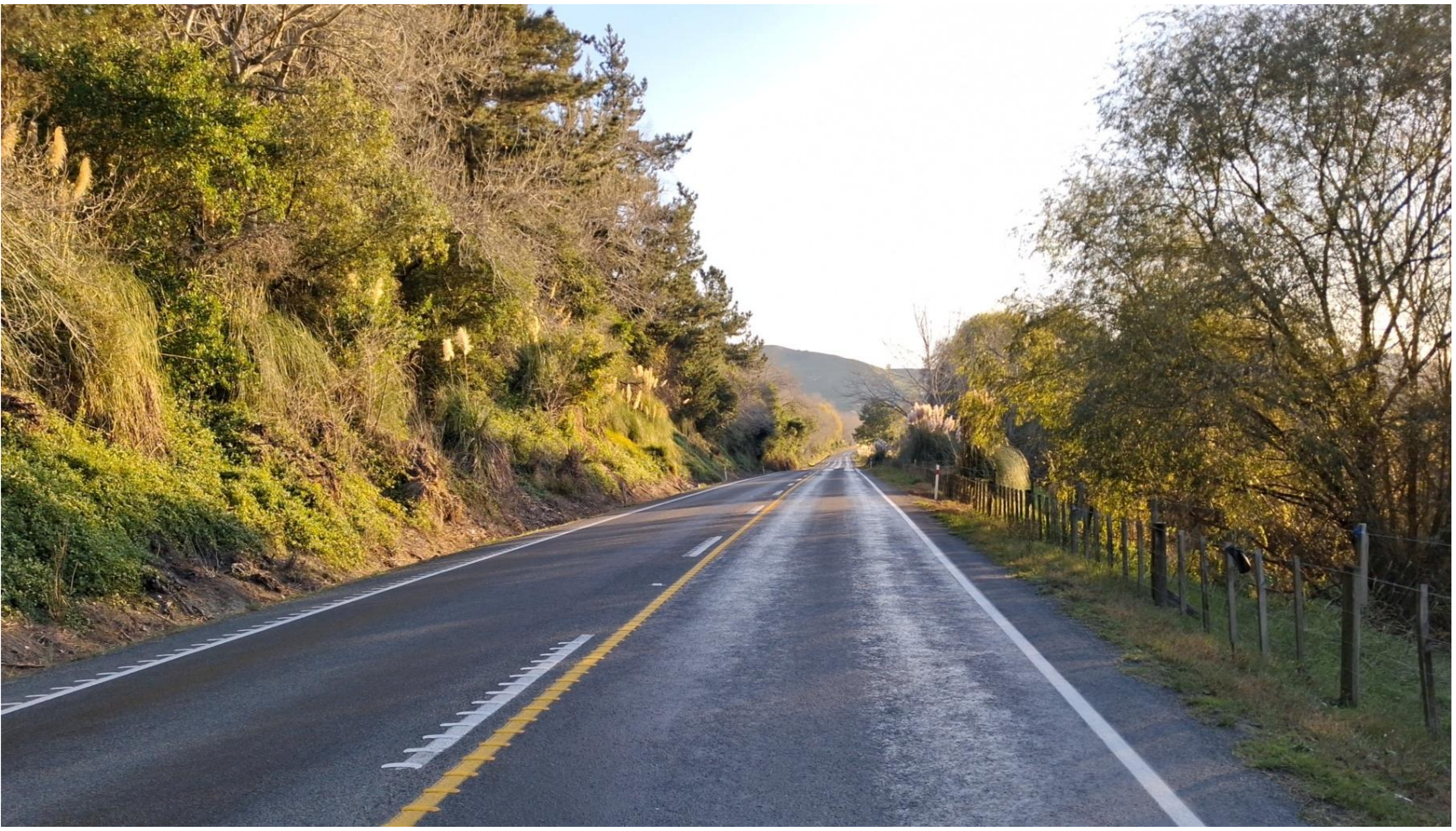

## Te Karaka SH2 Road Raising

# Preliminary Design Stage Safe System Audit Report

## Prepared for Gisborne District Council

**REVISION 0 - SEPTEMBER 2026**

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# 1 Safe System Auditing for Transport Projects

This Preliminary Design Stage Safe System Audit (SSA) report has been prepared for the Gisborne District Council for the Te Karaka SH2 Road Raising Project.

A Safe System audit (SSA) is an independent review of a future transport project to identify any safety concerns that may affect the safety performance and alignment to a Safe System. The audit team considers the safety of all road users and qualitatively reports on road safety issues or opportunities for safety improvement.

Therefore, a Safe System audit is a formal examination of a transport project, or any type of project that affects road users (including cyclists, pedestrians, mobility impaired etc.), carried out by an independent competent team that identifies and documents Safe System alignment and road safety concerns.

A Safe System audit is intended to help deliver a safe road system and is not a review of compliance with standards.

## 1.1 Safe System Audit Procedure

The primary objective of a Safe System audit is to deliver a project that achieves an outcome consistent with the Safe System approach, that is, minimisation of death and serious injury. The Safe System audit is a safety review used to identify all areas of a project that are inconsistent with a safe system and bring those concerns to the attention of the client so that the client can make a value judgement as to appropriate action(s) based on the risk guidance provided by the safety audit team.

The key objective of a Safe System audit is summarised as follows:

To deliver completed projects contributing to a Safe System by identifying and ranking potential safety concerns for all road users and others affected by a transport project.

A Safe System audit should be undertaken at project milestones such as:

- Concept Stage (part of Business Case);
- Scheme or Preliminary Design Stage (part of Pre-Implementation);
- Detailed Design Stage (Pre-implementation / Implementation); and
- Pre-Opening / Post-Construction Stage (Implementation / Post-Implementation).

A Safe System audit is not intended as a technical or financial audit and does not substitute for a design check on standards or guidelines.

Any recommended treatment of an identified safety concern is intended to be indicative only and to focus the design team on the type of improvements that might be appropriate. It is not intended to be prescriptive, and other ways of improving road safety or operational problems identified should also be considered.

Following the procedures set down in the "NZ Transport Agency Waka Kotahi Safe System Audit Guidelines," the audit report should be submitted to the client, who will instruct the design team to respond. The design team should consider the report and comment to the client on each of any concerns identified, including their cost implications where appropriate, and make a recommendation to either accept or reject the audit report recommendation.

For each audit team's recommendation that is accepted, the client shall make the final decision and brief the design team to make the necessary changes and/or additions. As a result of this instruction, the design team shall action the approved amendments. The client may involve a safety engineer to provide commentary to aid the decision.

Decision tracking is an important part of the Safe System audit process. A decision tracking table is embedded into the report format at the end of each set of recommendations to be completed by the design team, safety engineer and client for each issue, documenting the design team's response, client decision and the action taken.

A copy of the report, including the design team's response to the client and the client's decision on each recommendation, shall be given to the Safe System audit team leader as part of the important feedback loop. The Safe System audit team leader is to disseminate this to team members.

## 1.2 The Safe System

A Safe System is a forgiving road system that considers human fallibility and vulnerability. Under a Safe System, the whole transport system is designed to protect people from exposure to high crash forces that lead to death and serious injury (DSI).

It is recognised that people are vulnerable, and the key crash types and associated crash forces that people can be exposed to lead to death or serious injuries. A Safe System manages crash forces within these limits to protect people.

The audit team is required to understand the human tolerance to force and identify where these boundary conditions are likely to be exceeded when reviewing the transport project.

## 1.3 Report Format

The potential road safety problems identified have been ranked as follows:

- The expected crash probability is qualitatively assessed based on expected exposure (how many road users are to be exposed to a safety issue) and the likelihood of a crash resulting from the presence of the issue;

- The severity of a crash outcome is qualitatively assessed based on factors such as expected impact speeds, type of collision, angle of collision and type of vehicle involved.

The key crash types and respective impact speed thresholds are shown below in Figure 1.3-1.

| Key crash type | Impact speed threshold |
|---|---|
| Car/pedestrian/cyclist  | 20-30 km/h |
| Car/motorcyclist  | 20-30 km/h |
| Car/tree or pole (non-frangible objects)  | 30-40 km/h |
| Car/car (side-impact, intersections)  | 50 km/h |
| Car/car (head-on, rear-end)  | 70 km/h |

**Figure 1.3-1 – Key crash types and impact speed thresholds**

Reference to historic crash rates or other research for similar elements of projects, or projects as a whole, can be drawn if considered appropriate to assist in understanding the likely crash types, frequency and likely severity that may result from a particular concern.

The frequency and severity ratings are used in conjunction to develop a combined qualitative risk ranking for each safety issue using the Safety Concern Risk Rating Matrix below (refer to Figure 1.3-2). The qualitative assessment requires professional judgment and a wide range of experience in projects of all sizes and locations.

| | | Severity outcome | | | | |
|---|---|---|---|---|---|---|
| | | **Non-injury** | **Minor** | | **Serious** | **Fatal** |
| | | Property damage only (PDO) | Injury which is not 'serious' but requires first aid, or which causes discomfort or pain to the person injured. | **Safe System injury threshold** | Injury (fracture, concussion, severe cuts or other injury) requiring medical treatment or removal to and retention in hospital. | A death occurring as the result of injuries sustained in a road crash within 30 days of the crash. |
| **Probability of a crash** | **Very likely** | Minor | Moderate | | Serious | Serious |
| | **Likely** | Minor | Moderate | | Serious | Serious |
| | **Unlikely** | Minor | Minor | | Significant | Serious |
| | **Very unlikely** | Minor | Minor | | Significant | Significant |

**Figure 1.3-2 - Safety Concern Risk Rating Matrix**

## 1.4 Disclaimer

The findings and recommendations in this report are based on an examination of available relevant plans, the specified road and its environs, and the opinions of the SSA team. However, it must be recognised that eliminating safety concerns cannot be guaranteed since no road can be regarded as absolutely safe, and no warranty is implied that all safety issues have been identified in this report. Safe system audits do not constitute a design review nor an assessment of standards concerning engineering or planning documents.

Readers are urged to seek specific technical advice on matters raised and not rely solely on the report.

While every effort has been made to ensure the report's accuracy, it is made available on the basis that anyone relying on it does so at their own risk without any liability to the safety audit team or their organisations.

# 2 Safe System Audit Details

## 2.1 Type of Audit

This is a Preliminary Design Stage Safe System Audit (SSA) for the Te Karaka SH2 Road Raising Project.

A key driver of the SSA is the identification of hazards or deficiencies that can potentially result in serious and fatal crashes.

As agreed with the client, a Safe System Assessment Matrix / Safe System Assessment has not been prepared for this project. This reflects the nature of the scheme and the limited opportunity at this stage to assess materially different scheme options.

## 2.2 The Safe System Audit Team

The safe system audit was carried out following the Waka Kotahi NZ Transport Agency Safe System Audit Guidelines, Road to Zero Edition – August 2022 by:

- Matheus Boaretto, Urban Connection Limited, Hawke's Bay – Team leader
- Steve James, Urban Connection Limited, Wellington – Team member

## 2.3 Meetings and Site Inspections

The Safe System Audit Team (SSAT) reviewed the drawings on 21 April 2026. A full daytime site inspection was carried out on 29 April 2026. A nighttime inspection was not carried out.

# 3 Project Description

## 3.1 Project Background and Objective

The Te Karaka SH2 Road Raising project is associated with proposed stopbank works in the Te Karaka area. The project has been developed to assess road raising requirements where the proposed stopbank upgrade would intersect with the existing road network.

The current scheme considers three locations, being two sites on State Highway 2 (SH2) and one site on Rangatira Road. The preliminary design work has been prepared to understand the extent of road raising likely to be required to tie the roads into the proposed stopbank levels, and to identify the main geometric, property, drainage and access implications arising from those changes.

## 3.2 Existing Conditions and Context

The audit area comprises three separate locations (refer to Figure 3.2-1) in and around Te Karaka, Gisborne:

- Site 01: SH2 near RP 406/8.640
- Site 02: SH2 near RP 416/1.560
- Site 03: Rangatira Road near RP 140


**Figure 3.2-1 – Site locations**

SH2 through the audit area is a rural two-lane state highway classified as arterial under the One-Network Road Classification (ONRC). The posted speed limit is 100 km/h. Daily traffic volumes range from 1,131 to 1,316 vehicles per day (vpd) as per MobileRoad 2023 estimate. The road cross-section comprises two traffic lanes with narrow shoulders.

Rangatira Road is a low-volume local road with a posted speed limit of 40 km/h through the audit site. Daily traffic volumes of 102 vpd are estimated by MobileRoad 2021. The road's cross-section is constrained, with a narrow single lane carriageway on the audit site that connects to the also single lane Rangatira Bridge.

## 3.3 Proposed Works

The proposed works involve raising the road profile at three locations to align with the levels required by the proposed stopbank upgrade.

At Site 01 and Site 02, the works comprise localised raising of SH2 using revised vertical alignment, associated earthworks, tie-ins to the existing carriageway, and consideration of impacts on drainage structures, side drains, accesses, property boundaries and roadside features.

At Site 03, the works comprise raising Rangatira Road between the bridge and Cliff Road to tie into the proposed stopbank level, while working within the constraints created by the existing bridge, adjacent properties, access requirements and the local horizontal alignment.

## 3.4 Supplied Documents

The SSA team reviewed the following documents for the Te Karaka SH2 Road Raising project:

**Concept Design Report**

- 2-S5743.00 Te Karaka SH2 Road Raising – Concept Design Report, dated 31 October 2025, Revision B

**Drawing Package**

- 2-S5743.00_C01-06(C) – Te Karaka SH2 Road Raising drawing set, comprising 6 sheets

# 4 Safety Concerns

## 4.1 Crash History

The crash history for the road raising project was assessed to assist the SSA team in understanding the road's safety performance. A 10-year CAS assessment was undertaken from 2016 to 2026 to date. The crash location map is shown in Figure 4.1-1, and the summary of the crashes is presented in Table 4.1.1.


**Figure 4.1-1: Extent of safety assessment and crash locations**

**Table 4.1.1: Crash Summary 2016 – 2026 (to date)**

<table>
<tr><th>Crash<br>Severity</th><th colspan="2">Frequency</th><th colspan="2">Casualties</th></tr>
<tr><td>Fatal</td><td colspan="2">0</td><td colspan="2">0</td></tr>
<tr><td>Serious</td><td colspan="2">2</td><td colspan="2">5</td></tr>
<tr><td>Minor Injury</td><td colspan="2">1</td><td colspan="2">2</td></tr>
<tr><td>Non-injury</td><td colspan="2">2</td><td colspan="2">-</td></tr>
<tr><td>Total</td><td colspan="2">5</td><td colspan="2">7</td></tr>
<tr><th colspan="2">Crash Type</th><th colspan="3">Environment</th></tr>
<tr><td>Overtaking crashes</td><td>2 (40%)</td><td rowspan="2">Natural light conditions</td><td>Light/overcast</td><td>2 (40%)</td></tr>
<tr><td>Straight road lost control/head-on</td><td>2 (20%)</td><td>Dark/twilight</td><td>3 (60%)</td></tr>
<tr><td>Bend lost control/head-on</td><td>1 (20%)</td><td rowspan="3">Road conditions</td><td>Dry</td><td>4 (80%)</td></tr>
<tr><td>Rear-end/obstruction</td><td>-</td><td>Wet</td><td>1 (20%)</td></tr>
<tr><td>Crossing/turning</td><td>-</td><td>Ice or Snow</td><td>-</td></tr>
<tr><td>Others</td><td>-</td><th colspan="3">Intersection/midblock</th></tr>
<tr><td>Involved motorcyclists</td><td>-</td><td colspan="2">Intersection</td><td>-</td></tr>
<tr><td>Involved pedestrians/cyclists</td><td>-</td><td colspan="2">Midblock</td><td>5 (100%)</td></tr>
</table>

Overall, although in relative low frequency, the crash records indicate a loss-of-control crash type pattern on the sites subject to the proposed road raising.

## 4.2 Summary of Findings

The frequency of risk rankings associated with this Safe System Audit is provided below, with the detailed findings to follow. This summary illustrates the degree of consideration that should be given when working through the findings.

**Table 4.2.1: Summary of Findings**

| Serious | Significant | Moderate | Minor | Comment | Total |
|---|---|---|---|---|---|
| 0 | 2 | 0 | 0 | 4 | 6 |

# 5 Safety Issues

## 5.1 General Issues

### 5.1.1 Roadside Hazards Significant

At both SH2 sites, the proposed road raising will result in a roadside environment that provides limited opportunity for drivers to recover if they leave the carriageway.

The typical cross-section indicates 0.5 m shoulders and a roadside batter arrangement comprising a short 1.95 m wide 1:4 slope, followed by a 1:2 slope. While the initial 1:4 batter may provide some limited traversable width, it is not sufficient to function as a forgiving roadside. The narrow shoulder further reduces the available recovery area. In combination, this means an errant vehicle may have little opportunity to regain control before encountering a steeper slope that increases the potential for loss of control, rollover, or descent into the roadside.

This is of particular relevance at Site 01, where a drain / ditch with a noticeable drop-off is present on the north side of the road, together with rigid roadside objects including trees. A curved is also present along this site, which in general terms results in a higher likelihood of loss of control crashes. At Site 02, non-frangible power poles are present near the road, predominantly on the southern side, although one is also located on the northern side. While most of these poles appear to sit outside the road reserve, two are relatively close to the carriageway. In these locations, the proposed cross-section may not only provide limited recovery space, but may also direct errant vehicles toward existing roadside hazards. The current preliminary design information does not clearly show how these hazards would be addressed as part of the works.

Of relevance, SH2 sites sit within a high-speed rural environment, and the existing crash history includes loss of control crashes some with high severity outcomes. While the affected lengths are relatively localised, an unforgiving roadside at these locations may increase the severity of outcome where a vehicle departs the carriageway. The combination of narrow shoulder width, limited traversable batter width, steeper outer slopes, and existing roadside hazards may therefore provide a reduced margin for driver error than would be desirable on a 100 km/h state highway.

It is acknowledged that the proposal is not entirely dissimilar to the existing cross-section and roadside environment. However, the raised road levels would increase the height of roadside drops relative to the existing situation, which may increase crash severity if a vehicle leaves the carriageway. There remains a risk that the proposed works could introduce or retain a roadside condition in which some errant vehicles would have limited opportunity to recover before encountering a rollover hazard or rigid roadside object.

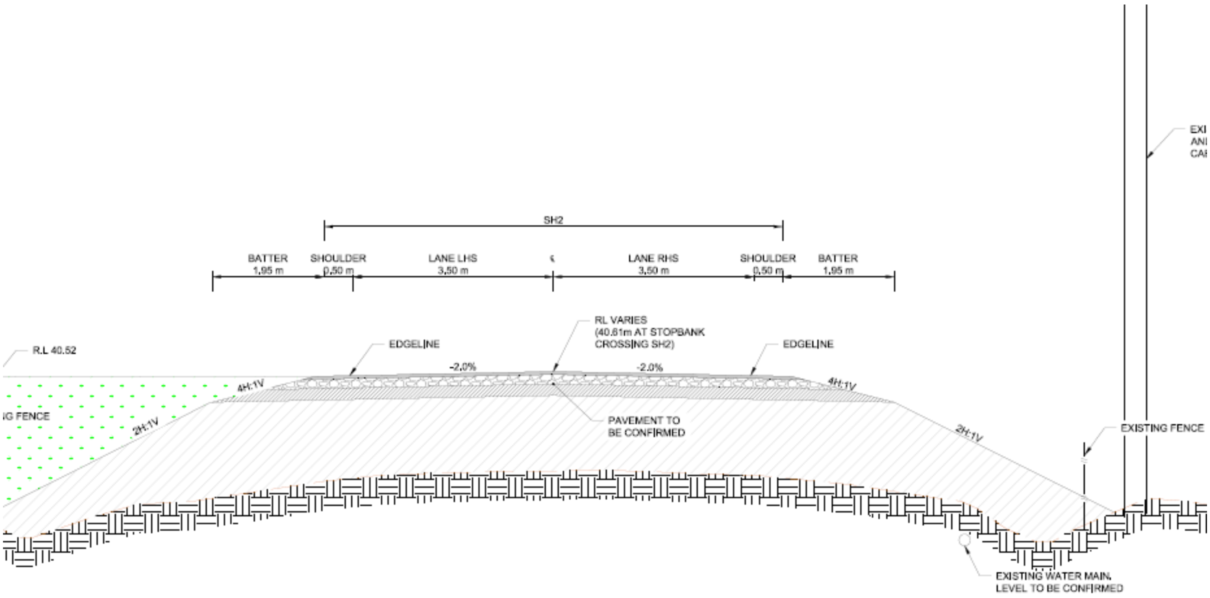


**Figure 5.1-1: Typical Cross-section on SH2**


**Figure 5.1-2: Power poles on the south side of SH2 (Site 2)**


**Figure 5.1-3: Drop-off into ditch / drain on SH2 (Site 1)**

***Recommendations:***

1. *Identify roadside hazards within the project extent and confirm whether these should be removed, relocated, or protected.*
2. *Review the proposed cross-section at both SH2 sites, including whether additional recovery width can be achieved through shoulder widening and / or flatter roadside slopes, or alternatively whether roadside barrier protection is required.*

| *Probability Rating:*<br><br>***The probability of a crash is* Unlikely** | *Severity Outcome Rating:*<br><br>***Crashes are likely to be* Serious** |
|---|---|
| ***Design Team Response:*** *Noted. The designer accepts that the road raising increases the height difference from the new road to the bottom of the batter slope. Designer to review the recommendations to test the feasibility for shoulder widening, noting that this may encroach into private land. Notwithstanding this the designer will also investigate the inclusion of a safety barrier. This work is to be undertaken as part of the detailed design phase.* | |
| ***Safety Engineer:*** ***Jamie Gallacher – GDC Major Projects Manager.*** | |
| ***Client Decision:*** *Client preference is for inclusion of a safety barrier as suggested by the design team at WSP.* | |
| ***Action Taken:*** ***Designer to include a safety barrier.*** | |

### 5.1.2 Approach to the Rangatira Bridge — Significant

The proposed approach to Rangatira Bridge is likely to provide limited opportunity for drivers to safely respond when encountering opposing traffic near the bridge.

The proposed road raising adjacent to the bridge introduces a crest in the approach to the stopbank crossing, which reduces forward visibility toward the bridge for westbound traffic and reduces the ability of eastbound drivers who have just crossed the bridge to see approaching westbound vehicles compared to the existing situation. This reduction in visibility is not the concern in isolation given the low operating speeds in this area.

The more important issue is the way this reduced visibility combines with the proposed bridge approach cross-section. The carriageway is proposed to be approximately 3.3 m wide, with 1.65 m lanes, 1 m verges on either side, and steep 1:2 embankment slopes beyond. This means that when opposing vehicles meet on the approach to the bridge, there is limited width available for manoeuvring and no clearly formed passing area to enable one vehicle to move aside in a controlled manner, particularly if one or more heavy vehicles are involved. While the 1 m verge may provide some nominal space for evasive tracking, it is unformed and sits immediately adjacent to a steep drop. As such, it would provide only limited practical refuge, may deteriorate over time if repeatedly used by vehicles, and may bring vehicles uncomfortably close to the edge hazard.

The road is also raised by up to approximately 3.5 m near its highest point, effectively increasing the drop-off and severity risk in the immediate vicinity of the bridge relative to the existing situation. At this stage, no barrier protection or other specific roadside treatment is shown to manage that increased risk.

As a result, there remains a risk that drivers meeting near the bridge approach may be required to make late or constrained manoeuvres within a narrow and unforgiving environment. If a vehicle departs the carriageway, the steep embankment slopes and unprotected drop-offs may increase the likelihood of rollover or a more severe run-off-road outcome. The single-lane bridge arrangement and priority-controlled operation further increase the importance of providing a clear and forgiving approach where drivers can see, assess and respond safely to the presence of other vehicles.

While visibility toward the bridge is currently restricted in practice by vegetation, review of the existing layout suggests that when vegetation maintenance is undertaken, approaching drivers are able to observe the bridge earlier and use an approximately 25 m long, 3 m wide sealed area within the frontage of properties 9 and 11 to pass one another. The proposal does not retain an equivalent passing provision, and therefore may result in a more constrained environment for opposing vehicles than exists currently.

This risk is moderated by the very low traffic volumes and low speed environment, meaning such conflicts are expected to occur infrequently. However, when they do occur, the consequences may be elevated by the narrow approach width, reduced visibility, steeper and higher drop-offs, and the absence of roadside protection.

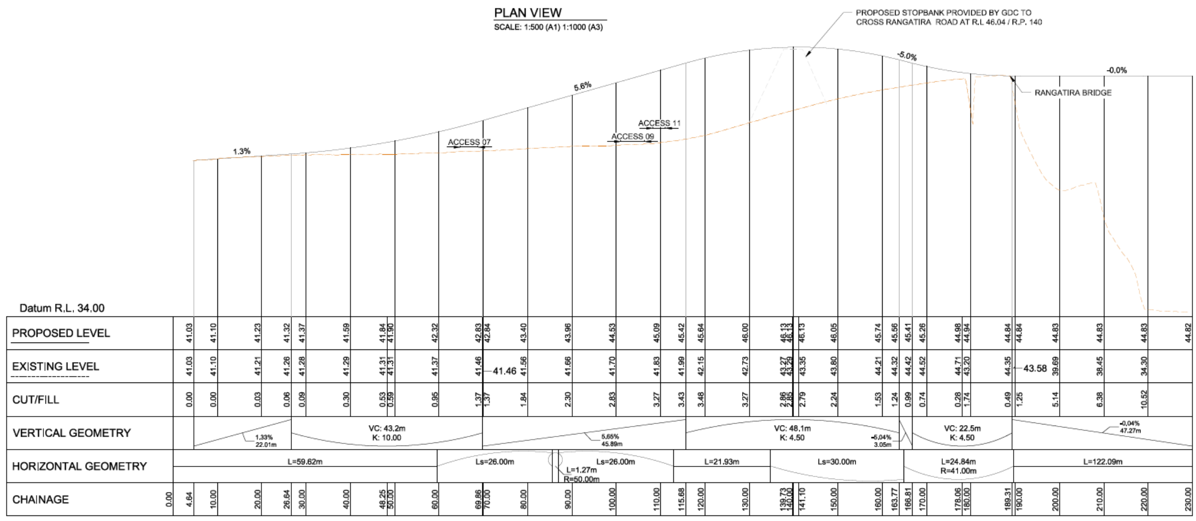


**Figure 5.1-4: Vertical Alignment on the approach to the Rangatira Bridge**

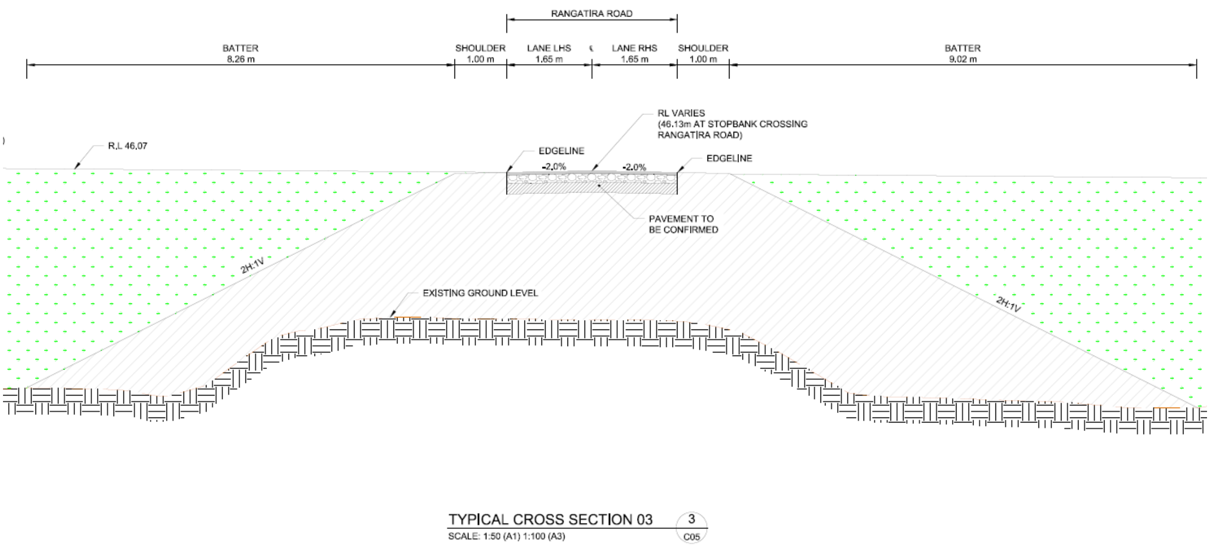


**Figure 5.1-5: Proposed Cross-section on the approach to the Rangatira Bridge**

***Recommendations:***

1. *Review the proposed cross-section and verge treatment to ensure that vehicles can safely manoeuvre when encountering opposing traffic on the approach to the bridge.*
2. *Review the raised embankment roadside treatment near the bridge, including whether barrier protection, flatter slopes or other mitigation is required to address the increased drop-off hazard.*
3. *Confirm that the final bridge approach arrangement provides a clear, legible and safe operating environment for drivers approaching from both directions.*

| ***Probability Rating:*** <br><br> ***The probability of a crash is* Very Unlikely** | ***Severity Outcome Rating:*** <br><br> ***Crashes are likely to be* Serious** |
|---|---|
| ***Design Team Response:*** *Agree with SAT. The following actions are suggested to be undertaken during detailed design. Response to point 1 – Designer to test opportunity to widen lanes and shoulder on horizontal curve to allow more forgiveness when two vehicles pass one another. Response to point 2 – Designer to include safety barriers to improve delineation of the horizontal curve and to prevent vehicles from leaving the road. Response to point 3 – Designer to include appropriate advanced warning and curve warning signage to alert drivers.* | |
| ***Safety Engineer:*** | ***Jamie Gallacher – GDC Major Projects Manager.*** |
| ***Client Decision:*** | *Agree with the response from the Design Team at WSP.* |
| ***Action Taken:*** | ***Designer to include within Detailed Design phase.*** |

### 5.1.3 Road markings and signage — Comment

No road marking or signage drawings were provided at this stage, so it is unclear how these elements are intended to be addressed as part of the works. This is understood to reflect the preliminary status of the design.

During the site visit, it was noted that audio tactile profiled markings are currently present at Site 01. These should be addressed as part of the detailed road marking design. It was also observed that a single chevron sign is currently provided on the curve at Site 01, whereas where chevron delineation is required, a series of signs would typically be expected rather than a single isolated sign.

More generally, the proposed road raising may affect the visibility and effectiveness of existing signs as road levels and vertical alignment change. This includes signs such as the existing curve warning sign with 75 km/h advisory speed at Site 02, and also the priority signs associated with the single-lane operation of Rangatira Bridge, where changes in road level may affect their visibility on approach. These matters should be assessed as the design develops.

At Site 01, the proposed vertical alignment may also result in a slight reduction in forward visibility compared with the existing situation. In that context, and noting the recorded crash history includes loss of control crashes involving overtaking manoeuvres, consideration should be given to whether no-passing lines are appropriate through this locality.

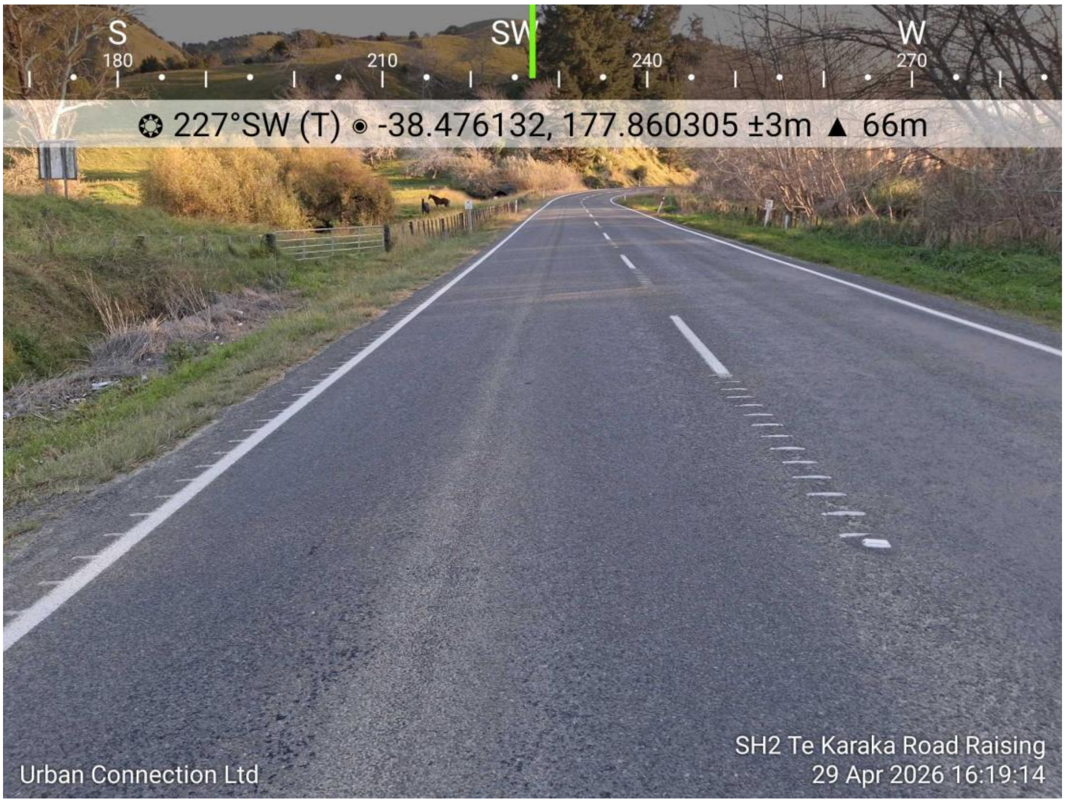


**Figure 5.1-6: Existing ATP markings on site 1**

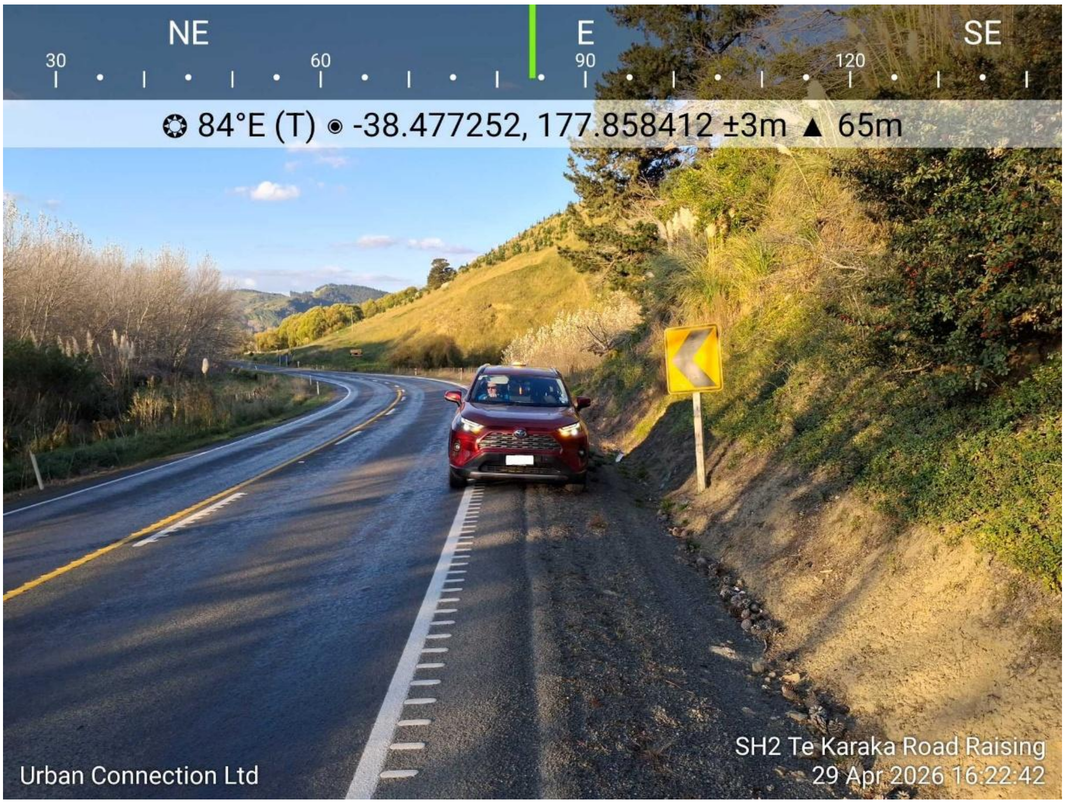

Figure 5.1-7: Single chevron sign on site 1


Figure 5.1-8: Existing curve and speed advisory sign on site 2

***Recommendations:***

1. *Review the required road markings and signage as part of the next design stage.*
2. *Confirm how existing audio tactile profiled markings would be reinstated or adjusted through the works.*
3. *Review curve delineation and sign provision and assess whether the proposed works affect the visibility of existing signs at both sites.*
4. *Consider whether no-passing lines should be provided.*

| ***Probability Rating:*** <br><br> ***The probability of a crash is*** **N/A** | | ***Severity Outcome Rating:*** <br><br> ***Crashes are likely to be*** **N/A** |
|---|---|---|
| ***Design Team Response:*** *Point 1 – Agree with SAT. Point 2 – Noted and designer to include specific details on how the ATP will merge with the existing road. Point 3 – Agree with SAT. Designer to revisit existing signage locations and amend to align with overall project intent. Point 4 – Agree with SAT. New road layout to include no passing lines due to the vertical alignment changes potentially impacting forward visibility.* | | |
| ***Safety Engineer:*** | ***Jamie Gallacher – GDC Major Projects Manager.*** | |
| ***Client Decision:*** | *Agree with response of the Design Team at WSP.* | |
| ***Action Taken:*** | ***Designer to consider in Detailed Design as noted.*** | |

### 5.1.4 Property access tie-ins **Comment**

A number of accessways and / or gates on SH2 and Rangatira Road are expected to be affected by the proposed road raising. At this stage, the preliminary design information does not clearly show how these access points would tie into the proposed road levels and whether they are to be sealed as part of this project.

This should be reviewed as the design develops to confirm that vehicle movements to and from these accessways and gates remain suitable. In particular, steepened access gradients or abrupt tie-ins may make entry and exit movements more difficult, and could delay safe vehicle entry and exit, particularly in wet or slippery conditions.



**Figure 5.1-9: Accessways and gates on SH2 and Rangatira Road**

***Recommendation:***

1. *Review all affected accessways and gates as part of the next design stage.*
2. *Confirm that tie-ins to the proposed road levels provide suitable gradients and vehicle manoeuvring conditions for safe entry and exit.*
3. *Confirm that all affected driveways are to be sealed.*

| ***Probability Rating:*** ***The probability of a crash is*** **N/A** | ***Severity Outcome Rating:*** ***Crashes are likely to be*** **N/A** |
|---|---|
| ***Design Team Response:*** *Noted. SAT may not be aware that some properties are to be relocated / demolished as part of the stopbank improvements and as such driveway access is not required. Designer to ensure that all properties that remain are appropriately designed to ensure they are fit for purpose and to no introduce safety risks.* | |
| ***Safety Engineer:*** | ***Jamie Gallacher – GDC Major Projects Manager.*** |
| ***Client Decision:*** | *Agree with response of the Design Team at WSP.* |
| ***Action Taken:*** | ***No Action.*** |

### 5.1.5 Utilities coordination **Comment**

The proposed road raising is expected to affect existing utilities at a number of locations, particularly overhead power lines, as the change in road level may reduce the available clearance relative to the existing situation. While this is acknowledged in parts of the design information, the current preliminary design does not clearly show how utility constraints would be addressed.

This is relevant on both SH2 and Rangatira Road, where overhead power infrastructure is present within or adjacent to the project area. It is important that the effect of the raised road profile on overhead clearances is reviewed as the design develops, including at locations where vehicles may track closer to the road edge or use adjacent verges and accessways. More generally, other existing services and utilities within the project extent should also be reviewed to confirm whether protection, adjustment, or relocation is required.

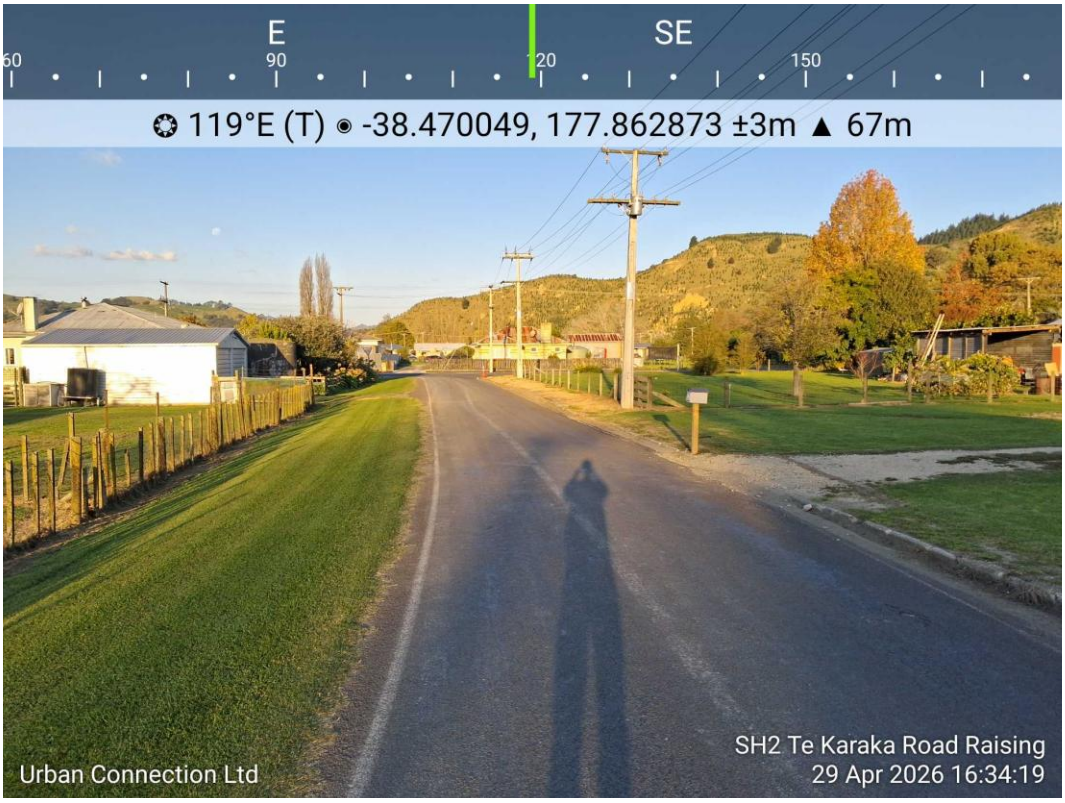


**Figure 5.1-10: Overhead power cables on Rangatira Road**


**Figure 5.1-11: Overhead power cables on SH2 (Site 2)**

***Recommendation:***

1. *Review the effect of the proposed road raising on overhead power line clearances throughout the project extent.*

| ***Probability Rating:*** <br><br> ***The probability of a crash is*** **N/A** | ***Severity Outcome Rating:*** <br><br> ***Crashes are likely to be*** **N/A** |
|---|---|
| ***Design Team Response:*** *Noted. Design team has taken into consideration the overhead powerlines, but has not considered the reduced clearance due to the raising of the road. Designer to revisit the clearance requirements and if not achievable, include provision for engaging with utility company to determine the appropriate remedial measure, most likely the reinstatement of a new powerpole and foundation once the new road has been constructed.* | |
| ***Safety Engineer:*** ***Jamie Gallacher – GDC Major Projects Manager.*** | |
| ***Client Decision:*** ***Agree with the response of the Design Team at WSP.*** | |
| ***Action Taken:*** ***Designer to allow for provisions as stated.*** | |

### 5.1.6 Other outstanding design information **Comment**

At this stage, some aspects of the design have not yet been provided or developed sufficiently to enable full review through this audit. These include broader elements such as drainage, cross-section detailing, and roadside protection / treatment.

This is understood to reflect the preliminary design status of the project. However, these elements will need to be resolved through later design stages to confirm that the final outcome functions safely and that the effects of the road raising are appropriately managed.

**Recommendations**

1. *Complete the outstanding design elements as the design develops.*
2. *Undertake a detailed design Safe System Audit once the design has been further developed.*

| ***Probability Rating:*** ***The probability of a crash is*** **N/A** | ***Severity Outcome Rating:*** ***Crashes are likely to be*** **N/A** |
|---|---|
| ***Design Team Response:*** *Agree with SAT.* | |
| ***Safety Engineer:*** | ***Jamie Gallacher – GDC Major Projects Manager.*** |
| ***Client Decision:*** | *Agree with SAT.* |
| ***Action Taken:*** | ***No Action*** |

# 6 Safe System Audit Statement

We certify that we have used the available plans and have examined the specified roads and their environment to identify features of the project we have been asked to look at that could be changed, removed, or modified in order to improve safety. The problems identified have been noted in this report.

Signed: Saved on .pdf copy Date: 5 May 2026

**Matheus Boaretto,** BEng (Civil), GradDipEng (Highways)
Senior Transport Engineer, Urban Connection Limited

Signed: (Signed on pdf) Date: 5 May 2026

**Steve James,** MET, CMEngNZ (Eng. Technician)
Principal Safety Engineer, Urban Connection Limited

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|---|---|---|
| ***Designer:*** | *Name: .......................................* | *Position: ..............................* |
| | *Signature……………………………* | *Date……………………………..* |
| ***Safety Engineer:*** | *Name: Jamie Gallacher* | *Position: GDC Major Projects Manager* |
| | *Signature:* | *Date 02 July 2026* |
| ***Project Manager:*** | *Name: Dean Foote* | *Position: GDC Rivers Engineer* |
| | *Signature:* | *Date: 02 July 2026* |
| ***Action Completed:*** | *Name: .......................................* | *Position: ..............................* |
| | *Signature……………………………..* | *Date……………………………..* |

***Project Manager to distribute audit report incorporating decision to the designer, Safety Audit Team Leader, Safety Engineer, and project file.***

***Date: …………………***

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Document Status CLIENT REVIEW

| **Revision** | **Prepared by:** | **Reviewed by:** | | **Approved by:** | | |
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| | | Name | Signature | Name | Signature | Date |
| 0 | Matheus Boaretto | Jonno Fletcher | Provided on pdf | Jonno Fletcher | Provided on pdf | 5/05/2026 |
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