several cycleway projects planned by Council (as discussed in Table 1), as well as cycle facilities proposed by PPC80. Council is currently working with Waka Kotahi to ensure that the SH1/Dunns Crossing Road intersection upgrade includes appropriate facilities for pedestrians and cyclists to safely and conveniently travel through the intersection. I understand that this includes*

a preference by Council that Waka Kotahi provide grade separated facilities to link to Walkers Road. The future accessibility of PPC80 by public transport may be improved however, the expansion of the public transport network is subject to planning and funding from the Canterbury Regional Council"

- 78 I agree with Mr Collin's comments. It is particularly encouraging that Waka Kotahi and council are currently working together to ensure that the SH1/Dunns Road crossing intersection includes appropriate facilities for pedestrians and cyclists. In my view, this – in combination with planned cycleway investments such as the Jones Road cycleway, and the provision of excellent cycling access through the PC80 site per the ODP – would substantially increase the frequency of employees travelling to the site using active modes and would likely be of benefit in terms of lifting the utilisation of active travel modes for the whole Rolleston township.

CUSTOMER TRAVEL

- 79 The nature of the development means that the volume of customers to the site will be small compared to the volume of staff and contractors. Hence, the emissions from their travel can be considered negligible.

FREIGHT

- 80 The movement of freight in New Zealand is a significant contributor to the country's GHG emissions, with freight making up 25% of our transport emissions.
- 81 The Government's ERP has set several targets to reduce transportation emissions, including a target to reduce emissions from freight transport by 35 per cent by 2035.
- 82 One of the ways that freight emissions can be reduced, is by using lower emissions modes of transportation, such as rail and coastal shipping to transport goods around the country.
- 83 Freight that is transported by rail emits just 20%³ of the equivalent of freight transported by truck, with rail emissions on average 27g of CO₂ equivalent (which includes carbon dioxide, methane, and nitrous oxide) per tonne-kilometre, whereas freight emits on average 135g.

³ Ministry for the Environment. (2020). Measuring emissions: a guide for organisations: 2020 detailed guide. <https://environment.govt.nz/assets/publications/files/measuring-emissions-detailed-guide-2020.pdf>

- 84 The independent He Pou a Rangi Climate Change Commission, in their advice to government have recommended that *"Government should develop a national low-emissions freight strategy, that includes moving more freight by rail and sea."*
- 85 The inaugural Rail Network Investment Programme⁴, arising from the New Zealand Rail Plan, targets to increase rail mode share from 12% of total freight in 2020 to 14% by 2030.
- 86 This will require not only investment in the rail network, but also investment from the private sector to establish cost-effective connectivity with the rail network, such as that envisaged at PC80.
- 87 It is notable that Two Chain Road has the backing of KiwiRail, as noted in Kiwirail's submission on PC80 to the Operative District Plan:

"The designated Main South Line runs the entire southern length of the PC80 site, being approximately 2 kilometres. This long frontage will provide a significant and rare opportunity for new long rail sidings to be established adjacent the Rolleston Township and the existing industrial areas of the township.

New rail sidings allow, particularly of this length allow for significantly improved efficiency of freight movement through the Canterbury region (and in turn the South Island), including intermodal connections within the PC80 site.

The provision of additional industrial land immediately adjacent the Main South Line will allow for more co-location of warehousing and distribution facilities for freight forwarders, including large format, siding-served facilities. This again, improves efficiencies in freight movement throughout the Canterbury and the South Island.

Improved opportunities and efficiencies for rail transport of freight will contribute to transportation emissions and road costs, with a direct reduction in carbon emissions when rail is compared to heavy road freight."

- 88 The operation of Lyttleton Port Company's (LPC) Midland Port facility located in Rolleston (with daily connecting services between Lyttleton and Rolleston) serves as a good example of the impact that moving freight off road and onto rail can have on not only emissions, but also on reducing road congestion:

⁴ KiwiRail. (2021). Rail network investment programme.
<https://www.kiwirail.co.nz/assets/Uploads/documents/Rail-Network-Investment-Programme-July-2021.pdf>

- 88.1 LPC's 2020 Statement of Intent notes that *"We've completed and opened the Midland Port at Rolleston, which is transforming logistics in Canterbury, getting freight off trucks and on to trains, and reducing pressure on the Brougham corridor."*
- 88.2 A LPC Case Study⁵ from 2019 notes that up to 195 one-way truck trips (70,000 trips per annum) have been taken off the road each day since Midland Port opened. The case study highlights the example of emissions reductions that have been achieved by the Warehouse, who have mode-shifted freight movements from LPC to the Warehouse's South Island distribution centre (located in IZONE). Previously, freight was distributed from Lyttleton by truck, whereas now the freight is transported from Lyttleton on rail to Midland port and then by truck to the distribution centre. This resulted in a 50% emissions reduction for the end-end journey.
- 89 Another example of effectively shifting freight off road and onto rail is Synlait's new rail siding, located at their milk processing plant in Dunsandel. This was opened in May 2021, and it was noted in various media articles that this would result in 16,000 less truck movements (between Dunsandel and LPC) per annum.
- 90 These examples serve to highlight the significant possibilities for freight mode shift, and associated emissions reductions in the South Island, that could be enabled by the development of Two Chain Road. It is also notable that the Warehouse has chosen to locate its main South Island distribution centre in Rolleston. This highlights the strategic nature of Rolleston as a freight hub, particularly for large national organisations.
- 91 I also note Mr Collin's comments that *"The future accessibility of PPC80 to the freight rail network is likely to be excellent"*.

RESPONSE TO SUBMISSIONS

- 92 I have reviewed the comments of submitters where mention of GHG emissions has been made.
- 93 I note the submission from Waka Kotahi (PC80-0007), and the concerns raised in paragraphs 29 to 30.
- 94 Waka Kotahi's concerns relate to severance issues from the facilities and amenities of Rolleston township. The concern being that there is limited and difficult access for workers to the township, and that

⁵ <https://www.climateleaderscoalition.org.nz/wp-content/uploads/2022/06/2019-08-20-LPC-Case-Study.pdf>

access to PC80 for workers will likely be highly dependent on private vehicles.

- 95 Waka Kotahi raises a concern that the plan change provides no specific provision for local or neighbourhood centres. In paragraph 44 of their submission, Waka Kotahi assert that carbon emissions will be increased because workers will travel to amenities in the Rolleston township, because these are not planned for within the plan change site.
- 96 In my observation, the most common amenity that workers access during a workday is food and beverage outlets – typically to buy lunch, or a coffee. Whilst there is no “plan” for such outlets to be developed within the plan change area, such activity is provided for under the operative district plan rules (Rule 22.10.1.3 (e)) The relevant equivalent proposed zoning rule is GIZ – R9 which allows for “Any food and beverage activity”, so long as the Gross Floor Area of the food and beverage activity is no more than 150m². It is anticipated that this proposed zoning rule will be operative by the time the development progresses enough to warrant such food and beverage activities.
- 97 Given the anticipated number of workers expected to be based in the plan change area (2,000) I think it is almost certain that food and beverage outlets will be developed to meet the demand for such amenity, despite not being ‘planned’.
- 98 The plan change area also allows for automotive activity, such as inspection and certification of motor vehicles. I expect that if there was a level of demand for workers to access such services during a workday, that suitable automotive outlets would be developed within the plan change area.
- 99 Other amenity activities that employees may need to access could include activities such as accessing a gym or accessing health services. I expect that these activities could be scheduled to occur before or after a workday – either on an employee’s journey to work, or on their route home. For instance, I think it is reasonable to assume that most people who access a gym do so either before or after work.
- 100 Taking the above into account, I disagree with Waka Kotahi’s comments that the limited connectivity to Rolleston will result in increased emissions.

RESPONSE TO OFFICER’S REPORT

- 101 I note the comments of Ms White in paragraph 121 of the Section 42A Report:

"In relation to greenhouse gas emissions, I note Mr Collins' view that the Site: will have good accessibility by active modes in the future; that public transport accessibility may improve in the future, but is outside the control of the applicant; 70 and that while PC80 is outside the currently areas planned for urban development, it may have benefits to the wider transport network in terms of providing additional local employment and services to residents within the Township who might have otherwise travelled outside of Rolleston.

As noted earlier, KiwiRail also state that new rail sidings would allow for improved efficiency of freight movement through the Canterbury region, greater co-location of warehousing and distribution facilities for freight forwarders, and that this will improve opportunities and efficiencies for rail transport of freight, resulting in a reduction of carbon emissions when compared to heavy road freight. I am therefore satisfied that the plan change is consistent with the provisions of the NPS-UD regarding supporting the reduction of greenhouse gas emissions."

102 I concur with Ms White.

CONCLUSION

- 103 The proposed rezoning supports GHG emissions reductions primarily as it will enable the mode shift of a substantial number of South Island freight movements from road to rail, which have between 50-70% lower freight emissions per trip.
- 104 The rezoning proposal supports the New Zealand government's target of reducing emissions from freight transport by 35 per cent by 2035 as it can enable significantly improved efficiency of freight movement through the Canterbury region.
- 105 Development of the site will result in a significant increase in employment opportunities within Rolleston. This is likely to reduce the average commuting distance for employed residents of Rolleston, as the site is far closer to the centre of Rolleston than alternative locations of employment within Christchurch City.
- 106 The site is expected to have good accessibility via active modes of travel, especially if suitable pedestrian and cycling access is provisioned for in the redevelopment of the Dunns Road Crossing/SH1 intersection. This, combined with the site's close proximity to residential areas of Rolleston is expected to result in a significant proportion of commuting to be via active (zero-emissions) travel modes.

- 107 Employee related emissions could be further reduced by way of the introduction of a local Rolleston bus network that could transport workers from the Southern side of Rolleston to their place of work.
- 108 The development sites are expected to be well suited to solar power, and the 'green-field' nature of the site and proximity to electrical infrastructure allows for suitable electrical infrastructure to be deployed to enable electrical charging of vehicles – both passenger and delivery vehicles. This can be expected to result in a more rapid uptake of lower emissions vehicles compared to alternative industrial locations.

Dated: 5 October 2022

Paul Farrelly