Christchurch City Council

New Brighton Road Bus Stop Improvements
Scheme Safety Audit

December 2020

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1. Background

1.1 Safety Audit Procedure

This report has been prepared in response to Christchurch City Council's (CCC) request to carry out a Scheme Safety Audit for the proposed New Brighton Road Bus Stop Improvements project.

A road safety audit is a term used internationally to describe an independent review of a future road project to identify any safety concerns that may affect the safety performance. The audit team considers the safety of all road users and qualitatively reports on road safety issues or opportunities for safety improvement.

A road safety audit is therefore a formal examination of a road project, or any type of project which affects road users (including cyclists, pedestrians, mobility impaired etc.), carried out by an independent competent team who identify and document road safety concerns.

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

The primary objective of a road safety audit is to deliver a project that achieves an outcome consistent with Safer Journeys and the Safe System approach, that is, minimisation of death and serious injury. The road safety 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 in order 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 road safety audit is summarised as:

To deliver completed projects that contribute towards a safe road system that is increasingly free of death and serious injury by identifying and ranking potential safety concerns for all road users and others affected by a road project.

A road safety audit should desirably 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 road safety 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 designer on the type of improvements that might be appropriate. It is not intended to be prescriptive and other ways of improving the road safety or operational problems identified should also be considered.

In accordance with the procedures set down in the "*NZTA Road Safety Audit Procedures for Projects Guideline,* (Interim Release May 2013)", the audit report should be submitted to the client who will instruct the designer to respond. The designer 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 recommendation that is accepted, the client shall make the final decision and brief the designer to make the necessary changes and/or additions. As a result of this instruction the designer shall action the approved amendments. The client may involve a safety engineer to provide commentary to aid with the decision.

Decision tracking is an important part of the road safety 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 designer, safety engineer and client for each issue documenting the designer response, client decision (and asset manager's comments in the case where the client and asset manager are not one and the same) and action taken.

A copy of the report including the designer's response to the client and the client's decision on each recommendation shall be given to the road safety audit team leader as part of the important feedback loop. The road safety audit team leader will disseminate this to team members.

1.2 The Safety Audit Team (SAT)

The road safety audit was carried out in accordance with the "*NZTA Road Safety Audit Procedures for Projects Guideline",* (Interim Release May 2013) and also reference made to its earlier document (dated 2004).

The assessment team was as follows:

- Jacques Steyn, GHD Limited, Christchurch (Team leader); and
- Jack Needham, GHD Limited, Christchurch (Team member).

A site inspection was undertaken on Thursday, 1 August 2019 from 10 AM during morning period where the weather was fine and sunny. A night time audit was not undertaken.

1.3 Report Format

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

The expected crash frequency is qualitatively assessed on the basis of expected exposure (how many road users will 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 on the basis of factors such as expected speeds, type of collision, and type of vehicle involved.

Reference to historic crash rates or other research for similar elements of projects, or projects as a whole, have been drawn on where 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 together to develop a combined qualitative ranking for each safety issue using the Concern Assessment Rating Matrix in Table 1 below. The qualitative assessment requires professional judgement and a wide range of experience in projects of all sizes and locations.

Table 1 Concern Assessment Rating Matrix

Severity (likelihood of Death or Serious Injury Consequence)	Frequency (Probability of a Crash)			
	Frequent	Common	Occasional	Infrequent
Very Likely	Serious	Serious	Significant	Moderate
Likely	Serious	Significant	Moderate	Moderate
Unlikely	Significant	Moderate	Minor	Minor
Very Unlikely	Moderate	Minor	Minor	Minor

While all safety concerns should be considered for action, the client or nominated project manager will make the decision as to what course of action will be adopted based on the guidance given in this ranking process with consideration to factors other than safety alone. As a guide a suggested action for each concern category is given in Table 2 below.

Table 2 Risk Categories

Concern	Suggest Action
Serious	A major safety concern that must be addressed and requires changes to avoid serious safety consequence
Significant	Significant concern that should be addressed and requires changes to avoid serious safety consequences
Moderate	Moderate concern that should be addressed to improve safety
Minor	Minor concern that should be addressed where practical to improve safety

In addition to the ranked safety issues it is appropriate for the safety audit team to provide additional comments with respect to items that may have a safety implication but lie outside the scope of the safety audit. A comment may include items where the safety implications are not yet clear due to insufficient detail for the stage of project, items outside the scope of the audit such as existing issues not impacted by the project or an opportunity for improved safety but not necessarily linked to the project itself. While typically comments do not require a specific recommendation, in some instances suggestions may be given by the auditors.

1.4 Scope of Audit

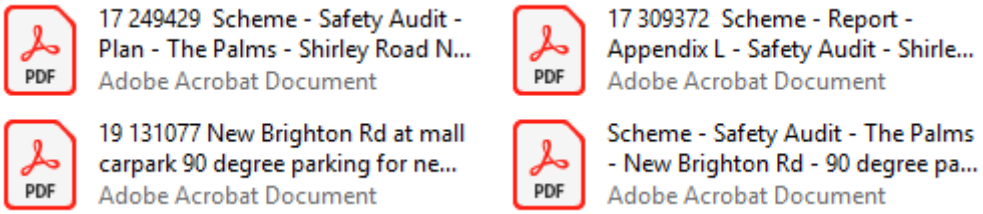
This audit is a Scheme Safety Audit, focusing on the New Brighton Road Bus Stop Improvements project.

The SAT is aware of the scheme nature of the design and acknowledges that some of the project details and design will be developed in further phases.

The SAT is aware that previous safety audits have been undertaken, however there have been subsequent changes made to the design.

1.5 Documents Provided

The Safety Audit Team (SAT) has been provided with the following documents for this audit:



1.6 Disclaimer

The findings and recommendations in this report are based on an examination of available relevant plans, the specified road and its environments, and the opinions of the SAT. 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. Safety audits do not constitute a design review or an assessment of standards with respect to 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 accuracy of the report, 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.

1.7 Project Description

This project involved upgrading the existing bus facilities (bus shelters and stops) at the Shirley Public Transport Hub. The purpose of this project is to improve bus facilities (shelters and stops) on Shirley Road and New Brighton Road to make them more attractive and increase patronage.

It should be noted that a previous scheme safety audit was completed for this project in December 2016, however there has been subsequent changes to the design and therefore an additional scheme safety audit has been requested.

This design proposes a new kerb alignment on the western end of New Brighton Road near the Marshland Road/North Parade intersection. This will provide space for a new bus stop and bus shelter on the northern side of the road. The southernmost Palms Shopping Centre car parks will be relocated with a number of parks being removed to provide the required space needed for the new bus stop. There will also be a raised platform crossing point at the entrance to the shopping centre.

1.8 Items not considered

The auditors note the following information was not provided and therefore was not able to be audited. This includes, but is not limited to:

- Cross sections and long sections;
- Vehicle tracking plans;
- Lighting design; and
- Services, including drainage details.

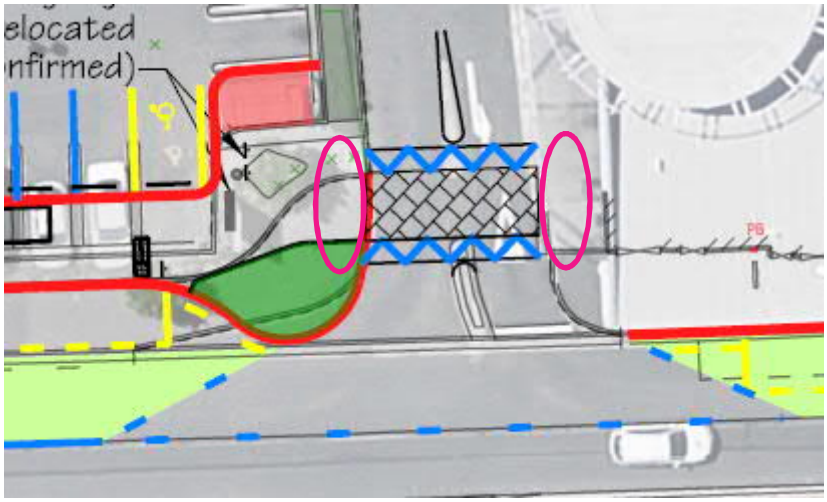
2. Safety Audit Findings

2.1 General issues

2.1.1 Tactile pavers – Moderate

Frequency Rating	Infrequent	Severity Rating	Likely

The SAT note the tactile pavers are missing at the crossing of the access way to the shopping centre. These are important for visually impaired pedestrians to be aware of a change in road environment or potential hazard.



Recommendations	Install tactile pavers at crossing
Designers Response	Agreed. Tactile pavers will be added to the scheme.
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted
Clients Response	Noted as per designers response
Action Completed	Yes

2.1.2 Storage access at pedestrian crossing – Moderate

Frequency Rating	Occasional	Severity Rating	Likely

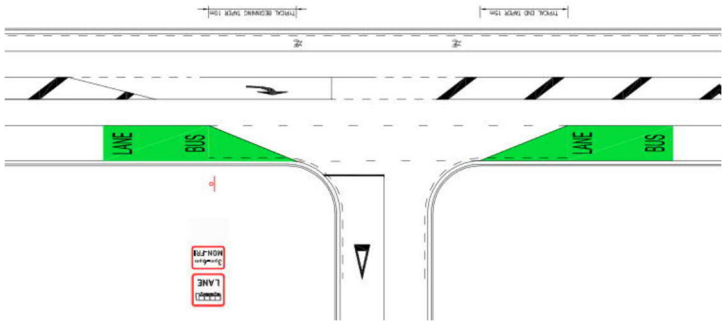
While on site the SAT noted the eastern crossing point of the appears to be used as a driveway or access for a garage or storage unit. It is unclear how often this is used, but there is an increased risk for conflict due to the higher volume of pedestrians around the shopping centre access and pedestrian crossing.

Recommendations	Confirm garage access is in the appropriate location. Consider treatments such as tactile pavers to warn pedestrians of the hazard
Designers Response	Noted. The access and pedestrian crossing point is located within The Palms. The Palms centre management advised that the access is used for wheelie bins pick up only for nearby businesses. The bins are usually picked up outside the mall operating hours. No tactile pavers to be added to warn pedestrians of the access.
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted
Clients Response	Responses noted and accepted
Action Completed	Yes, no further action required.

2.1.3 Bus lane – Minor

Frequency Rating	Occasional	Severity Rating	Unlikely

While on site the SAT noted the bus lane being used for the majority of its length from Marshland Road as a left turn lane by vehicles travelling east on New Brighton Road turning into The Palms shopping centre. This can result in conflict at the entranceway as the bus line marking is unclear.



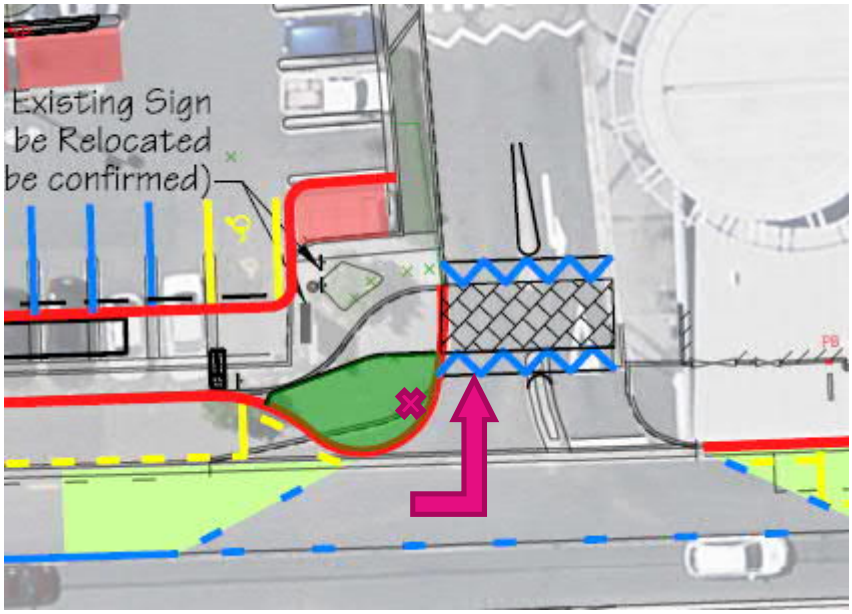
Recommendations	Consider installing intersection markings to delineate start and end of bus lane around access way to shopping centre
Designers Response	Agreed. The Palm access is not a legal road but the intersection markings for bus lane could be added to highlight the access to approaching motorists.
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted
Clients Response	Responses noted and accepted
Action Completed	Yes

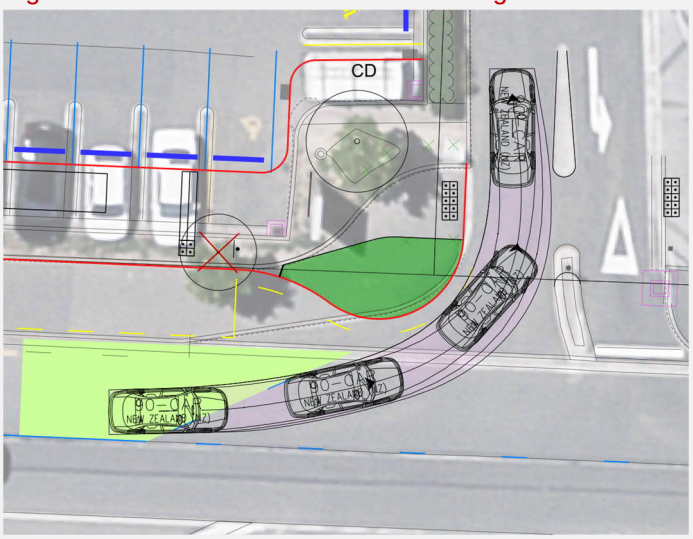
2.1.4 Vehicle tracking at entrance – Minor

Frequency Rating	Common	Severity Rating	Very Unlikely

While on site the SAT noticed that vehicles often clip the kerb when entering The Palms. With the new buildout extending further out towards the road the likelihood of a vehicle clipping the kerb could increase.

It is acknowledge however that tracking has not been provided.



Recommendations	Confirm vehicle tracking is appropriate
Designers Response	Noted. Vehicle tracking has been undertaken with 90 percentile NZ car turning into The Palms. The turning path shows that car is able to enter The Palms without mounting the kerb. The proposed kerb will be kerb only (CSS SD602) to deter motorists from mounting it and encourage motorists to slow down when entering The Palms access. 
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted. New kerb alignment has more consistent radius, and requires drivers to take a higher entry angle, therefore less likely to clip kerb.
Clients Response	Responses noted and accepted
Action Completed	Yes, no further action required.

2.1.5 Pavement surfacing – Minor

Frequency Rating	Common	Severity Rating	Very Unlikely

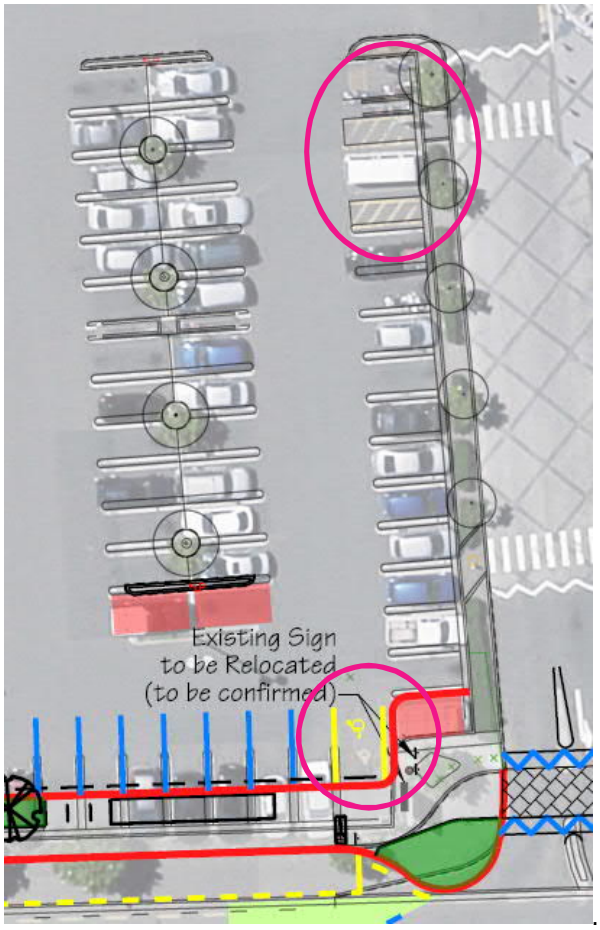
While on site the SAT noted that the bus lane pavement markings are faded and have not been remarked after a recent reseal.

Recommendations	Remark bus lane pavement with green paint to help delineated the bus lane
Designers Response	Agreed. The bus lane markings are to be remarked. The pavement along the bus lane is proposed to be reshaped as part of the project.
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted
Clients Response	Responses noted and accepted
Action Completed	Yes, the remarking of the bus lane is to be included in detailed design

2.1.6 Parking dimensions – Comment

Frequency Rating	N/A	Severity Rating	N/A

The SAT note that dimensions for the parking spaces have not been provided so cannot assess whether they are appropriate width and length. It is noted however that the mobility parking space provided does not match the existing mobility parks located within the car park

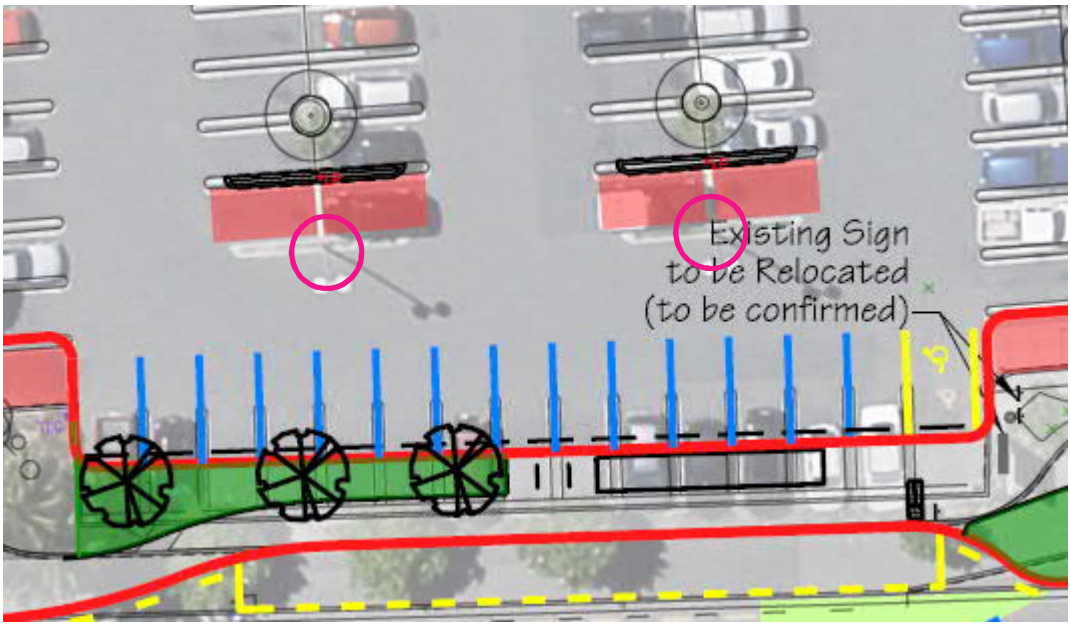


Recommendations	Consider providing extra width for safe entry and exit out of vehicle by matching the line marking of existing mobility parking.
Designers Response	Noted. The width of the proposed mobility parking is 3.6m wide (to the new kerb) and 5m long. This width meets the requirements for NZ Standards for mobility parking. The existing mobility parking space is 3.5m wide with 1.4m shared space more than the current requirements. We are unable to provide additional width to the proposed mobility parking to match existing without further loss of parking. We had a loss of six parking spaces with the current proposal. We proposed to mark the mobility parking with 2.5m stall width and 1.1 shared space to match the line marking of the existing mobility parking.
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted
Clients Response	Responses noted and accepted
Action Completed	Yes

2.1.7 Light pole – Comment

Frequency Rating	N/A	Severity Rating	N/A

The SAT note that the existing light poles will have to be removed/relocated. It is assumed this will be picked up in detailed design / lighting plans.



Recommendations	Confirm relocation/removal of existing light poles
Designers Response	The two existing light poles are to be relocated. The lighting designer recommended to relocate them to maintain the lighting level in the carpark.
Auditors Comment	No further comment.
Safety Engineer	Designer response noted and accepted
Clients Response	Responses noted and accepted.
Action Completed	Yes, the relocation of lighting poles is to be included in detailed design

3. Audit Statement and Conclusion

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.

A Scheme Safety Audit for the New Brighton Road Bus Stop Improvements has been undertaken and 7 issues were identified and are summarised in Table 3 below.

Table 3 Summary of Issues

Serious	Significant	Moderate	Minor	Comment	Total
0	0	2	3	2	7

Signed: Issued on PDF..... Dated: 8 August 2019

Jacques Steyn, GHD Limited

Signed: Issued on PDF..... Dated: 8 August 2019

Jack Needham, GHD Limited

Designer: May Wong…….. Position Traffic Engineer

Signature  ……..Date: 13 March 2020

Auditors Comment:

Signed: Issued on PDF..... Dated: 15 June 2020

Jack Needham, GHD Limited

Review by Sean Nilsson, GHD Limited Dated: 15 June 2020

Safety Engineer: Wayne Gallot……. Position: Senior Transportation Engineer, Christchurch City Council

Signature: ……  ... ……Date: 18/06/2020……..

Project Manager: Name…Luke Thomas……. Position…Client……..

Signature…  ……... Date……24/6/20……..

Action Completed: Name…Luke Thomas……. Position…Client……..

Signature…  ……... Date……24/6/20……..

Project Manager to distribute audit report incorporating decision to designer, Safety Audit Team Leader, Safety Engineer and project file. Date: 24/06/2020

3.1 Scope and limitations

This report: has been prepared by GHD for Christchurch City Council and *may only be used and relied on by Christchurch City Council for the purpose agreed between GHD and the Christchurch City Council as set out in Section 1 of this report.*

GHD otherwise disclaims responsibility to any person other than Christchurch City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	J Needham	J Steyn	Issued on PDF	A Watt	Issued on PDF	08/08/19

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