

MEMORANDUM

BROOKLYN HILL LOW-COST DESIGN PEDESTRIAN CROSSING LOCATIONS

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RECIPIENTS

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1 PURPOSE OF THIS MEMO

The purpose of this memo is to present the findings of Egis NZ's assessment of potential pedestrian crossing locations on Ohiro Road, undertaken in response to Wellington City Council's request dated 27 November 2025. The assessment supports the Brooklyn Hill Low-Cost Cycleway Design project and aims to determine the most appropriate crossing types and locations to improve safety and accessibility for pedestrians within the project area.

This memo summarises the results of speed surveys, pedestrian behaviour observations, sight-distance assessments, and crash history analysis. It evaluates the suitability of one versus two pedestrian crossings and identifies preferred crossing locations that balance safety, visibility, user desire lines, and the operational requirements of a heavy-vehicle and bus route. Recommendations are provided to inform WCC's design development and coordination with the 2025/26 reseal programme.

2 SPEED SURVEY RESULTS

An on-site speed survey was undertaken during a site visit conducted on Thursday 11th of December, between 17:00 and 18:30. A total of 139 speed measurements were recorded across four locations, with a minimum of 30 measurements taken at each location. Table 1 below gives a summary of these results, at locations shown in Figure 1.

As per Wellington City Council's traffic surveys conducted in 2024, traffic volumes are approximately 12,000 vpd with ~6% heavy vehicles along this route.

	Crossing 1 Southbound	Crossing 1 Northbound	Crossing 2 Southbound	Crossing 2 Northbound
85th Percentile (km/h)	38.5	42.2	40.1	42
Mean (km/h)	33.4	38.4	35.7	38.8
Median (km/h)	33	38	35	39

TABLE 1. SUMMARY OF SPEED SURVEY RESULTS



FIGURE 1. SPEED SURVEY LOCATIONS

3 PEDESTRIAN BEHAVIOUR

Pedestrian behaviour was observed during the site visit conducted on Thursday 11th of December, between 17:00 and 18:30. At this location, pedestrians were primarily observed disembarking from the bus at the bus stop in the southbound lane. During the site visit, approximately 25-50% of people disembarking the bus at this location crossed the road to go up Tanera Crescent (see Figure 2). At peak, approximately 10-20 people were disembarking the bus at this stop.

A morning peak site visit was not undertaken, though it would be reasonable to assume that people disembarking the bus at this location, would likely also board at this location. This would mean there is also a high proportion of passengers crossing Ohiro Road at this location in the morning as well.

The existing staged non-priority crossing is also the currently designated route to access the footpath along Brooklyn Road, as the footpath on the eastern side of Ohiro Road does not continue onto Brooklyn Road.

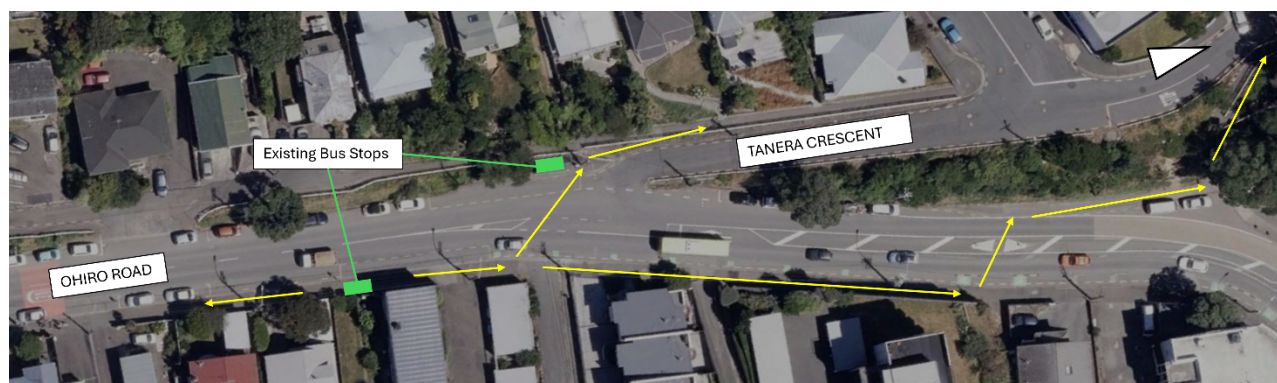


FIGURE 2. OBSERVED PEDESTRIAN MOVEMENTS

4 OHIRO ROAD CRASH ANALYSIS

A crash analysis was conducted using NZTA's Crash Analysis System (CAS) on 16th of January 2026 for the period 2021–2026. In the vicinity of the crossing locations, one crash occurred at the Tanera Crescent/Ohiro Road intersection (minor injury), and 7 at the Ohiro Road/Brooklyn Road intersection (2 non-injury, 5 minor injury). One of these crashes, at the Brooklyn Road intersection, involved a pedestrian stepping into the path of a vehicle without looking. Other crashes primarily involved drivers failing to give way at intersections, most commonly to cyclists/motorcyclists, along with a couple of other random isolated incidents.

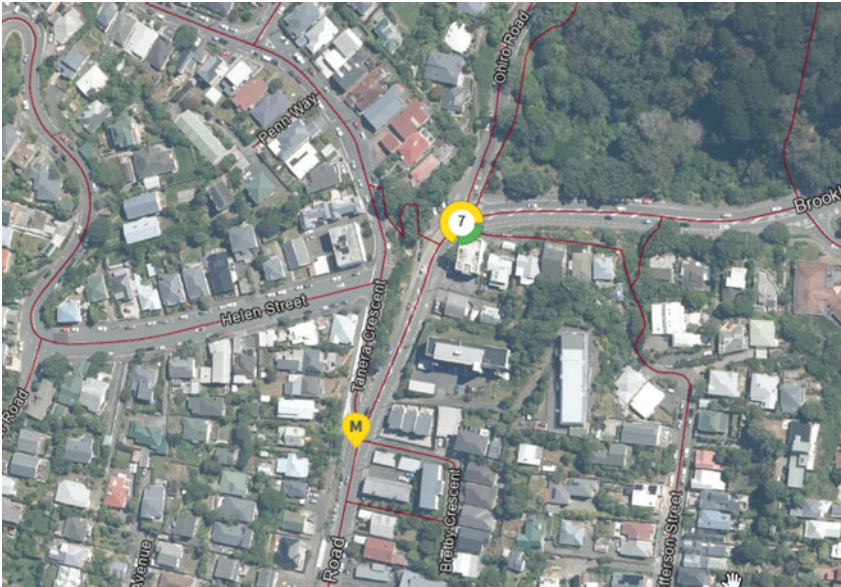


FIGURE 3. CRASH MAP (NZTA CAS, 2021-2026)

5 CURRENT DESIGN COMPLIANCE

The latest design, as per the IFC drawing set, '*BIL-1003220-Brooklyn-250917-IFC_0.pdf*' dated 17/09/2025, includes two flush crossings, crossing 1 in front of 143 Ohiro Road, and crossing 2 in front of 159 Ohiro Road.

Crossing 1 is a staged crossing with a median island. The crossing over the southern approach (northbound lane with sharrows) has a crossing length of 4.8 m. The crossing over the northern approach (southbound lane with separated cycle lane) has a crossing length of 6.7 m.

Crossing 2 is a full width crossing, with a width of 11.9 m, including separated cycle lanes in both directions.

For pedestrian facilities, NZTA's *Pedestrian Network Guidance 3. Design – 3.4. Crossings V1.1* stipulates two sight distance requirements (section 3.4.3d):

- Approach sight distance (ASD) ensures that approaching drivers are aware of the presence of a crossing.
 - ASD should be provided at all formal, marked pedestrian crossings.
- Crossing sight distance (CSD) ensures that people about to cross can see approaching traffic in sufficient time to judge a safe gap and cross the roadway. It also ensures a clear view for approaching drivers to see people waiting to cross the road.
 - CSD should be provided at crossings, including:
 - where the pedestrian does not have the priority, or
 - where the pedestrian has the priority and must be seen by approaching drivers/riders who must give way (e.g. a zebra crossing).

Table 2 gives a summary of calculated ASD and CSD, against available ASD and CSD for the current design. As shown, CSD is not achieved for the southbound direction at both crossings.

- CSD at Crossing 1 in the southbound direction is limited by the horizontal curve, and by the building on the inside of this curve, near the Ohiro Road/Brooklyn Road intersection. Available CSD is short by 9 m.
- CSD at Crossing 2 in the southbound direction is limited by the vertical crest curve 30m north of the crossing, at the Ohiro Road/Tanera Crescent intersection, and steep uphill gradient (~8%). Available CSD is short by 55 m.

	ASD (m)	Available ASD (m)	CSD (m)	Available CSD (m)
Crossing 1 Southbound	37	51	62	51
Crossing 1 Northbound	50	56	48	72
Crossing 2 Southbound	40	45	111	56
Crossing 2 Northbound	43	>130	116	>130

TABLE 2. SUMMARY OF CROSSING DESIGN COMPLIANCE

CSD: Assumed walking speed 1.2 m/s, vehicle speed as per Table 1

ASD: Assumed reaction time 2.0 s; coefficient of deceleration 0.36, vehicle speed as per Table 1

6 EVALUATION OF CROSSING TYPES

6.1 One Versus Two Crossings

Site observations identified a consistently high number of pedestrians crossing Ohiro Road at the southbound bus stop. A formal crossing at this location is therefore required to support existing demand and improve safety.

A crossing near Crossing Location 1 is also necessary to provide safe access to the walkway leading to Tanera Crescent and to the footpath along Brooklyn Road. Although the existing staged non-priority crossing provides basic connectivity, it does not achieve the required Crossing Sight Distance (CSD) as outlined in Table 2.

Based on observed movements and connectivity requirements, two crossings—regardless of whether priority or non-priority—are recommended.

6.2 Proposed Options Versus Existing Conditions

■ Crossing 1

The current facility at this location is a staged non-priority crossing. ASD is met in both directions, and CSD is met in the northbound lane only. CSD is not met in the southbound direction due to the horizontal curve and adjacent development.

The proposed priority crossing represents an improvement over existing conditions. Because drivers must give way, pedestrians are no longer required to clear the road before vehicles arrive, reducing the operational risk associated with the current shortfall in southbound CSD.

■ Crossing 2

No existing crossing is present at this location. Pedestrians currently cross the full road width in a single movement along a strong desire line. Sightlines are insufficient for safe crossing due to limited visibility of southbound traffic as highlighted by the deficit of CSD in the southbound lane at this location.

A new priority crossing will improve safety by reducing reliance on CSD, as drivers are required to yield to pedestrians. ASD is adequate in both directions, providing sufficient time for drivers to detect the crossing and decelerate.

6.3 Alternative Crossing Options

■ Crossing 1

The proposed design retains the existing traffic island location to minimise cost, construction impacts, and the need for substantial footpath realignment on the western side of Ohiro Road.

Shifting the crossing south would marginally improve southbound CSD but would introduce significant cost and disruption for limited benefit.

Relocating the crossing further north is not recommended as it would worsen the CSD deficit and require restricting nearby driveways to left-in/left-out movements, likely resulting in resident opposition.

Relocation to the other side of the Ohiro Road/Brooklyn Road corner was considered, however, desire-line crossings would likely continue to occur at the existing location, reducing its effectiveness. Additionally, this would require further investment to extend the footpath along Brooklyn Road, likely requiring a retaining wall.

While minor adjustments to the current design could marginally improve sight visibility, the expected gains in CSD would be minimal and do not justify the associated construction cost or disruption.

■ Crossing 2

The proposed location is in place of the current southbound bus stop outside 159 Ohiro Road. This aligns with the pedestrian desire-lines observed on site, while maintaining adequate distance from the Tanera Crescent/Ohiro Road intersection to allow turning vehicles to join the traffic lane safely before reaching the crossing.

Movement further north is not feasible due to the bus stop and nearby driveways. Relocation further south is possible but would require further footpath extensions and associated retaining structures, increasing costs for limited benefit to CSD and potentially encouraging unsafe desire-line crossings.

As with Crossing 1, while minor adjustments to the current design could marginally improve sight visibility, the expected gains in CSD would be minimal and do not justify the associated construction cost or disruption.

6.4 Risk Mitigation Measures

■ Lighting

Neither location has any directly adjacent streetlighting, the current design includes new streetlighting for both crossings.

■ Signage

Zebra crossing signage is included in the current design on all approaches to the proposed crossings. Additional signage is also incorporated on the southbound approach to crossing 1 to reduce the risks associated with the CSD deficit.

Belisha disks will also increase the visibility of crossings, in particular for crossing 2 where the CSD deficit is caused by the vertical geometry of the road.

■ Surfacing

Crossing 1 is located on a steep downhill (~8% grade). To address this, the current design also includes high friction surfacing in the form of calcined bauxite for the northbound downhill lane. This aims to reduce braking distance on the steep downhill approach.

No other crossing approaches have the need for high friction surfacing. Since this work is being aligned with WCC resurfacing programme, other approaches should have sufficient skid resistance with new surfacing being constructed.

■ Speed Reduction Measures

Two design options—raised and flush pedestrian crossings—were assessed during the design phase. Flush crossings were preferred due to Ohiro Road's function as a heavy-vehicle route to the landfill and a bus route. Lack of raised crossings does increase the risk of pedestrians crossing/waiting to cross not being noticed by drivers approaching at excessive speeds. This is exacerbated in this scenario by the deficit of CSD on some approaches.

To mitigate this, speed cushions are recommended at minimum, on both southbound approaches to reduce the speeds of light vehicles and increase driver awareness while allowing heavy vehicles and cyclists to pass unimpeded. These should be positioned such that they do not interfere with intersection or driveway movements.

7 RECCOMENDATIONS

As outlined above, Egis' recommendation for the two crossings is to maintain the current proposed design of two flush priority crossings outside 143 and 159 Ohiro Road. Egis also proposes the addition of speed cushions on the southbound approaches to both crossings, to reduce the risks associated with the CSD deficit.