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Integrated Transport Assessment
prepared for

OCEAN RIDGE PLAN CHANGE

Ocean Ridge, Kaikoura

October 2025



Integrated Transport Assessment
prepared for

Ocean Ridge Plan Change

Ocean Ridge, Kaikoura

Novo Group Ltd
Level 1, 279 Montreal Street
PO Box 365, Christchurch 8140
P: (03) 365 5570
E: info@novogroup.co.nz
W: www.novogroup.co.nz

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Project Manager:	Lisa Williams, Senior Transport Engineer & Planner
Prepared by:	Lisa Williams, Senior Transport Engineer & Planner
Reviewed by	Nick Fuller, Principal Transport Engineer

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Introduction

1. Cargill Station Limited have commissioned Novo Group to prepare an Integrated Transport Assessment (ITA) in respect a Plan Change request which among other matters, enables greater residential yield and corresponding non-residential activity at Ocean Ridge, Kaikoura.
2. This report provides an assessment of the transport aspects of the proposal. It also describes the transport environment in the vicinity of the site and describes the transport related components of the proposed changes sought. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research report 422, November 2010.
3. The Plan Change relates to the area known as Ocean Ridge which is an existing development area located west of the Kaikoura Township on the northern side of State Highway 1 (SH1).
4. In summary the proposal is to add an additional 150 residential dwellings¹ and to increase the mixed use area (known as the “Hub”) and associated scale of a range of activities including: residential, visitor accommodation, retail / food and beverage, commercial activities, offices, a preschool, and community / recreational facilities.
5. The changes to the road network are shown on the proposed Outline Development Plan (ODP) provided in **Appendix 1** and shown in Figure 1 below.

¹ To a maximum 486 residential units (existing and additional). There are additional caps proposed for the sub-areas of the ODP which have been informed by the concept master planning exercise, which to identify indicative residential yields for the proposed sub-areas in Ocean Ridge. The caps are up to: 220 residential units in the Greenlane Area; 35 residential units in the Crest Area, 60 residential units in the Farm Area; 40 residential units in the Hub Area; and a further 8 residential units comprised in Country Living and other large lot development on the slopes about Ingles Drive and the upper parts of Ludley Drive. Note that the caps for each sub area do not over-ride the 486 maximum number of dwellings for the whole area (i.e., a higher yield in one location will have a correspondingly lower yield in others).

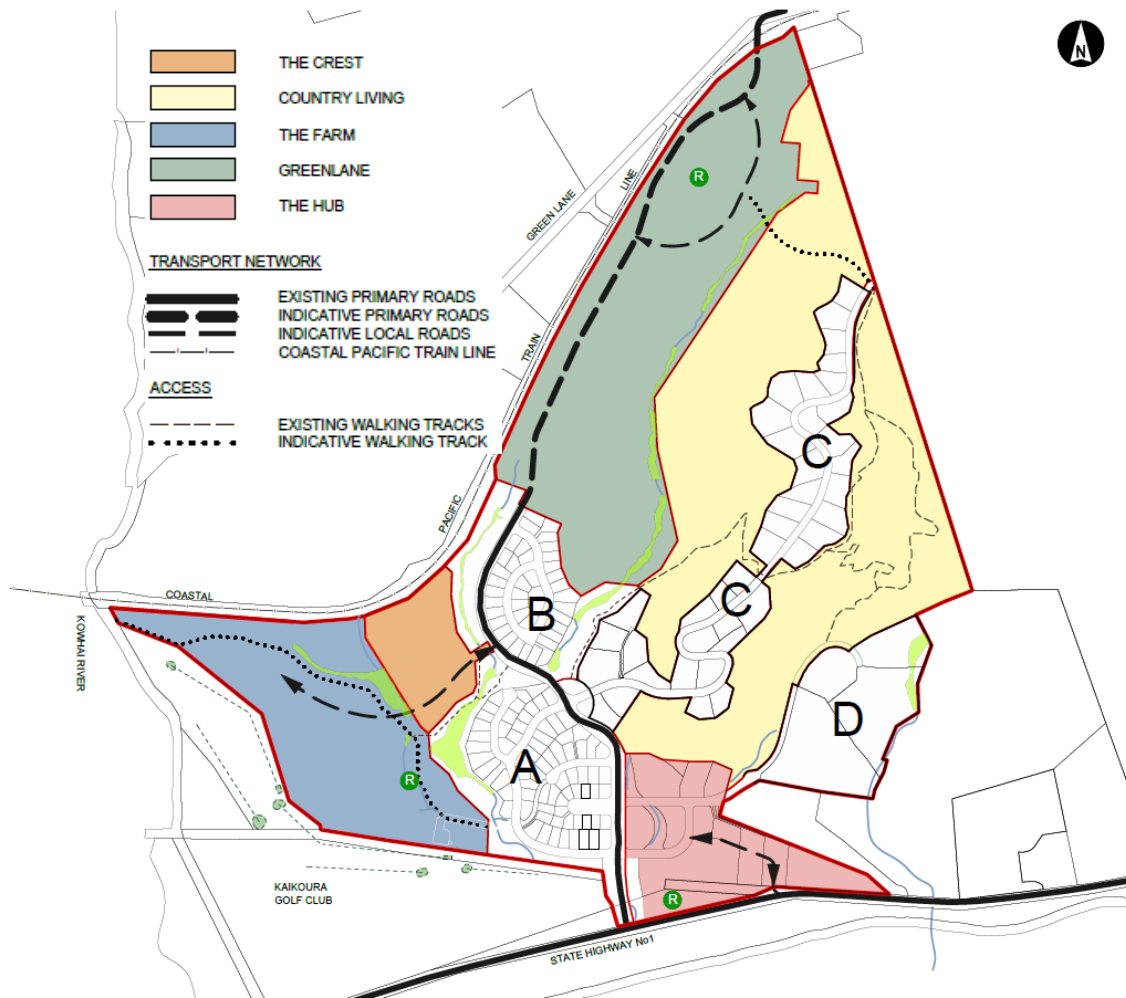


Figure 1: Site Location and Road Layout [Extract from ODP]

6. The key transport infrastructure components of the ODP include:

- A repositioning of the Ocean Ridge Drive connection to Green Lane (further north compared to that currently illustrated in the District Plan²) to align with the proposed Rail Overbridge³. This leads to associated changes to the location, alignment and cross-section of the proposed Ocean Ridge Drive extension.
- A new Local Road connecting to Kersage Drive and servicing the extension of the mixed use area known as the “Hub”⁴.
- A new road or accessway providing left turn egress to SH1 from the Hub.

² DEV2 Appendix 1 in Part 3 of the Kaikoura District Plan.

³ This project is occurring separately but in parallel to the Plan Change and is being advanced by KDC as part of the Infrastructure Acceleration Fund project.

⁴ Either terminating as a cul de sac or connecting with Fidele Lane.



- Extension of and adjustments to Local Roads servicing the residential areas known as the Farm and Crest⁵, and adjustments to the roads in the Greenlane residential area.
 - A shared path which connects from Green Lane to the Kaikoura Trail adjacent to the Kowhai River. Various off road walking connections are also proposed within Ocean Ridge.
7. The application and planning assessment also set out changes to District Plan rules and other transport provisions in response to, and support of, the approach set out in this report.

Site and Existing Development

8. Ocean Ridge is located to the south-west of the Kaikoura Township between State Highway 1 (SH1), the Kaikoura Golf Club, the Railway Line and Green Lane as shown in Figure 2.

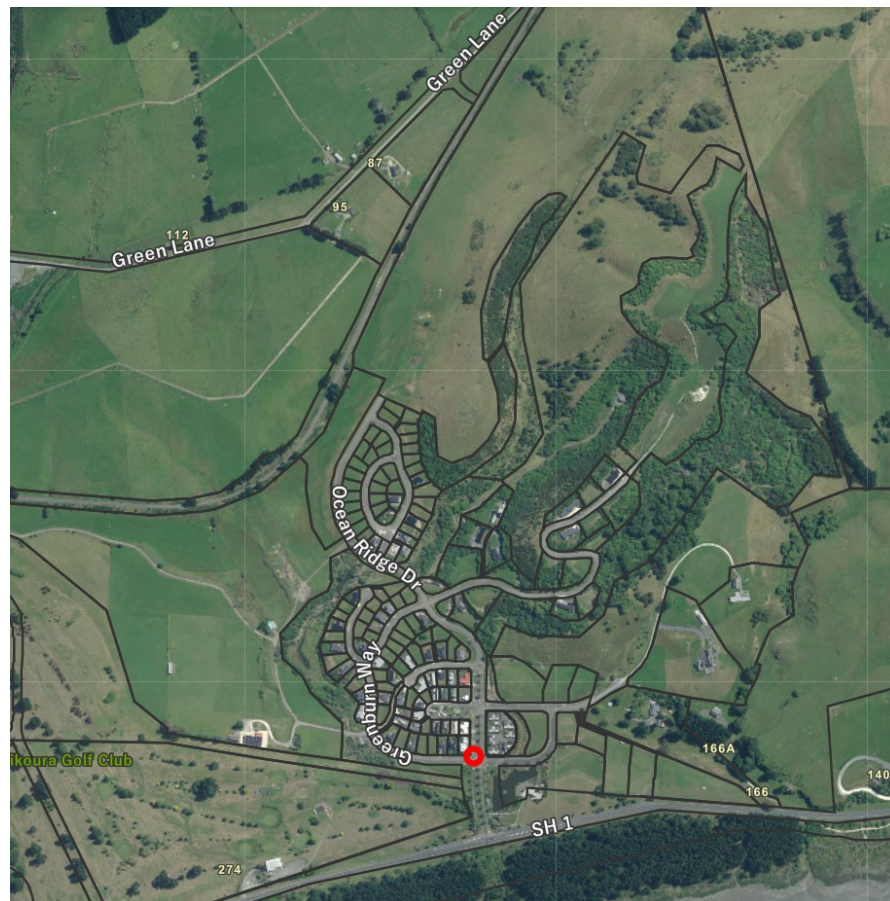


Figure 2: Existing transport network [Source: Canterbury Maps]

⁵ With an emergency access for the Farm and Crest via the storage area and maintenance facility (to Greenburn Way).



9. The District Plan provides for Ocean Ridge as Development Area 2⁶ which is subject to an existing Outline Development Plan (DEV2 -refer to Figure 3). The current District Plan provisions provide for a variety of residential densities and mixed use activities including: a total of 336 residential units, 100m² GFA Offices, 300m² GFA Restaurant, 100m² GFA Retail Sales, 300m² GFA Personal Care; and visitor accommodation in the mixed use area.

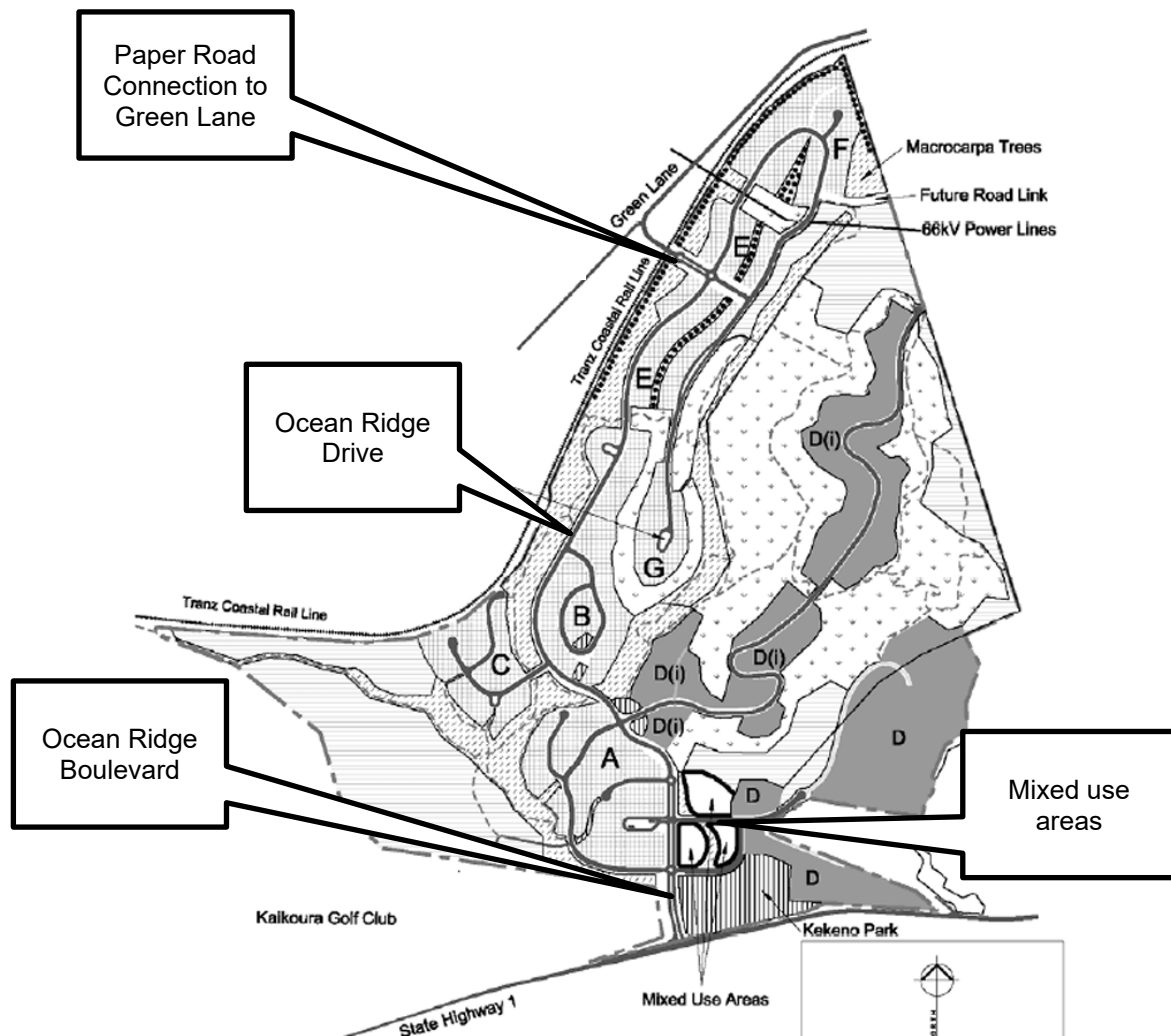


Figure 3: District Plan DEV2 Ocean Ridge Comprehensive Living Zone

10. Ocean Ridge is currently under development with some areas occupied and construction of buildings underway on other lots. It is located west of Kaikoura and provides for a comprehensive residential subdivision with associated mixed use area. This is serviced by Ocean Ridge Boulevard which intersects with SH1. To the north of the site is the Main North Railway Line, and to the west is the Kaikoura Golf course and the Kowhai River.
11. A large amount of the internal transport network has been built including the Ocean Ridge Boulevard intersection with SH1. North of Ocean Ridge Boulevard, the main road continues

⁶ DEV2 Appendix 1 in Part 3 of the Kaikoura District Plan.



as Ocean Ridge Drive and is constructed as far north as Knowles Crescent ('B' in Figure 3). The existing ODP provides for Ocean Ridge Drive to connect to Green Lane via a paper road, however this is not yet constructed, and a new location is now proposed (refer to the 'Proposal' section of this report).

Transport Environment

12. The existing transport network is described below as well as the future transport network including the Rail Overbridge to Green Lane which is in the design / planning phase and the light industrial area development planned near the corner of SH1 and Inland Kaikoura Road.

Existing Transport Network

13. The key parts of the existing transport network within the site relate to Ocean Ridge Boulevard and Ocean Ridge Drive which provide the primary road connection. In addition, Kersage Drive and Ludley Drive service the existing extent of the mixed-use area. External road connections are to SH1 and are proposed to Green Lane which connects to Ludstone Road. There are a variety of other Local Roads which provide access to residential properties.

Ocean Ridge Boulevard and Ocean Ridge Drive

14. Ocean Ridge Boulevard forms a stop controlled, 'T' intersection with SH1. It has one traffic lane in each direction with a planted median. Beyond the intersection with Swyncombe Place, it continues north as Ocean Ridge Drive with the existing sections having an unmarked 8m wide sealed carriageway. Ocean Ridge Drive will be connected to Green Lane to the north (as future subdivision stages are progressed⁷).
15. The speed limit is 50km/h and existing traffic volumes are relatively low although these are increasing as additional stages of the subdivision are constructed and dwellings occupied. This is anticipated to increase towards an estimated AADT⁸ of 2,000-3,000 vehicles per day (vpd) at full development provided for by the proposed plan change.

⁷ Note that the location of this road connection is proposed to change from that indicated on District Plan DEV2 Outline Development Plan 1. This is discussed later in this report.

⁸ Annual Average Daily Traffic



Figure 4: Existing Layout of Ocean Ridge Boulevard [Source: Canterbury Maps]

State Highway 1

16. SH1 near the site has one traffic lane in each direction with left and right turn lanes marked on the approaches to the intersection with Ocean Ridge Boulevard.
17. The speed limit is 100 km/h and this section of the road carries around 4,226 vehicles per day⁹.
18. Annual average daily traffic volumes in 2015, at the same count station, were around 3,519 vehicles per day. Comparing the 2015 traffic volumes to the 2024 volumes suggests a growth in traffic volumes of around 2% per annum, on average. Whilst annual traffic volumes have dropped at times due to impacts of the Kaikoura Earthquake (2016) and Covid (post 2019), the traffic volumes have recovered, and as such, comparing the 2015 and 2024 traffic volumes is considered appropriate to provide a long-term estimate of average trends in traffic volumes.

⁹ Full 2024 year from the NZTA Annual Average Daily Traffic, Continuous Dual Loop located North of Kowhai River.



Green Lane

19. Green Lane is currently an un-sealed rural road with an 80km/h speed limit. Green Lane connects to Kaikoura Township via Ludstone Road. Green Lane currently services a small number of rural properties and has a very low daily traffic volume.

Ludstone Road / Red Swamp Road

20. Ludstone Road is a Collector Road with an 80km/h speed limit. Near the site, this has an estimated¹⁰ daily traffic volume of around 250 vpd, increasing to around 830 vpd nearing the Kaikoura Township.
21. North of Green Lane, Ludstone Road turns into Red Swamp Road (also a Collector Road) which has a 100 km/h speed limit and has an estimated daily traffic volume of around 200 vpd.

Kersage Drive and Ludley Drive

22. Kersage Drive and Ludley Drive connect to Ocean Ridge Boulevard and provide access to the existing extent of the mixed use area. These roads provide for one traffic lane in each direction and generally provide for parallel kerb-side car parking with some angle parking in a few locations. There is a footpath on the north / west side of the roads and a partial second footpath on the southern side of Kersage Drive. The speed limit is 50km/h. Existing traffic volumes are low and indicative of the early stages of development.

Other Local Roads

23. There are a variety of other Local Roads within the Ocean Ridge development that provide for residential property access which all connect to Ocean Ridge Boulevard or Ocean Ridge Drive. These all have a 50km/h speed limit.

Main North Railway Line (Coastal Pacific Railway Line)

24. The Main North Railway line runs to the north of (and separates) Ocean Ridge from Green Lane. Planning is currently underway for a Rail Overbridge to connect Ocean Ridge Drive to Green Lane, near the intersection with Ludstone Road. The future Overbridge is discussed further in subsequent sections.

Crash History

25. The New Zealand Transport Agency's Crash Analysis System (CAS) has been reviewed to identify crashes that have been reported on the surrounding road network for the previous ten year period¹¹. The output from the CAS database identified eight crashes in the locations shown Figure 5 and included in **Appendix 2**.

¹⁰ MobileRoad (<https://mobileroad.org>).

¹¹ Complete 2014-2024 years and year to date entries to 14 February 2025.



Figure 5: Location of reported crashes [Waka Kotahi NZTA CAS]

26. There were two crashes at / near the intersection of Ocean Ridge Boulevard with SH1. One was a loss of control crash where the driver on SH1 was distracted by the sun and objects within the vehicle and collided with the traffic islands (minor injury). The other crash was also a loss of control crash as the driver fell asleep and collided with the two lamp posts (non-injury).
27. There was also a loss of control crash on SH1 around 360m west of the intersection with Ocean Ridge Boulevard due to the driver falling asleep and veering off the road (minor Injury).
28. There was another crash on SH1 around 350m east of Ocean Ridge Boulevard as a driver distracted (eating) veered into the incorrect lane and collided with a truck (Minor injury).
29. There were two other loss of control crashes on SH1 (630m and 694m east of the intersection with Ocean Ridge Boulevard), one due to a driver breaking heavily to read a map and another where the driver fell asleep (both non-injury).
30. There was one crash within the existing subdivision which occurred on Ingles Road associated with a truck and trailer unit. The trailer became disconnected and rolled down the hill (non-injury).



31. There was one crash on Ludstone Road near the site, which was due to loss of control turning at the corner where Ludstone Road connects to Red Swamp Road (non-injury).

Active Transport

32. The Kaikoura Trail will provide a cycling loop route¹² from the Kaikoura Township, along the coast, crossing under the Kowhai River Bridge and heading north, generally following the Kowhai River and surrounds (continuing to Postmans Road then north to Hapuku River and ultimately back to Kaikoura Township). This track can also be used by pedestrians. The trail will also connect to the Whale Trail cycle way which will run between Kaikoura and Picton with several sections open and others under development.
33. It is proposed to provide a shared path along the northern section of Ocean Ridge Drive from Green Lane and connecting to the Kaikoura Trail via the Crest area.
34. In addition to the footpaths adjacent to each of the roads within Ocean Ridge there are also a variety of off road / recreational trails as shown on the ODP in **Appendix 1**.

Future / Planned Transport Network

Rail Overbridge

35. Planning is currently underway for a Rail Overbridge from Green Lane to the northern end of Ocean Ridge Drive. This connection is just south of the Green Lane intersection with Ludstone Road and Red Swamp Road. This project is currently in the planning phase being led by Kaikoura District Council and is included in works being undertaken as part of the Infrastructure Acceleration Fund. The indicative layout is shown below.

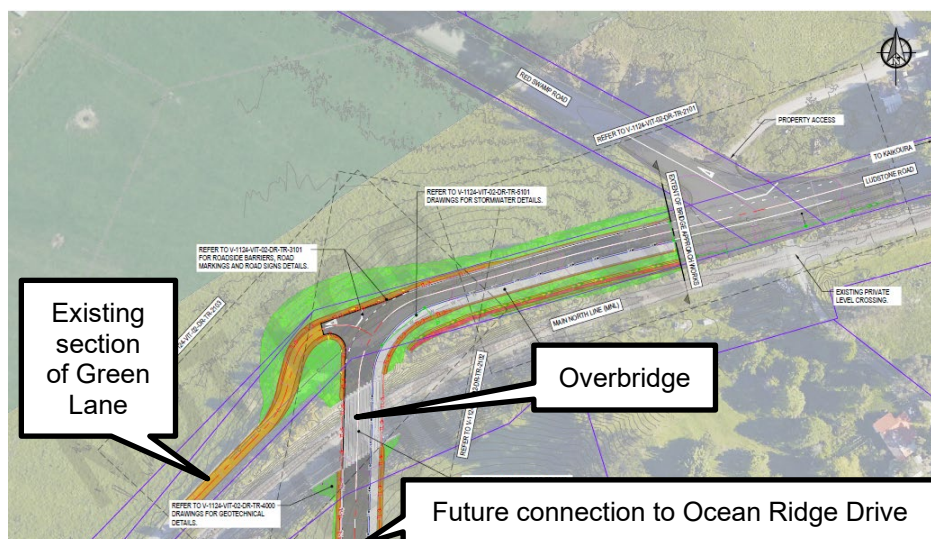


Figure 6: Indicative layout of Proposed Rail Overbridge and Green Lane / Ludstone Road / Red Swamp Road Intersection. [Source: Extract from Road Design Overview Plan, dated 09/05/24, prepared by Vitruvius on Behalf of KDC]

¹² Not all sections are complete.



36. Associated with the Rail Overbridge is a change to the Ludstone Road / Red Swamp Road / Green Lane intersection to provide priority for the Green Lane – Ludstone Road arms and a give-way control for the Red Swamp Road arm. This will provide a better intersection layout with improved visibility for the give-way movement and reflect priority for the higher future traffic flows between Green Lane and Ludstone Road.
37. The existing section of Green Lane will also form the minor arm of a 'T' intersection just north of the bridge.
38. The existing District Plan ODP (refer to Figure 3) provides for Ocean Ridge Drive to connect to Green Lane via a paper road crossing over the railway line. The proposed amendments to the Development Plan include repositioning the Ocean Ridge Drive extension to instead align with the proposed Overbridge.

Western Development Shared Use Path

39. A shared use path is planned along the Ludstone Road. The eastern section, including past the schools to Mt Fyffe Road has been completed (stages 1 and 2). The remaining section (stage 3) will continue the path to the Rail Overbridge. Construction timeframes are not yet known but are intended to align with Ocean Ridge development which will continue the shared path adjacent to the extension of Ocean Ridge Drive then connecting to the Kowhai River (refer to the proposal section below).

Kaikoura Business Park Light Industrial Area

40. The zoning of a Light Industrial Area (Plan Change 4) has been approved which is located adjacent to SH1 and the Inland Kaikoura Road (south-west of Ocean Ridge). There are no major transport related infrastructure changes that would impact the development of Ocean Ridge however it is expected to increase traffic volumes on the section of SH1 between the Industrial Area and Kaikoura Township.
41. The Transport Report provided with that Plan Change application (prepared by Carriageway Consulting) indicated the development of the industrial zone would add the following traffic volumes to the section of SH1 passing Ocean Ridge:
 - PM peak hour: 105 additional south-bound vehicles and 247 additional north-bound vehicles.
 - AM Peak hour, 270 additional south-bound vehicles and 49 additional north-bound vehicles.
42. The peak hours considered in that report were 0800-0900 and 1600-1700 which are likely to coincide with the peak hours for Ocean Ridge. As such, the additional traffic associated with development of the light industrial area has been taken into account in the following transport effects analysis.



Proposal

43. The proposed Plan Change for Ocean Ridge includes an additional 150 residential dwellings and an extension of the mixed use area known as the “Hub” to provide for a range of activities including: residential, visitor accommodation, retail / food and beverage, commercial activities, offices, a preschool, and community / recreational facilities.
44. The changes to the road network are shown on the proposed ODP provided in **Appendix 1** and in Figure 1.
45. The key transport infrastructure components include:
- A repositioning of the Ocean Ridge Drive extension to Green Lane (further north compared to that currently illustrated in the District Plan) to align with the proposed Rail Overbridge¹³. This leads to associated changes to the location, alignment and cross section of the future sections of Ocean Ridge Drive and minor changes to the local roads intersecting with it which will provide for property access to the residential area known as ‘Greenlane’.
 - A new Local Road connecting to Kersage Drive and servicing the “Hub” (mixed use area). This may either terminate as a cul de sac or connect with Fidele Lane to provide good connectivity. The design intent for this road is to have low speeds and prioritise pedestrians and amenity.
 - From the new road servicing the Hub it is also proposed to provide a road or accessway providing left turn egress to SH1. This is intended to provide an efficient route for people leaving the Hub and heading towards the Kaikoura Township. This will also reduce traffic volumes on the new Hub road supporting the low speed pedestrian orientated design intent.
 - Extension of, and adjustments to, local roads servicing the residential areas known as the Farm and Crest¹⁴ to reflect the topography and future residential subdivision design.
 - A shared path which connects from Green Lane to the section of the Kaikoura Trail adjacent to the Kowhai River as well as various recreational walking trails providing local connections within Ocean Ridge.
46. The full development of Ocean Ridge will provide for 486 residential units (150 more than currently provided for). The future local roads will largely be to service the as yet undeveloped residential areas known as the Crest, Farm, and Greenlane. The location and design of these roads are subject to the topographical constraints of the area resulting in the locations indicated on the proposed ODP.
47. It is also proposed to extend the mixed use area (known as the “Hub”) to accommodate shops / services to meet some of the residents and guests’ day to day needs. It is proposed

¹³ This project is occurring separately but in parallel to the Plan Change and is being advanced by KDC as part of the Infrastructure Acceleration Fund project.

¹⁴ With an emergency access for the Farm and Crest via the storage area and maintenance facility (to Greenburn Way).



to allow for (as permitted activities¹⁵) up to: 150 guest accommodation units / rooms, 1,200m² GFA Retail or Food and Beverage, 400m² GFA office, 2,000m² GFA other commercial activities, a 50-child preschool and 1,200m² GFA of community / recreational activities). The Hub area will also include associated car parking, site access, and pedestrian and cycling facilities which will be determined at subdivision stage.

Traffic Generation Estimates

48. Based on existing and planned residential units and the activities anticipated in the Hub, estimates of the traffic generation, at full development, have been undertaken as set out in **Appendix 3**. The Hub is intended to provide shops / services to meet some of the residents and guests' day to day needs. As such, an internal discount factor has been applied to the traffic generation estimates as also set out in **Appendix 3**. Overall, this equates to 71.5% of trips being external trips (leaving Ocean Ridge).
49. In terms of traffic distribution to the external road network, the planned route via Green Lane is anticipated to carry the majority of residential trips (60%). Although the distance is comparable to the alternative of using SH1, the Green Lane route offers a slightly quicker travel time to Kaikoura Township and particularly to key destinations such as schools and supermarkets. 40% of residential trips have been assumed to use the SH1 route.
50. Most (70%) of the Hub traffic has been assumed to use the SH1 route given the proximity to SH1 and that some of these trips will be pass-by trips (vehicles already on SH1). The other 30% of Hub traffic is anticipated to use the Green Lane route.
51. Based on the above, the following peak hour volumes are anticipated:
 - Ocean Ridge Boulevard to SH1
 - AM Peak Hour: 91 arrivals and 218 departures.
 - PM peak hour: 201 arrivals and 108 departure trips.
 - Ocean Ridge Drive to Green Lane
 - AM Peak Hour: 83 arrivals 218 departures.
 - PM Peak Hour: 193 arrivals and 109 departures.
52. It is assumed that nearly all trips to Green Lane will then use Ludstone Road for travel to / from Kaikoura Township. The proposed intersection changes (refer to Figure 6) will give priority to this route. Red Swamp Road is proposed to form the minor arm and be giveaway controlled. There are few destinations to the north, suggesting the Ocean Ridge development will add very low turning volumes to / from Red Swamp Road, an assumption which is supported by the very low existing traffic volumes on Red Swamp Road. In terms

¹⁵ Beyond the permitted activity thresholds resource consent will be required to consider the effects on the safety and efficiency of the road network including State Highway 1. For further information refer to the proposed rule package included with the planning report.



of any additional traffic from Ocean Ridge, the turning volumes to and from Red Swamp Road are anticipated to be so low as to not necessitate any detailed analysis.

53. In terms of distribution to SH1, arrival and departure traffic has been factored as 80% to / from Kaikoura (30% of departures using the proposed left turn from the new access / road to SH1). The 20% allowance to / from the south provides for some trips to / from the future Industrial area, some to / from tourist destinations in that direction and or wider travel destinations such as Christchurch. This leads to the following turning movements in the AM and PM peak¹⁶.

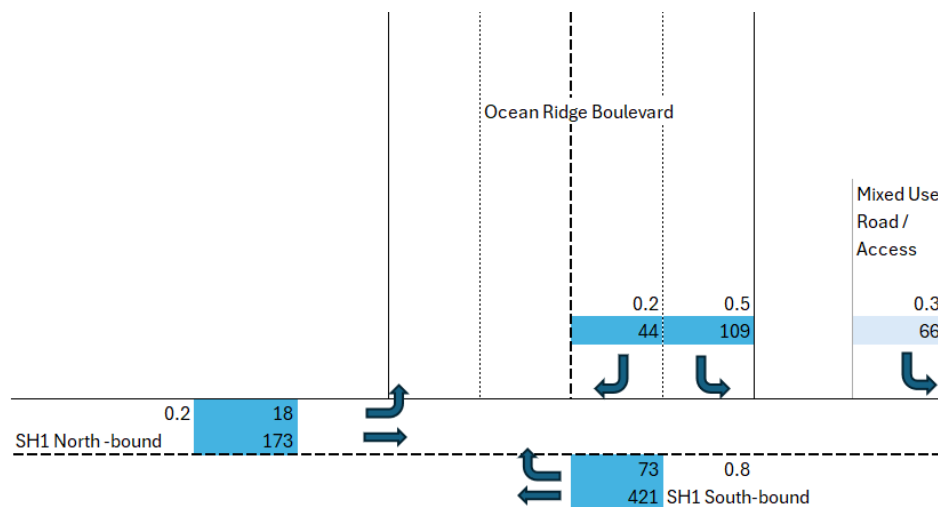


Figure 7: AM Peak Hour Turning Volumes – SH1 – Ocean Ridge Boulevard and the New Access

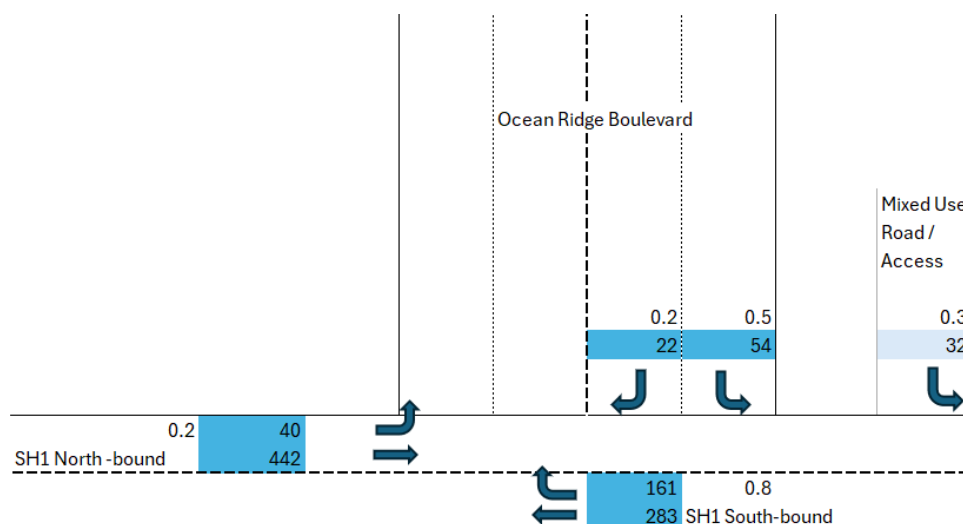


Figure 8: PM Peak Hour Turning Volumes – SH1 – Ocean Ridge Boulevard and the New Access

¹⁶ State Highway 1 through traffic volumes have been added based on the 2024 directional counts for 0800-0900 and 1600-1700 (refer to paragraphs 17-18) and the additional trips anticipated for the Light Industrial zone (refer to paragraphs 41 and 42).



Assessment of Transport Effects

54. The transport effects assessment covers the following key topics:

- a. Design and Layout of the ODP
- b. The Ocean Ridge Drive extension.
- c. Green Lane – Ludstone Road connection
- d. Ocean Ridge Boulevard - SH1 Intersection
- e. New left turn egress / intersection to SH1

55. The above matters have been discussed in turn below.

Design and Layout of the ODP

56. The layout of the ODP is largely dictated by the existing ODP for DA2 with the following changes:

1. A repositioning of the road connection to Green Lane (further north compared to that currently illustrated in the District Plan) to align with the proposed Rail Overbridge.
2. Changes to the alignment of Ocean Ridge Drive at the northern end to allow for the Green Lane connection.
3. A new local road servicing the Hub which connects to Kersage Drive.
4. A new road or accessway from the Hub road which will provide left turn egress only to SH1.
5. Adjustments to local roads servicing the residential areas known as Greenlane, the Farm, and Crest¹⁷.
6. A shared path which connects from Green Lane to the section of the Kaikoura Trail adjacent to the Kowhai River. Various walking trails within Ocean Ridge.

57. Points 1, 2 and 4 relating to the external road connections are discussed in separate sections. The other points above are discussed in turn below.

New Hub Road

58. A new road is proposed to connect from Kersage Drive and to service the Hub. This will be a Local Road providing one traffic lane in each direction with either a cul de sac turning

¹⁷ With an emergency access for the Farm and Crescent via the storage area and maintenance facility (to Greenburn Way).



head or a through connection to Fidele Lane (exact layout to be determined at subdivision stage).

59. This road is intended to have low operating speeds (indicatively <30km/h), prioritise pedestrians, and create a high amenity area.
60. The preferred intersection position with Kersage Drive would be on the apex of the existing bend in Kersage Drive, optimising sight distance in each direction. This location would be subject to a future reserve exchange for a portion of the land in Keken Park to the east of Kersage drive. In the event that this does not occur, the road would be positioned further north, clear of the reserve. This location, as currently shown on ODP Plan 4, could also be supported based on lower operating speeds on Kersage Drive and, or, with measures to improve intersection visibility (for example, through use of splays on the inside of the bend¹⁸). This road along with a left turn egress to SH1 (discussed below) will provide good access for the variety of activities anticipated to establish with the Hub.

Internal Residential Road Design and Capacity

61. The Farm and Crest residential areas and associated roads are being extended further towards the western end of the ODP area. The Farm and Crest area are serviced by one road intersection with Ocean Ridge Drive. However, in the event of an emergency, vehicle access would also be possible via the service access to the maintenance area and Greenburn Way.
62. Collectively the Farm and Crest areas are anticipated to service up to 95 dwellings with an estimated peak hour traffic volumes¹⁹ of:
 - 22 arrivals and 63 departures in the AM Peak hour.
 - 54 arrivals and 32 departures in the PM Peak hour.
63. A basic intersection analysis has been undertaken using SIDRA Intersection (9.1) for the Ocean Ridge Drive volumes (refer to paragraph 50) and assuming an even distribution of travel north and south (i.e. 50% to/ from Green Lane / Kaikoura Township and 50% either to the Hub or SH1). The results are provided in **Appendix 4** and indicate that this volume can be readily accommodated with a basic 'T' intersection²⁰.
64. The ODP also indicates some changes to the local roads servicing the Greenlane residential area. These changes primarily arise from new location of Ocean Ridge Drive (for the Rail Overbridge). They also reflect further analysis of the topographical and other site constraints, but generally provide a similar layout with a crescent / two connections at the northern end, and a cul de sac servicing the higher elevation areas near the southern end. Overall, these changes are appropriate, and the local roads are not dissimilar to those shown on the existing ODP for this section.

¹⁸ Providing additional visibility to the south-west across 3 Kersage Drive.

¹⁹ Using the same traffic generation estimates set out in Appendix 3.

²⁰ They also indicate ample spare capacity.



65. The two local road intersections with Ocean Ridge Drive are anticipated from the Greenlane area. These intersections are estimated to provide for around <95 future dwellings each²¹. The resultant volume of traffic can be readily accommodated across these two 'T' intersections. The intersections are located so as to achieve safe intersection sight distance along the Ocean Ridge Drive extension.
66. In summary, the changes to the residential local roads in the Greenlane area are considered appropriate to provide property access for this part of the development.
67. In addition to the above intersections, some smaller local roads may also be provided where needed for property access and there is sufficient ability to accommodate that at subdivision stage. The ODP layout is intended to indicate the key road connections which are considered to be appropriate for the proposal noting the constraints imposed by the topography of the site limit opportunities for through connections. However, the traffic volumes anticipated are readily within the capacity of the local roads proposed and additional connectivity is offered by walking trails, as discussed further below. In summary, the changes to the local residential roads indicated on the ODP are appropriate to service these residential areas.

Pedestrian and Cycle Connectivity

68. The ODP has been designed to provide for walking and cycling connectivity through the site and to the adjacent network, specifically this includes:
 - a. The shared use path adjacent to the extension of Ocean Ridge Drive which continues along the Rail Overbridge and connects to the proposed section of path along Ludstone Road.
 - b. The shared use path will also connect to a trail through the Crest to the section of the Kaikoura Trail along the Kowhai River, as shown on the ODP.
 - c. There are also a variety of internal tracks existing and proposed to provide connectivity between the residential areas and the Hub including:
 - From the Crest / Farm through to Greenburn Way (opposite Kersage Drive)
 - From the Greenlane area to the existing tracks near the eastern boundary and connecting to Ludley Drive.
69. These tracks provide for both recreational walking and also improve connectivity within Ocean Ridge noting that some of the roads are cul de sacs. These provide alternative routes to visit neighbours and the shops / services within the Hub and contribute to creating a well connected living environment.

²¹ The Greenlane area may accommodate up to 220 residential units however some will have direct property access to Ocean Ridge Drive. The remainder are anticipated to generate traffic across the two intersections with a reasonably even split.



70. The future shared paths connecting to the Kaikoura Township, along the coast and via Ludstone Road will provide good connectivity for walking and cycling between the site and key destinations within the Township.
71. Overall, the ODP provides for good walking connections internally and is well coordinated with and supports the continuation of routes for walking and cycling to the surrounding area and the Kaikoura Township.

Ocean Ridge Drive Extension

72. Ocean Ridge Drive is currently constructed as far north as Knowles Crescent and typically has an 8.0m wide sealed carriageway. It is proposed that this will be extended to connect with Green Lane to align with the proposed Rail Overbridge. This new alignment is indicated on the proposed ODP along with subsequent changes to the alignment for the extension of Ocean Ridge Drive. The proposed location of the Rail Overbridge is further to the north-east than the existing paper road connection. The Rail Overbridge provides a superior option both in terms of reducing safety concerns associated with a road rail level crossing at the paper road and in terms of being a more direct connection to Kaikoura Township.
73. The alignment of Ocean Ridge Drive is otherwise appropriate taking into account topography, access needs, and appropriate horizontal and vertical alignment. The main feature of the horizontal alignment is the curves on the approach to the Rail Over Bridge and in this area the topography and land stability requirements constrain the options for positioning of the road. The proposed curve approaching the bridge is appropriate for a 40-45km/h design speed²² and this is considered advantageous to maintain safe travel speeds on the approach to, and over the bridge, particularly noting the likely lower design speed of the curve on the northern side of the bridge²³.
74. The alignment is also suitable for the anticipated side road intersections (in locations identified on the Proposed Outline Development Plan) to achieve safe intersection sight distance (Austroads *Guide to Road Design Part 4A* recommends 90-97m for 50km/h). The side roads are not anticipated to carry volumes which would warrant dedicated left or right turn lanes on Ocean Ridge Drive.
75. Ocean Ridge Drive will function as the main road providing external connections for Ocean Ridge via either the State Highway or the Ludstone Road Arterial route. All other local roads are connected via Ocean Ridge Drive / Ocean Ridge Boulevard. The internal layout and external connections suggest Ocean Ridge Drive will have a collection / distribution function. Whilst the indicative AADT of 2,000-3,000 vehicles per day would be at the lower end of the daily volume of traffic anticipated for a Collector Road²⁴, noting the key connection it provides, we anticipate that the Ocean Ridge Drive will function as a Collector Road.

²² It is also anticipated that no kerb side parking be provided in this location to maximise forward visibility, reflect topographical constraints, because there is no property access to Ocean Ridge Drive in this location and because it is proposed to provide a crossing point for the shared path in this location. These matters can be confirmed at subdivision stage.

²³ Per Road Design Overview Plan, dated 09/05/24, prepared by Vitruvius on Behalf of KDC

²⁴ Collector Roads generally carrying in the vicinity of 3,000-8,000 vehicles per day.



76. Considering Ocean Ridge Drive in the context of the District Plan requirements, it would sit in the upper part of the District Plan SUB Table 2 category “800-3000 VPD” which would suggest two 3.5m wide traffic lanes and two 2.0m wide parking lanes. It is however acknowledged that it is approaching the 3,000 VPD threshold in that table, beyond which a specific design would be required.
77. The starting point for the cross-section design²⁵ is to continue with an 8.0m carriageway (+0.2m for kerbs) which will be suitable for one traffic lane in each direction, noting cyclists are primarily catered for on a shared path and low volumes of heavy vehicles are anticipated²⁶.
78. It is anticipated that where parking is provided this will be via indented car parking bays on one or both sides. This approach also allows flexibility for parking bays to be interspersed with grass berms and or street trees to suit the final subdivision layout. On-street parking demand²⁷ is only anticipated near residential sections with property access to Ocean Ridge Drive. Many of the residential sections on the south-eastern side will front Ocean Ridge Drive, but due to the topography, they will take property access from other roads (intersecting with or up-hill of Ocean Ridge Drive). Where that is the case, the other / side roads are expected to provide for any kerb side parking demand.
79. The 3.0m wide shared path on the north-western side is anticipated to cater for the majority of pedestrian movements with pedestrian crossing facilities provided near intersections for connections to side road footpaths. This may be supported by additional shared path or footpath on some sections of the south-eastern side of Ocean Ridge Drive where there is residential property access and kerb side parking that may generate pedestrian movements.
80. The changes to the alignment of the Ocean Ridge Drive extension are considered appropriate to co-ordinate with the Rail Overbridge to Green Lane. The proposed cross section will likely deviate from the District Plan rules but is considered to be suitable taking into account the function of the road, likely parking demands and that a shared path provides for the majority of cyclist movements.
81. Overall, the changes to the ODP for the Ocean Ridge Drive extension are considered to provide an improvement to the transport network and align with the planned Rail Overbridge.

Green Lane – Ludstone Road

82. As part of the proposed Rail Overbridge to Green Lane Council are also proposing to change the priorities at the existing Green Lane / Ludstone Road / Red Swamp Road intersection. This change will give priority to the Green Lane and Ludstone Road. Red Swamp Road will form the minor giveaway controlled arm of the intersection. This is considered appropriate noting the very low traffic volumes of traffic anticipated to use Red

²⁵ Refer to indicative cross sections in Appendix 7.

²⁶ Typical of a residential area. Goods delivery vehicles associated with the mixed use area are anticipated to predominantly use the SH1 route due to proximity to the mixed use area.

²⁷ Generally at least 1 visitor space per 5 dwellings with access to Ocean Ridge Drive.



Swamp Road. Traffic from Ocean Ridge is anticipated to utilise Ludstone Road to access the Kaikoura Township.

83. As outlined above, the proposed full development is expected to add around 83 arrivals 218 departures in the morning peak hour and 193 arrivals and 109 departures in the evening peak hour. These trips are anticipated to be through movements on the Green Lane – Ludstone Road route. Very few additional trips to / from Red Swamp Road are anticipated. Noting this and the very existing traffic volumes on Red Swamp Road (~200 vpd indicatively equating to 20-30 trips in the peak hour) no capacity analysis of the turning movements at this intersection is considered necessary.
84. Ludstone Road is a Collector Road and noting the existing (~250vpd near the site to 830 vpd to the east) and proposed volumes (indicatively 2,000-3,000 vpd) from full development of Ocean Ridge this will remain within the typical capacity of a Collector Road.
85. It is assumed that for the interim the 80km/h speed limit and a rural formation will remain. As outlined above a shared path is planned on the Rail Overbridge and along Ludstone Road connecting to the existing sections (the eastern end as far as Mt Fyffe Road is completed). This will offer a walking and cycling connection to the Kaikoura Township and the schools on Ludstone Road.
86. Road Safety Audits are being completed for each stage of the Rail Overbridge and intersections changes (including Detailed Design and Post Construction) which will ensure that those parts of the road network are constructed to current safety standards.
87. Overall, with the changes proposed, the external connection to Green Lane and Ludstone Road is considered to be appropriate to provide for safe and efficient travel for traffic generated by the development of Ocean Ridge. It is considered a significant improvement on the paper road option which was indicated on the existing ODP.

New Left Turn Egress / Intersection to SH1

88. The other new external connection is the proposed left turn egress to SH1 from the new road servicing the Hub. This may either be provided for by way of a new road intersection (vested road) or access (ROW) with the legal mechanism to be determined at subdivision stage. Either way this will provide for left turn egress onto SH1 for the purpose of facilitating efficient travel from the 'Hub' towards Kaikoura Township. This will be a one-way section of access /road²⁸ from the Hub Road and therefore will require a specific design providing for one traffic lane with associated markings and signs.
89. The location of the proposed new road / access is indicated below and there is an existing farm access in a similar location. This location avoids the link strip²⁹ (along SH1 to the east) and is approximately 290m from the existing Ocean Ridge Boulevard / SH1 intersection. As indicated in the figures below, the location allows for more than 282m sight distance in each direction. This provides a suitable location including meeting the NZTA Planning

²⁸ One way only from the new Hub Road to the State Highway. Note that the Hub road which will have a cul de sac turning head or connection to Fidele Lane to provide for travel in other directions.

²⁹ Sometimes also referred to as a segregation strip, or point strip. Adjacent to part of the site, this is a narrow section of land between the road and the site boundary, which prevents access to the State Highway.

Policy Manual requirements for sight distance and separation of intersections, on State Highways.



Figure 9: Location of Proposed 'Mixed Use Area' Road / Access Intersection with SH1.



Figure 10: Sight Distance at Proposed Access to SH1



Figure 11: Visibility from the Proposed Access along SH1 to the North-East (towards Kaikoura Township)



Figure 12: Visibility from the Proposed Access along SH1 to the South-West³⁰

90. There is ample space within the road corridor to provide for a variety of intersection layouts however initial advice from NZTA suggests preference for a high angle, stop controlled, left turn.
91. As outlined earlier, this connection is estimated to cater for around 30% of the egress trips to SH1 with the remainder using the existing Ocean Ridge Boulevard Intersection. This equates to around 32 – 66 left turn movements in the peak hours and is readily with the capacity of left turn movement at a stop-controlled intersection with SH1 in this location.
92. For the avoidance of doubt, it is not sought to provide other turning movements at this intersection noting:
- The existing intersection of Ocean Ridge Boulevard is a more convenient route for right turn egress movements, and there is sufficient capacity at that intersection (discussed in the following section).
 - The left turn entry at the existing Ocean Ridge Boulevard intersection is a more convenient route for travel from that direction.
 - Accommodating right turn entry movements would require a dedicated right turn lane on SH1. Given there is sufficient capacity for this movement at the existing intersection with Ocean Ridge Boulevard such that it is not proposed to provide this here. This also supports the function of Ocean Ridge Boulevard as the main “gate-way” to the development from SH1.
93. Overall, the proposed access / intersection is appropriately located to accommodate a safe and efficient left turn to SH1. The proposed left turn egress only arrangement is considered appropriate and provides an efficient route for people travelling from the Hub towards the Kaikoura Township.

³⁰ Note that a small variation in horizontal alignment occurs near the intersection with Ocean Ridge Boulevard at approximately 290m from the access, however this is small and does not obscure on-coming traffic such that additional visibility is available in this direction.



Ocean Ridge Boulevard – SH1 Intersection

94. The existing intersection of Ocean Ridge Boulevard and SH1 is a stop-controlled 'T' Intersection which is formed to a high standard. The existing intersection includes left and right turning lanes on SH1. As outlined earlier, the only crashes at / near the intersection were minor or non-injury loss of control crashes on SH1 (fell asleep, distracted by objects within the car). They do not appear to be related to issues with the design or layout of the intersection.
95. Noting the additional 150 residential units and increased activities proposed within the Hub, modelling of the capacity of the existing intersection has been undertaken for the morning and evening peak hours using SIDRA Intersection (9.1).
96. The SH1 traffic volumes for the model use the 2024 hourly and directional counts from the SH1 Count Station 'Kaikoura – North of Kowhai River' (for the base year). The peak hours for Ocean Ridge are anticipated to occur between 0800-0900 and 1600-1700³¹. A 2% per annum growth in traffic volumes has been applied (refer to paragraph 18) to the 2024 traffic volumes (for 10 years to 2034). This is considered to be a realistic upper estimate noting that this is applied as background growth (i.e., in addition to growth in volumes for Ocean Ridge and the Kaikoura Business Park). The additional peak hour volumes from the Kaikoura Business Park (refer to paragraphs 40-42) have also been added to the peak hour traffic on SH1.
97. The traffic generation estimates for the Ocean Ridge Boulevard to SH1 route were set out earlier in this report (refer to Figure 7 and Figure 8).
98. The results of the SIDRA models are provided in **Appendix 5**. These indicate that the intersection will continue operating within acceptable levels of capacity. The most constrained movement is the right turn from Ocean Ridge Boulevard to SH1 (south bound). This movement is operating at LOS C³² in both peak hours, which is acceptable in this location. All other movements are operating at LOS A or B which indicates a good level of capacity.
99. The results suggest there is sufficient capacity to cater for the increase in traffic associated with the proposal for the 2034 analysis period, allowing for traffic growth on SH1, assuming full development of the Ocean Ridge Plan Change, and the PC4 Industrial site. As such no changes to the intersection design or layout are needed.

Transport Effects Summary

100. The proposal can be supported from a transport perspective noting that the ODP design and layout is appropriate and there is ample capacity to safely and efficiently integrate the anticipated development into the existing and planned transport network. The key points in this respect are summarised as follows:

³¹ The same peak hours as PC4.

³² Level of Service (LOS) is a standardized measure of operational efficiency, where LOS A denotes optimal conditions with minimal delay, while LOS F reflects over-saturated conditions with excessive delays and significant queuing, indicating failure of the intersection to accommodate demand.



- a. The design and layout of the ODP is appropriately integrated into the existing and proposed transport network.
 - b. The ODP layout is appropriate to safely and efficiently provide for access to the planned residential areas and Hub.
 - c. The ODP layout is integrated with and supports planned walking and cycling connections between Ocean Ridge and the Kaikoura Township as well as recreational routes along the Kowhai River.
 - d. The ODP provides a number of trails (off-road) which improve the internal walking and cycling connectivity including between residential areas and the Hub.
 - e. The existing intersection of Ocean Ridge Boulevard with SH1 can accommodate the anticipated increase in traffic volumes safely and efficiently.
 - f. The new left turn egress to SH1 from the Hub area will provide an efficient route for trips between the Hub and the Kaikoura Township. The location proposed is appropriate to facilitate the safe and efficient access to SH1 for a stop-controlled left turn egress.
 - g. The changes to the extension of Ocean Ridge Drive are appropriate to align with the planned Rail Overbridge to Green Lane and the future shared path connection along Ludstone Road.
101. Noting the above, the proposed ODP is considered to be appropriate to accommodate the traffic associated with the proposed residential and Hub activities and is well integrated into the existing and planned transport network.

District Plan Objectives and Policies

102. Although Objectives and Policies are best considered overall in the Planning Report, to assist, some brief comments are provided from a transport perspective. The key provisions are set out in **Appendix 6** and in summary we note the following key points:
- a. The Plan Change provides for residential growth where it can make appropriate and efficient use of the existing and planned transport infrastructure.
 - b. The proposed ODP specifically includes changes to integrate with the planned transport network including the Rail Overbridge to Green Lane and shared use paths along the Coast, Kowhai River, and Ludstone Road.
 - c. The proposal includes the Hub providing for services and shops to support the reduction of vehicle trips by meeting some day to day needs of residents and guests staying within Ocean Ridge.
 - d. The Plan Change provides for connections to SH1 and Green Lane which can readily and appropriately be integrated into the existing transport network in a safe and efficient manner.



- e. The new roads, shared use paths and trails proposed on the ODP provide suitable access to proposed residential and Hub areas as well as for connections to the wider transport network.
103. For the above reasons, the proposal generally supports the relevant objectives and policies from a transport perspective.

Conclusion

104. The proposed Plan Change for Ocean Ridge includes an additional 150 residential dwellings and an extension of the mixed use area known as the “Hub” to provide for a range of activities including: residential, visitor accommodation, retail / food and beverage, commercial activities, offices, a preschool, and community / recreational facilities. It also includes an amended Outline Development Plan (ODP) which includes the following key changes:
- a. A repositioning of the Ocean Ridge Drive extension to Green Lane (further north compared to that currently illustrated in the District Plan) to align with the proposed Rail Overbridge.
 - b. A new local road servicing the Hub which connects to Kersage Drive.
 - c. A new road or accessway from the Hub road which will provide left turn egress only to SH1.
 - d. Adjustments to local roads servicing the residential areas known as Greenlane, the Farm, and Crest.
 - e. A shared path which connects from Green Lane to the section of the Kaikoura Trail adjacent to the Kowhai River. Various walking trails within Ocean Ridge.
105. Based on the assessment of effects outlined above, the key transport conclusions are:
- a. The design and layout of the ODP is well integrated into the existing and proposed transport network and is appropriate to safely and efficiently provide for access to the planned residential areas and the Hub.
 - b. The ODP layout is integrated with and supports planned walking and cycling connections between Ocean Ridge and the Kaikoura Township as well as recreational routes. The ODP also provides a number of trails (off-road) which improve the internal connectivity including between residential areas and to the Hub.
 - c. The existing intersection of Ocean Ridge Boulevard with SH1 can accommodate the anticipated increase in traffic volumes safely and efficiently.
 - d. The new left turn egress to SH1 from the Hub area will provide an efficient route for trips between the Hub and the Kaikoura Township. The location proposed is appropriate to facilitate the safe and efficient access to SH1 for a stop-controlled left turn egress.

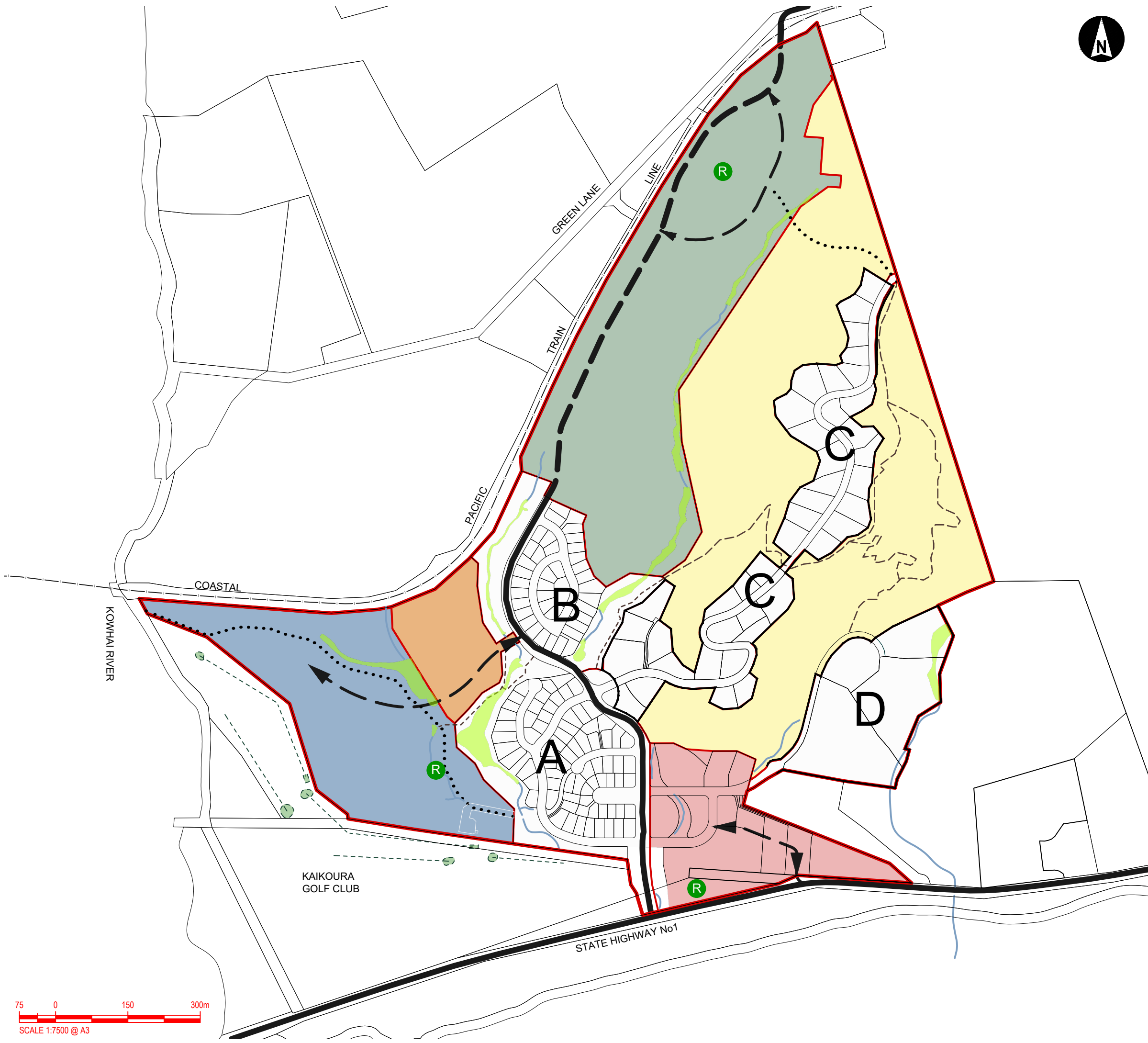


- e. The changes to the extension of Ocean Ridge Drive are appropriate to align with the planned Rail Overbridge to Green Lane and the future shared path connection along Ludstone Road.
- 106. The proposal is also considered to be generally consistent with and supports the relevant objectives and policies of the District Plan, from a transport perspective.
- 107. In conclusion, the proposal can be supported from a transport perspective noting that the ODP design and layout is appropriate and there is ample capacity to safely and efficiently integrate the anticipated development into the existing and planned transport network.



Appendix 1

Proposed ODP



KEY SITE

- SITE BOUNDARY
- SUB AREA BOUNDARIES

FOUNDATION AREAS

- RESIDENTIAL AREA

SUB AREAS

- THE CREST
- COUNTRY LIVING
- THE FARM
- GREENLANE
- THE HUB

TRANSPORT NETWORK

- EXISTING PRIMARY ROADS
- INDICATIVE PRIMARY ROADS
- INDICATIVE LOCAL ROADS
- COASTAL PACIFIC TRAIN LINE

ACCESS

- EXISTING WALKING TRACKS
- INDICATIVE WALKING TRACK

RESERVES & OPEN SPACES

- SIGNIFICANT RESERVE AREA (INDICATIVE)
- NATURAL INLAND WETLAND

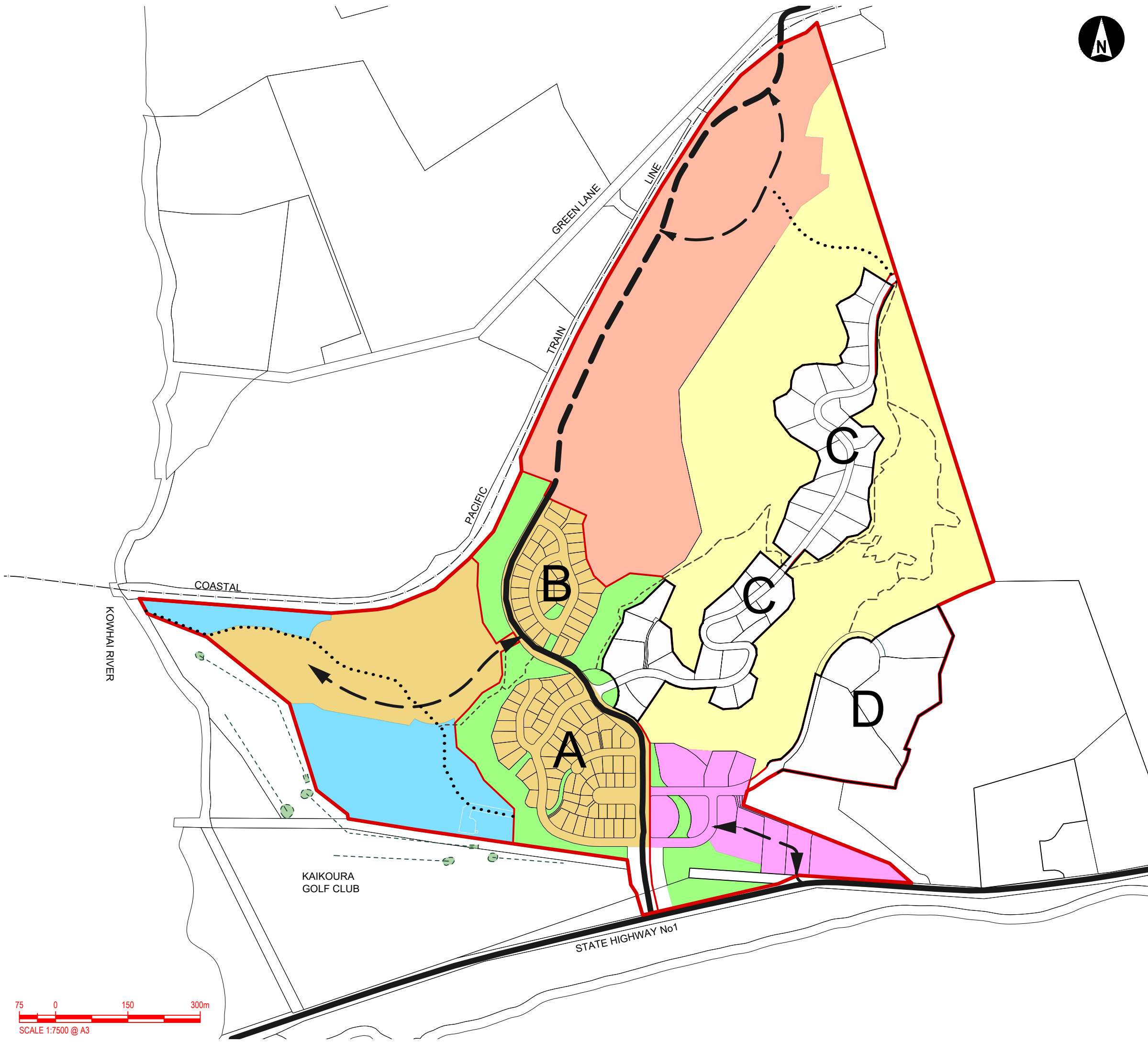
PLAN 1

KEY FEATURES AND SUB-AREAS

OCEAN RIDGE DEVELOPMENT
OUTLINE DEVELOPMENT PLAN

REVISION J
DATE 24-10-2025

75 0 150 300m
SCALE 1:7500 @ A3



KEY SITE

SITE BOUNDARY
 SUB AREA BOUNDARIES

EXISTING LOCAL PURPOSE & RECREATION RESERVES

MINIMUM ALLOTMENT SIZE

350m²
 500m²
 1,500m²
 3000m²
 1ha
 NO MINIMUM ALLOTMENT SIZE

TRANSPORT NETWORK

EXISTING PRIMARY ROADS
 INDICATIVE PRIMARY ROADS
 INDICATIVE LOCAL ROADS
 COASTAL PACIFIC TRAIN LINE

ACCESS

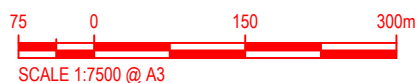
EXISTING WALKING TRACKS
 INDICATIVE WALKING TRACK

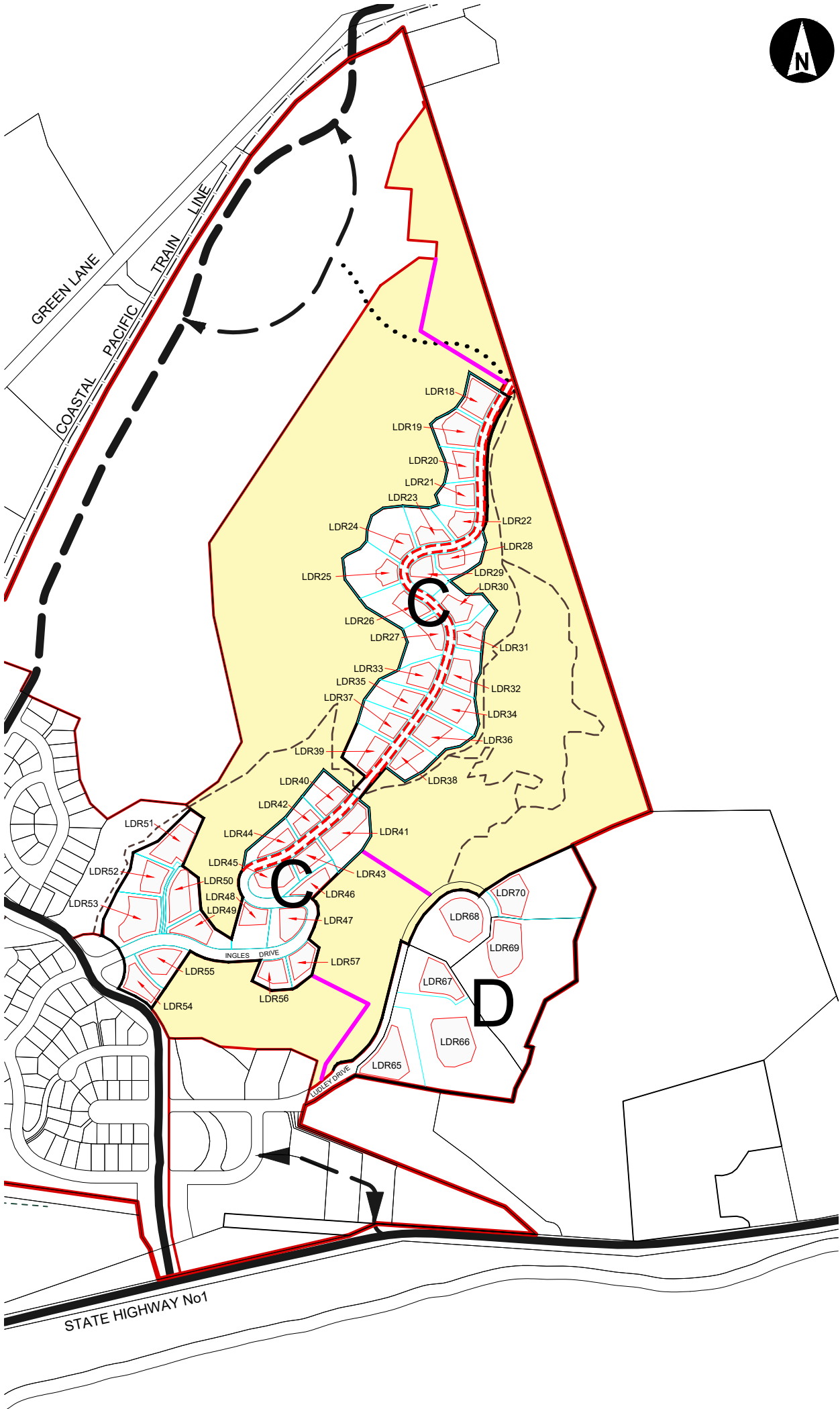
PLAN 2

SUBDIVISION DENSITY

OCEAN RIDGE DEVELOPMENT
OUTLINE DEVELOPMENT PLAN

REVISION J
DATE 24-10-2025





KEY SITE
SITE BOUNDARY
SUB AREA BOUNDARIES

FOUNDATION AREAS
AREAS C & D

SUB AREAS
COUNTRY LIVING

TRANSPORT NETWORK
EXISTING PRIMARY ROADS
INDICATIVE PRIMARY ROADS
INDICATIVE LOCAL ROADS
COASTAL PACIFIC TRAIN LINE

ACCESS
EXISTING WALKING TRACKS
INDICATIVE WALKING TRACK

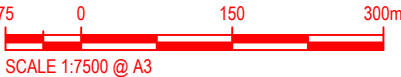
DETAILED LAYOUT - EASTERN SUB-AREA

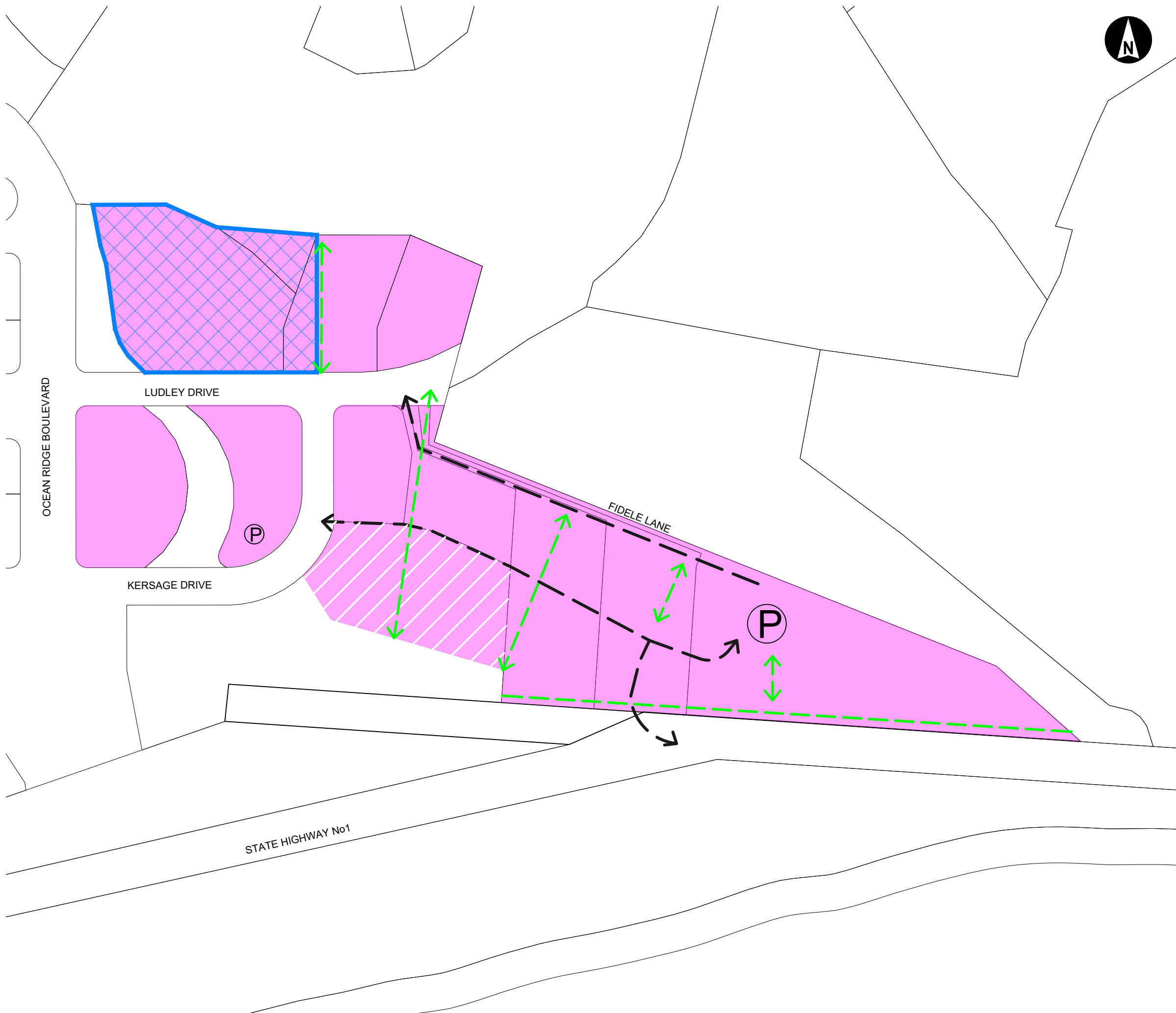
INDICATIVE COUNTRY LIVING ALLOTMENT BOUNDARIES
LOW DENSITY RESIDENTIAL ALLOTMENT BOUNDARIES
LOW DENSITY RESIDENTIAL AREA BOUNDARIES
RESIDENTIAL NATIVE PLANTING AREAS
CURTILAGE AND BUILDING AREA
5m (min)
LDR18 LOW DENSITY RESIDENTIAL SITE NUMBER
ROAD CARRIAGEWAY
ROAD SIDE NATIVE PLANTING

PLAN 3

**DETAILED LAYOUT
EASTERN
SUB-AREAS**

OCEAN RIDGE DEVELOPMENT
OUTLINE DEVELOPMENT PLAN
REVISION J
DATE 24-10-2025





- KEY
-  HUB AREA
 -  SUBJECT TO FUTURE RESERVE LAND EXCHANGE
 -  INDICATIVE LOCAL ROAD / ACCESS
 -  ACTIVE LANDSCAPE LINKAGE
 -  INDICATIVE SHARED PARKING AREA
 -  MAXIMUM BUILDING HEIGHT 15m

PLAN 4

DETAILED LAYOUT HUB AREA

OCEAN RIDGE DEVELOPMENT
OUTLINE DEVELOPMENT PLAN

REVISION J
DATE 24-10-2025



Appendix 2

NZTA Crash Summary Report



8 results from your query.

1-8 of 8

Crash road	Side road	Feature	Distance from side road/feature	Direction	Reference station	Route position	Easting	Northing	Longitude	Latitude	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather	Junction	Control	Casualty count fatal	Casualty count serious	Casualty count minor
015-0155	OCEAN RIDGE BOULEVARD		694.00m	E			1653726	5304195	173.652954	-42.412689	201974646	19/07/2019	Fri	14:00	Ute1 EDB on SH 1 lost control turning left; went off road to right, Ute1 hit tree, substantial vegetation (causing vehicle damage or stopping the vehicle)	UTE1, alcohol test below limit, lost control when turning, other fatigue	Dry	Overcast	Fine	Nil (Default)	Unknown	0	0	0
INGLES DRIVE	OCEAN RIDGE DRIVE		710.00m	E			1653310	5304859	173.647842	-42.406742	201849525	05/10/2018	Fri	10:30	load or trailer from Truck1 NDB on INGLES DRIVE, KAIKOURA FLAT, KAIKOURA hit VEH8, Truck1 hit non specific building	TRUCK1, other brakes	Dry	Overcast	Fine	Nil (Default)	Unknown	0	0	0
LUDSTONE ROAD	RED SWAMP ROAD			I			1653466	5306050	173.649628	-42.396004	201843724	28/06/2018	Thu	11:37	Car/Wagon1 WDB on Red swamp Road lost control turning right, Car/Wagon1 hit non specific ditch	CAR/WAGON1, alcohol test below limit, new driver/under instruction, speed entering corner/curve, too far left, while returning to seal from unsealed shoulder	Dry	Overcast	Fine	Y Junction	Nil	0	0	0
SH 1	OCEAN RIDGE BOULEVARD		350.00m	E			1653385	5304216	173.648819	-42.412523	2020151583	05/05/2020	Tue	16:00	Ute1 WDB on State Highway 1 swinging wide hit Truck2 head on	TRUCK2, alcohol test below limit UTE1, alcohol test below limit, attention diverted by food, cigarettes, beverages, swung wide on bend	Dry	Overcast	Fine	Nil (Default)	Unknown	0	0	1
SH 1	OCEAN RIDGE BOULEVARD		33.00m	E			1653075	5304159	173.645057	-42.413059	2022253908	16/04/2023	Sun	07:20	SUV1 EDB on SH 1 lost control; went off road to left, SUV1 hit light pole	SUV1, alcohol test below limit, driver dazzled, fatigue due to lack of sleep, too far left, ENV: dazzling sun	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
SH 1	OCEAN RIDGE BOULEVARD			I			1653025	5304145	173.644444	-42.413187	2022232781	14/08/2022	Sun	09:30	Car/Wagon1 NDB on SH 1 lost control; went off road to left, Car/Wagon1 hit traffic island, light pole	CAR/WAGON1, alcohol test below limit, other attention diverted, too far left	Dry	Bright sun	Fine	T Junction	Stop	0	0	1
SH 15	INLAND KAIKOURA ROAD		830.00m	N			1652648	5304056	173.639877	-42.414017	201416949	26/10/2014	Sun	09:15	Car/Wagon1 NDB on SH 15 lost control; went off road to right, Car/Wagon1 hit non specific tree	CAR/WAGON1, other fatigue	Dry	Overcast	Fine	Nil (Default)	Nil	0	0	1
SH 15	OCEAN RIDGE BOULEVARD		630.00m	E			1653667	5304198	173.652237	-42.412670	201750796	07/10/2017	Sat	18:10	SUV1 EDB on SH1 lost control; went off road to left, SUV1 hit non specific fence	SUV1, inappropriate speed for weather conditions, lost control under braking	Wet	Overcast	Light rain	Nil (Default)	Unknown	0	0	0

1-8 of 8



Appendix 3

Peak Hour Traffic Generation Estimates



PM Peak Hour												
Activity	Areas / Units	Rates ³³			Total Volumes			Internal			External	
		Peak Hour Rates	Arrival Rate	Departure rate	Peak hour volume	Arrivals	Departures	Factor ³⁴	Arrivals	Departures	Arrivals	Departures
All Residential	486 units	0.9	0.63	0.37	437	276	162	0.1	28	16	248	146
Guest Accommodation	150 beds / units	0.72	0.9	0.1	108	97	11	0.1	10	1	87	10
Retail / food and beverage	1,200 m ² GFA	0.0588	0.5	0.5	71	35	35	0.6	21	21	14	14
Office	400 m ² GFA	0.012	0.1	0.9	5	1	4	0.2	0	1	1	3
Commercial Activities	2,000 m ² GFA	0.0588	0.5	0.5	118	59	59	0.6	35	35	24	24
Preschool Child numbers	50 Children	0.48	0.5	0.5	24	12	12	0.8	10	10	2	2
Community / Recreation	1,200 m ² GFA	0.074	0.5	0.5	89	44	44	0.6	27	27	18	18
Total					858	528	331		132	113	395	218

40 percent of residential 70% other
60 percent of residential 30% of other

Ocean Ridge Boulevard / SH1	201	108
Ocean Ridge Drive to Green Lane	193	109

³³ Refer to information below tables.

³⁴ Refer to information below tables.



AM Peak Hour												
Activity	Areas / Units	Rates ³⁵			Total Volumes			Internal			External	
		Peak Hour Rates	Arrival Rate	Departure rate	Peak hour volume	Arrivals	Departures	Factor ³⁶	Arrivals	Departures	Arrivals	Departures
All Residential	486 units	0.9	0.26	0.74	437	114	324	0.1	11	32	102	291
Guest Accommodation	150 beds / units	0.72	0.1	0.9	108	11	97	0.1	1	10	10	87
Retail / food and beverage	1,200 m ² GFA	0.0588	0.5	0.5	71	35	35	0.6	21	21	14	14
Office	400 m ² GFA	0.012	0.9	0.1	5	5	0	0.2	1	0	4	0
Commercial Activities	2,000 m ² GFA	0.0588	0.5	0.5	118	59	59	0.6	35	35	24	24
Preschool Child numbers	50 Children	0.48	0.5	0.5	24	12	12	0.8	10	10	2	2
Community / Recreation	1,200 m ² GFA	0.074	0.5	0.5	89	44	44	0.6	27	27	18	18
Total					858	284	575		108	137	175	438

40 percent of residential 70%
other
60 percent of residential 30% of
other

Ocean Ridge Boulevard / SH1	91	218
Ocean Ridge Drive to Green Lane	83	218

³⁵ Refer to information below tables.

³⁶ Refer to information below tables.



The traffic generation rates and arrival / departure rates are based on the following:

- **Residential** Trip rate NZ Transport Agency Research Report 453 (Trips and Parking Related to Land Use) for residential trip generation suggests an 85th percentile traffic generation rate of 0.9 vehicle movements per dwelling per hour in the peak hours. The ITE *Trip Generation* guidebook suggests a split 63% arrivals and 37% departures in the weekday PM peak.
- **Guest Accommodation** Rates vary from 0.4 trips per unit from the New South Wales Guide to Transport Impact Assessment 2024 for Motels. Upper range based on Motel Survey Data from Christchurch 0.9 trips per occupied room, and 80% monthly occupancy rate = 0.72 trips per unit (adopted). Hotels are anticipated to be similar where there is a high degree of self drive or lower where they cater for coach tours or provide transport pick-up and drop-off services. 90% arriving in PM peak and 90% departures in AM peak associated with either check-in / check-out or leaving for various tourist destinations in the AM and returning in the PM.
- **Retail / Food and Beverage and Commercial Activities** New South Wales Guide to Transport Impact Assessment 2024. Shopping centre rate of 5.88 trips per 100m² GFA for regional locations in the network PM peak hour. Note that small food and beverage tenancies likely falls within this range for the network peak. For example, restaurants at 5 trips per 100m² GFA. Whilst some food and beverage activities can have higher peak hour rates for the activity the timing of those peaks tends to be at different times to other retail / commercial activities i.e., outside of the peak traffic generation for the site as a whole. Short duration / turn-over therefore assumed equal arrival and departure splits in the peak hours.
- **Office:** New South Wales Guide to Transport Impact Assessment 2024. Office blocks PM Peak Hour (for Sydney – regional could be lower at 0.96 trips per 100m² GFA). Assumed 90% arrival in the morning with staff arriving for work and 90% departure in the evening with staff finishing for the day.
- **Preschools** Novo Group surveys of Kindercare and Kidditech preschools in Canterbury – survey data. Fairly equal arrivals and departures noting parent pick-up / drop-off.
- **Recreation / Community** – 7.4 trips per 100m² GFA based on the Trips and Parking Relating to Land-Use 2011 Gymnasium rate, assuming this may provide for a gym or similar recreation activity. Assuming fairly equal arrivals / departures as different hourly sessions start / finish. Note this represents a reasonable peak hour estimate as other uses such as a Church or sports club tend to have lower peak hour traffic generation rates.

The internal factors are based on:

- **Residential and Guest Accommodation** 10% - small allowance for residential / guest trips, visiting neighbours, working from home, driving to a green space and the like. Note discount for trips to the mixed use area has been applied to those rates so as not to “double count” the internal factor.
- **Office** – 20% assuming some staff and visitors live (or are guests staying) at Ocean Ridge.



- **Preschool 80%** This will primarily service a roll of children whom are residents of Ocean Ridge with 20% allowance for occasional external visitor, student or staff trip.
- **All other mixed use activities** – 60% noting they will primarily service residents and guests with 40% external allowance for passing trade and some trips to / from other activities in Kaikoura Township. This also allows for multi-destination trips, where people may drive to the mixed use area and visit several shops in the same trip.



Appendix 4

SIDRA 9 Intersection Movement Summaries Ocean Ridge Drive -Farm / Crest Road

MOVEMENT SUMMARY

Site: 101 [Crest / Farm Ocean Ridge Drive - AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Ocean Ridge Drive (south arm)															
1	L2	All MCs	12	5.0	12	5.0	0.123	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	48.5
2	T1	All MCs	229	5.0	229	5.0	0.123	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach			241	5.0	241	5.0	0.123	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Ocean Ridge Drive (north arm)															
8	T1	All MCs	87	5.0	87	5.0	0.053	0.2	LOS A	0.1	0.6	0.10	0.11	0.10	49.4
9	R2	All MCs	12	5.0	12	5.0	0.053	5.5	LOS A	0.1	0.6	0.10	0.11	0.10	47.9
Approach			99	5.0	99	5.0	0.053	0.8	NA	0.1	0.6	0.10	0.11	0.10	49.2
West: Crest / Farm															
10	L2	All MCs	34	5.0	34	5.0	0.063	5.4	LOS A	0.2	1.6	0.34	0.58	0.34	45.1
12	R2	All MCs	34	5.0	34	5.0	0.063	6.1	LOS A	0.2	1.6	0.34	0.58	0.34	45.0
Approach			67	5.0	67	5.0	0.063	5.7	LOS A	0.2	1.6	0.34	0.58	0.34	45.1
All Vehicles			407	5.0	407	5.0	0.123	1.3	NA	0.2	1.6	0.08	0.14	0.08	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Crest / Farm Ocean Ridge Drive - PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Ocean Ridge Drive (south arm)															
1	L2	All MCs	28	5.0	28	5.0	0.074	4.6	LOS A	0.0	0.0	0.00	0.11	0.00	48.1
2	T1	All MCs	115	5.0	115	5.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.4
Approach			143	5.0	143	5.0	0.074	0.9	NA	0.0	0.0	0.00	0.11	0.00	49.1
North: Ocean Ridge Drive (north arm)															
8	T1	All MCs	203	5.0	203	5.0	0.123	0.1	LOS A	0.2	1.5	0.08	0.10	0.08	49.4
9	R2	All MCs	28	5.0	28	5.0	0.123	5.1	LOS A	0.2	1.5	0.08	0.10	0.08	48.0
Approach			232	5.0	232	5.0	0.123	0.7	NA	0.2	1.5	0.08	0.10	0.08	49.2
West: Crest / Farm															
10	L2	All MCs	17	5.0	17	5.0	0.031	5.0	LOS A	0.1	0.8	0.27	0.53	0.27	45.3
12	R2	All MCs	17	5.0	17	5.0	0.031	6.1	LOS A	0.1	0.8	0.27	0.53	0.27	45.2
Approach			34	5.0	34	5.0	0.031	5.5	LOS A	0.1	0.8	0.27	0.53	0.27	45.2
All Vehicles			408	5.0	408	5.0	0.123	1.2	NA	0.2	1.5	0.07	0.14	0.07	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Appendix 5

SIDRA 9 Intersection Movement Summaries Ocean Ridge Boulevard -SH1

SITE LAYOUT

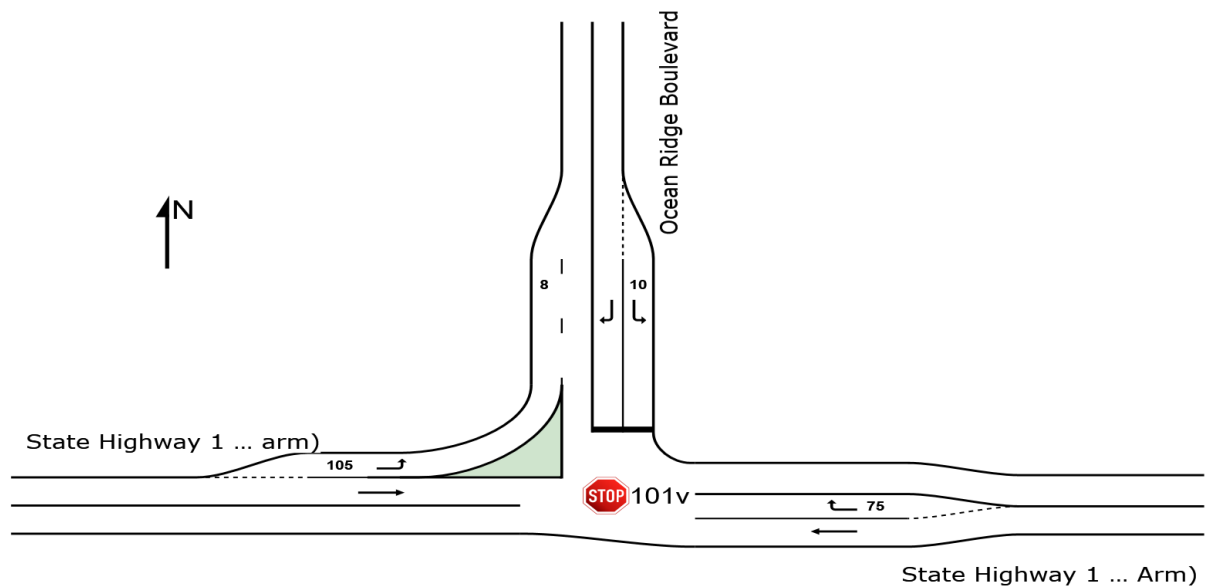
 Site: 101v [SH1 Ocean Ridge Boulevard - SH Growth + PC4
(PM Peak) (Site Folder: General)]

New Site

Site Category: (None)

Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: NOVO GROUP LIMITED | Licence: PLUS / 1PC | Created: Monday, 7 July 2025 11:46:26 am

Project: C:\Users\LisaWilliams\OneDrive - Novo Group Limited\1322 Ocean Ridge\1322001 Ocean Ridge Subdivision and Plan Change\03 Transport\03 Reporting\Final Analysis\Intersection Models Final.sip9

MOVEMENT SUMMARY

 **Site: 101v [SH1 Ocean Ridge Boulevard - SH Growth + PC4 (AM Peak) (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: State Highway 1 (Eastern Arm)															
5	T1	All MCs	443	20.0	443	20.0	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
6	R2	All MCs	77	5.0	77	5.0	0.053	8.5	LOS A	0.2	1.7	0.31	0.62	0.31	55.7
Approach			520	17.8	520	17.8	0.250	1.3	NA	0.2	1.7	0.05	0.09	0.05	89.4
North: Ocean Ridge Boulevard															
7	L2	All MCs	115	5.0	115	5.0	0.100	8.5	LOS A	0.4	3.0	0.32	0.88	0.32	52.8
9	R2	All MCs	46	5.0	46	5.0	0.141	17.5	LOS C	0.5	3.5	0.71	1.00	0.71	47.2
Approach			161	5.0	161	5.0	0.141	11.1	LOS B	0.5	3.5	0.43	0.92	0.43	51.0
West: State Highway 1 (western arm)															
10	L2	All MCs	19	5.0	19	5.0	0.011	8.8	LOS A	0.0	0.0	0.00	0.63	0.00	71.2
11	T1	All MCs	182	20.0	182	20.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			201	18.6	201	18.6	0.103	0.8	NA	0.0	0.0	0.00	0.06	0.00	96.2
All Vehicles			882	15.6	882	15.6	0.250	3.0	NA	0.5	3.5	0.11	0.23	0.11	79.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101v [SH1 Ocean Ridge Boulevard - SH Growth + PC4 (PM Peak) (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: State Highway 1 (Eastern Arm)															
5	T1	All MCs	298	20.0	298	20.0	0.168	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
6	R2	All MCs	169	5.0	169	5.0	0.167	10.3	LOS B	0.7	5.3	0.54	0.76	0.54	54.7
Approach			467	14.6	467	14.6	0.168	3.7	NA	0.7	5.3	0.20	0.28	0.20	76.9
North: Ocean Ridge Boulevard															
7	L2	All MCs	57	5.0	57	5.0	0.074	10.5	LOS B	0.3	2.0	0.52	0.93	0.52	51.6
9	R2	All MCs	23	5.0	23	5.0	0.111	24.2	LOS C	0.3	2.5	0.81	1.00	0.81	43.6
Approach			80	5.0	80	5.0	0.111	14.5	LOS B	0.3	2.5	0.60	0.95	0.60	49.0
West: State Highway 1 (western arm)															
10	L2	All MCs	42	5.0	42	5.0	0.023	8.9	LOS A	0.0	0.0	0.00	0.63	0.00	71.2
11	T1	All MCs	465	20.0	465	20.0	0.263	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
Approach			507	18.8	507	18.8	0.263	0.8	NA	0.0	0.0	0.00	0.05	0.00	96.6
All Vehicles			1055	15.9	1055	15.9	0.263	3.1	NA	0.7	5.3	0.13	0.22	0.13	81.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Appendix 6

District Plan Objectives and Policies



Objective and Policies	Transport Comments
<i>TRAN-O1 To provide for the safe and efficient use of the District's existing and future transportation infrastructure.</i>	The proposal can be accommodated safely and efficiently within the existing and planned transport network as well as providing additional connections to support the ongoing development of the transport network as discussed in the effects assessment.
<i>TRAN-O2 To avoid remedy or mitigate actual and potential adverse effects of transportation.</i>	
<i>TRAN-O3 To maintain and provide for access and ease of pedestrian and vehicle movement throughout the District.</i>	The proposed ODP includes roads, shared paths and trails supporting pedestrian (and cycle) movement both within Ocean Ridge and to Kaikoura Township.
<i>TRAN-P1 Promote, protect, and improve efficiency and safety of the transport network:</i> <i>2. To protect the efficiency of through traffic on State Highway 1 due to its role as a carrier of through traffic.</i> <i>4. To promote the efficient use of roads by ensuring the size, location and type of access to properties is appropriate.</i> <i>6. To promote and encourage cycling as a safe and efficient use of the Districts roads.</i> <i>10. To support the new development of safe pedestrian links, and to upgrade existing pedestrian links, in order to promote and provide for the safe, direct and pleasant movement of pedestrians and to reduce short vehicle trips and congestion.</i> <i>12. To encourage any new urban development in Settlement Zones to locate within or on the periphery of</i>	The Ocean Ridge Boulevard intersection with SH1 will continue to operate efficiently as outlined in the assessment of effects. The new roads proposed on the ODP are appropriate for access to the residential and commercial areas and taking into account the environmental and topographical characteristics of the site. The site is well located in respect to access to the proposed shared use paths along Ludstone Road and the Coastline which provide cycling options to Kaikoura Township as well having good access for recreational cycling. The ODP includes a variety of new pedestrian connections to provide for the safe and pleasant movement of pedestrians within Ocean Ridge and to external connections. The proposal extends the existing Ocean Ridge development including the Hub area which will provide some goods and

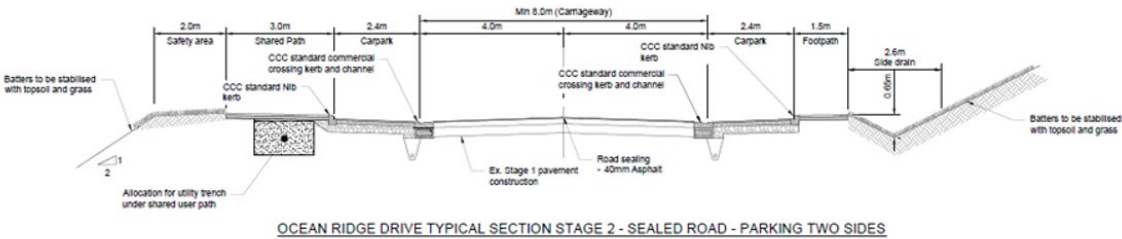


<i>existing settlements to reduce the length of, and need for, vehicle trips.</i>	services to meet the day to day needs of residents and guests at Ocean Ridge.
<i>TRAN-P2 Manage the environmental effects of transportation</i> <i>1. To encourage new residential development to locate within or on the periphery of existing settlements to reduce the length of and need for vehicle trips.</i> <i>3. To support the development of pedestrian and cycling links within the settlements and urban areas, having regard to the needs of disabled persons by making these facilities safe and pleasant.</i> <i>4. To promote the use of transport modes which have low adverse environmental effects.</i> <i>TRAN-P3 Ensure maintenance and provision of access</i> <i>1. To encourage the development of pedestrian areas, walking routes, and cycleways, having regard to the needs of disabled persons.</i> <i>2. To ensure access is available through the provision of new roads and related facilities</i>	
<i>UFD-P2 To ensure additional urban growth does not adversely affect traffic safety and efficiency of the State Highway.</i>	As set out in the effect assessment above, the proposed connections to SH1 and Green Lane can readily and appropriately be integrated into the existing transport network in a safe and efficient manner.
<i>DEV2-P10 To provide for an integrated road network that links the Ocean Ridge Development Area roading network to State Highway 1, Green Lane and adjacent rural land.</i>	The proposed ODP is well integrated with the road and shared use path infrastructure existing and planned for SH1 and the Green Lane / Ludstone Road route. A number of the changes to the proposed ODP are specifically to co-ordinate with planned changes to the road network beyond the site.



Appendix 7

Indicative Cross-sections for Ocean Ridge Drive Extension



INDICATIVE

