Before the Hearings Panel
At Porirua City Council

Under	Schedule 1 of the Resource Management Act 1991
In the matter of	the Proposed Porirua District Plan
Between	**Various**
	Submitters
And	**Porirua City Council**
	Respondent

Statement of evidence of Harriet Barbara Fraser on behalf of Porirua City Council (Transport)

Date: 3 December 2021

INTRODUCTION:

1 My full name is Harriet Barbara Fraser. I work as a sole practitioner in the field of transportation planning and traffic engineering.

2 I have prepared this statement of evidence on behalf of the Porirua City Council (**Council**) in respect of technical transportation related matters arising from the submissions and further submissions on the Proposed Porirua District Plan (**PDP**).

3 Specifically, this statement of evidence relates to the matters in the Transport and Infrastructure Chapters.

4 I am authorised to provide this evidence on behalf of the Council.

QUALIFICATIONS AND EXPERIENCE

5 I hold the qualifications of Chartered Professional Engineer and Chartered Member of Engineering NZ. I hold a Bachelor of Civil Engineering degree from Imperial College, University of London and a Master's degree of Science in Transportation Planning and Engineering awarded with distinction by the University of Leeds.

6 My background of experience includes over 27 years consultancy experience in traffic and transportation matters. From August 1998 to August 2012, I worked as a Transportation Planner in the firm of Traffic Design Group Limited (now Stantec) practicing as a transportation planning and traffic engineering specialist throughout New Zealand. Since September 2012 I have been working as a sole practitioner in the field of transportation planning and traffic engineering.

7 During the 23 years that I have worked in New Zealand, I have provided traffic engineering and transportation planning advice to both applicants lodging resource consent applications for developments within Porirua City and to the Council. I also assisted Palmerston North City Council with

the current version of their District Plan transportation chapter. I have recently provided advice to Wellington City Council as they develop an updated draft transportation chapter.

8 I am a certified Hearing Commissioner, having completed the MfE Making Good Decisions training and have also been appointed as a Development Contribution Commissioner.

Code of conduct

9 I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing my evidence and will continue to comply with it while giving oral evidence before the Environment Court. My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

INVOLVEMENT WITH THE PROPOSED PLAN

10 I have been asked by the Council to provide evidence in relation to the transport related submissions on the Transport and Infrastructure Chapters.

11 I have been involved in the PDP since June 2021.

SCOPE OF EVIDENCE

12 In preparing this evidence I have read the transportation related submissions and further submissions. The transportation related submissions have been grouped into the same topics as included in the planning officer's report and are addressed in turn in my evidence. Kainga Ora [81] opposes the transport provisions generally and seeks the

full chapter be reviewed and amended to ensure the safe and efficient management of the transport network. As part of my review of the submissions, I have also been asked to consider the full set of proposed transport related provisions.

13 In my evidence below, I first review the alignment of the proposed transport objectives and policies with the national and regional priorities and later I comment on the submissions and summarise my review of the proposed rules and standards.

Alignment with National and Regional Transport Priorities

14 Road to Zero is the New Zealand Road Safety Strategy 2020-2030. The vision of Road to Zero is "a New Zealand where no one is killed or seriously injured in road crashes" and has the target reducing death and serious injuries on New Zealand roads by 40% over the next decade. The seven principles identified to guide the design of the network and for making road safety decisions are:

14.1 Promote good choices but plan for mistakes;

14.2 Design for human vulnerability;

14.3 Strengthen all parts of the road transport system;

14.4 Shared responsibility for improving road safety;

14.5 Actions are grounded in evidence and evaluated;

14.6 Road safety actions support health, wellbeing and liveable places; and

14.7 Safety is a critical decision-making priority.

15 The Government Policy Statement on land transport 2021 sets four strategic priorities as follows:

15.1 **Safety** – Developing a transport system where no one is killed or injured

15.2 **Better Travel Options** – Providing people with better travel options to access social and economic opportunities

15.3 **Improving Freight Connections** – Improving freight connections for economic development

15.4 **Climate Change** – Developing a low carbon transport system that supports emissions reductions while improving safety and inclusive access.

16 The Wellington Regional Transport Plan 2021 includes the following priorities:

16.1 **Public Transport Capacity** – Build capacity and reliability into Wellington Region's rail network and into Wellington City's public transport network to accommodate future demand.

16.2 **Travel Choice** – make walking, cycling and public transport a safe and attractive option for more trips throughout the region.

16.3 **Strategic Access** – Improve access to key regional destinations, including the port, airport and hospitals, for people and freight.

16.4 **Safety** – Improve safety, especially at high-risk intersections and on high-risk urban and rural roads.

16.5 **Resilience** – Build resilience into the region's transport network by strengthening priority transport lifelines and improving redundancy in the system.

17 In the table below, I comment on the alignment of the proposed transport objectives and policies in the Infrastructure and Transport chapters with the national and regional priorities.

Proposed Objective/ Policy	**Alignment with National and Regional Transport Priorities**
INF-O4 Transport network The transport network is effective, accessible and integrated with other land uses, including contributing to the amenity of public spaces, and provides for all transport modes and users to move efficiently within and beyond the City.	Given the national and regional priorities of safety, I suggest that the objective is amended to include that the transport network is safe and that that all users can move safely and efficiently within the network. Otherwise, good alignment with all other priorities.
INF-P12 Operation of the transport network Enable the safe, resilient, effective and efficient operation, maintenance and repair of the transport network to meet local, regional and national transport needs.	Good alignment with all priorities.
INF-P13 Upgrading and development of the transport network Provide for the upgrade and development of the transport network where, as far as practicable, it: 1. Integrates with the existing transport network and any other planned network upgrades or development; 2. Does not compromise the safe, efficient and effective functioning of the transport network; 3. Responds to site and topographical constraints including opportunities to reduce the effects of earthworks on landscape and ecological values; 4. Provides for high levels of connectivity within and between transport modes; 5. Provides for pedestrian and cycling safety and connectivity including access to and usability of public open spaces; and 6. Provides roads which: a. Allocate adequate space in the road corridor for walking, cycling, infrastructure, streetlighting and street trees as well as vehicles and on-street parking; b. Avoid permanent no-exit streets unless there is no practicable	To ensure alignment with the priority of providing access to public transport, I suggest that consideration is given to expanding INF-P13-6.a to include space for buses including the vehicles, the bus stops and associated infrastructure.

Proposed Objective/ Policy	Alignment with National and Regional Transport Priorities
alternative due to site and topographical constraints; and c. Include street trees that are suitable for their specific locations in the road reserve, where these….	
INF-P14 Connections to Roads Provide for safe and efficient connections between the transport network and on-site transport facilities by requiring connections to roads to address: 1. The classification, characteristics and operating speed of the road and the number and types of vehicles accessing the site; 2. Opportunities to share and minimise the number of connections; 3. Public health and safety including the safe functioning of the transport network and the safety of pedestrians and cyclists; and 4. Site or topography constraints including reduced visibility.	As included later in my evidence, I agree that this policy be relocated into the Transport Chapter. To strengthen the alignment with the safety and active mode priorities, I suggest that emphasis is placed on the safety of pedestrians and cyclists accessing the sites as well as for those within the frontage road corridor.
INF-P15 Road classification Classify roads according to their function and anticipated volume of traffic, based on the New Zealand Transport Agency's One Network Road Classification, as set out in SCHED1 - Roads Classified According to One Network Road Classification.	Using a road hierarchy classification that is consistent with roads throughout the country will assist with delivering the safe and efficient operation of the road network along with connectivity and consistency for priority routes.
INF-P16 Roads as infrastructure corridors Encourage the use of roads as infrastructure corridors in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors 2019.	The Code includes practices to minimise safety risks associated with the placement and maintenance of services located in the road reserve.
TR-O1 High trip generating use and development Use and development that generates high numbers of vehicle trips: 1. Do not compromise the safety and efficiency of the transport network; and 2. Is located where it is accessible by a range of transport modes.	Good alignment with safety and mode choice priorities.
TR-O2 On-site transport facilities and access Use and development has safe and effective on-site transport facilities and site access which do not	To ensure that the safety of vulnerable road users is included as a consideration,

Proposed Objective/ Policy	Alignment with National and Regional Transport Priorities
compromise the safety and efficiency of the transport network.	I suggest that the wording 'for all users' is added to the end of the policy.
TR-P1 High trip generating use and development Provide for high vehicle trip generating activities where it can be demonstrated that any adverse effects on the transport network will be minimised, having regard to: 1. The extent to which it integrates and co-ordinates with the transport network, including proposed or planned network upgrades and service improvements; 2. The location of the proposed activity and the purpose of the zone it is located in; 3. The transport network's capacity, level of service, form and function; 4. The effect of the proposed activity on the transport network and it's users; 5. The effect of the proposed activity on the character and amenity values of the surrounding area; 6. The provision for pedestrians, cyclists, public transport users, freight and motorists, as appropriate; 7. Any alternative site access and / or routes available; 8. Any traffic management and travel planning mechanisms; 9. The staging of the activity; 10. Any improvements to the transport network proposed as part of a high trip generating activity development; 11. Any cumulative adverse effects; and 12. Any positive effects.	Good alignment with safety and mode choice priorities.
TR-P2 Appropriate on-site transport facilities and site access Enable on-site transport facilities and site access that: 1. Provide for the safe and efficient use of the site and functioning of the transport network; 2. Meet the reasonable demands of site users; and 3. Promote the uptake and use of public and active transport modes.	Good alignment with safety and mode choice priorities.
TR-P3 Potentially appropriate on-site transport facilities and site access Provide for on-site transport facilities and site access that do not meet standards where it can be demonstrated that the safety and efficiency of the	To ensure that the safety of vulnerable road users is included as a consideration, both within the site and within the road

Proposed Objective/ Policy	Alignment with National and Regional Transport Priorities
transport network and the health and wellbeing of people is not compromised, having regard to: 1. Whether the projected demand for loading spaces or cycle spaces will be lower than that required in the standards or can be accommodated by shared or reciprocal arrangements; 2. Whether the site is adequately serviced by public and active transport networks; 3. Whether the proposed activities are conducive with, and the facilities support and promote the uptake and use of, public and active transport modes; 4. Whether the facilities are effective in meeting the operational needs and functional needs of the activity on the site; 5. Whether activities have safe and effective access for firefighting purposes; 6. Whether there are site and topographical constraints that make compliance unreasonable; and 7. The extent to which public health and safety, including the safety of pedestrians walking through any parking areas, will not be compromised.	reserve, I suggest that the wording 'safety, health and wellbeing for all people within the site and the road reserve' replaces the wording 'health and wellbeing of people'.

18 Overall, I consider that the proposed objectives and policies are well aligned with the national and regional priorities for land transport.

TOPIC Infrastructure (Transport): General Submissions

19 Kainga Ora [81] request that for ease of use of the District Plan that all transport provisions are included in the Transport Chapter rather than including some in the Infrastructure Chapter. I note that historically, many of the District Plans have not included particular provision for the design of public roads and intersections. Guidance has often been provided in the Councils' code of practice for land development (or similar), or reference made to the New Zealand Standard Land Development and Subdivision Infrastructure NZS4404:2010 and/or the Austroads Guides to Road Design.

20 I consider that it is useful for both applicants and the officers processing an application to have a clear understanding of the design requirements

for public roads and intersections. As such, I recommend that guidance is included in the District Plan. With regard to the location of this guidance, if it is not included in the Transport Chapter, I consider that it is important to include a reference to the relevant part of the Infrastructure Chapter from the Transport Chapter.

21 Regional Public Health [263] seeks that the Healthy Streets Design Indicators are considered and included into the design of road types where higher density housing will be located. I consider that the key transportation matter for inclusion in the District Plan is that roads are designed to safely accommodate all road users with active modes and public transport use being encouraged. Objective INF-04 and Policy INF-P13 provide this direction. The indicators referenced by Regional Public Health might more usefully be included within the more detailed guidance of a Code of Practice or Street Design Manual.

TOPIC Infrastructure (Transport): Zoning of Roads

22 Porirua City Council [11] and Robyn Smith [168] seek clarification regarding the zoning of roads. Regarding the design of roads and given that where there is a zone boundary along a road the zoning (in most cases) will be different on each side of the centreline, I recommend that any road design parameters included in the District Plan refer to the classification of the road within the road hierarchy rather than the zone to ensure that the same standards apply to the full width of the road. For instance, if there is commercial zoning on one side of the road and residential on the other, both sides of the road would need to be able to safely accommodate the traffic including trucks, associated with the commercial activity. An alternative approach would be that where there is a zone boundary along a road, that discretionary assessment of the road design is triggered.

TOPIC Infrastructure (Transport): Ancillary Transport Network Infrastructure

23 KiwiRail Holdings Ltd [86] and Kainga Ora [81] seek changes to INF-S8 and INF-S9 which refer to ancillary transport network infrastructure. The key transportation matter is that any infrastructure within the road reserve does not obstruct sight lines between frontage road users (pedestrians, cyclists and vehicles) and vehicles exiting driveways or side roads. Another matter is ensuring that any infrastructure within the road reserve does not become a collision hazard.

24 I support the inclusion of the proposed matter of discretion 'Traffic and pedestrian safety including sightlines and visibility of traffic signage' with a refinement so that it reads 'Vehicle, cyclist and pedestrian safety including sightlines to traffic signage and from vehicles exiting driveways and side roads'. I recommend that this matter of discretion applies to any ancillary infrastructure within the road reserve. I also recommend that a matter of discretion is added regarding 'Vehicle safety and the avoidance of roadside collision hazards'. Such hazards could be expected to be identified during either a Detailed Design or Post Construction Road Safety Audit, however the inclusion here as a matter of discretion will minimise the risk of the potential costly relocation of infrastructure.

TOPIC Infrastructure (Transport): Policy INF-P13

25 This policy refers to the upgrading and development of the transport network. The following matters have been raised in submissions:

25.1 That the policy should be deleted and included as a standard or that the phrase 'as far as practicable' be deleted and a requirement that the upgrade or development is outside of an overlay and for adverse effects to be avoided, remedied and mitigated (Forest and Bird Protection Society [225]).

25.2 That the policy should be amended so that INF-P13-6.a also refers to public transport and includes space within the road

reserve for stormwater treatment (Greater Wellington Regional Council [137]).

25.3 That the policy is combined with INF-P12 and moved to the Transport Chapter (Kainga Ora [81]).

25.4 That no-exit streets are minimised rather than avoided with a clause added addressing the provision of connections and network permeability for pedestrians and cyclists (Carrus Corporation Ltd [68] and Kenepuru Limited Partnership [59]).

25.5 That provision for space within the road reserve is included for refuse and recycling collection (Porirua City Council [11]).

26 The first point is addressed in the evidence of Mr Smeaton.

27 I agree with the inclusion of public transport in INF-P13 6.a. Regarding the request to include provision for stormwater treatment within the road reserve, I note that the proposed standards that flow on from this policy include minimum width provisions and as such, where needed a wider road reserve width can be provided to accommodate stormwater treatment.

28 The Kainga Ora submission point has been addressed previously.

29 I agree with the suggestion that no-exit streets should be minimised rather than avoided for the following reasons:

29.1 Hilly topography, as occurs in many parts of the City, can make providing connected street networks very difficult.

29.2 Similarly, the shape of sites can make it challenging to include only through routes.

29.3 There are benefits to no-exit roads rather than rights of way serving multiple properties, in particular regarding ongoing

maintenance and access to services, Council rather than private ownership, public rubbish collection and inclusion of streetlighting.

30 In my view, I consider that it would be useful to include controls regarding the length of no-exit streets, the inclusion of a turning head, pedestrian and cyclist connections from the turning head, the number of properties accessed and where relevant creating opportunities for future road connections with adjacent sites.

31 I agree with the Council that space should be included within the road reserve for refuse collection. It is typically not necessary to provide a formal collection point, but it would be useful for consideration to be given to the location of up to three bins per household on a flat surface, clear of the footpath and carriageway, and with practical access to the bins for the collection truck. The current trend towards increased residential density with smaller lot sizes and increased pressure on kerbside parking, restrict the availability of space within the road reserve for collection day storage and the ability for the refuse truck to access the bins.

32 As part of the general review of the transport provisions, in line with the submission from Kainga Ora [81], I have considered the appropriate timing for road safety audits to be undertaken of new roads and intersections within the public road network. Safety is the top priority in the Government Policy Statement Transport 2021 with an ongoing direction to reduce the number of serious injury and fatal crashes. I recommend that road safety audits are required as a condition of consent rather than as part of the resource consent application, apart from for new arterial roads or new intersections onto arterial roads. The implications of requiring a Detailed Design Road Safety Audit to form part of a resource consent application include that the Applicant will need to engage two traffic/roading engineers, one to assist with developing the design and then another to undertake the independent road safety audit. The road safety audit is also likely to extend the

timeframe for lodging the resource consent. Kapiti Coast District Council has for many years included conditions of consent requiring that both Detailed Design and a Post-Construction Road Safety Audit are undertaken. I consider that the inclusion of a policy clause in this regard may provide useful guidance and direction to both applicants and processing officers regarding the importance of achieving safe outcomes.

33 In the case of the arterial road network, given the traffic volumes and speeds along with the mixes of travel modes and vehicle types, I consider that requiring a Detailed Design Road Safety Audit as part of the resource consent process is warranted.

TOPIC Infrastructure (Transport): Policy INF-P14

34 This policy provides for 'Connections to Roads'. Kainga Ora seek that this policy is moved into the Transport Chapter. Given that the accesses that lead to the connection points are formed within private property, typically as driveways with a vehicle crossing to the public road, I agree that the policy is most appropriately located in the Transport Chapter.

TOPIC Infrastructure (Transport): Policy INF-P15

35 This policy refers to the classification of roads in line with the Waka Kotahi (NZTA) One Network Road classification. Kainga Ora seek that this policy is moved into the Transport Chapter. The classification system refers to public roads and as such I consider that the policy should be located in the Infrastructure Chapter.

TOPIC Infrastructure (Transport): General Transport Rule Provisions

36 Waka Kotahi (NZTA)[82] seek that National, Regional and Arterial Roads are given the same status as other roads. I agree with Mr Smeaton that discretionary assessment of these roads is needed for the following reasons:

36.1 No design standards are included in the PDP for National, Regional and Arterial Roads and none have been proposed by the submitter. These roads invariably need an element of bespoke design.

36.2 These roads have busier traffic flows, greater proportions of heavy vehicles and often accommodate freight routes along with having higher speed limits. The mix of road users and the higher speed environment increases the risk of serious injury and fatal crashes and therefore warrants closer scrutiny of the road design. This is reflected in the Regional Land Transport Plan safety priority of seeking to improve safety at high-risk intersections and roads.

TOPIC Infrastructure (Transport): Rule INF-R23

37 This rule refers to 'Connections to roads for vehicle access to sites' with the following requests included in the submissions:

37.1 Kainga Ora [81] seek that the rule is moved to the Transport Chapter.

37.2 Porirua City Council [11] seek that the rule is amended such that a connection of a Vehicle Access Level 4 with an Arterial Road is a restricted discretionary activity given the potential for these busier accesses to have an adverse effect on the safe and efficient operation of the Arterial Road.

37.3 Waka Kotahi (NZTA) [82] seeks that a note is added that all new roads and vehicle access points connecting with a state highway require the approval of Waka Kotahi.

38 As previously included, I agree that this rule is most appropriately located in the Transport Chapter.

39 I agree with the Council's submission that the busiest access connections onto Arterial Roads should trigger restricted discretionary assessment given the traffic carrying function of Arterial Roads and the need to ensure their safe and efficient operation.

40 I note that it is common practice for District Plans to include reference to the need to consult and seek approvals from Waka Kotahi and I agree that a note to this effect should be included.

TOPIC Infrastructure (Transport): Rule INF-R27

41 This rule refers to 'new roads and upgrading of roads outside of any Overlay'.

42 Kenepuru Limited [59] considers that the requirement for road safety audits is not appropriate for low speed roads in residential areas. As included earlier in my evidence, I agree that road safety audits should be required as a condition of consent rather than as part of the application, apart from for new arterial roads or new intersections onto arterial roads. Given the traffic volumes and speeds along with the mixes of travel modes and vehicle types, I consider that requiring a Detailed Design Road Safety Audit as part of the resource consent process is warranted on Arterial Roads.

43 Kainga Ora [81] seek that the upgrading of roads within the existing road reserve is provided for as a permitted activity with no associated standards. I agree with Mr Smeaton's view that a controlled activity status is appropriate for the upgrade of roads.

TOPIC Infrastructure (Transport): Standard INF-S22

44 This standard refers to the classification of new roads, with National, Regional and Arterial Roads to be classified in line with the Waka Kotahi One Network Road Classification and Collector and Access Roads to be classified according to INF-Table 1.

45 Waka Kotahi [82] seek that the standard is amended so that all roads are classified according to the One Network Road Classification. I note that this national road classification system is currently being updated to a system called the One Network Framework. As such, it is inevitable that the prescribed classification in the PDP will become obsolete and need modifying in the next year or so. The classification categories included in INF-Table 1 are intended to assist with the design of new Collector and Access Roads. Once established, new roads can be expected to be included in the Porirua Road Hierarchy with a classification according to the current national road classification system. I agree with Mr Smeaton that this request from Waka Kotahi be rejected.

TOPIC Infrastructure (Transport): Standard INF-S23 and Tables INF-Table 1 and INF-Table 3

46 This standard and the referenced tables refer to the design standards for roads with the following requests included in the submissions:

46.1 That no-exit roads are allowed for (Kenepuru Limited [59]) and that connectivity and permeability in design for pedestrians and cyclists is required (Carrus Corporation [68]).

46.2 That INF-Table 1, 2 and 3 are amended to reflect NZS4404:2010 or similar and to include the lanes and private roads that are in the Transport Chapter (Kenepuru Limited and Carrus Corporation). Survey + Spatial [72] also request that the road design provisions are as per NZS4404:2010.

46.3 That INF-Table 3 is amended to reflect local roads in residential areas (Kenepuru Limited).

46.4 That road gardens be allowed for in residential areas (Kenepuru Limited).

46.5 That retaining structures associated with the construction of a road are allowed for (Kenepuru Limited and Carrus Corporation).

46.6 That the standard and tables are deleted, and a full review undertaken of these standards (Kainga Ora [81]).

46.7 That INF-S23-5 references Waka Kotahi Cycling Network Guidance (CNG) and the Pedestrian Planning Design Guide rather than the Austroads Guide to Road design Part 6A: Paths for Walking and Cycling (2017) (Waka Kotahi [82]).

46.8 That the cycle lane and footpath widths be increased from 1.5m to 1.8m and maximum gradient of 5% for all roads to improve accessibility for pedestrians and cyclists (Waka Kotahi).

47 As included earlier in my evidence, I consider that there are circumstances where no-exit roads should be provided for. I recommend that controls are included regarding the length of no-exit streets, the inclusion of a turning head (9.5m radius as per NZS4404:2010 Figure 3.3), pedestrian and cyclist connections from the turning head, the number of properties accessed and where relevant creating opportunities for future road connections with adjacent sites. A maximum length of 100m is recommended to minimise the additional walking distances for pedestrians. A maximum anticipated traffic flow of 200 vehicle movements per day is equivalent to the traffic activity generated by around 20 households and is aligned with the 'Lane' category in NZS4404:2010.

48 INF-Table 3 includes K and R values. These are design parameters associated with the vertical and horizontal alignment of a road. In the Austroads design guidance the following comment is included:

'*In the final design, the vertical alignment should fit into the natural terrain, considering earthworks balance, appearance and the maximum and minimum vertical curvature allowed, expressed as the K value'*.

49 I consider that the K and R values are matters for detailed design and should more appropriately be included in an engineering standards document or similar, rather than in the District Plan. I recommend that INF-Table 3 is deleted from the PDP.

50 Regarding accommodating road gardens within the road reserve, I note that the provisions include a minimum road reserve width such that wider cross-sections can be provided to accommodate road gardens as needed. The key matter from a road safety perspective is ensuring that any planting within the road reserve does not restrict sight lines from driveways or side roads.

51 As with road gardens, the key road safety matter regarding retaining structures within the road reserve is that they do not restrict sight lines from driveways or side roads. I recommend that inclusion of retaining structures within the road reserve, for whatever purpose, trigger an assessment of effects on road safety, in particular available sight lines from nearby driveways and side roads.

52 With regard to the Waka Kotahi request that regarding the design of facilities for pedestrians and cyclists, references should be included to the latest Waka Kotahi material rather than the 2017 Austroads guidance. I note that the Waka Kotahi Cycling Network Guidance (CNG) is a webpage based resource and that the Pedestrian Planning Design Guide is currently also being transitioned to a webpage based resource. While these are very comprehensive resources and developed for the New Zealand context, I have found that it can be difficult to locate the guidance sought and then once found, providing references to support and document design choices can be frustrating. Accordingly, I recommend that references are included to both the Waka Kotahi and the Austroads guidance.

53 The request to include minimum footpath widths of 1.8m is consistent with a change in footpath standards driven by Waka Kotahi which is being rolled out throughout New Zealand. I recommend that a minimum footpath width of 1.8m is adopted. Regarding cycle lane widths, the CNG includes within a 50km/h speed environment, a desirable minimum on-road cycle lane width of 1.6m when not alongside parking and 1.8m when there is kerbside parking. For simplicity, I recommend that where on-road cycle lanes are provided, they should have a minimum width of 1.8m.

54 I understand the rationale behind the request that roads have a maximum gradient of 5% to improve accessibility for pedestrians and cyclists. A 5% grade is considered accessible for pedestrians. While desirable, given the hilly topography of much of the city I do not consider this to be a practical limit and could unreasonably limit the potential for the development of sites. NZS4404:2010 includes for roads in a suburban environment, a maximum grade of 10% for connector/collector roads, 12.5% for local/access roads and 16% for a lane accommodating up to 200 vehicle movements per day. I recommend that a maximum gradient of 10% be included for all the road types in INF-Table 1, to deliver improved ease of use for pedestrians and cyclists while recognising the hilly topography within much of the City.

55 My view is that NZS4404:2010 is a good starting point for the consideration of road design standards but for the following reasons I do not consider that the standards should simply be duplicated in or referenced from the District Plan:

55.1 As included earlier in my evidence, Waka Kotahi have recently provided guidance on increased minimum widths for footpaths and cycle lanes. I recommend that a 1.8m minimum width for footpaths is included in the District Plan, and also a 1.8m minimum width where on-road cycle lanes are included. The wider footpaths will better provide for users to pass each other including those with prams or wheelchairs and allows

for improved clearances to street furniture and signs. These increased widths are in line with the nationwide directive through the Government Policy Statement on Transport (2021) for road safety and to encourage active modes which in turn helps with achieving emissions and climate change goals.

55.2 The driver position regardless of whether the vehicle is moving in forward or reverse gear is typically around 2.5m from the front or back extent of the vehicle. A berm width of at least 2.5m will allow for the driver of an exiting vehicle to be able to see along the berm to frontage vehicle traffic before the vehicle enters the carriageway. This is particularly important with narrow carriageways (around 6m) where frontage vehicles can be expected to be travelling at the speed limit along the edge of the carriageway. Kerbside parking on wider roads can provide a buffer which is not available with narrower carriageway widths.

55.3 My understanding is that the ideal location for services is often within a grassed berm which provides for easy and cost-effective access for maintenance purposes with minimal waste and need for additional materials. The road reserve width needs to include allowance for services to be located within the berm and clear of the footpath and street trees. The berms also need to accommodate roadside infrastructure such as benches, bus stops and utility cabinets.

55.4 As residential density increases and lot sizes reduce, the opportunity for landscaping and in particular trees to be included within the private realm reduces. As such, there is increased pressure to include trees within the public realm. As mentioned above this can result in wider berms so that trees and services can be separated.

55.5 NZS4404:2010 includes carriageway widths of 5.5 to 5.7m. Noting that the fire service is increasingly requesting a 4m clear width for access, compared with 3.6m previously, if a car is parked within a 5.5-5.7m width carriageway a trafficable width of around 3.4-3.6m remains. Also, regarding a 5.5-5.7m carriageway width, if a berm of less than 2.4m is provided, the manoeuvring width for a car turning to or from a frontage property can be compromised by a vehicle parked kerbside opposite to the driveway.

55.6 NZS4404:2010 does not include guidance on increased carriageway widths on bends. AS/NZS2890.1:2004 recommends a minimum width of 6.3m where the outside radius is 20 to 50m and 6.7m where the radius is less than 20m.

55.7 The National Policy Statement Urban Development (2020) facilitates development in Porirua with no parking on-site parking and smaller lot sizes. This results in narrower property frontages with an associated reduction in the capacity of kerbside parking plus increased demand for kerbside parking with no requirement to provide parking on-site. As such, consideration needs to be given to accommodating at least some parking demands within the road reserve to ensure access to employment, services and amenities for all residents.

56 Using NZS4404:2010 as the base guidance and then amending the provisions to reflect the above comments, I recommend that INF-Table 1 includes the following:

56.1 **An access road category for suburban residential streets which provide access to up to 20 households with a traffic volume of up to 200 vehicle movements per day**:

56.1.1 Maximum length of 100m for a no-exit road

56.1.2 Target operating speed 20km/h (as per NZS4404:2010) which may require the inclusion of speed management measures

56.1.3 Minimum road reserve width 14m (increased from 9m in NZS4404:2010)

56.1.4 Maximum gradient 10% (reduced from 16% in NZS4404:2010)

56.1.5 A 1.8m wide footpath on at least one side (increased from no footpath provision in NZS4404:2010)

56.1.6 Cyclists accommodated within the traffic carriageway (as per NZS4404:2010)

56.1.7 2.1m wide indented parking along one side (increased from no separate parking provision in NZS4404:2010)

56.1.8 Two 3m wide traffic lanes (increased from a 5.5-5.7m carriageway width in NZS4404:2010)

56.1.9 1m wide infrastructure berm

56.1.10 2m wide street tree berm

56.1.11 Minimum total berm on each side of the carriageway of 2.5m on one side and 2.8m on the other

56.1.12 Carriageway width of at least 6.7m on bends with an outside radius of 50m or less

56.2 **An access road category for suburban streets which provide access to up to 200 households or accommodate a traffic volume of up to 2,000 vehicle movements per day**:

56.2.1 Target operating speed 40km/h (as per NZS4404:2010) which may require the inclusion of speed management measures

56.2.2 Minimum road reserve width 16m (increased from 15m in NZS4404:2010)

56.2.3 Maximum gradient 10% (reduced from 12.5% in NZS4404:2010)

56.2.4 A 1.8m wide footpath on each side of the street (increased from 2*1.5m wide footpath provision in NZS4404:2010)

56.2.5 Cyclists accommodated within the traffic carriageway (as per NZS4404:2010)

56.2.6 2.1m wide indented parking along one side (increased from no separate parking provision with up to 100 households in NZS4404:2010). Increase to two 2.1m wide indented parking bays when accommodating access to industrial activities

56.2.7 Two 3m wide traffic lanes (increased from a 5.5-5.7m carriageway width in NZS4404:2010). Increase to two 4.2m traffic lanes when accommodating access to industrial activities

56.2.8 1m wide infrastructure berm

56.2.9 2.5m wide street tree berm

56.2.10 Minimum total berm on each side of the carriageway of 2.8m on one side and 4.3m on the other

56.2.11 Carriageway width of at least 6.7m on bends with an outside radius of 50m or less

56.3 **An access road category for urban streets, other than residential or industrial, which accommodate a traffic volume of up to 2,000 vehicle movements per day:**

56.3.1 Target operating speed 40km/h (as per NZS4404:2010) which may require the inclusion of speed management measures

56.3.2 Minimum road reserve width 19m (increased from 15m in NZS4404:2010)

56.3.3 Maximum gradient 10% (reduced from 12.5% in NZS4404:2010)

56.3.4 A 2.5m wide footpath on each side of the street increasing to 3.5m where the street has retail frontages

56.3.5 Cyclists accommodated within the traffic carriageway (as per NZS4404:2010)

56.3.6 2.1m wide indented parking along both sides

56.3.7 Two 3m wide traffic lanes (increased from a 5.5-5.7m carriageway width in NZS4404:2010)

56.3.8 1m wide infrastructure berm

56.3.9 2.5m wide street tree berm

56.3.10 Minimum total berm on each side of the carriageway of 3.5m on one side and 5m on the other

56.3.11 Carriageway width of at least 6.7m on bends with an outside radius of 50m or less

56.4 **An access road category for rural roads which provide access to up to 150 households (as per NZS4404:2010) or accommodate a traffic volume of up to 1,000 vehicle movements per day** (as per NZS4404:2010):

56.4.1 Target operating speed 60km/h (reduced from 70km/h in NZS4404:2010)

56.4.2 Minimum road reserve width 15m (as per NZS4404:2010)

56.4.3 Maximum gradient 10% (reduced from 12.5% in NZS4404:2010)

56.4.4 A 2.5m wide shared path on at least one side of the road (no separate provision included in NZS4404:2010)

56.4.5 Two 3m wide traffic lanes (increased from a 5.5-5.7m carriageway width in NZS4404:2010) plus two 0.5m sealed shoulders

56.4.6 Minimum total berm on each side of the carriageway of 3.5m with provision included for swales as needed

56.5 **A collector/ connector road category for suburban streets which provide access to up to 800 households or accommodate a traffic volume of up to 8,000 vehicle movements per day**:

56.5.1 Target operating speed 50km/h (as per NZS4404:2010)

56.5.2 Minimum road reserve width 25m (increased from 20m in NZS4404:2010)

56.5.3 Maximum gradient 10% (as per NZS4404:2010)

56.5.4 A 2m wide footpath on each side of the street (as per NZS4404:2010)

56.5.5 Cyclists accommodated within 1.8m cycle lanes in each direction, either on or off road (provides more certainty than NZS4404:2010)

56.5.6 2.5m wide parking lane/bus stop along each side (similar to NZS4404:2010)

56.5.7 Two 4.2m wide traffic lanes (as per NZS4404:2010) to allow for buses and heavy vehicles to be comfortably accommodated

56.5.8 1m wide infrastructure berm

56.5.9 3m wide street tree berm

56.5.10 Minimum total berm on each side of the carriageway of 3m on one side and 5m on the other

56.6 **A collector/connector road category for rural roads which provide access to up to 250 households or accommodate a traffic volume of up to 2,500 vehicle movements per day (as per NZS4404:2010):**

56.6.1 Target operating speed 60km/h (reduced from 100km/h in NZS4404:2010)

56.6.2 Minimum road reserve width 20m (as per NZS4404:2010)

56.6.3 Maximum gradient 10% (as per NZS4404:2010)

56.6.4 A 3.0m wide shared path on at least one side of the road (NZS4404:2010 includes 1.5m wide footpaths on each side and cyclists on sealed shoulder)

56.6.5 Two 3.5m wide traffic lanes (increased from a 5.5-5.7m carriageway width in NZS4404:2010) plus two 0.75m sealed shoulders

56.6.6 Minimum total berm on each side of the carriageway of 3.5m with provision included for swales as needed.

56.7 **A collector/ connector road category for streets in zones other than residential, rural or industrial zones, which provide accommodate a traffic volume of up to 8,000 vehicle movements per day:**

56.7.1 Target operating speed 50km/h

56.7.2 Minimum road reserve width 26m

56.7.3 Maximum gradient 10%

56.7.4 A 2.5m wide footpath on each side of the street increasing to 3.5m when there is a retail frontage

56.7.5 Cyclists accommodated within 1.8m cycle lanes in each direction, either on or off road

56.7.6 2.5m wide parking lane/bus stop along each side

56.7.7 Two 4.2m wide traffic lanes to allow for buses and heavy vehicles to be comfortably accommodated

56.7.8 1m wide infrastructure berm

56.7.9 3m wide street tree berm

56.7.10 Minimum total berm on each side of the carriageway of 3.5m on one side and 5.5m on the other

TOPIC Infrastructure (Transport): Standard INF-S24, INF-Table 4 and INF-Figure 1, INF-Figure 2 and INF-Figure 3

57 This standard and the referenced figures set out the permitted activity standard for the design of parking spaces within the road reserve. Kainga Ora seek for the provisions to be relocated in the Transport Chapter. Given that the standard is for parking within the road reserve, I consider that it is appropriately located in the Infrastructure Chapter. The Road Design Standards included in INF-Table 1 are restricted to the inclusion of parallel parking which I consider to be a reasonable approach and therefore I consider that design provisions are only needed for on-street parallel parking in the District Plan. I have undertaken a review of the proposed standard against Australian Standard Parking facilities Part 5: On-street parking 2020 which includes the following for parallel parking spaces in a 50km/h or less speed environment:

57.1 2.0-2.3m space width for car and light commercial vehicle use increasing to 2.6m for large vehicle use;

57.2 No need to include a safety buffer (additional space between the parking space and the adjacent traffic lane or cycle lane);

57.3 5.4m end space length where a vehicle may enter or leave the space directly. This is frequently reduced to a 5m length in New Zealand;

57.4 6.0-6.7m length for an intermediate space, depending on parking turn over and traffic volume. No guidance is included for the selection of space length within the stated range; and

57.5 6.3m length for an obstructed end space.

58 The Australian and New Zealand Standard 2890.1:2004 which covers off-street parking design includes a space width for parallel parking spaces of 2.1m with 5.4m, 6.3m and 6.6m lengths for open end spaces, intermediate spaces and end obstructed spaces respectively when adjacent to a 3m wide aisle.

59 On this basis and for simplicity, I recommend that INF-Figure 1, 2 and 3 are deleted and INF-S24 replaced with wording for parallel parking spaces to the effect:

59.1 Parking space width of 2.1m; and

59.2 Parking space length of 6.3m for intermediate spaces, 6.6m for end obstructed spaces and 5m unobstructed end spaces.

TOPIC Infrastructure (Transport): Standard INF-S25, Figure 4 and INF-Table 5

60 This standard and the associated figure and table refer to the design of intersections. Kainga Ora [81] seeks that the material is included in the Transport Chapter. Waka Kotahi [82] seeks definitions are provided for

'Minor Road' and 'Major Road'. Both Waka Kotahi and Porirua City Council [11] request that INF-Table 5 is amended to include sight distance requirements for Arterial, Regional and National Roads.

61 With intersections forming part of the public road network, I consider that the provisions are appropriately located in the Infrastructure Chapter. The Austroads Guides to Road Design provide best practice guidance on the design of intersections. Regarding sight distances, Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections is the guiding document and includes the terms major and minor road. I recommend that INF-Figure 4 is amended to a tee intersection layout and that the minor road (side road) is shown with a dashed line across it as included in the Austroad Guide (Figure 3.2). I do not consider that any other definition is needed.

62 Regarding the requests that INF-Table 5 be amended to include arterial roads, I note that the key matter with regard to providing safe sight distances is the speed environment rather than the road classification. This is reflected in the Austroads guidance which does not include separate sight line requirements for different classes of road. I recommend that INF-Table 5 is amended as shown below, to reflect the Safe Intersection Sight Distance (rounded up to the nearest 5m) with a two second reaction time as shown in Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections Table 3.2.

Operating Speed (km/h) of major road	**Distance X (m) (see INF-Figure 4)**	**Distance Y (m) (see INF-Figure 4)**
≤40	5	75
41-50	5	100
51-60	5	125
61-70	5	155
71-80	5	185
81-90	5	215
91-100	5	250

Operating Speed (km/h) of major road	Distance X (m) (see INF-Figure 4)	Distance Y (m) (see INF-Figure 4)
101-110	5	285

63 As part of my wider review of the transport provisions, given the number of additional conflict points associated with crossroad intersections compared with tee intersections, I recommend that intersections with more than three approaches would trigger discretionary assessment with regard to safety for all road users. I also recommend that the inclusion of roundabout or signalised intersections triggers discretionary assessment with regard to safety for all road users. These intersection forms are typically needed at the connection of busier roads and particular care is needed with ensuring the safety of vulnerable road users and safe access to neighbouring properties.

64 The separation distance between intersections is also a consideration in terms of ensuring the safe and efficient operation of the transport network. To date, the guidance is varied and has typically not been included in District Plans being more likely to be set out in Codes of Practice or Design Standards.

65 I note that the Christchurch City Council Infrastructure Design Standard includes a 40m minimum separation distance (centreline to centreline) between local road/ local road intersections and a minimum of 150m between all other intersections. NZS4404:2010 at Section 3.3.7 sets out that intersections between connector/ collector roads with other connector/collectors or arterial roads should be a minimum of 150m apart (centreline to centreline).

66 Given the current trend to provide increased residential density with smaller lots and the resulting smaller block sizes, I recommend that a standard is added that includes:

66.1 40m minimum intersection separation distance between intersections of local roads;

66.2 80m minimum intersection separation distance between a local/local road intersection and a local road intersection with a higher order road; and

66.3 150m minimum intersection separation distance to intersections of collector/connector roads and/or arterial roads.

67 The distance should be measured between the centrelines and can apply to intersections on the same or opposite side of the road. I am recommending the 80m separation category as a transition between the two other documented separation distances.

TOPIC Infrastructure (Transport): Standard INF-S26, INF-Table-6 and INF-Figure 5

68 This standard and the associated figure and table refer to the design of private access connections with public roads. Kainga Ora [81] seeks that the material is included in the Transport Chapter. Given that the standard refers to the design of infrastructure in the private realm, I agree with the submitter. I provide further comment on this standard later in my evidence.

TOPIC Infrastructure (Transport): Standard INF-S27

69 This standard includes design provisions for cycleways, shared paths and pedestrian walkways on public land other than roads. Waka Kotahi [82] seek that the standard is amended to reference the NZ Cycle Trail Design Guide (2019). As well as seeking that the standard is relocated to the Transport Chapter, Kainga Ora [81] have concerns with the use of references to an external document.

70 Given that the standard is for infrastructure in the public realm, I recommend that it remains in the Infrastructure Chapter. I agree with Mr Smeaton that a reference to the NZ Cycle Trail Design Guide be added

alongside the reference to the Austroads guide. I note that the Austroads guides are freely available online.

TOPIC Transport: General Submissions

71 Kainga Ora [81] seek a full review of the transport provisions. Waka Kotahi [82] seek a number of amendments to the transport provisions to ensure the safe and efficient management of the transport network. Kenepuru Limited [59] has a concern regarding the classification of public roads versus private accesses. I provide comment on the submissions received on the Transport Chapter below along with recommendations from my general review of the proposed transport provisions.

TOPIC Transport: Rail level crossings

72 KiwiRail [86] seek that a new rule and a standard be included to address sight lines at level rail crossings. I agree that a standard should be included and have inserted below the permitted activity standard that has been included in the Palmerston North City District Plan. If preferred a diagram could be included rather than the reference to the Traffic Control Devices Manual. I consider that the proposed provisions in TR-S12, as included in Mr Smeaton's report, are well matched to the KiwiRail requirements.

> **(v) Railway Lines**
>
> The following restrictions apply to vehicle accesses in the vicinity of railway lines:
>
> a) No new road or access shall cross a railway line;
>
> b) Any new vehicle access or intersection, or any additional development that intensifies the use of an existing access or intersection, shall be located a minimum of 30m from a rail crossing limit line; and
>
> c) Any new development near an existing railway level crossing with passive control, that is a crossing without flashing lights, bells, barrier arms or gates, must be located outside of the sight triangles as set out in Appendix B of NZTA Traffic Control Devices Manual 2008, Part 9 Level Crossings.

TOPIC Transport: Objective TR-01, Policy TR-P1, Standard TR-S10, Rule TR-R5 and TR-Table 7

73 These provisions relate to high trip generating activities. Mr Smeaton has provided comment on the submissions on Objective TR-01 and Policy TR-P1 and I have no additional comment to make on the objective and policy. The submissions on Rule TR-R5 and TR-Table 7 can be summarised as follows:

73.1 Kainga Ora [81] seek deletion of the rule as they do not agree with residential activities being included as potential high trip generating activities;

73.2 Waka Kotahi [82] request that the threshold be reduced to 100 vehicle movements per day for activities accessing a national or regional arterial road; and

73.3 Ministry of Education [134] requests that a category is added for intermediate schools.

74 The use of high trip generating thresholds is being increasingly included in District Plans around the country, recognising that traffic effects from vehicle traffic up to a certain level can be reasonably absorbed within the road network but that at higher levels an assessment of the traffic effects and the potential inclusion of mitigation is needed. As such, it is the traffic generation rather than the land-use activity which is the concern and therefore the trigger for assessment.

75 Sixty residential units could be expected to generate 480-600 vehicle movements per day which is well aligned to the 500 vehicle movements per day which is included for an activity that has not been listed in the table. It is possible that with the recent removal of parking provision minimums that a residential development could be built with little if any parking and therefore considerably less vehicle movement onto and off the site. These developments will still generate vehicle activity, albeit not

necessarily within the site, such as drop-off and pick-up, visitors accessing the nearby road network by vehicle, deliveries and service activities along with rubbish collection and in my view, will warrant being triggered for assessment.

76 I agree with the submission from Waka Kotahi that the high trip generating threshold should be 100 vehicle movements per day for activities accessing state highways. This is in line with the guidance included in their Planning Policy Manual which includes provisions for accesses onto their highways accommodating up to 100 vehicle movements per day.

77 I also agree with the request from the Ministry for Education for a category to be added to the table for intermediate schools.

TOPIC Transport: Policy TR-P3

78 This policy is for potentially appropriate on-site transport facilities and site access. Waka Kotahi [82] request that a clause is added relating to benefits from the activity on the surrounding environment. Kainga Ora [81] seek that the word wellbeing is replaced with the word safety. Given the strong ongoing directive for safety to be a top priority, in the context of transport in the Government Policy Statement on Land Transport 2021, I agree with the addition of the word safety as suggested by Kainga Ora. Regarding the Waka Kotahi submission, I note that Mr Smeaton is recommending the addition of a clause such that 'any positive effects' can be given regard to. I agree that this is a useful approach.

TOPIC Transport: Policy TR-P4

79 This policy provides for 'Connections to Roads' and based on the Kainga Ora submission is recommended to be relocated into the Transport Chapter (previously Policy INF-P14). Given that the accesses that lead to the connection points are formed within private property, typically as

driveways with a vehicle crossing to the public road, I agree that the policy is most appropriately located in the Transport Chapter.

TOPIC Transport: Rule TR-R1, Standards TR-S1 and TR-S4

80 This rule and standards refer to access to properties which do not have vehicle access, that is, there is no on-site parking or loading bay provisions. The submission points can be summarised as follows:

80.1 Waka Kotahi [82] seek clarification whether site access includes access for vehicles;

80.2 Kainga Ora [81] include a request concerning notification which is addressed by Mr Smeaton. Concern is also raised about the relationship between TR-S1 and TR-S4 and the possibility of poor outcomes. A request is included to delete the maximum gradients; and

80.3 Survey and Spatial NZ [72] seeks that cycle access on shared access is deleted, that allowance is included for steps and that the minimum widths are reduced to a 1.2m formed width within a 1.5m legal width.

81 Mr Smeaton is recommending that the heading for TR-R1 be changed to 'All activities with no on-site parking or loading spaces'. This addresses the Waka Kotahi submission and usefully clarifies that the rule does not apply to sites with vehicle access. Standard TR-S4 has been amended such that it is independent of TR-S1 with no referencing needed between the two standards. I agree with this approach and discuss the provisions of TR-S4 later in my evidence. The addition of proposed clauses 4 and 5 to TR-S1 ensure that a permitted non-vehicle access can be used for firefighting purposes.

82 In response to the Kainga Ora request to remove maximum gradients from the standard, the proposed controls on gradients ensure

compliance with NZS4121:2001 Design for access and mobility: Buildings and associated facilities, which is referenced in the Building Code as an acceptable solution for providing an accessible route to a building. As such, the provisions should remain in the standard.

83 Regarding cycle access, my expectation is not that the access would be cycled along but that cyclists will need to be able to push their bicycles between the building and the street. Other users of the access will need to be able to pass a cyclist pushing their bicycle. With NZS4121:2001 including a minimum width of 1.2m to allow for wheelchair access and the current initiative from Waka Kotahi for public footpath widths to be a minimum of 1.8m wide, I consider that the proposed 1.5m minimum formed width is a balanced response for inclusion in the private realm. The proposed minimum legal width of 1.8m includes allowance for letterboxes, landscaping, items protruding from building facades etc.

TOPIC Transport: Rule TR-R2, Standards TR-S2, TR-S3 & TR-S4, TR-Tables 1, 2 & 3

84 This rule and associated standards include provisions for vehicle access to properties. The submission points can be summarised as follows:

84.1 Waka Kotahi [82] seek clarification of the relationship between TR-R2 and INF-R23;

84.2 Kainga Ora [81] seek that TR-R2-1.b which includes the vehicle access classifications be deleted, that the note regarding INF-R23 be deleted along with the S88 requirements for road safety audits. They also oppose the discretionary status for vehicle accesses;

84.3 Kainga Ora seeks the full review of TR-S2 and TR-S3 and TR-Table 1, Table 2 and Table 3;

84.4 Kenepuru Limited [59] requests that references to TR-Tables 2 and 3 are replaced with references to the tables in the

Infrastructure Chapter. It is also requested that the same standards are used for public and private roads and that NZS4404:2010 is used as the basis for this standard with references to these standards from both the Transport and Infrastructure Chapters. Kenepuru Limited seek amendments to the K values in TR-Table 3;

84.5 Waka Kotahi [82] seek a note addressing administration of the Government Roading Powers Act 1989;

84.6 Survey and Spatial [72] seek the deletion of TR-S4 which provides for firefighting access; and

84.7 Fire and Emergency NZ [119] seek that the formed width in TR-S4 is increased to 4m and that the word 'minimum' is added to Tr-S4-1.c.

85 In response to the request from Kainga Ora, I have undertaken a full review of Rule TR-R2, Standards TR-S2, TR-S3 and TR-S4. As included earlier in my evidence I consider that these provisions are most appropriately included in the Transport Chapter rather than the Infrastructure Chapter given that the infrastructure that is delivered is in private ownership. I have summarised my review of these proposed provisions in the following paragraphs.

86 As included at paragraph 32 of this evidence, I consider that the requirement for road safety audits to be undertaken should be included as a condition of consent rather than as part of the resource consent application, with the exception of intersections with Arterial Roads. Regarding access connections to roads, I would only expect consideration to be given to including road safety audits as a condition of consent where either there is a Level 4 access or the connecting road has an arterial function;

87 I note that the One Network Road Classification will at some future date be superseded by the One Network Framework and that this will require a future amendment to the District Plan;

88 I agree with the inclusion of access to the state highway network (National and Regional Roads) as a restricted discretionary activity and the inclusion of a note regarding the need to consult with Waka Kotahi. As per my comments above on road safety audits, I also consider that Level 4 accesses onto an Arterial Road under the City's control should be included as a restricted discretionary activity.

89 Regarding the classification of accesses, NZS4404:2010 Table 3.2 includes categories for 1 to 3 dwellings, 4 to 6 dwellings and up to 20 dwellings. With traffic generations of up to 10 vehicle movements per day per household, the categories in terms of vehicle movements are up to 30 vehicle movements per day, 31 to 60 vehicle movements per day, 61 to 200 vehicle movements per day and more than 200 vehicle movements per day. In the absence of guidance on acceptable heavy vehicle movements on accesses, I recommend that the following categories are used, an average of no more than 2 heavy vehicle movements per week, average of 3-4 heavy vehicle movements per week, average of 5-8 heavy vehicle movements per week and an average of 9 or more heavy vehicle movements per week.

90 I consider that NZS4404:2010 provides a useful starting point for developing standards for the design of accesses. The table below is a summary of the NZS4404:2010 provisions. Where turning provisions are required in the common area, a 9.5m radius turning head or L, Y and T turning arrangements are included as solutions.

Classification	1-3 dwelling units	4-6 dwelling units	Up to 20 dwelling units (200vpd)	Up to 100 dwelling units (1,000vpd)
Target operating speed (km/h)	10	10	20	40
Minimum legal width (m)	3.6	4.5	9.0	15.0
Maximum grade	20%	20%	16%	12.5%
Pedestrians	Shared in movement lane	Shared in movement lane	Shared in movement lane	1.5m wide footpath one side
Passing, parking, loading, & shoulder	Allow for passing up to every 50m	Allow for passing up to every 50m	Shared in movement lane	Shared in movement lane
Cyclists	Shared in movement lane	Shared in movement lane	Shared in movement lane	Shared in movement lane
Movement lane (m)	2.75-3.00	2.75-3.00	5.5-5.7	5.5-5.7
Turning provision within common area	Required when three dwellings	Required	Required	Required

91 I recommend that the NZS4404:2010 provisions are modified as per the table below for application in Porirua City. Amendments and additions are shown in bold print.

Classification	**Vehicle Access Level 1**	**Vehicle Access Level 2**	**Vehicle Access Level 3**	**Vehicle Access Level 4**
	1-3 dwelling units	**4-6 dwelling units**	**Up to 20 dwelling units**	**Up to 100 dwelling units**
	Up to 30vpd (cars) Up to 2 vpw (truck)	**31-60vpd (cars) 3-4 vpw (truck)**	**61-200vpd (cars) 5-8 vpw (truck)**	**200-500 vpd (cars) More than 9 vpw (truck)**
Target operating speed (km/h)	10	10	20	**30**
Minimum legal width (m)	3.6 **+ additional with at passing bays**	4.5 **+ additional width at entry & passing bays**	**11.0**	**11.0**

Maximum grade	20% **2m transition length for changes in grade >12.5%** **Where access rises to road, 5% max gradient within 6m of road boundary**	20% **2m transition length for changes in grade >12.5%** **Where access rises to road, 5% max gradient within 6m of road boundary**	16% **2m transition length for changes in grade >12.5%** **Where access rises to road, 5% max gradient within 6m of road boundary**	12.5% **Where access rises to road, 5% max gradient within 6m of road boundary**
Pedestrians (minimum provision)	Shared in movement lane	**1.2m wide footpath one side**	**1.2m wide footpath one side**	**1.5m wide footpath both sides**
Passing, parking, loading, & shoulder (minimum provision)	Allow for passing up to every 50m **(100m in rural)** **Clear line of sight between passing bays**	Allow for passing up to every 50m **(100m in rural)** **Clear line of sight between passing bays**	Shared in movement lane	Shared in movement lane
Cyclists (minimum provision)	Shared in movement lane	Shared in movement lane	Shared in movement lane	Shared in movement lane
Movement lane (m) (minimum provision)	2.75-3.00	**5.5 for first 6m from road boundary** 1*2.75-3.00 for rest of access	5.5-5.7 **6.7 around bends with outside radius 50m or less**	5.5-5.7 **6.7 around bends with outside radius 50m or less**
Turning provision within common area	Required when three dwellings	Required	Required	Required
Infrastructure berm (m) (minimum provision)	**Shared in movement lane**	**Shared in movement lane**	**1*1.0**	**1*1.0**
Minimum berm width to provide visibility for vehicles entering access from properties (m)	**Not required**	**Not required**	**2*2.5m (can include footpath and infrastructure berm)**	**2*2.5m (can include footpath and infrastructure berm)**

92 The rationale for the recommended changes is as follows:

92.1 The target operating speed for Level 4 accesses is reduced from 40 to 30km/h. Given that these accesses are not public

roads and the narrower road reserve width will potentially restrict forward sight lines, a reduced target operating speed is appropriate.

92.2 For Level 1 and 2 accesses wording has been added to make it clear that additional access width is needed to accommodate vehicle passing on long accesses and at the entry from the road for Level 2 accesses. The minimum legal width for Level 3 accesses has been increased to 11m to allow for the 6m carriageway width plus the two 2.5m wide berms that are needed to ensure sight lines for drivers turning onto the access from frontage properties. The minimum legal width for Level 4 accesses has been reduced from 15m in NZS 4404 to 11m. The 11m can accommodate a 6m carriageway width plus the minimum berm widths which in turn can accommodate the footpaths and infrastructure berm.

92.3 The maximum grades are unchanged from the NZS4404:2010 provisions. Comments have been added regarding grade transitions and grades close to the road boundary. These recommended provisions reflect the guidance included in AS/NZS2890.1 and could either be included in the table or as notes.

92.4 A 1.2m wide footpath on one side of the Level 2 and 3 accesses has been added along with the requirement to provide an additional 1.5m wide footpath along a Level 4 access. These recommendations are based on the desire to encourage active modes and noting that separated facilities are safer for vulnerable road users. While less than the 1.8m width that is being recommended for public footpaths, the 1.2m width is in line with the minimum width for accessible routes.

92.5 For the level 1 and 2 accesses additional requirements have been added regarding the passing bays. These could be

included either in the table or as notes. Guidance could also be usefully included for the design of the passing bays with the recommended provision being a minimum formed width of 5.5m over a length of 7m with 45 degree tapers.

92.6 A requirement to provide for vehicle passing at the entry to Level 2 accesses has been added. This has been included to minimise the risk of vehicles waiting to turn into the access disrupting traffic flows on the frontage road or obstructing the frontage footpath when there is a vehicle exiting the single lane access.

92.7 The turning provisions included in NZS4404:2010 have been included in the table. I recommend that consideration is given to including figures showing acceptable turning facilities as shown in Figures 3.3 and 3.4 of NZS4404:2010.

92.8 For Level 3 and 4 accesses provisions have been added for an infrastructure berm and a minimum berm provision. The inclusion of an infrastructure berm on the busier accesses allows for easier access from a grassed berm and minimises disruption to access for residents during maintenance activities. The inclusion of a minimum berm is guided by the desire to accommodate sight lines for an exiting driver to vehicles on the access before their vehicle enters and obstructs the access. The infrastructure berm and any footpaths can be included within these berms.

92.9 For Level 4 accesses, the anticipated range of vehicle movements is 200 to 500 vehicle movements per day. The upper end of this range is aligned with the high trip generating threshold of 500 vehicle movements per day. Accesses with daily traffic volumes of more than 500 vehicle movements per day have the potential to result in significant adverse traffic effects and require a more robust assessment.

93 TR-S3-2 refers to minimum K and R values included in TR-Table 3. As included at paragraphs 48 and 49 of this evidence, I consider that the K and R values included in TR-Table 3 are matters for detailed design and should more appropriately be included in an engineering standards document or similar rather than in the District Plan. I recommend that TR-S3-2 and TR-Table 3 are deleted from the PDP.

94 TR-S3-3 includes a permitted standard that Level 4 accesses include streetlighting. Given that these accesses could serve up to 100 houses or carry more than 200vpd I consider that the lighting of the access and the connection with the public road network is warranted.

95 TR-S3-4 includes provisions for walkways, cycleways and shared paths within vehicle access areas. I consider that the combination of the proposed provision for such facilities in the public realm, and the provisions in TR-Table 2 for the private realm provide the necessary guidance and TR-S3-4 can be deleted.

96 As for roads connecting with the state highway network, I recommend that a note is included in TR-S3 to alert readers to the need to consult with Waka Kotahi regarding vehicle accesses with direct connections onto the state highway network.

97 Fire and Emergency NZ seek that the formed width in TR-S4 is increased to 4m and that the word 'minimum' is added to TR-S4-1.c. I agree with the addition of the word 'minimum' to TR-S4-1.c. Regarding the formed width, I recommend that the requirement for a minimum formed width of 3.5m is left unchanged but that wording is added to the clause to require a minimum unobstructed width of 4m. This will provide additional width for the vehicle mirrors and the swept path of the vehicle without the associated cost of forming the additional width of the access. With a formed width of 4m there also begins to be some undesirable ambiguity regarding whether the access operates as a single movement lane or whether vehicles can pass.

98 I also recommend that a note is added to TR-S4 to make it clear that when this standard is triggered it overrides permitted narrower access widths.

99 As included earlier in this evidence, I agree with the submission from Kainga Ora [81] that standard INF-S26, INF-Table-6 and INF-Figure 5 be relocated into the Transport Chapter. This standard and the associated figure and table refer to the design of private access connections with public roads. I comment on the proposed clauses and include recommendations for additional clauses below:

99.1 I agree with Clause 1 which limits the number of vehicle crossings per site.

99.2 I recommend that Clause 2 is amended to reflect the different access classifications and suggest a maximum vehicle crossing width at the property boundary of 3m for Level 1, 6m for Levels 2, 3 and 4 and 9m if heavy vehicles are to be accommodated.

99.3 I agree with Clause 3 which requires connection to the lower classified road when a site has more than one frontage.

99.4 Regarding Clause 4, I recommend that the minimum design vehicle for turning to or from a vehicle crossing should be a 99 percentile car, that is a 5.2m long by 1.94m wide vehicle. This will ensure that a car turning between the frontage road and an access can do so without needing to perform multiple turns within the carriageway risking obstruction to through traffic. Within a site and as anticipated by AS/NZS2890.1:2004 it is acceptable to design for an 85th percentile car.

99.5 Clause 5 provides for separation distances from vehicle crossings to intersections and railway crossings. I recommend that these provisions are aligned with those included in

AS/NZS2890.1:2004 Section 3.2.3 and Figure 3.1. This will require the inclusion of a figure similar to Figure 3.1 and wording to the effect *'vehicle crossings must not be located within 6m of an intersection tangent point as shown as the heavy lines in TR-Figure XY. Level 1 accesses are exempt from the prohibition in respect of the kerb section marked XY'*.

99.6 The 30m minimum separation between a vehicle crossing and a railway crossing could be worded in a clause rather than in a table. Suggested wording is *'the distance from vehicle crossings to railway crossings must be at least 30m, measured from the nearest edge of the vehicle crossing to the nearest railway track'*.

99.7 Clause 6 provides for pedestrian visibility splays with reference to a figure which illustrates the required provision. I recommend that the figure reflects the detail of AS/NZS2890.1:2004 Figure 3.3. As such the length of the triangle along the driveway should be increased to 2.5m and notation added that for driveways with two lanes at the boundary the splay is only needed on the side adjacent to the exiting vehicle. I recommend that allowance is included for the triangle to be to the back of the footpath rather than to the property boundary as the footpath may be located along the kerb rather than the property boundary.

99.8 I recommend that a clause is added regarding the formation of accesses in the rural context. This should usefully provide for the access to be sealed from the road carriageway to the property boundary. I also recommend that a provision is included for the entry and exit turn radius of the access to be at least 9m in line with the guidance included in Waka Kotahi's Planning Policy Manual.

99.9 To better reflect the access provisions included in AS/NZS2890.1:2004, I recommend that a clause is added to ensure that where an access crosses a frontage footpath, cycleway or shared path that the crossfall of the path must not be more than 2.5%.

99.10 Regarding sight distances from an exiting driver to frontage through traffic, I recommend that a clause is added which makes reference to a table with the provisions as included below. These suggested provisions reflect the guidance included in AS/NZS2890.1:2004. A figure will also be needed to show how the sight distance is measured. The figure should reflect the detail included in AS/NZS2890.1:2004 Figure 3.2.

	Minimum Sight Distance (m)		
Frontage road speed limit (km/h)	**Access Level 1**	**Access Level 2**	**Access Levels 3 & 4**
30	25	25	25
40	30	35	55
50	40	45	70
60	55	65	85
70	70	85	100
80	95	105	115
90	-	130	125
100	-	160	140
110	-	190	155

TOPIC Transport: Rule TR-R3, Standards TR-S5 & TR-S6, TR-Table 4 and TR-Figures 1, 2, 3 & 4

100 These provisions include the design of on-site parking spaces and the associated vehicle manoeuvring with the following submissions on this this topic:

100.1 Kenepuru Limited [59] are concerned that the gradient requirement of 1:16 in Standard TR-S5 is too flat and that a gradient of up to 1:10 should be allowed on driveways.

100.2 Porirua City Council [11] seeks that the clearance width in TR-S6-1 and TR-Figure 4 is increased from 150mm to 300mm.

100.3 Kainga Ora [81] seek that clause TR-S6-1 is deleted and replaced with two clauses to only require a vehicle to exit in a forward direction when accessing a site from a National or Regional Road, or the access is servicing six or more parking spaces. Kainga Ora also seek that TR-Figure 4 and TR-S6-3 be deleted.

101 AS/NZS2890.1:2004 Section 2.4.6.1 includes maximum gradients within parking modules 1 in 20 (5%) parallel to the angle of parking and 1 in 16 (6.25%) in any other direction. I consider that this standard should be reflected in the District Plan provisions for non-residential parking. For residential parking I consider that the gradient parallel to the space could be increased to up to 1 in 10 (10%) but that the maximum gradient in any other direction should remain a maximum of 1 in 16 (6.25%) to ensure that the driver and passengers can comfortably enter and exit the vehicle and the risk of the car doors scraping on the downhill side on opening is minimised. The maximum grade of 10% parallel to the parking spaces results in a similar outcome to that for cars parked kerbside on a public road with a grade of up to 10%.

102 I agree with Porirua City Council that clearances of 300mm from the swept path of a vehicle should be included in TR-S6-1 and TR-Figure 4. This matches the provisions included in AS/NZS2890.1:2004.

103 Regarding the request from Kainga Ora for less restrictive provisions for the inclusion of on-site turning, given the road safety priority at national, regional and local levels and the vulnerability to injury of pedestrians and cyclists, I do not consider that it is satisfactory to allow for vehicles to reverse along accesses shared with other properties. For single residential units, I consider that it is reasonable that on-site turning is only required when the access connects with an Arterial, Regional or

National Road. I recommend that TR-S6-1.b is reworded to read *'the road is an Access, Secondary Collector or Primary Collector Road'*.

104 Regarding the request to delete TR-Table 4, my preference is that the design requirements for parking spaces included in District Plans refer directly to AS/NZS2890.1:2004. If outside documents are not to be referenced, then I support the inclusion of material that reflects the provisions of AS/NZS2890.1:2004. As such, I recommend that Table TR-4 is amended to read as included in the table below. No changes are needed to TR-Figures 1, 2 and 3.

Parking Space Type	**Dimension a* (m)**	**Dimension b* (m)**	**Dimension c* (m)**	**Min Aisle Width (m)**
Parallel (permanently unobstructed sides and ends)	-	2.1	5.4	3.0
Additional clearance requirement for each obstructed side or end (e.g. fence, wall, column)	-	+0.3	+0.9 (between spaces) +1.2 (obstructed end space)	
Perpendicular (permanently unobstructed sides and ends)	-	2.4 (residential) 2.6 (other)	4.8	5.8
Additional clearance requirement for each obstructed side or end (e.g. fence, wall, column)	-	+0.3	+0.6	
Additional clearance requirement for single garage	-	+0.6	+0.6	7.0 (2.4m wide garage door) 6.3 (2.7m wide garage door)
Angle - 60 degrees (permanently unobstructed sides)	2.4 (residential) 2.6 (other)	2.8 (residential) 3.0 (other)	5.1	4.9 (residential) 4.3 (other)

Parking Space Type	Dimension a* (m)	Dimension b* (m)	Dimension c* (m)	Min Aisle Width (m)
Additional clearance requirement for each obstructed side or end (e.g. fence, wall, column)	+0.3	+0.33	+0.6	

*Dimensions a, b and c are shown in Figure TR-1, Figure TR-2 and Figure TR-3

105 Kainga Ora seek that TR-S6-3 be deleted. This type of clause is widely used to ensure that parking spaces can be accessed from within the site and without obstruction. I recommend that TR-S6-3 is retained.

106 As part of my wider review of the transport provisions, I comment on proposed standards TR-S5 and TR-S6 as follows:

106.1 With the requirement to comply with the dimensions in TR-Table 4, I consider that clause TR-S5-1.a is redundant. If it is to be included, I recommend that for the parking space design the design vehicle should be the 99 percentile car.

106.2 The 2.2m height clearance in clause TR-S5-1.d is the minimum included in AS/NZS2890.1:2004 section 5.3.1 and a note is included that for access to mobility spaces a minimum height clearance of 2.3m is needed as per AS/NZS2890.6. I recommend that either the height clearance is increased to 2.3m or a note is included regarding provisions for mobility parking.

106.3 In line with the provisions of AS/NZS2890.1:2004 Section 2.4.2(c), I recommend that a clause is added to TR-S5-1 to require for blind aisles that the aisle extend at least 1m beyond the last parking space the aisle provides access to.

106.4 A possible additional clause for consideration in TR-S5-1 is whether a requirement is included for residential on-site parking to be electric vehicle-charging ready. That is for non-garaged residential spaces, requiring an electrical conduit from the electricity supply to the edge of the carpark.

106.5 TR-Figure 4 shows a reverse in manoeuvre for a car. The dimensions shown for the vehicle are for an 85th percentile car but there is no scale on the drawing. For this figure to be useful it needs to be shown to scale and a separate figure needs to be added to show the forward turn that might be used to either enter or exit a space. I recommend that these figures are as per AS/NZS2890.1:2004 Figure B5 and Figure B8.

106.6 I recommend that a clause is added to TR-S6-1 that ensures that vehicles are not required to reverse more than 30m to or from the frontage road.

106.7 I recommend that a clause is added to TR-S6 to the effect that on-site parking, circulation and manoeuvring must not include ramps, turntables, car lifts or stackers. I consider that this type of infrastructure requires specific design and should therefore trigger resource consent.

TOPIC Transport: Rule TR-R4, Standards TR-S7, TR-S8 & TRS9, TR-Tables 5 & 6

107 These provisions include on-site loading, waste management and bicycle facilities. Submissions on these standards and tables include:

107.1 Kainga Ora [81] seeks that the provision for on-site waste storage and loading facilities in TR-S8 be increased from seven to eleven residential units.

107.2 Waka Kotahi [82] seeks that TR-S9 and TR-Table 6 be amended to include a requirement for bicycle parking to be as close as

possible and no more than 25m from a pedestrian entry to the building. It is also requested that the fourth matter for discretion is reworded to refer more generally to 'people' and to include reference to cycleways and shared paths. Finally a change to TR-Table 6 to include a requirement for industrial activities to include at least one short stay bicycle park is requested.

108 I agree that there is a need to control the level of residential activity that can be accommodated without requiring on-site waste collection facilities. The ability for Council contractors to be able to access rubbish from the kerbside is one of the reasons that I consider that where possible, it is desirable to have public roads, including short no exit roads rather than private roads and rights of way. I have spoken with David Down, the Manager for Water and Waste at Porirua City Council and I understand that to ensure consistency with other provisions for waste storage and collection, the trigger for on-site waste collection facilities might need to be as low as four residential units.

109 Mr Smeaton has addressed the submission from Waka Kotahi and recommends that the submission is accepted. I agree that it is useful for the proposed provisions to be aligned with the guidance included in the Waka Kotahi Cycle Parking Planning and Design Guidance.

110 As part of my wider review of the transport provisions, I comment on proposed standards TR-S7, TR-S8 and TR-S9 as follows:

110.1 I am concerned that the provisions included in TR-S7 and TR-Table 5 are too simplistic and could result in the inadequate provision of loading facilities with associated adverse traffic effects for the safe and efficient operation of nearby roads, including footpaths. I recommend that a requirement like that included in the City of Lower Hutt District Plan (Chapter 14A Table 5-1) and included below is adopted. This standard recognises that it is not an efficient use of land to provide on-

site loading for smaller sites. I note that the Lower Hutt table is based on Gross Floor Area and if the requirement is to be based on building footprint that the categories will need adjusting.

Gross Floor Area	No. of Spaces	Minimum Design Vehicle
Up to 500m^2	Nil	-
501 - 1000m^2	1	Small Rigid Vehicle
1001 - 3000m^2	1	Medium Rigid Vehicle
Greater than 3000m^2	1	Heavy Rigid Vehicle

110.2 Regarding the design of the required loading spaces, the Lower Hutt District Plan refers to an external standard. The Palmerston North District Plan includes the following table (Rule 20.4.2 (f)). I recommend that a similar table is included in the Porirua District Plan. A note should be included that *'where the service vehicle is loaded or unloaded from the ground rather than an adjacent platform, additional width sufficient to meet the anticipated loading and unloading requirements of the activity, including by forklift, shall be provided'*.

Vehicle Type	*Minimum Space Width (m)*	*Minimum Space Length (m)*	*Minimum Vertical Clearance (m)*
Small Rigid Truck(6m)	*3.5*	*6*	*3.5*
Medium Rigid Truck(8m)	*3.5*	*8*	*4.5*
Large Rigid Truck(11m)	*3.5*	*11.5*	*4.5*
Articulated Truck (17-20m)	*3.5*	*20*	*4.5*
Courier Van	*3.0*	*6*	*3.2*

110.3 I recommend that the following provisions are included to support the two tables:

110.3.1 All loading and unloading shall occur within the site and in a manner that does not impede access to parking spaces or areas needed for vehicle manoeuvring and circulation within the site.

110.3.2 Loading spaces which are accessed from National, Regional, Arterial and Primary Collector Roads shall

be designed so that it is not necessary to reverse vehicles either on to or off the street.

110.3.3 Within the area of any loading space there shall be a maximum gradient of 1:25 (4%).

110.3.4 In cases where the loading area is gated, sufficient space shall be provided within the site and queuing space between the access crossing to the site and the gate to accommodate the largest truck visiting the site.

110.3.5 Where there are multiple tenants on a site, each tenant shall provide the number of loading spaces required by their activities unless the site is under single ownership or management, in which case shared facilities or equivalent capacity may be provided instead.

110.4 The minimum design vehicle included in TR-S8-2 is approximately equivalent to a small rigid truck. I consider that the minimum design vehicle should be a medium rigid truck. Regarding TR-S8-3, accommodating truck turning within a site can require a large area, I recommend that on-site turning only be required where sites connect with National, Regional, Arterial and Primary Collector Roads.

110.5 I consider the provisions for bicycle parking included in TR-S9 and TR-Table 6 to be reasonable. They include requirements for short stay bicycle parking for all activities except in the City Centre or Local Centre, where visitor bicycle parking can most appropriately be located within the public realm. The long stay (staff) bicycle parking provisions equate to around 10% of staff cycling to work, I consider this an appropriate level given the strategic desire to encourage active modes.

Date: 3/12/2021

Harriet Fraser