



PART C – ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

Waka Kotahi NZ Transport Agency
Bombay Commercial Vehicle Safety Centre

WSP NEW ZEALAND LTD

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QUALITY REVIEW AND APPROVAL RECORD

Item	Name	Date
Prepared by:	T Kalmar, WSP and A Simpson, WSP	17.10.2023
Reviewed by:	J Bray and C Crooks WSP	17.10.2023
Approved by:	Waka Kotahi Environmental Planning Team planner	24.10.2023

ACRONYMS, TERMS AND ABBREVIATIONS

Acronym/Term	Description
AC	Auckland Council
AEE	Assessment of Effects on the Environment
ANPR	Automatic number plate recognition
AT	Auckland Transport
AUP	Auckland Unitary Plan (Operative in Part)
CVSC	Commercial Vehicle Service Centre (the project)
DOC	Department of Conservation
DSI	Detailed Site Investigation
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
LTMA	Land Transport Management Amendment Act 2008
MfE	Ministry for the Environment
NES-AQ	National Environmental Standards for Air Quality 2004
NES-DW	National Environmental Standard for Sources of Drinking Water 2007
NES-F	National Environmental Standards for Freshwater 2020 (NES-F)
NES-CS	Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
NPS-FM	National Policy Statement for Freshwater Management 2020
NPS-HPL	Proposed National Policy Statement for Highly Productive Land
NPS-IB	Proposed National Policy Statement for Indigenous Biodiversity
NOR	Notice of Requirement
Outline Plan	Outline Plan of Work
Project	Bombay Commercial Vehicle Safety Centre
PSI	Preliminary Site Investigation
PWA	Public Works Act 1981
RMA	Resource Management Act 1991
SHx	State Highway x
VMS	Variable Messaging Signs
Waka Kotahi	Waka Kotahi NZ Transport Agency
WIM	Weigh in Motion plate sensors

EXECUTIVE SUMMARY

Waka Kotahi New Zealand Transport Agency (Waka Kotahi) is responsible for the operation and maintenance of the state highway network in the Auckland Region as per the Land Transport Management Amendment Act 2008 (LTMA). As part of this role, Waka Kotahi proposes to establish a Commercial Vehicle Safety Centre in Bombay, Auckland (the 'CVSC'). The name 'Pukekura' has been identified by Mana Whenua as the historical name for this area.

To provide for the CVSC, Waka Kotahi is proposing to designate land through a Notice of Requirement (NOR) under the Resource Management Act, 1991 (RMA) and is applying for the associated resource consents for the construction, operation and maintenance of the CVSC. The intention is that Heavy Commercial Vehicles (HCVs) will be directed to the CVSC from State Highway 1 (SH1) for inspection by the New Zealand Police. The wider Project also includes infrastructure upgrades within the state highway corridor and local roads to support the operation of the CVSC, such as installing in-road smart technology and signage to detect and direct HCVs to the site.

The CVSC site works will include:

- A single-storey compliance station (control building housing staff, driver and administrative facilities) and limited on-site parking;
- A HCV weigh bridge and single inspection shed (including under-vehicle inspection pit and roller brake machine); and
- Six open inspection bays. Where exceedances are found, an offload area will provide a temporary parking area for overloaded vehicles to transfer material onto another vehicle.

The CVSC site is situated approximately 250 metres east of the Bombay Interchange, at 253 Mill Road, Bombay. This strategic location is intended to allow detection and assessment of freight traffic on SH1 as it reaches south of Auckland. Site access will be from the SH1 off-ramps at the Bombay Interchange, via Mill Road onto Great South Road, just north of the junction with the Mill Road roundabout.

In summary, the proposed work will have a number of significant positive effects. Such as for compliant heavy motor vehicle operators, the process for inspection will be more efficient without unnecessary delays.

This Assessment of Effects on the Environment (AEE) considers temporary (construction) effects as well as permanent (operational) effects. As part of the assessment, measures to avoid, remedy or mitigate effects are proposed.

The technical assessments of the proposed work prepared in support for the AEE, have concluded that the majority of adverse effects will be no more than minor and can be suitably mitigated. The effect assessed as being more than minor, is limited to visual effects on a limited number of receivers. This report assesses the overall effects of the proposed work as being minor and capable of being mitigated to a level where they are low and less than minor in the long-term.

An assessment has been undertaken to meet the statutory requirements of the RMA. The AEE finds the Project is consistent with the applicable provisions of national planning instruments and the Auckland Unitary Plan (Operative in Part)(AUP) and will accordingly achieve the purpose of the RMA.

The details of the proposed work, as referred to in Section 176A(3) of the RMA are included with the NOR, AEE and drawings. In this case, a subsequent outline plan will not need to be submitted to the Auckland Council, as provided for by Section 176A(2)(b) of the RMA.

ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

1 INTRODUCTION

1.1 REPORT PURPOSE

Waka Kotahi NZ Transport Agency (Waka Kotahi) is proposing to designate land through a Notice of Requirement (NOR) for the Bombay Commercial Vehicle Safety Centre (CVSC) as well as lodging an application for resource consent under the provisions of the Resource Management Act, 1991 (RMA).

The NOR and resource consent applications are collectively referred to in this report as “the Application” unless the context requires specific reference to either the NOR or the resource consent applications.

This Assessment of Effects on the Environment (AEE) report has been prepared in support of the Application, in accordance with Section 168(2) and Section 88, and meets the information requirements under Schedule 4 of the RMA.

The separate NOR document has been prepared in accordance with the requirements of Form 18 of the Resource Management (Forms, Fees, and Procedure) Regulations 2003 (**Part A**). The proposed designation extent is shown in the Designation Plan provided in **Part A-Attachment A**.

A separate resource consent application form has been prepared in accordance with the requirements of Form 9 of the Resource Management (Forms, Fees, and Procedure) Regulations 2003 and the relevant Auckland Council application form requirements (**Part B**).

This AEE forms **Part C** of the application package. The level of detail provided in the assessment is consistent with the overall scale of the proposed work. The assessment has considered temporary (construction) effects as well as permanent (operational) effects. As part of the assessment, measures to avoid, remedy or mitigate effects are identified.

The AEE considers the potential effects associated with site establishment (earthworks, ecological, landscape and visual), site operations (traffic, noise, lighting), and stormwater discharge and disposal.

1.2 WAKA KOTAHI NZ TRANSPORT AGENCY

Waka Kotahi is a Crown entity with its functions, powers and responsibilities set out in the Land Transport Management Amendment Act 2008 (LTMA) and the Government Rounding Powers Act 1989. The primary objective of Waka Kotahi under Section 94 of the LTMA is to contribute to an effective, efficient, and safe land transport system in the public interest.

An integrated approach to transport planning, funding and delivery is taken by Waka Kotahi. This includes investment in public transport, walking and cycling, local roads and the construction and operation of state highways.

Section 96(1)(a) of the LTMA requires that Waka Kotahi exhibits a sense of social and environmental responsibility when undertaking its work. This statutory requirement is reflected in a raft of strategic and policy documents. One of the core position statements is that Waka Kotahi will responsibly manage the land transport system’s interaction with people, places, and the environment.

Waka Kotahi is also a network utility operator approved as a requiring authority under Section 167 of the RMA.

The legal name for Waka Kotahi is the New Zealand Transport Agency. The corporate name Waka Kotahi, is used throughout this AEE.

1.3 PROJECT / PROPOSED ACTIVITY OVERVIEW

Waka Kotahi is proposing to establish a CVSC at 253 Mill Road, Bombay, Auckland. The CVSC will support the safe operation of the state highway network and is strategically located to capture all Heavy Commercial Vehicles (HCV) traffic travelling between Auckland and Waikato/ Bay of Plenty. Figure 1 shows the location of the CVSC in relation to State Highway 1 (SH1) at Bombay.



Figure 1 - Site Location Plan

The proposed work will see the construction of the CVSC, which has been designed to meet Waka Kotahi operational requirements. To provide for the Project, 12,330m² of land is proposed to be designated to allow for the construction, operation and maintenance of the CVSC. The parent site on the north-east corner of Mill Road and Great South Road (GSR) is some 52,400m² in area.

The CVSC site works will comprise:

- HCV Inspection shed and inspection bays;
- A weigh-bridge;
- Compliance station building with:
 - staff workstations, equipment and storage rooms
 - restrooms for staff and drivers
 - staffroom/multipurpose room for training, meetings
 - drivers' facilities (administrative)
 - bypass lane;
 - visitor and staff parking;
 - stormwater infrastructure
 - safety signage and site fencing
 - water and wastewater tanks
 - lighting
 - landscaping

In addition to providing for the CVSC, the proposed work also requires the realignment of the private vehicle access from GSR to the balance of the site at 253 Mill Road. Any balance of the land not required for the operational requirements of the CVSC, will be reviewed upon completion of construction.

To support the operation of the CVSC, minor infrastructure works are required along the state highway corridor, adjoining road reserve and local network roads. These works, discussed in section 2.3.4, include Weigh-in-Motion (WIM) sensors and Automatic Number Plate Recognition (ANPR) cameras which can largely be accommodated within the existing highway corridor, and local road reserves, as permitted activities in the AUP.

1.4 NOR SUBMITTED AND RESOURCE CONSENTS SOUGHT

Waka Kotahi has submitted the following NOR and resource consent applications:

- A NOR to designate land under Section 168 RMA for a new designation. The NOR applies to an area of land at 253 Mill Road, Bombay, Auckland within the site legally described as Lot 1 DP 124783, currently held in Record of Title 5186598, a copy provided in **Part C- Appendix A**.
- The purpose of the proposed designation is “to construct, operate, maintain, and improve a vehicle safety centre as part of the operation of the state highway network”.
- Regional consents from Auckland Council are required for:
 - Diversion of water and incidental temporary damming of water near an induced (natural) wetland;
 - Bed disturbance and depositing of any substance within an induced (natural) wetland;
 - Stormwater diversion and discharge to a permanent stream and within 100m of a natural wetland;
 - Earthworks greater than 2500m² within the Sediment Control Protection Area; and
 - Discharge of contaminants in soil (arsenic, asbestos) into water, or onto or into land.
- Land use/ regional consents from Auckland Council for:
 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS, 2011) Regulation 9(1) Reg 9(2) – **Controlled** activity for the discharge of contaminants during land disturbance; and
 - Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-FW) - **Discretionary** activity under regulation 45, for the construction of specified infrastructure, earthworks, and the damming, diversion and discharge of water within 100m of a natural wetland.

A permitted activity assessment against the relevant standards is provided in **Appendix C.1**.

A planning assessment is provided in **Appendix C.2** for controlled and restricted discretionary matters; and a statutory assessment in **Appendix C.3** for all relevant objectives and policies.

Sufficient information to address Outline Plan matters (Section 176A RMA) is provided with this application, such that an Outline Plan is not required to be submitted separately for the proposed work.

The proposed work also requires a wildlife permit, which is covered by the following:

- Implementation of the existing Wildlife Permit (valid until December 2024) from the Department of Conservation under the Wildlife Act 1953 authorising Ecology New Zealand to undertake any lizard salvage.

2 DESCRIPTION OF PROJECT / PROPOSED ACTIVITY

2.1 LOCATION

The proposed site for the CVSC is located at 253 Mill Road, Bombay, approximately 250m to the east of the Bombay Interchange and SH1 corridor. An aerial view of the parent site, and the surrounding environment is illustrated in Figure 2.

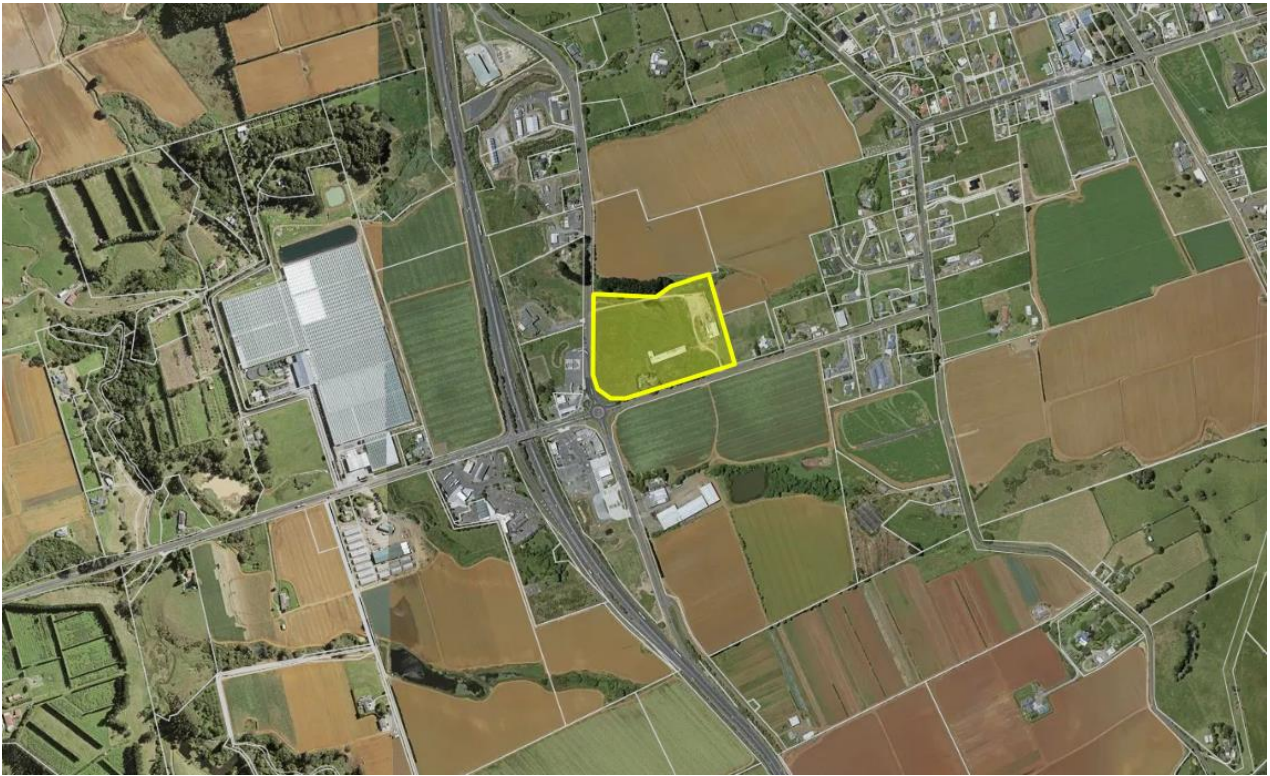


Figure 2 - Aerial Overview of Project Location (parent site in yellow)

2.2 REASON FOR THE PROJECT / PROPOSED ACTIVITY

2.2.1 ISSUES AND RESPONSE

Waka Kotahi regulates heavy vehicle trips and monitors heavy vehicle loads on the state highway network. Class 2–5 licence-holders (all heavy vehicles) consist of approximately 390,400 licence-holders, of whom 230,000 are considered to be driving in the commercial sector to date (Waka Kotahi, 2021).

It has been estimated that, approximately 10% of heavy vehicle trips are currently exceeding their authorised load limits. However, the existing national network of weigh station sites does not have the coverage and is not sufficiently equipped to identify and target non-compliant operators.

2.2.2 THE COMMERCIAL VEHICLE SAFETY PROGRAMME (WEIGH RIGHT)

The Commercial Vehicle Safety Programme (CVSP) will reduce heavy vehicle overloading through the targeted selection of overloaded vehicles. The programme will use roadside technology and intelligent software to direct potentially overloaded vehicles into 12 commercial vehicle safety centres (CVSCs, were formerly known as weigh stations) for assessment, throughout New Zealand.

Three of the CVSC locations are existing and nine will be built. The locations of these CVSC are located on heavy-volume routes (greater than 1200 heavy vehicles per day based on the One Network Road Classification) and cover 46% of the total freight kilometres travelled in New Zealand. CVSC sites are therefore close to major centres, seaports, or significant highway junctions and at locations where it is difficult for heavy vehicles to avoid.

Three of the twelve CVSC sites will be in the Auckland Region – one in north Auckland, one in the central city near the Port, and one in south Auckland. The latter, the Bombay CVSC is the subject of this assessment.

2.2.3 PROJECT OBJECTIVES

Presently within the Auckland Region, a single inspection site is located in central Auckland at Stanley Street (SH16), enroute to the Port of Auckland. Overweight vehicles are currently identified by NZ Police via visual judgment, which leads to some compliant vehicles being pulled over while potentially overweight vehicles are missed. The new detection system for the Bombay CVSC will ensure vehicles that are not registered as overweight by the WIM sensors are not required to take action and can continue along their planned route. The new automated system is expected to reduce delays for compliant operators.

The overall objectives of the CVSC programme are to:

- Establish safe and accessible facilities to screen HCVs using the state highway network;
- Improve the screening of non-compliant vehicles, thus increasing the compliance of HCVs; and
- Improve HCV compliance which will in turn improve the safety and efficiency on the state highway network.

2.2.4 PROJECT BENEFITS

The CVSC programme will result in fewer overloaded vehicles, and improved efficiency of freight supply chains and productivity of the transport sector by targeted vehicle selection for assessment. The aim is to improve safety and reduce the impacts of illegal overloading in the context of wider objectives through smarter and informed regulatory action.

2.2.5 STRATEGIC CONTEXT OF THE PROJECT

This section outlines the strategic context of the Project including relevant strategies and plans for commercial transport.

The Commercial Vehicle Safety Programme (CVSP) is part of the Waka Kotahi strategic framework targeting a road system free of fatalities and serious injury, and enablement of a production land transport system, which supports a level playing field for the heavy vehicle industry. The framework includes the following plans and strategies:

- **‘Road to Zero’ Strategy 2020-2030:** A regulatory framework for commercial transport that incentivises the right behaviours, applies obligations at the right level, and is enforced in a responsive and risk-based manner by Waka Kotahi in conjunction with road safety partners.
- **Road to Zero Action Plan 2020-2022:** A vision-setting document for prevention of road crashes in New Zealand. The Action Plan acknowledges the CVSP is broader than weight compliance and needs to expand effectively through the extended CVSP capabilities that can be delivered.
- **Tū ake, Tū māia – Stand Up, Stand Firm Regulatory Strategy 2020–25:** A high level strategy regarding overall road safety. Commercial vehicle safety and commercial operators’ compliance strategies reference the broader areas of focus such as operator licensing, driver restrictions, dangerous goods, driving hours and logbooks, passenger endorsements and weight compliance.
- **Te Kāpehu (NZTA Statement of Intent 2021-2026):** Sets out the strategic direction for the land transport system and responds to recent changes to strategic and operating environments including the Government Policy Statement on land transport 2021/22 – 2030/31.

2.2.6 NEED FOR DESIGNATION

The Project will provide a safe and easily accessed facility to target and test HCVs using the state highway network. The outcome is a well-designed and efficiently operated CVSC with all necessary infrastructure, that supports the strategic objectives of the CVSP.

The CVSC will function in support of the existing and future road networks of significance in the Auckland Region and establishes what will become a future network of centres, providing certainty and coverage to address national objectives.

To establish a new CVSC at this location would require the necessary land use approvals under the RMA. Section three outlines the assessment of alternative sites and methods considered. Proposing a designation is considered an efficient and effective method for the Bombay CVSC.

2.2.6 PROJECT DELIVERY PARTNERS

Waka Kotahi and NZ Police are considered joint partners for the Safety Partnership Programme and CVSC project delivery. NZ Police will be responsible for ongoing operations of the site.

2.3 DESCRIPTION OF THE PROPOSED WORK

The following sections provide a description of the Project and the proposed activity.

2.3.1 CVSC OVERVIEW

The proposed work will establish a CVSC at Bombay that has been designed to meet Waka Kotahi operational requirements. The site will include six inspection bays, a weigh bridge, inspection shed and compliance station building. On site car parking for staff and visitors will also be provided (13 spaces plus one accessible space). A site plan is provided in Figure 3 and the General Arrangement plans (**Appendix B**).

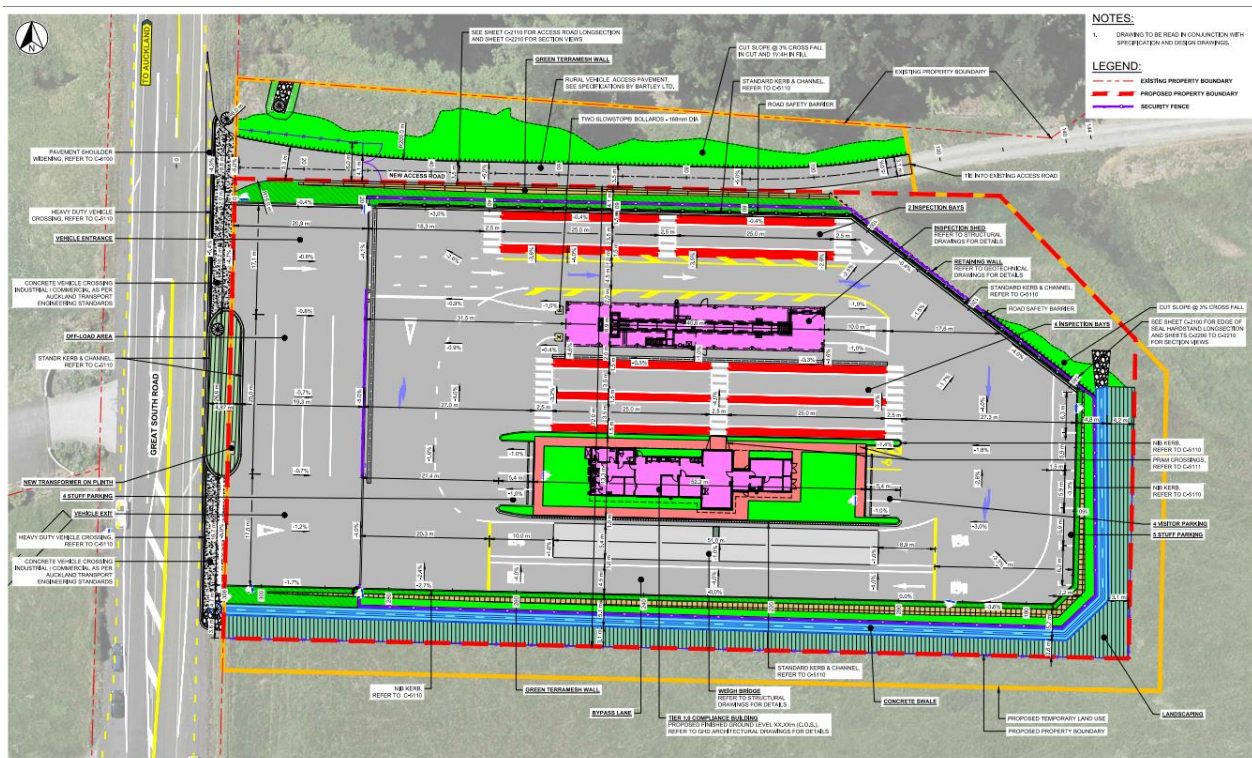


Figure 3 - Bombay CVSC Site Plan

The compliance station building will be located toward the south of the site (adjacent to the weigh bridge) and is a single-storey building with a floor area of 204m². The length of the building is approximately 41m, with the nominal span of the structure being approximately 7m wide with height up to 5m (pitched roof).

The external finishing material will be a combination of Linea weatherboard, with profiled metal cladding and roofing in recessed colours, and glazing. The compliance building will be surrounded by a landscaped area with light vehicle parking at the east and west ends of the structure and adjoining the eastern wall.

The compliance building characteristics are consistent with the Waka Kotahi design framework for the CVSP, while utilising site-specific variations at Bombay, such as exterior façade treatments, to integrate within its Bombay context. This is discussed further in section seven of this report.

The inspection shed, located towards the north of the site, has a floor area of 279m², with the nominal span of the structure being 40m in length, 6m wide and a maximum height of 7m. The external finish material will be to "Totalspan" steel specifications. The length of the inspection shed is designed to accommodate a single HCV. Architectural Design Plans are provided in **Appendix B**.

The site has been designed with an outer circulation lane, to enable the safe and efficient movement of vehicles between the facilities provided on site.

A site perimeter fence is provided, with a maximum height of 2.44m, along with electronic security gates at the vehicle entry and exit points onto GSR. The gates have an opening width of 12m and 17m, and are set back from the road boundary by 21m, to allow HCVs to enter and exit the site. Provisional stacking for five HCVs prior to the weigh bridge (approximately 125m of stacking) is provided. On average, eight HCVs can be accommodated within the site at any one time (six within the inspection areas, two additional with the offload area).

Where exceedances are found following inspections, an offload area will provide a temporary parking area for overloaded vehicles to transfer material onto another vehicle. The offload area is located at the western frontage of the site, outside the perimeter security fencing.

As a result of the proposed work, the site will have an impervious surface coverage of 6,315m². This area of coverage is required to allow for the effective operation of the CVSC.

Landscaping will surround the compliance building, and is provided at the site frontage, as illustrated in Figure 4. The green terramesh retaining walls integrates planting, and a section of timber retaining wall on the north-east corner of the site avoids encroachment into the induced wetland, which also features landscape planting.



Figure 4 - Bombay CVSC Landscape Plan

2.3.1.1 VEHICLE ACCESS TO THE CVSC

Vehicle access to the CVSC will be provided from GSR, with the majority of vehicles making a right in, left out manoeuvre. HCVs accessing the site from SH1 will exit the state highway at the Bombay Interchange and travel east along Mill Road. Vehicles will turn left into GSR and make a right turn to access the site.

To travel back to SH1, HCVs vehicles will make a left turn onto GSR to exit the CVSC, and then turn right on Mill Road to access the northbound on-ramp, or continue straight through the Mill Road roundabout to access the southbound on-ramp for SH1.

2.3.1.2 HOURS OF OPERATION

The site will typically operate during day time hours or into the evening. Some flexibility is required for site operations to respond to road safety events or initiatives when necessary, and this may require the site to be operational on occasion during night-time hours (after 10pm). The offload area lies outside of the security fence and would be accessible outside of normal business hours.

Operational site requirements anticipate up to 15 HCVs would be directed to the CVSC per hour during peak periods at the site (AM 0700hrs and PM 1600hrs), which represents one vehicle every four minutes.

The smart roading technology will enable the WIM sensors and VMS to be disabled digitally (or VMS will not display) when the CVSC is at full capacity. This will ensure a responsive and efficient operation of the CVSC, factoring in the local roading network conditions.

2.3.1.3 STORMWATER MANAGEMENT

The proposed stormwater management incorporates a treatment approach appropriate for a HCV inspection site. Runoff from the CVSC impervious surfaces (building roofs and platform) will be directed into the on site pipe network subject to treatment and hydrological detention, prior to discharge into the Ngakoroa Stream receiving environment north of the site.

The stormwater design has considered the opportunity to discharge treated stormwater to the induced wetland. However, this was not considered either feasible or the best practicable option for hydrological and erosion prevention reasons.

Under normal operating conditions, stormwater flow remains in the piped system where it reaches the oil and water separator, with a 100L/S flow limit for emergency spill storage. After passing through the separator, the runoff then reaches the StormFilter device with 22.4L/s capacity for treatment, and bypasses the remainder to the attenuation device. In the event of runoff in excess of this overflow capacity, this will be piped to the Ngakoroa Stream.

Outside of the impervious trafficable area, a cut off drain installed around the perimeter of the CVSC platform diverts flows either west towards GSR, or easterly towards the wetland. Sub-soil drains below the southern and eastern retaining walls divert the existing overland flow paths from the upstream catchment around the site.

The existing road drainage culvert along GSR will be upgraded, and flows will connect to the stormwater pipe outlet shared with the internal site stormwater discharge.

The private accessway north of the CVSC will be partially reconstructed on a new alignment from GSR to tie in with the eastern section of the accessway. Presently the wetland drains via a 450mm diameter culvert under the accessway (culvert 1), which discharges to the Ngakoroa Stream, and there will be no change to the existing capacity or function.

In summary the stormwater proposal will include:

- An oil and water separator and StormFilter to provide treatment for runoff and ensure a high standard of discharge quality. The oil and water separator will hold day-to-day drips and small spills from the splitter manhole point which collects all platform site runoff. The StormFilter has sufficient capacity to intercept and convey runoff from impervious trafficable areas for the majority of storm events (10-year Average Recurrence Interval (ARI)). Treated stormwater will then be conveyed to the underground hydrologic detention facility.
- Onsite detention and retention of 185m³ of stormwater runoff from the entire developed site provides hydrologic mitigation. Hydrologic detention requires twelve underground chambers on the western side, some 26m x 1.5m width, arranged side-by-side. The detention device provides sufficient storage volume to hold back the runoff from a 95th percentile 24-hour storm event (Stormwater Management Area: Flow, or SMAF-1), and to release it slowly over the subsequent 24-hour period, to the Ngakoroa stream.
- Discharge to the wetland of the 100-year ARI upstream runoff that arrives along the eastern boundary of the site from the drainage channel. This will maintain, as much as possible, the

current volume of water reaching the wetland. The estimated catchment to this channel is approximately three quarters of a hectare.

- Diversion of 100-year ARI upstream runoff, that arrives along the southern boundary, to the GSR drainage system. Then via that system to the stream, converging at the same outlet as the platform discharge. The overland catchment to the southern boundary is approximately 1.45ha.
- An energy dissipation structure at the outlet to the stream and induced wetland
- Some roof rainwater capture in a tank by the inspection shed

The stormwater drainage plan is provided in the General Arrangement Plans (**Appendix B**).

2.3.1.4 UTILITIES

The CVSC will not be connected to the reticulated water and wastewater networks as these are not available, so on site facilities are required. On site water and wastewater detention tanks will be installed on site at locations as illustrated in the General Arrangement plans (**Appendix B**), and have been sized to meet operational service needs.

The feasibility of on-site wastewater disposal was considered as an option. Taking account of the underlying soil types (fine silty clay and clayey silt), and the likely wastewater flow rate, the area of land required for on site disposal (either via evapotranspiration beds or shallow irrigation), reserve areas and primary disposal area requirements, exceeded the maximum area available at this site for such a purpose. The chosen method therefore does not involve discharge of wastewater to the land on the site.

To manage wastewater from the site, an underground wastewater holding tank (15,000L) is to be located at the western side of the compliance building. The proposed wastewater disposal is by vacuum tanker, with periodic removal offsite to a Watercare disposal point by an approved contractor, as there is no sewer within a practicable distance to connect to. This is aligned with Watercare Services Limited requirements. The wastewater holding tank is sized at 15m³ including a 25% margin to enable emptying out at weekends, as necessary. The underground tank is gravity fed and will be installed such that the inlet to the tank is at a level to maximise capacity.

The oils, sludges, and grits (contaminants) from the oil and water separator (see section 7.6) will be also picked up separately by an approved contractor. The disposal of the contaminants is at this stage expected to go to a specialist landfill.

Potable water will be brought in and stored on site in a 10,000L portable water tank (10m³, 2m diameter) to the north-east corner of the compliance building. Anticipated demand has been based upon the expected number of staff and visitors, and the specific needs at the site such as showers, emergency use and occasionally to top up the rainwater reservoir for non-potable hose-down supply in periods of low rainfall or water supply shortages.

Infrastructure futureproofing will be provided through the inclusion of a redundant potable water line from the GSR roadside berm to the Potable Water Tank that can, in future, enable service connections to the site from a reticulation network if this is installed by the Council at some stage. This line will be buried and capped at the terminal point in the berm to enable ease of connection in the future.

An above ground rainwater tank (5000L) located on the northern side of the inspection shed will capture rainwater and re-used for washdown and other operational purposes where required.

The necessary power and telecommunications connections and services required to operate the site will also be provided as a separable portion of works. This includes a new fibre duct connection from the CVSC site to the One.NZ pit at 2038 GSR (crossing Mill Road and Designation 6703) that will provide Wide Area Network (WAN) connection for the CVSC.

In summary, the CVSC design provides for the necessary utilities in the absence of site reticulation to the site. The water and wastewater tanks have been adequately sized to meet site requirements and appropriate site collection and disposal will be undertaken.

2.3.2 EARTHWORKS

Site preparation will require:

- Earthworks for site preparation and structure foundations, retaining walls and embankments around the northern, eastern and southern boundaries of the site; and
- The existing private accessway from GSR to be relocated and the western section reinstated to retain vehicle access to the adjoining property.

The proposed earthworks will occur over the entire extent of the CVSC footprint necessary to build the site platform. The total earthworks have an approximate total area of 11,190m² and volume of 22,252m³ in cut, and 184m³ in fill. Table 1 below details the volume and area of earthworks required on site.

The cut will be on the southern portion of the site, to fill in the sloped northern portion of the site. Retaining structures will be required to provide a relatively level platform for the CVSC.

The earthworks adjoin an induced wetland located on the north-east corner of the site. The north eastern timber pole retaining wall is within approximately 2m vicinity of the wetland. The toe of the retaining wall adjoining the induced wetland will be protected with rip-rap to avoid any undermining of the foundations.

To retain the cut slopes along the eastern, northern and southern boundaries, green terramesh walls at varying heights are proposed, so minimising the built footprint. The northern green terramesh wall (GTW) is 1.8m and the southern GTW is a maximum of 3.7m high.

The earthworks will be undertaken in a manner that utilises on-site cut to fill. However, as an on-site balance of cut to fill is likely not achievable, suitable fill materials will be imported to site. Any localised soft layers and uncontrolled fill will be undercut and replaced with engineered fill.

Table 1 – Earthwork Areas and Volumes

	Construction Area	
	Area (m ²)	Volume (m ³)
Total Cut/fill from existing ground level to proposed subgrade level	11,190m ²	22,252m ³ Cut
		184m ³ Fill

For the duration of earthwork activities on site, suitable erosion and sediment control measures will be implemented in accordance with best practice methods.

2.3.3 LIKELY FINISHED CONTOURS

The CVSC site has strict requirements for the platform and site contours, to ensure accurate reading on the weigh-bridge, and for the diversion of stormwater.

The site preparation will provide for a flat platform in cut, which nestles the site into the landform on the southern and eastern boundaries, as shown in Figure 5 (cross-sectional view to the east). The inspection shed is to the left and compliance building on the right.

This placement acts to partially screen the overall visible bulk and height of the Project buildings when viewed from the west, east and south, and mitigate views from the adjoining residential property at 253 Mill Road (parent parcel). This also provides an acoustic buffer along the southern boundary.

The general cross-fall goes south to north as it slopes down to the private accessway and stream (Figure 5) with finished site contours provided in the General Arrangement plans (**Appendix B**).

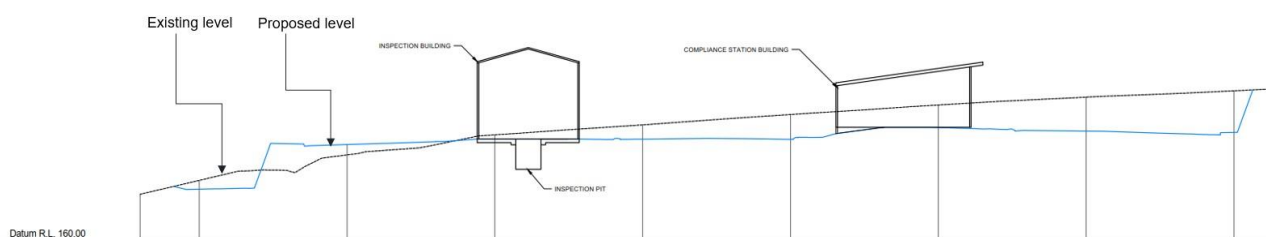


Figure 5 – Finished site contours (cross-sectional view to the east)

2.3.4 OTHER INFRASTRUCTURE WORKS

Beyond the CVSC site, supporting infrastructure works are required along the state highway corridor, within the adjoining road reserve, and within GSR and Mill Road. The detection system, provided to support the operation of the CVSC (separable portion of works) will include:

- Weigh-in-Motion (WIM) sensors, installed within the state highway carriageway;
- Automatic Number Plate Recognition (ANPR) cameras;
- Variable Message Signs (VMS)
- Integrated Telecommunications System (ITS) lines for conveyance of communications to the VMS

The new WIM sensors and ANPR cameras will send vehicle information to the vehicle screening system that will assess whether a heavy vehicle complies with its allowable weight, and if necessary, direct vehicles to pull into the Bombay CVSC on the VMS.

The supporting infrastructure works in the state highway corridor and local road reserves are permitted activities in the AUP. Waka Kotahi will seek any relevant approvals from Auckland Transport (AT), or other utility providers as required. Supporting infrastructure within the existing Waka Kotahi designations will be covered by a separate Outline Plan waiver process, if needed.

Accordingly, the balance of this report focuses on the proposed work at the CVSC site at 253 Mill Road, not the supporting infrastructure, unless the context requires specific reference to it.

2.4 INDICATIVE CONSTRUCTION METHODOLOGY

The indicative construction methodology described in this section is considered a realistic and feasible methodology sufficient to enable an assessment of the potential construction effects on the environment to be identified.

The final construction methodology will be confirmed by the contractor once appointed.

2.4.1 CONSTRUCTION STAGING AND TIMEFRAMES

The following sets out the indicative construction staging of works, with the programme and construction staging to be confirmed by the contractor.

To avoid, remedy or mitigate potential construction effects, a staged approach to the proposed work will be implemented. Applicable stages two and three for the CVSC will likely commence as follows:

- Stage 1 SH1 VMS and WIM locations: Installation of VMS signs and WIM equipment (*separable portion of works*);
- Stage 2 CVSC Project works: Earthworks and preparation of the building platforms, including retaining walls;

- Stage 3 CVSC Project works: Installation of the buildings (compliance building and inspection shed), installation drainage facilities and civil works, completion of site pavement areas, weigh bridge, lighting columns, security fencing and commissioning; and
- Stage 4 Other supporting infrastructure (Mill Road and GSR): including telecommunications, and network utility power connections as per the VMS, ITS and CVSC supply requirements (*separable portion of works*).

Construction commencement of Stage 1 works is expected to start late 2023, with the other stages subject to granting of the statutory approvals.

Key considerations for construction timing will be minimising disruption to the state highway network for the supporting infrastructure works, and Mill Road and GSR arterial roads when undertaking any road marking changes, installing cables and signage.

During stage two, the entire construction area will be fenced and this forms the boundary for establishing the erosion and sediment control measures which will be implemented throughout the construction phase, as well as any noise mitigation measures such as hoardings, if required. While the site has no established trees or vegetation, site clearance of the grassed areas will be necessary.

The proposed work at the CVSC site requires careful consideration of land disturbance should winter works be required given the proximity to watercourses. The summer period (October to April) is preferred, although flexibility is desired due to the high need for the Project to commence as soon as possible.

Implementation of the relevant management plans will be required pre-commencement and throughout the duration of stages two and three, in particular, to manage any stockpiling and/or disposal of materials during earthworks.

The indicative location of all plant, equipment and materials storage may change as the Project progresses. Removal of site offices and construction staff facilities and erosion and sediment control devices at completion of the works will be undertaken.

2.4.2 CONSTRUCTION METHODOLOGY

An outline of the indicative CVSC construction activities that will be undertaken are set out below in Table 2.

Table 2 - Indicative construction staging and associated activities

Construction Staging and Activities	
Stage	Activity
<p><u>Stage 2</u></p> <p>CVSC Site preparation and establishment</p>	<ul style="list-style-type: none"> • The construction area will be fully fenced and made secure. • Site establishment activities will include site clearance, ground preparation, and establishing erosion and sediment control measures (ESCP) prior to land disturbance activities occurring. • Site offices and construction personnel amenities, including car parking; • Construction vehicle and machinery parking and maintenance areas identified. Approximately 10 parking spaces will be provided during construction to accommodate 5-10 construction staff on site. • Provision for water (via storage tanks), telecommunications, and portable toilet facilities and power connections. These services are able to be connected directly to the existing adjacent networks if available. • Demarcate areas for structures compounds (construction materials), loading and storage of plant and equipment, and building materials; • Establish compacted hard-fill areas, where required. • Demarcate stockpile areas (bulk, contaminated material, where required) • Establish wheel wash facilities to prevent dirt tracking from the construction area onto the road
<p><u>Stage 2</u></p> <p>Bulk earthworks and construction of retaining wall</p>	<ul style="list-style-type: none"> • Check erosion and sediment control measures • Removal of topsoil and clearance of vegetation • bulk earthworks • Spoil handling and storage • Site compacting
<p><u>Stage 3</u></p> <p>Building foundations and other facilities</p>	<ul style="list-style-type: none"> • Check erosion and sediment control measures • Installation of three waters tanks
<p><u>Stage 3</u></p> <p>Construction of buildings and hard standing</p>	<ul style="list-style-type: none"> • Check erosion and sediment control measures
<p><u>Stage 3</u></p> <p>Reinstatement, stabilization of site and landscaping works</p>	<ul style="list-style-type: none"> • Upon completion of the works, the construction area will be dis-established • Removal of E&S control devices, site offices and construction staff facilities

The contractor will prepare construction management plans in accordance with the Waka Kotahi contract requirements. These will be implemented for the duration of the construction work.

3 ALTERNATIVES

3.1 OVERVIEW

Section 171(1)(b) of the RMA requires Auckland Council, when considering a NOR, to have particular regard to whether adequate consideration has been given to alternative sites, routes or methods of undertaking the work if:

- (i) The requiring authority does not have an interest in the land sufficient for undertaking the work; or
- (ii) It is likely that the work will have a significant adverse effect on the environment.

Based on the assessment of effects on the environment (section seven), the overall level of effect has been assessed as minor, and therefore in terms of Section 171 (1)(b) not 'significant'.

Due to not having sufficient interest in the land required, an assessment of alternatives is required.

3.2 ALTERNATIVE SITES AND ROUTES

A site selection process was undertaken in 2020 which considered a short-list of four sites in the area around the Mill Road (Bombay) Interchange with SH1. Figure 6 shows the location of the four sites considered in relation to the Interchange.



Figure 6 - Location of alternative sites for the CVSC

3.2.1 SITE SELECTION PROCESS

The site selection process involved:

1. Finding a feasible CVSC site which meets the four key strategic requirements for a CVSC,
2. Narrowing of site options considered for a southern CVSC site, and
3. Determining a preferred option.

The four strategic requirements are outlined in Table 3.

Table 3 - CVSC Strategic Requirements

CVSC: Strategic Requirements	
Favourable ground	The infrastructure associated with the CVSC is highly sensitive and cannot be placed on soft or filled ground as this will threaten the long-term accuracy and performance of the infrastructure. The state of the existing ground can also have significant cost implications for a project.
Difficult to avoid	Where there are too many avoidance routes or opportunities for avoidance, it is difficult for the police to resource the coverage they need and difficult to enforce avoidance behaviour. Therefore, where there is more than one avoidance route available, a site will not be suitable for a CVSC.
Length of diversion	A site that would require a diversion length of more than 5km removes that site from further consideration due to requirements under the s125(3)(a) of the Land Transport Act 1998. In practice, a CVSC should be as close to the state highway as possible. In addition, roads must be sealed to the standard required for heavy vehicle movements.
Safe access and egress	Safe access and egress for both north and southbound vehicles should be achievable. It is preferable that access be achieved from an existing local road, as direct access from a state highway can create significant safety issues, especially where the speed environment is 70km/h or more.

Beyond these strategic requirements, other matters have been considered in determining the preferred option, as noted in Table 4.


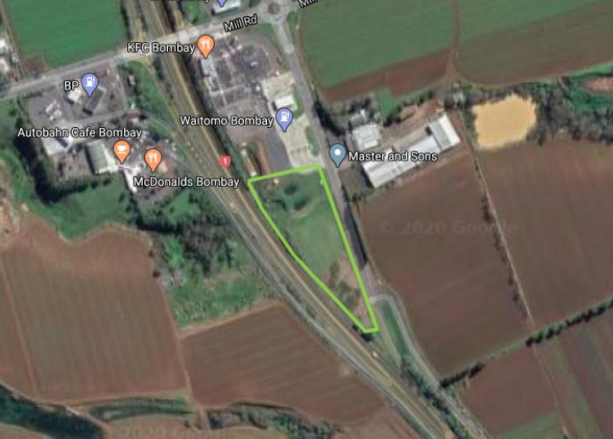
Table 4 - Other considerations for site selection

CVSC: Other considerations for site assessment	
Minimum site size	A CVSC site itself should be a minimum of 1.2 hectares in size and ideally a rectangular shape, to allow for all the required infrastructure as well as sufficient manoeuvring space for heavy motor vehicles.
Interface with Other Infrastructure	Existing underground or overhead infrastructure (such as gas or sewer mains and overhead power lines) can constrain the development and relocating or undergrounding existing infrastructure can increase costs.
Earthworks Required	The volume of earthworks required to engineer the site is a large factor in the total cost to construct a CVSC. The management and removal of any contaminated soils can also increase costs.
Property Purchase	The cost (and the length and complexity of the process involved) to purchase a property is a factor that Waka Kotahi take into consideration when selecting a site.
Safety of All Road Users	It is important that the heavy motor vehicles movements associated with the CVSC do not create a situation where the crash risk is exacerbated or where risk to recreational users such as cyclists is increased.
Environmental Considerations	Waka Kotahi must obtain all required approvals under the RMA and is committed to undertaking their activities in an environmentally responsible manner. Environmental factors are therefore an important consideration for site selection. Waka Kotahi will avoid locating a CVSC in an area that triggers any unreasonable environmental risk, or risk that cannot be adequately remedied or mitigated. CVSCs are preferred in areas where there will be little to no impact on any residential or other sensitive activities such as recreational use areas or schools. High risk natural hazard areas are similarly avoided.

3.2.2 SITES CONSIDERED

Four alternative sites were considered for the southern CVSC in the vicinity of the Mill Road interchange with SH1. The following Table 5 provides an overview of each option considered.

Table 5 - Overview of sites considered

CVSC: Alternative Site Options Considered	
Alternative Option	Site Location Figure
<p>Alternative Option 1 – Mill Road (West of SH1)</p> <p>The site is located at Mill Road (PT ALLOT 6 Parish Mangatawhiri District), to the west of SH1 (Figure 7). The land parcel is 8.68ha and is presently used for market garden and orchard purposes.</p> <p>The AUP Quality-Sensitive Aquifer Management Area Overlay, High-Use Aquifer Management Area Overlay and High-Use Stream Management Area Overlay apply to this site. An AUP Vehicle Access Restriction Control (motorway interchange control) applies to the section of Mill Road at the site frontage.</p>	 <p><i>Figure 7 - Alternative Site Option 1</i></p>
<p>Alternative Option 2 – Between SH1 and Great South Road (SH1 southbound on-ramp)</p> <p>The site is located at the southern half of 2038 Great South Road (Lot 4 DP 161926) as illustrated in Figure 8. The site is zoned Business-Neighbourhood Centre Zone in the AUP.</p> <p>The AUP Quality-Sensitive Aquifer Management Area Overlay, High-Use Aquifer Management Area Overlay and High-Use Stream Management Area Overlay apply to this site. An AUP Vehicle Access Restriction Control (motorway interchange control) applies to the section of Mill Road and Great South Road at the site frontage.</p>	 <p><i>Figure 8 - Alternative Site Option 2</i></p>

Alternative Option 3 – South of Mill Road and Great South Road Intersection

The site is located on the southern side of Mill Road, east of the SH1 (Pt Lot 1 DP 50718) on land within the Rural-Rural Production Zone as shown in Figure 9. The AUP Quality-Sensitive Aquifer Management Area Overlay, High-Use Aquifer Management Area Overlay and High-Use Stream Management Area Overlay apply to this site. An AUP Vehicle Access Restriction Control (motorway interchange control) applies to the section of Mill Road at the sites frontage on the north-western corner and along Great South Road.



Figure 9 - Alternative Site Option 3

Alternative Option 4 – North of Mill Road and Great South Road Intersection

The site is located to the north of Mill Road off Great South Road, west of SH1 (Pt Lot 1 DP 50718) on land within the Rural-Rural Production Zone as shown in Figure 10. The AUP High Use Stream Management Areas Overlay, High Use Aquifer Management Areas Overlay, Quality-Sensitive Aquifer Management Areas Overlay, Bombay Volcanic Overlay and Franklin Volcanic Aquifer Overlay apply to this site.

The site lies in pastoral field with no existing buildings or structures.

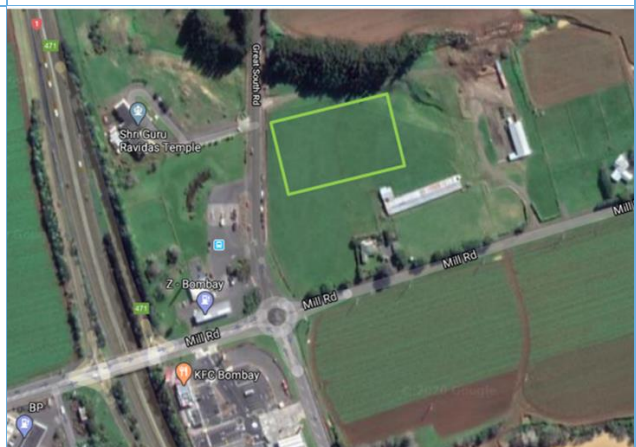


Figure 10 - Alternative Site Option 4

Another site consideration was the existing weigh station facility located at Firth Street, Drury. This site is already established and located in an urban area (Light Industry Zoning under the AUP). It is also located in an area that could capture all traffic travelling along the state highway network. However, it was not considered a feasible location for the following reasons:

- It only provides a limited weigh station facility and is not able perform a broader range of safety checks;
- The surrounding area has been identified for urban growth with 22,000 households planned; and
- Pukekohe via Mill Road is a freight destination and is recognised as a future freight-generating area. Any site located between the Bombay Interchange and Drury would miss all the freight going to Pukekohe (and State Highway 22 via Pukekohe would provide an alternative avoidance route).

Based on the above, it was considered that the existing facility is inadequate to meet the desired strategic objectives and a site south of Drury is therefore, preferred. A CVSC site located near the Mill Road (Bombay) Interchange would capture all vehicles heading to/from either Pukekohe or Drury.

3.2.3 ASSESSMENT OF OPTIONS

Table 6 outlines the assessment of the options, taking account of the strategic considerations and other relevant matters.

Table 6 - Consideration of alternative options

CVSC: Assessment of Options	
Option	Consideration of Option
Option 1	<p>At the time the alternatives assessment was undertaken, the section of Mill Road in front of this site was 70km/h in this location¹, and has an existing flush median to facilitate a right turn bay into the site.</p> <p>Due to the location of the entry and exit at the BP petrol station on the other side of the road, there is a high probability of conflicts. The assessment concluded there is insufficient space on Mill Road for vehicle movements to and from the BP, and heavy motor vehicle movements to and from the CVSC, to be undertaken concurrently while meeting Waka Kotahi safety guidelines.</p> <p>Safe access and egress to and from this site for heavy motor vehicles would not be possible.</p>
Option 2	The site is too small at less than 1 hectare. A site visit showed that there is a substantial area of filled ground and stormwater attenuation on the northern part of the site which further reduced the area of suitable ground for the CVSC.
Option 3	The site is a cultivated field in a well-established market garden. In selecting a site for a CVSC, Waka Kotahi would prefer to obtain a site that is surplus to requirements and does not have an existing productive use.
Option 4	<p>Identified as the preferred option because:</p> <ul style="list-style-type: none"> • The site meets all of the strategic requirements for a CVSC; • The site's current use is pasture grass only; • There are no other locations near the Mill Road interchange where proximity to residential activity can be avoided; and • GSR in this location is 70km/h² and has existing 3.5m sealed shoulders on both sides of the road. There is sufficient space to provide safe access and egress for heavy motor vehicles without requiring much additional widening.

Based on the option selection process, Option 4 was identified as the preferred location for the CVSC at Bombay.

3.3 ALTERNATIVES ASSESSMENT SUMMARY

Four alternative site options near the Bombay Interchange were evaluated, being the only location that would allow safe access and egress to and from State Highway 1 for both north and south bound vehicles. The preferred option is the proposed site, at 253 Mill Road.

The CVSC is not an unusual operational activity (there are comparative uses already established such as existing weigh bridges, servicing and inspection centres). A new designation provides consistency in the planning framework across the CVSP, with appropriate visibility of the CVSC provided through the designation.

The work and designation proposed are considered reasonably necessary for achieving the objectives of Waka Kotahi and the road safety programme and an appropriate method.

¹ Auckland Transport Open GIS Data shows a subsequent speed reduction to 60km/h along this stretch of Mill Road

² *ibid*

The work undertaken to date is considered sufficient to support an alternatives site assessment for the NOR in accordance with s171(1)(b).

4 STATUTORY CONTEXT

4.1 OVERVIEW

Section four of this report outlines the relevant statutory consideration and approvals for the Project in accordance with s171(1)(a) of the RMA, noting any relevant provisions contained within a national policy statement, regional policy statement and plans.

4.2 RESOURCE CONSENTS SOUGHT

The proposed work has been considered against the provisions of the AUP and these are provided in **Part C- Appendix C**.

The identified reasons for consent that are required for the construction and operation of the CVSC are provided in Table 7 below.

Table 7 - Reasons for Consent

Activity Rule	Consent Status
Chapter E3 Lakes, rivers, streams and wetlands E3.4.1 (A44) Any activities not complying with the general permitted activity standards in E3.6.1.1 or the specific activity standards in E3.6.1.14 to E3.6.1.23	Discretionary
Chapter E7 Taking, using, damming and diversion of water and drilling E7.4.1(A28) The diversion of groundwater caused by any excavation, (including trench) or tunnel that does not meet the permitted activity standards or not otherwise listed	Restricted Discretionary
Chapter E8 Stormwater – Discharge and diversion E8.4.1 (A10) All other diversion and discharge of stormwater runoff from impervious areas not otherwise provided for <i>Diversion onto or into land or water from an impervious area greater than 5,000m²</i>	Discretionary
Chapter E26 Land disturbance E26.5.3.2 (A107) Greater than 2,500m ² within the Sediment Control Protection Area other than for maintenance, repair, renewal, minor infrastructure upgrading	Restricted Discretionary
Chapter E15 Vegetation Management and Biodiversity E15.4.1 (A18) Vegetation alteration or removal within 20m of a natural wetland	Restricted Discretionary
E30 Contaminated Land E30.4.1 (A6) Discharges of contaminants into air, or into water, or onto or into land not meeting permitted activity Standard E30.6.1.1; E30.6.1.2; E30.6.1.3; E30.6.1.4; or E30.6.1.5	Controlled

Based on the above, the overall activity status of the application is **Discretionary**.

4.3 PERMITTED ACTIVITIES

A number of activities associated with the Project can be undertaken as a permitted activity based on the provisions of the AUP. A permitted activity check is provided in **Part C- Appendix C**, and includes the following:

- Conservation planting (as defined in the AUP) and associated diversion of water (associated with the induced wetland)
- Pest plant removal
- Provision of erosion control structures less than 30m in length

- Stormwater outfall
- Temporary diversion and damming of surface water and the discharge of treated sediment laden water from land disturbance activities
- Discharge to air from the engines of motor vehicles during CVSC operations
- Underground pipelines and ancillary structures for the conveyance of water, wastewater and stormwater
- Water, wastewater and stormwater storage tanks
- Stormwater treatment devices
- Operation, maintenance, renewal, repair and minor infrastructure upgrading, of infrastructure within the 1 per cent annual exceedance probability (AEP) floodplain (CVSC and accessway)
- Temporary activities associated with building or construction for the duration of the Project, or up to 24 months, whichever is the lesser

4.4 OTHER STATUTORY APPROVALS

This section outlines other relevant statutory approvals which are applicable to the proposed work.

4.4.1 HERITAGE NEW ZEALAND POUHERE TAONGA ACT 2014

The Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) manages New Zealand's historic and cultural heritage. Under the HNZTA, an archaeological authority must be sought via Heritage New Zealand Pouhere Taonga to destroy, damage, or modify any archaeological site.

The ArchCheck and Archaeological Assessment (**Appendix G**) have confirmed there are no known archaeological or heritage sites noted on any database, or identified on the New Zealand Archaeological Association ArchSite GIS platform, within or approximate to the vicinity of the site.

Completion of these detailed archaeological assessments has confirmed that the potential of significant remnants on site is low risk, and no archaeological authority is required. This matter is assessed in section 7.5 of the AEE.

4.4.2 WILDLIFE ACT 1953

The Wildlife Act 1953 specifies wildlife that are to be absolutely, or partially protected throughout New Zealand and New Zealand fisheries waters. All indigenous lizard species are 'absolutely protected' under the Wildlife Act. The potential presence of terrestrial and freshwater wildlife that may be present within the proposed work extent has been assessed by an ecological specialist, and the outcomes of the Ecological Impact Assessment (EclA) (**Appendix H**) is discussed in Section 7.7.

The EclA confirms that a salvage permit approach is appropriate.

Authorised personnel within the Auckland region who hold a current permit from DoC may carry out necessary lizard management activities (such as salvage and capture of any lizards) as an Authority under the Wildlife Act 1953. Ecology New Zealand, a provider of professional ecological services, hold an existing permit. The permit requirements specify any salvage operations must be accompanied by a site-specific Lizard Management Plan (LMP) prepared prior to construction commencement.

5 DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 SITE OVERVIEW

The Project site is located in the Bombay area of Auckland, around 42kms south of Auckland's City Centre. To the south of the site is Mill Road, with GSR to the west.

There are no buildings or structures within the boundaries of the proposed CVSC designation, which lies in pasture.

Figure 11 provides an overview of the area surrounding the site.



Figure 11 - Location of Site

There are no underground services to the site although potable water supply infrastructure is located further east along Mill Road. Stormwater infrastructure is evident at properties opposite the site, but the network is otherwise limited due to the rural zoning. The nearest Auckland Council infrastructure (as per the database) are situated opposite GSR and near the Bombay Village within the Residential - Rural and Coastal Settlement zone.

A summary of site information is provided in Table 8.

Table 8 - Site Information

Name of site	Bombay / Pukekura
Site Address	253 Mill Road, Bombay
Legal Description	Lot 1 DP 124783
Land Ownership	Waka Kotahi NZ Transport Agency, Montilla Properties Limited
Site area	1.23ha (proposed designation area, parent parcel site is some 5.24 hectares)
Unitary Authority	Auckland Council
Relevant plan	Auckland Unitary Plan Operative in Part (AUP)
AUP Information	
Zoning of site	Rural Production
Natural features overlays	High Use Stream Management Areas Overlay High Use Aquifer Management Areas Overlay Quality-Sensitive Aquifer Management Areas Overlay Bombay Volcanic Overlay Franklin Volcanic Aquifer Overlay
Controls	No Vehicle Access Restriction Control but this does apply to the south-west corner of 253 Mill Road (near roundabout),

	Macroinvertebrate Community Index Control
Surrounding zoning	Rural Production Zone Rural and Coastal Settlement Zone Mixed Rural Zone Neighbourhood Centre Zone (Bombay Precinct)
Sensitive sites/buildings	<u>No</u> heritage features or overlays or scheduled site of significance for mana whenua.
Designation	The site has no other designations.
Non-AUP Information	
Hydrology and flooding	Rivers and Permanent Streams - River No. 4662 (approximate but not within the project site) Overland Flow Paths (1ha to 3ha; 2000m ² to 4000m ² ; 4000m ² to 1ha) Flood Prone Areas (100yr ARI) Flood Sensitive Area
Servicing	No existing water supply, wastewater disposal and stormwater disposal at the site.

5.2 PHYSICAL AND BUILT ENVIRONMENT

Residential properties and both commercial and rural production activities are located within the vicinity of the Project site at GSR and Mill Road. The closest residential dwelling at No. 253 Mill Road (Lot 1 DP 124783) is approximately 80m from the site, and one other residential dwelling is less than 200m away.

The parent site contains other buildings including a large farm shed approximately 30m to the north-east of the dwelling and a repairs business (Gecko Fibreglass Repairs) located approximately 165m to the east of the CVSC site. A large shed style building and numerous out buildings, along with a metalled circulation and parking area for trucks, are located on the site. The built forms in this context are consistent with predominantly agricultural and horticultural purposes and supporting farm buildings and structures on rural blocks, interspersed with urban developments on the flanks of the Bombay Hills.

SH1 is located to the west of the site, and the National Grid (Transpower) line and the Bombay substation are visible on the hills above the Bombay Village to the east.

Situated approximately 220m away on the elevated flanks of the Bombay Hills, is the settlement of Bombay Village. Many residential dwellings within the village are orientated to the west and will potentially have views of the proposed work out across the lower lying landscape.

West-facing properties include those off Christa Place (No. 8, 9 and 10), Bombay Road (No. 138 and 114) and the western extent of Lawrence Carter Drive (No. 2). No. 9 Christa Place is located approximately 346m from the proposed work and is orientated towards the site with a direct, open view. The Christa Place residential area is largely covered by the AUP Urban Subdivision Variation Control (USVC).

Other activities occurring in the vicinity of the site include:

- Two petrol stations and specific refueling station for heavy vehicles;
- A motor workshop;
- A religious temple; and
- Residential and lifestyle block farming activities.

At No. 1998 GSR (located across from the Project site), is the Shri Guru Ravidas Temple (SGR Temple), shown in Figure 11. The temple buildings are set back within the property, approximately 117m from the site frontage with GSR and orientated in a north easterly direction. There are a number of established trees dotted within the property, with solid fencing and low growing amenity planting at the site frontage.

Situated to the west of SH1 is the BP Petrol Station, along with various fast food outlets surrounding the Bombay Interchange. A similar facility is provided to the east of SH1 (located to the south of Mill Road), providing a number of fast food outlets and office space at the small Bombay business area known as "The Junction". The Junction is within the Business-Neighbourhood Centre zone, within walking distance of the site, and provides some commercial services for the community in particular the Rural and Coastal

Settlement zoned area as well as general commuters on the network. A Waitomo Petrol Station also adjoins the centre.

5.3 NATURAL ENVIRONMENT

5.3.1 NATURAL LANDSCAPE FEATURES

The volcanic landscape is the predominant landform in the context of the site with the Bombay Hills and visible twin peaks of Mt William to the south.

The surrounding rural blocks feature established vegetation largely on the boundaries, to delineate fence lines and boundaries, or contained to gullies and streams. The site similarly illustrates this geometric pattern of rural agricultural development, predominantly being grassed pasture with no established vegetation, except at the frontage to Mill Road, and a mix of native vegetation and established pine shelter belt along the northern Ngakoroa stream margins. The stand of pine trees along the Ngakoroa Stream gully are the dominant natural feature in the landscape, which obscure views of built development, further to the north along GSR.

The meandering and irregular network of streams and gully systems as part of a wider flood plain and hydrological network contribute to some natural character within this landscape but within a modified rural landscape.

In this context the freshwater bodies (streams and wetland) appear more as low-lying depressions in the landscape.

5.3.2 FRESHWATER

A tributary of the Ngakoroa Stream is situated to the north of the proposed CVSC site. Classified as River 4662, this stream is an open watercourse. An 582m² induced wetland is located at the north-eastern corner of the site which is connected to the Ngakoroa Stream through a 450mm culvert under the existing private access road. A portion of the wetland (approximately 210m² in size) is located within the designation boundary.

A statutory acknowledgement for the Ngakoroa Stream and its tributaries (OTS-129-20) applies to the entire site and wider context. This acknowledgement forms part of the settlement for Ngāti Tamaoho, provided under Treaty settlement legislation for areas within Auckland. The acknowledgement recognises the association between Ngāti Tamaoho and a particular site or area and enhances the iwi's ability to participate in specified RMA processes³. This matter is addressed further in sections six and nine.

Wetland vegetation, hydric soil and hydrology was confirmed across the lowest lying areas around the wetland margins, being plots 1, 2 and 4 (of a total five plots) as illustrated in Figure 12.

³ Te Kāwanatanga o Aotearoa New Zealand Government – Ngāti Tamaoho Deed of Settlement summary

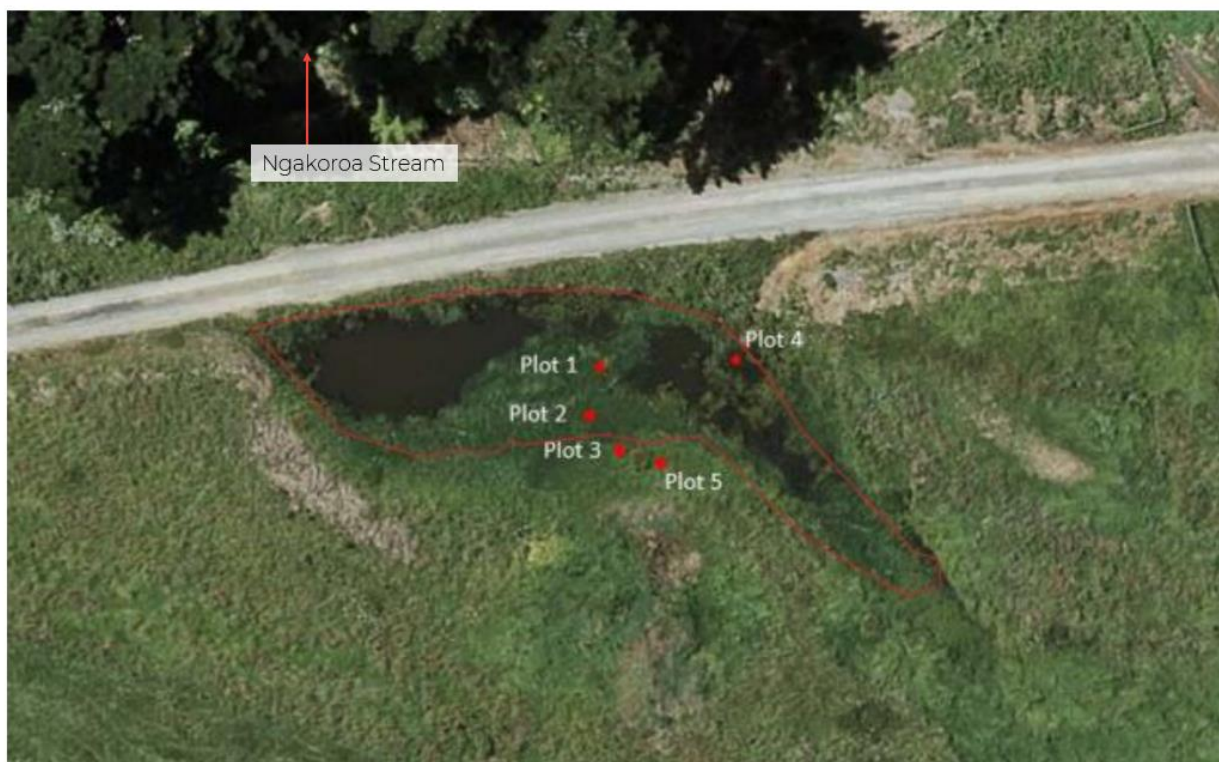


Figure 12 - Vegetation plots assessed as part of the wetland delineation procedure with delineated wetland outline (red line) (WSP, 2023)

5.3.3 DRAINAGE CATCHMENTS

The AUP regional 'Natural Resources' planning overlays which apply to the Project site, are the Quality-sensitive Aquifer Management Areas overlay, High- Use Aquifer Management Areas overlay, and High-use Stream Management Areas overlay. No other regional planning layers apply to the site.

Figure 13 illustrates the known flood prone areas as per Auckland Councils GIS database. The northern site boundary adjoins a known flood plain. Overland flow paths feed into the flood plain from the east. While the Project site is shown to only have a relatively small floodplain, the direction of site stormwater flow will be to significant floodplains downstream.

The existing downstream floodplains are characterised as flood prone areas (depressions) which are restricted by culvert outlets.

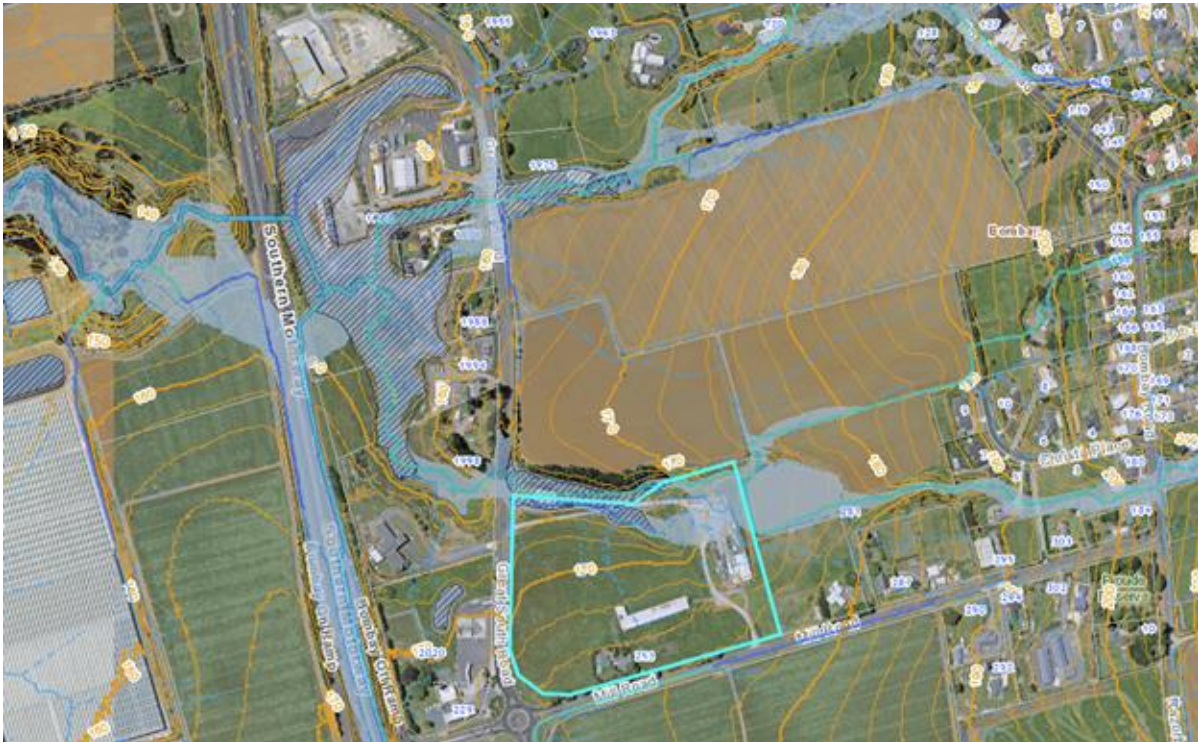


Figure 13 - Downstream Flood Plain and Flood Prone Areas (AC GeoMaps)

5.3.4 GEOLOGY AND SOILS

The soil stratigraphy has been inferred from the desktop analysis summarised in the Geotechnical Factual Report, and site investigations as described in the Geotechnical Interpretive and Design Report. The analysis has considered historical information such as geology mapping and nearby New Zealand Geotechnical Database data.

The CVSC is located within the South Auckland (sometimes called Franklin) Volcanic Field, containing more than 80 volcanic centres⁴. Many of the volcanoes in the north eastern part of the field erupted along fault lines. The largest shield volcanoes are Pukekohe Hill, Waiuku, Mauku, Bombay and the three at Pukekawa⁵. In summary, the Auckland region is characterised by a low seismic risk.

The site is generally underlain by alluvium deposits over basalt, which agrees with the published geology of the South Auckland volcanics, and reflected in the AUP Bombay Volcanic Overlay and the Franklin Volcanic Aquifer Overlay. The typical depths to top layer (4m or less) are comprised of silty clay/clay/clayey silt.

5.3.5 FLORA AND FAUNA

The existing vegetation present within the site is mostly exotic, predominantly agricultural grasses and rank unmanaged grasses and herbaceous weed species. The EclA confirms no 'At Risk' or 'Threatened' plant species were observed within the site. The identified vegetation and habitat are not a reflection of the original ecosystem and extent, classed as WF7, Pūriri Forest within the Bombay context (Singers et al., 2017).

Within the induced wetland, the dominant species observed consisted of mercer grass (*Paspalum distichum*), water pepper (*Persicaria maculosa*), Yorkshire fog (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), and lotus (*Lotus pedunculatus*).

All freshwater values at the location of the site watercourse are assessed as 'low'. This is due to minimal riparian vegetation, limited to exotic species, and no undercut banks or habitat to provide refuge for native

⁴ Hayward, B.W. 2020. A 30-50 year vision for the protection of the volcanic heritage of the South Auckland Volcanic field. *Geoscience Society of New Zealand Newsletter* 32: 3-10.

⁵ Ibid

fish. Furthermore, due to several known barriers downstream of the Ngakoroa catchment, the site is unlikely to support populations of native fish species, with the exception of short-fin eels (*Anguilla australis*).

An ecological site visit confirmed the presence of common native and exotic bird species such as common mallard and chaffinch.

The EclA finds that the ponded area and the stand of pine trees immediately to the north of the site would provide reasonable foraging habitat and potentially the occasional roost for long-tailed bats. It is therefore, more than likely that bats will utilise the habitats immediately adjacent to the site for foraging and commuting, at least intermittently. The stand of pine trees immediately to the north of the site is however, outside of the proposed work area.

The potential for bats is very low within the CVSC site, given there are no suitable habitats for roosting or foraging. However, the likelihood of the presence of bats and intermittent use of the habitat adjacent to the site (in and around the Ngakoroa Stream) has potential high ecological value.

Overall, the Project site is highly modified and consists of predominantly grassed vegetation. The EclA finds there to be potential habitat onsite suitable for skinks, namely the native copper skink (*Oligosoma aeneum*), a species now classified as 'At risk-declining' (previously 'Not Threatened'), and the introduced plague skink (*Lampropholis delicata*). These habitats include rank grass and dense herbaceous weeds.

5.4 TRANSPORT ENVIRONMENT

In the vicinity of the proposed CVSC, both SH1 and the GSR on-ramp at the Bombay Interchange, are designated in the AUP. Table 9 provides the relevant designation numbers. These designations are shown the Designation Plans (**Part A - Attachment A**).

The closest, Designation 6703, is to the south of the current intersection at GSR/ Mill Road. Its purpose is 'road', providing the southbound on-ramp to SH1 via GSR.

Table 9 - List of relevant designations and their purpose and location

Number	Purpose	Location
6700	Motorway	State Highway 1 from south of Quarry Road, Drury to Bombay Road, Bombay
6701	Motorway	State Highway 1 from Bombay Road to Mill Road, Bombay
6702	State Highway – declared limited access road	State Highway 1 from Mill Road to south of Beaver Road East (Waikato District Council boundary), Bombay
6703	Road	State Highway 1 at Great South Road on-ramp, Bombay

Access from SH1 to the CVSC will be from GSR via Mill Road. The speed limit on Mill Road between the Bombay Interchange and GSR is 60km/hr. The section of GSR north of the site previously had a posted speed limit of 80km/h, now reduced to 60km/h. This speed limit change has been in effect since 30th June 2022, as part of Auckland Transport's (AT's) Safe Speeds Programme. There has been no substantial change in the physical characteristics of the road to support the reduced speed limit, since implementation.

A roundabout connects GSR and Mill Road to the south-west of the site. There are currently two points of vehicular access onto the parent site: one from GSR providing connection to the repairs business, and one from Mill Road connecting to the residential dwelling.

The section of GSR at the CVSC site frontage is classified as a 'medium rural' road and currently there are no pedestrian or cycling facilities along GSR. Mill Road also has no footpath or cycling facilities between GSR and the Bombay Interchange.

According to AT’s Roads and Streets Framework (RASf), this section of GSR is identified as having low place and low movement significance. This suggests that this low volume section of GSR, is used to travel to high trip generation destinations of regional importance.

AT’s cycling network map illustrates existing cycling facilities, currently extend to Papakura/Karaka in South Auckland. A separate shared path beside the state highway corridor is currently planned (long term) as part of the Papakura to Bombay Project by Waka Kotahi, which may provide a shared path facility on Mill Road at the Bombay Interchange, but not on GSR itself.

AUP Controls

The AUP Vehicle Access Restriction Control (VARC) – Motorway Interchange control applies at the south-western corner of 253 Mill Road. The VARC seeks to ensure vehicle accesses and crossings are designed and located to provide safe and efficient access for vehicles, pedestrians and cyclists.

Areas where a VAR applies are those where there is a potential higher transportation risk, and specific assessment is needed. This includes risk to other motorists, pedestrians and cyclists. The proposed access and entry crossings to the CVSC, during construction and operation will be located north of the intersection of GSR and Mill Road, with a distance greater than 10m providing appropriate separation from the road intersection, and is not subject to the control.

6 CONSULTATION

6.1 OVERVIEW

Auckland System Management (ASM) (the alliance which operates and maintains the state highway network) and NZ Police (who will operate the CVSC site on behalf of Waka Kotahi) have been involved in the development of the Project. This section summarises the consultation that has been undertaken with other parties and any responses received with respect to the proposed work.

6.2 INTERESTED PARTIES AND KEY STAKEHOLDERS

The organisations, groups and communities identified as having a potential interest in this Project, are listed in Table 10 below. The key issues raised and the outcome of engagement with some of these parties is documented in section 6.5.

Table 10 - Potential Interested Persons

Organisation/ Group/ Community	Role and Interest in the proposed work as key stakeholder(s)
Adjacent landowners, residential, or commercial businesses	Neighbouring or approximate to the CVSC
Auckland Council	Regulator – approval authority for NOR and Resource Consent application.
Auckland Transport	Road Controlling Authority (non-state highway network)
Franklin Local Board	Community representatives
Road Transport Forum	Represents the commercial freight industry
Wider Bombay local business and residential community and/or community groups	Wider community and interests; Bombay neighbourhood centre (“The Junction”)
Department of Conservation	Potential interest in Project and any relevant statutory requirements

Heritage New Zealand Pouhere Taonga	Potential interest in Project site and any statutory requirements concerning heritage, archaeology and cultural heritage (sites of significance)
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6.3 MANA WHENUA

Rohe maps (held by Auckland Council) indicated six iwi with potential interest in the site: Ngāti Tamaoho, Te Ākitai Waiohua, Ngāi Tai ki Tāmaki, Ngāti Te Ata, Ngāti Maru, and Waikato-Tainui.

The Waka Kotahi Southern Iwi Integration Group (SIIG) has been the main forum for engagement with Southern Iwi at regular monthly regional hui between the period November 2021 through to September 2023.

The SIIG is a forum representing iwi who have expressed an interest in Waka Kotahi projects in the south of Auckland. The purpose of the forum is to enable meaningful and efficient engagement on southern projects, mindful of iwi existing commitments and resources. The SIIG is comprised of:

- Ngāti Whanaunga
- Ngāti Te Ata
- Ngāti Tamaoho
- Te Ahiwaru-Waiohua
- Ngāti Maru
- Ngāi Tai ki Tamaki
- Te Ākitai Waiohua; and
- Ngāti Tamaterā (receive monthly meeting invitation and agenda but do not attend)

All iwi above, regardless of attendance at the monthly meetings receive the meeting agenda and minutes of the SIIG.

Waka Kotahi representatives have attended numerous SIIG hui to share information on the Project, understand cultural values associated with the site and works and seek feedback. This information has then fed back into the Project and design development.

A site visit was also held with iwi in March 2022. Particular matters raised at the site visit related to stormwater management, source controls and treatment, the northern Ngakoroa Stream and the wetland.

A separate hui was also held on 11 August 2022 at the request of Ngaati Te Ata Waiohua.

6.4 SUMMARY OF ENGAGEMENT METHODS

Engagement methods to date, have included:

- Meetings with and/or emails/letters sent to the following parties:
 - Landowner
 - SGR Temple
 - Auckland Council
 - Auckland Transport
 - Iwi/ Mana Whenua
 - Franklin Local Board
 - Bombay Community Collisions Group
 - Bombay Community Group
 - Department of Conservation
 - Network utility operators
- Specific meeting forums such as the SIIG Hui and Local Board Workshop
- Project site visit with the technical specialists and representatives of the SIIG

6.5 CONSULTATION AND ENGAGEMENT FEEDBACK

The Consultation and Engagement feedback received, and views expressed from the relevant stakeholders is summarised below:

6.5.1 LANDOWNER OF RESIDUAL TITLE AT 253 MILL ROAD

Waka Kotahi has engaged closely with the landowner of the property at 253 Mill Road throughout this process as a directly affected party. Those discussions are continuing with regard to the land requirements for temporary occupation.

6.5.2 SHRI GURU RAVIDASS TEMPLE (SGR Temple)

Project representatives met with some members of the SGR Temple on the Thursday 3 November 2022, on site at 1998 GSR.

An overview of the Project and associated works were presented, and a draft copy of the layout plan was handed out.

In summary, the members had no concerns about the Project but raised some queries which were responded to, based on information available at the time. These matters related to construction timing, parking, utilities and water supply/wastewater systems, and the timing for installation of fibre broadband (UFB) cables.

6.5.3 AUCKLAND TRANSPORT

The required supporting infrastructure will be partially located within the road reserve for which AT are the road controlling authority. Operationally, HCVs will be directed from the state highway network along Mill Road and GSR, part of AT's arterial road network, to the CVSC.

A pre-application meeting was held with AT representatives and Auckland Councils engineer on 21 June 2022. The pre-application meeting presented the strategic objectives and site requirements, a set of the Concept Design Plans, and canvassed the land use requirements for the VMS supporting infrastructure and access beyond the existing Waka Kotahi designation extents. Key items of feedback related to the CVSC entry and egress widths, provision of safe right turn facility, operational traffic effects and operational maintenance requirements.

The above matters have been addressed as part of the design development process, assessed in the Traffic Impact Assessment (TIA). The TIA incorporates responses to the peer review subsequently undertaken by Edin Transport Consultants and AT.

6.5.4 HEALTHY WATERS (AUCKLAND COUNCIL)

Project representatives discussed the proposed Concept Design with Healthy Waters at Auckland Council. Healthy Waters confirmed that the site should be assessed as per a site under the provisions of a Stormwater Management Area Control (SMAF) site, deemed appropriate to protect and enhance the freshwater environment. The feedback received in 2022 has informed the flood modelling exercise as well the stormwater proposal, which features stormwater detention to assist hydrologic mitigation. The matters are addressed in the Flood Assessment and described in section 7.6.

6.5.5 AUCKLAND COUNCIL – PRE-APPLICATION MEETING

A pre-application meeting was held with Auckland Council in April 2023 with representatives from the regulatory and policy teams. Attendance by technical specialists for stormwater, ecology, landscape and visual architecture and engineering were present and a pre-application summary was provided with the detailed design set and proposed designation plans.

Key issues discussed were the scope of the NOR and applications, National Policy Statement matters; Cultural Values Assessment; notification assessment; effects management hierarchy; proposed planting; three-waters and groundwater.

6.5.6 DEPARTMENT OF CONSERVATION

The Department of Conservation (DoC) RMA team were contacted in April 2022 regarding the proposed work and provided with plans of the CVSC site location. DoC responded via email (dated 27 April) confirming that they do not require further input with the Project and had no comments.

6.5.7 THE FRANKLIN LOCAL BOARD

The Franklin Local Board were provided an overview of the proposed work at a Local Board workshop on the 24 May 2022 via a virtual Teams presentation.

The key concerns of the local board members raised centred around the existing traffic issues on Mill Road and public/community concerns about this worsening. Ensuring project alignment and coordinated timing of project implementation were key matters.

The local board did not identify further community groups, with the exception of the Bombay Collisions Group who already meet regularly with Waka Kotahi Communications and Engagement Team, on projects relating to the area.

6.5.8 BOMBAY COLLISION CROSSROAD ACTION GROUP AND THE BOMBAY COMMUNITY GROUP

Waka Kotahi Communications and Engagement Team have met with the Bombay Collision Crossroad Action Group (BCCAG) on several occasions, most recently in February 2023, to update the community group on the CVSC proposed work. The BCCAG have expressed interest and significant concerns regarding the existing safety of the Bombay Interchange.

The Bombay Community Group have also been updated on the proposed work most recently in February 2023 with further engagement with the group expected.

6.5.9 NETWORK PROVIDERS

The Project will require network utility connections with providers One.NZ (previously Vodafone) and Counties Power. The Project team been in contact with Counties Power to discuss the necessary connections to the site. Discussions with these network providers are ongoing as detailed design is refined for these separate stages of work.

7 ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

7.1 OVERVIEW

This section is an assessment of the actual and potential effects that can be reasonably expected from the proposed work. This assessment is consistent with the requirements of Schedule 4 of the RMA with the level of assessment provided considered to be sufficient to meet the requirements of sections 104(1)(a), 171(1) and 171(1B), and 176A(3) of the RMA.

Technical assessments in support of the NOR and resource consent, are appended to this AEE. The NOR includes proposed designation conditions and draft resource consent conditions are included with the consent application forms.

7.2 TRAFFIC AND ROAD NETWORK EFFECTS

7.2.1 ASSESSMENT METHODOLOGY

A Traffic Impact Assessment (TIA) has been prepared to assess the potential effects relating to construction activity (temporary) and the operation of the CVSC (permanent effects), on the road transport network. A copy of the TIA is provided in **Appendix E**.

A study area for the TIA was identified, which includes:

- State Highway 1 Southbound off-ramp to Mill Road
- State Highway 1 Northbound off-ramp to Mill Road
- Mill Road, between the roundabout with GSR and the State Highway 1 interchange
- GSR, between the roundabout with Mill Road and to just north of the Project site

7.2.2 OPERATIONAL TRAFFIC EFFECTS

The operational scenarios assessed in the TIA assume on average about 15 HCVs per peak hour will be processed at the CVSC. This is approximately one vehicle every four minutes.

It is assumed that the CVSC operation will have a 50/50 split between HCV coming from the northbound and southbound off-ramps of State Highway 1. An assumption has been applied for staff and visitor trips, also split between northbound and southbound entry to the CVSC.

Table 11 identifies the anticipated trip routes to/from the CVSC.

Table 11 - Anticipated trip routes to and from the CVSC

To CVSC	From CVSC
HCVs travelling northbound on SH1 will take Bombay off-ramp, turn right onto Mill Road, turn left onto GSR, and turn right into CVSC	HCVs exiting the CVSC turn left onto GSR, turn right at Mill Road and turn right onto the SH1 northbound on-ramp
HCVs travelling southbound on SH1 will take Bombay off-ramp, turn left onto Mill Road, turn left onto GSR, and turn right into CVSC	HCVs exiting the CVSC turn left onto GSR, turn right at Mill Road and turn left onto the SH1 southbound on-ramp

7.2.2.1 BOMBAY INTERCHANGE

To assess the impact of the CVSC on the road network, the following three scenarios have been modelled at the Bombay Interchange:

- Scenario 1: Existing / base case (stop control) for both off-ramps
- Scenario 2: Existing (stop control) off-ramp layout with CVSC traffic (operational)
- Scenario 3: Signalisation at both SH1 off-ramps onto Mill Road with CVSC traffic (operational)

Signalisation at the Interchange will be implemented through a separate process/project involving temporary upgrades to the existing Bombay Interchange (Mill Road), until a full interchange upgrade is constructed as part of the Waka Kotahi Papakura to Bombay/ Papakura ki Pukekura Project (P2B) Stage 3, long term improvements. The anticipated effects have been accounted for in scenario 3 with signalisation in place, once the CVSC is operational.

The modelling of network conditions at the Interchange adopts the worst-case scenario, being the afternoon peak hour where HCVs are currently some 12% of the total traffic. To understand effects upon the network, the Level of Service (LoS) criteria has been applied.

NORTHBOUND OFF-RAMP

The LoS for the northbound off-ramp modelled in scenario 1 (base case scenario) is “B”, with majority of vehicular turns being left onto Mill Road, travelling west.

The assessment of the northbound off-ramp under scenario 2 finds both an increase in the queue length, and significant delays for right turning vehicles onto Mill Road. The LoS for the northbound off-ramp is

changed from “B” to “E” as it reaches capacity. Given the available queue length of 43m at the off-ramp, the delay will not affect the operation or result in extended queues onto Mill Road or restrict access for left turning vehicles at the off-ramp.

The third scenario modelled the operation of the CVSC with signalisation at the Interchange. Under scenario 3, a significant queue distance would be experienced at the northbound off-ramp, resulting in a LoS “F”. Approximately seven to eight HCVs could be added to the queue, before blocking access to the additional left-turn lane to the Mill Road (west) commercial centre and BP gas station. Approximately 19 to 20 HCVs could be added to the general traffic queues before overspill into the state highway traffic lanes. There are no expected issues with queueing impacting the flow of traffic on the state highway.

SOUTHBOUND OFF-RAMP

The LoS for the southbound off-ramp modelled in scenario 1 is “F”, with the majority predominantly right turns onto Mill Road, travelling west.

As with the northbound off-ramp, the modelling of the southbound off-ramp under scenario 2 confirms a significant delay for left turning heavy vehicles and additional queue length. The LoS for right turning vehicles at the southbound off-ramp will continue to perform at a LoS “F”, with an 187 second delay (approximately 32 sec increased from 28 sec in the base case scenario). The LoS for left turning vehicles and queue length on approach to Mill Road is influenced by the delay from right turn vehicles where queues extend beyond the dedicated 50m left-turn lane. The extended queue length however, does not extend beyond the length of the off-ramp, and onto the state highway under scenario 2.

Under scenario 3, the southbound off-ramp will have a LoS “E”. The southbound off-ramp queue distance is greater than the northbound, and only one or two HCVs could be added to the general traffic queues before overspill into the state highway traffic lanes. The low volume of additional heavy vehicle traffic generated by the CVSC, would exacerbate this excessive queue distance.

In summary, the PM peak is the critical peak for the off-ramp intersections on Mill Road. Under the base case scenario, the CVSC can operate at all peak periods using existing northbound and southbound stop control at the off-ramps, without blocking live state highway lanes. It is expected that any future signalisation of the off-ramps (scenario 3) will provide better operational performance at the Interchange over base scenario and scenario 2, but requiring mitigation to avoid significant queues during the PM peak. This reduced queue capacity would limit the number of southbound HCV that can be directed to the CVSC during the PM peak to ensure no impact on the flow of traffic on the state highway. No such effect is currently anticipated for the northbound traffic if signalisation is implemented due to the available queue capacity.

7.2.2.2 SITE ACCESS AND EGRESS FROM GREAT SOUTH ROAD

HCVs will travel from SH1 via Mill Road and on to GSR, with the majority of vehicles making a right turn into the site.

At present, the section of GSR fronting the site is formed from two single lanes with wide shoulders. A turning bay assessment has been undertaken to assess potential safety issues with throughfare traffic potentially bypassing any HCVs, waiting to turn right into the site, to continue journeying north. The assessment of opposing traffic data for GSR finds on average, only 90 vehicles travelling south during peak hour. This equates to an arrival rate of 40 seconds between vehicles, which is considered ample to provide gaps to allow for HCVs turning into the CVSC, without significant wait times.

Based on the opposing traffic volumes (southbound) on GSR, it is anticipated that the new flush median will be used for short wait times before there is a gap to turn into the site.

A review of the Waka Kotahi Crash Analysis System (CAS) database was also undertaken as part of the TIA identifying the known safety issues on the road network between the CVSC and the state highway including the Mill Road/GSR roundabout, on approach to the site. The review found no safety incidents or concerns of note. As such, no retrofitting of the Mill Road/GSR roundabout will be required to ensure safe and efficient movement of vehicles to and from the site.

The TIA has also assessed the approach sight distance (ASD) requirements for the proposed accesses on GSR. This was based on an operating speed of 84.6 km/h and applying grade correction for a non-

level road⁶. The total required safe intersection sight distance (SISD) is determined as 212m. The available sight distance to the north of the proposed site access is approximately 215m, which is sufficient to meet the required ASD of 141m and the SISD of 212m. This is an important functional aspect of the CVSC site location.

Vehicle crossing width standards will be exceeded for the CVSC to service over dimensional vehicles and due to tracking requirements. According to AUP Standard E27.6.4.2(2), the width of vehicle crossings at the site boundary must not exceed 6m (or provided that a maximum width of 9m is permitted where the crossing needs to accommodate the tracking path of large heavy vehicles). The CVSC entrance is 12m wide, CVSC exit is 14m wide, and the crossing width is 17m at the site boundary to service oversized vehicles.

The TIA confirms there is adequate separation distance between the CVSC site access and the reinstated private accessway to the north of the site.

In summary, HCV entry and egress will not have effects on the operation of the Mill Road/GSR intersection or GSR arterial.

7.2.2.3 STAFF AND VISITORS

The office building has seating for 12 staff as a maximum with 6-8 being an average expected occupancy. The nine proposed staff parking spaces and four visitor parking spaces will meet the anticipated average site usage. Additional non-staff visitors would be rare. The TIA confirms mobility accessible carparking requirements under the AUP, for parking spaces with under 20 car parks, will be met by the one car park.

Due to the onsite water and wastewater requirements, it is expected that tankers will likely make weekly to bi-weekly trips to refill (water) and empty (wastewater) tanks. This could be scheduled to occur during off-peak hours at the CVSC to minimise impact on site operations.

7.2.3 CONSTRUCTION TRAFFIC EFFECTS

Potential construction effects include disruption to the local roading network being GSR and Mill Road, particularly throughout the duration of the earthworks when the majority of the traffic movements will occur.

The proposed access to the site will be to and from GSR via Mill Road, and may be subject to specific temporary traffic management where appropriate.

The anticipated traffic movements during the earthworks operations entail both earth removal (unsuitable for fill) from the site and movement of engineered fill to the site. The nett calculated earthwork volume for cut is approximately 23,000m³ and the volume of fill required is approximately 180m³. In addition, it is anticipated that the engineered fill required for the Project is approximately 2,500m³ plus an additional volume of 2,500m³ to be carted off site to accommodate the engineered fill. In total (taking into account bulking and density of the material), the amount of unsuitable material to be transported off site is approximately 3,500 tonnes.

Construction of the CVSC is anticipated to occur for a duration of 12 months. The bulk earthworks phase is anticipated to occur during the first six months of the CVSC construction programme. For this site in particular, given the site constraints and size of the construction site, typically six-wheeler trucks with a capacity to cart about 10 tonnes will be used for the Project. Assuming in an hour, the site can be worked by two excavators loading four truck loads of material to cart off site, this equates to a movement of eight trips in an hour over a 20-week period. The engineered fill will be transported to the Project site during the second half of the CVSC construction period and with the other construction activities in progress, it is anticipated only two to four trucks per hour are required to transport the engineered fill to site over a period of four weeks.

As the truck movements and earthworks period can be reduced should the constructors adopt the use of larger trucks, the potential construction traffic effects are assessed as being less than minor.

⁶ Austroads Guide to Road Design (AGRD) Part 4A

7.2.4 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

7.2.4.1 MEASURES DURING CONSTRUCTION

The TIA finds that implementation of temporary traffic control and all construction traffic movements can be appropriately managed through a Construction Traffic Management Plan (CTMP) for the full construction duration.

With the requirements of the CTMP implemented, temporary construction traffic effects upon the road network will be less than minor.

7.2.4.2 MEASURES AT THE BOMBAY INTERCHANGE

The key mitigating factor is that the number of HCV directed to the CVSC per hour can be reduced during the peak hour, in response to the feedback detection at the Interchange and queuing at the off-ramps. Alternatively, the same concept can be applied if the CVSC is at capacity.

The operational traffic, being up to 15 HCVs per hour during the peak, will have less than minor effects on the network.

The TIA modelling has confirmed that the CVSC site can operate with less than minor effects on the queuing capacity and avoidance of traffic on the state highway under all scenarios, with the exception of the southbound off-ramp which has limited queue capacity to absorb HCV traffic generated by the CVSC if signalisation at the Bombay Interchange is in place (scenario 3).

To mitigate this effect, annual monitoring of the safety performance of the on and off-ramps at the Interchange, and roads within the immediate vicinity of the CVSC, is recommended in the TIA. This will ensure the timely identification and response to emerging trends on the network.

The interchange signalisation is a future proposed measure to remedy the existing interchange traffic issues and does **not** form part of the proposed work. The effects with signalisation in place have been assessed in scenario 3.

Planned interim improvements at the Interchange include improving the safety of vehicular crossings over Mill Road for vehicles exiting the western Bombay commercial centre (near BP station) through the provision of a waiting facility to assist the merge into east-bound traffic. Projected improvements in FY2025 associated with the P2B Stage 3 long term improvements, will also address future growth capacity.

To address potential operational traffic effects associated with the CVSC the following is proposed:

- Extra detection loop installation at the state highway off-ramps to monitor vehicle queuing at the Bombay Interchange
- GSR improvements
- Limiting the number of HCV that can arrive at the site at any one time; and
- CVSC Operational plan with operating parameters

With the above mitigation measures implemented, the effects upon the Bombay Interchange are less than minor.

7.2.4.3 CVSC ACCESS AND CIRCULATION

Various measures to improve site circulation and access and egress from the CVSC are also proposed:

- Internally, site operations are optimised through utilising a one-way circulation design for vehicles and providing separate entry and exit points. This measure also minimises vehicular and pedestrian conflicts within the site. Carparking for most staff and visitors are provided adjacent to the compliance station building to avoid pedestrian conflicts.
- A separate bypass lane limits site congestion for those vehicles cleared to exit the site and ensures an efficient processing process.
- Alterations to the existing road layout along GSR that will provide a right turn bay with sufficient space for HCVs waiting to turn into the site. The new road configuration proposed on GSR would accommodate a flush median, considered the most appropriate option.

- A red threshold surfacing is proposed in front of the site, to address any situations where over-dimensional vehicles are directed to the CVSC, which could result in taking up the whole road width when turning. This design detail will be confirmed in consultation with Auckland Transport.
- 'No stopping at all times' (NSAAT) markings are proposed on GSR between the CVSC site and the intersection with Mill Road to provide suitable visibility for vehicles exiting the site.
- In response to the road safety audit undertaken, additional street lighting along GSR to Mill Road is proposed to ensure safe operations of the CVSC.

Indicative plans for the P2B improvements propose a shared path at the Bombay Interchange along Mill Road up until, but going no further than, the junction with GSR. As such, the future environs in front of the CVSC will not provide additional pedestrian and cycling facilities and will remain on-road use, typical of a rural context. For this reason, effects on these road users from the CVSC site are considered to be less than minor and no further measures are proposed.

7.2.5 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

Based on the assessment of effects relating to the trip generating potential of the CVSC on the surrounding road network operation, and subject to the implementation of recommended mitigation measures, it is concluded that site operating parameters can be appropriately managed and monitored.

The operating parameters, site access, and effects of the Interchange signalisation will be reviewed once the site is operational. With these measures in place the assessment finds the actual and potential effects for traffic will be less than minor.

7.3 LAND DISTURBANCE AND GROUNDWATER EFFECTS

A Geotechnical Site Investigation Factual Report and Geotechnical Interpretive and Design Report (GIDR) have confirmed ground and groundwater conditions, seismicity, and geotechnical hazards to inform the design of the CVSC foundations, and necessary retaining. The outcomes for the scale and nature of land disturbance, and any dewatering requirements during construction, are assessed in this section.

7.3.1 ASSESSMENT METHODOLOGY

An appropriate hazard risk assessment proportionate to the hazard risk and nature of the hazard is required for land use and development requiring consent and should be appropriate to the scale, nature and location of the development. The land is subject to the 1 per cent AEP floodplain, overland flow paths, and potential land instability.

Geotechnical assessments included both desktop study and on-site investigations. Site investigations were carried as shown in Figure 14. The boreholes (BHs) were terminated at 15.5 to 20m below ground level (bgl), and the cone penetration testing (CPTs) terminated at refusals. Piezometers were installed to monitor groundwater conditions and these were monitored fortnightly between August 2022 to November 2022, and after major storm events.

Piezometer monitoring and CPT porewater pressure results found the groundwater table is at an average depth of 3.0m bgl (variances at depths between 1.5 to 3m bgl), with general gradient going down towards the stream.

The groundwater level over the monitored period has been relatively stable, although rainfall during this period has been extensive. As the maximum depth of the earthworks could exceed 4m, groundwater could be encountered due to site conditions and may vary with stream water levels. The groundwater level however, will be lower than the excavation formation level by half a metre. For these reasons, monitoring has been ceased.

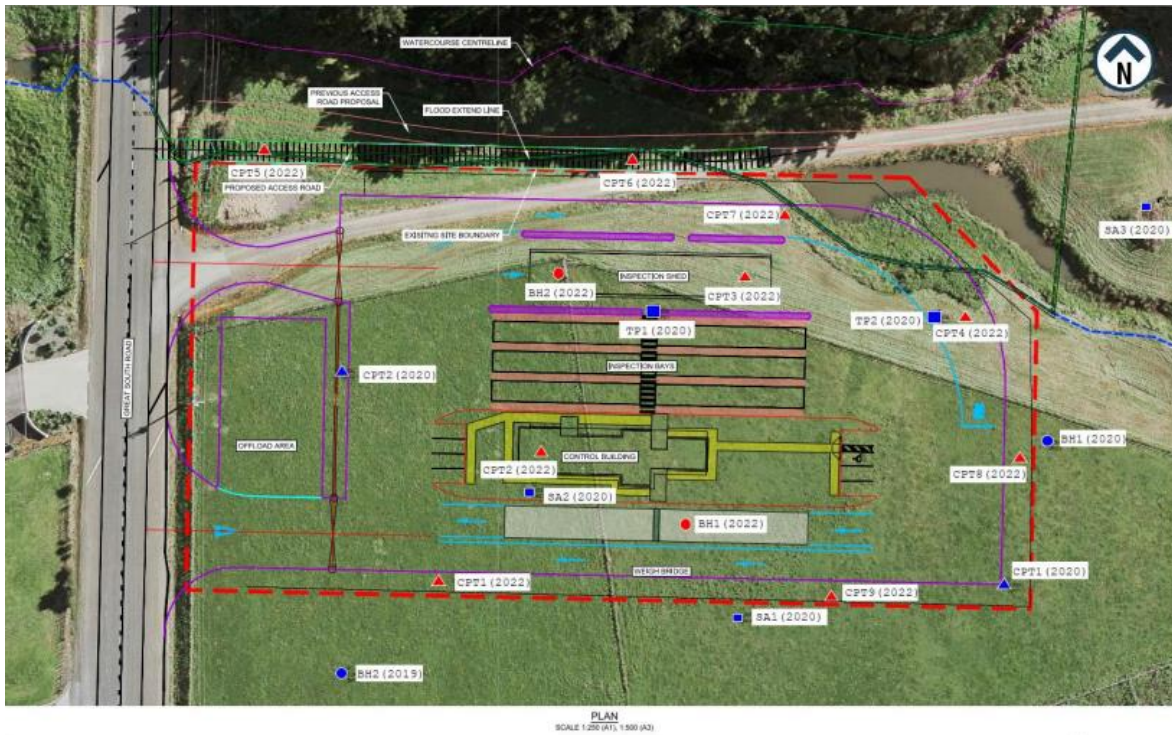


Figure 14 - Geotechnical Investigation Test Locations

A slope stability analysis was undertaken to assess lateral spread hazard risk of liquefied soil displacement towards a watercourse. The typical distributed pattern of lateral spreading has been demonstrated to generally occur within the first 100m to 150m of a watercourse. As such, the potential risk of displacement would apply to the bulk of the site which is approximate to the Ngakarua Stream.

7.3.2 LAND STABILITY AND GROUNDWATER SETTLEMENT EFFECTS

The potential effects of land disturbance during construction relate to diversion and dewatering of groundwater, and potential presence of localised soft layers and uncontrolled fill unsuitable for foundations, requiring additional off-site fill to be brought in. The potential permanent effects of land disturbance for the proposed work relate to liquefaction risk (given proximity to watercourses), and slope stability.

These effects have the potential to create residual risk to people, property and the environment from the implementation of any mitigation measures implemented to manage hazards, that are not managed properly.

The geotechnical assessments find the overall potential for liquefaction is low to nil, however, there are layers below the water table which have potential for liquefaction. As such, total and differential liquefaction induced settlement is expected at the site.

The liquefiable layer was identified to be approximately 2.5m and 3.5m below ground level, with variable thickness ranging from 0.5m to 4m (at BH02). The extent of proposed earthworks (cut) is in this range.

As the building platform is generally formed by cutting about 2 – 3m, the over consolidated silt and clay layers has less potential for further static settlement when the load of a low-rise building structure is imposed onto these layers. A shallow foundation option is considered feasible for the proposed work.

All conditions simulated in the GeoSlope model for the accessway reinstatement are also assessed to be higher than the minimum required Factor of Safety.

An assessment of the proposed work against the relevant assessment matters and criteria in the AUP concerning the diversion of groundwater is provided in **Appendix C.2** and all other objectives and policies in **Appendix C.3**.

7.3.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

The AUP requires buildings and structures on land which may be subject to land instability to consider the potential risk of adverse effects to other people, property and the environment.

The proposed design and implementation of earthworks recognises existing environmental site constraints and opportunities, specific engineering requirements and implementation of integrated water principles, in accordance with the AUP.

In summary the measures to avoid, remedy or mitigate the potential effects of land disturbance are:

- Various perimeter retaining options have been considered for the CVSC and along the outer edge of the reconstructed access road. The proposed design features reinforced soil embankments (RSEs), green terramesh walls, and timber pole walls. RSEs can be constructed like normal embankments. This is considered a more flexible, durable and economical structure for resilience, with improved bearing capacity, without the need for temporary or permanent facing. These measures will reduce the impact of lateral spreading in the event of an earthquake, and the scale and extent of earthworks in proximity to watercourses and within the flood plain.
- On the north-eastern corner, the retaining wall has avoided the footprint of the site platform extending into the induced wetland. The toe of the wall is protected with riprap to avoid any undermining of the foundations. This is considered a suitable non-structural solution to address the hazard (being within the flood plain).
- Lowering of the site platform reduced level will see the groundwater gradient slope from south to northerly direction such that levels will match with the gradient of the Ngakoroa Stream and induced wetland. This avoids permanent groundwater diversion requirements.
- Sub-soil drainage will be placed at the base of the southern and eastern retaining walls, with some flow to the induced wetland as part of the stormwater proposal (discussed in section 7.6).
- Preparation of an Erosion and Sediment Control Plan to manage groundwater discharge and diversion during construction (discussed in section 7.6).

The suitability of excavated material to use as fill will be confirmed by geotechnical engineers with laboratory testing if deemed required during construction. An engineer will also determine if it is necessary to undertake ground improvement such as by preloading, surcharge and/or wick drains.

Unsuitable materials excavated and removed would need to be disposed off-site at an agreed disposal site; this is covered in the Site Management Plan (SMP) discussed in section 7.4. A final SMP will include measures to manage the discovery of material unsuitable for use on site, manage the use of fill from the site, and use of cleanfill material brought on site.

7.3.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

The effects from land disturbance and groundwater diversion and discharge necessary for the proposed work, will be less than minor. No further groundwater monitoring is required. The use/re-use of fill can be appropriately managed during construction.

7.4 LAND CONTAMINATION EFFECTS

The following provide an assessment of land contamination effects with regard to land use, ecological and human health factors. A Site Investigation Report (equivalent of a Detailed Site Investigation (DSI)) has been prepared, in accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines (CLMG). A copy is appended to the draft Site Management Plan (**Appendix F**) provided.

7.4.1 ASSESSMENT METHODOLOGY

To prepare the DSI, desktop analysis and site testing has been undertaken to determine the presence or absence of heavy metals, pesticides and asbestos in the soil on the site. Soil samples were collected from test pits in five locations on site, at three depth levels. Figure 15 shows the soil sampling locations.



Figure 15 - Soil Sample Locations

7.4.2 LAND CONTAMINATION EFFECTS

The soil sampling results found at four of the five sample locations were commensurate with expected naturally occurring background concentrations. Soils encountered were natural ground comprising a shallow surficial greyish brown clayey sand topsoil layer overlying a brownish orange clay layer. No visual or olfactory signs of contamination were observed in any of the sampling locations.

A surface sample collected at SA03 was reported with an Arsenic level exceeding expected background levels. A deeper sample from SA03 however, was reported with metal concentrations not exceeding expected background. Arsenic is a contaminant known to be associated with poultry farming (Gerber, C, & H., 2007).

A single trace detection of asbestos was also identified in SA03. Asbestos is known to be associated with older buildings (NZGAMAS, 2017). The potential source is related to the shedding of fibres from asbestos containing material (ACM) in building fabric outside of the proposed work site. Only sample SA03 was subject to further lab analysis as asbestos was not detected in samples SA01 and SA02.

In summary, the exceedance of arsenic in the surface sample from SA03 does not present a significant risk to the Project or the environment. A single trace detection of asbestos in soil also does not present a significant human health risk.

The DSI concluded that contaminant concentrations complied with the background ranges for trace metals in Auckland soil (volcanic) and the permitted activity soil acceptance criteria which are presented in the AUP. Contaminant concentrations in soil also complied with Soil Contaminant Standards (SCS) for industrial/commercial land-use (MfE, 2012) applicable under the NESCS.

The DSI concluded however, that undiscovered asbestos could be present in shallow soil in some parts of the site. The preparation of a Site Management Plan (SMP) was recommended for the Project works setting out the framework for soil management in the event of encountering unexpected contamination.

7.4.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

Potentially contaminated soils may be disturbed during the earthworks stage of the proposed work, and off-site soil removal may occur. In addition, land disturbance may generate dust that needs to be controlled at source. Contaminated sites may have isolated hotspots of gross contamination that may not be uncovered during site investigations.

To manage potential effects of contaminated land disturbance during construction works, a SMP has been prepared. The SMP sets out the requirements for the management of soil during the works in the event of encountering unexpected contamination and is provided with this application as **Appendix F**.

The SMP outlines the summary of contaminant conditions at site, and the health, safety, and environmental measures that will be implemented prior to works commencing. The methods employed to minimise dust generation and distribution will prevent objectionable dust emissions from beyond the work area boundary.

The procedures for the management of contaminated soil during the earthworks are also outlined in the SMP including control measures designed to eliminate or manage the potential for human exposure to contaminated soils and contaminated discharges to the environment.

An unexpected discovery protocol (UDP) has been prepared as part of the SMP to assist with identifying further contamination and steps to be taken.

Key measures to avoid, remedy or mitigate potential effects of encountering or disturbing contaminated land during construction are:

- Following the procedures in the SMP which provide a framework for managing contamination-related effects at the site.
- Delineation of the construction area to ensure containment. The asbestos and arsenic sample found at the location of SA03 lies outside of the proposed designation boundary, and will not be disturbed by earthworks or required for construction purposes (i.e. access or laydown).
- Consideration of all uses within the construction area should be reviewed pre-construction in accordance with the SMP.

7.4.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

Based on site soil sampling undertaken on site, the site is considered a HAIL site. A SMP has been developed setting out the requirements for the management of soil during earthworks in the event of encountering unexpected contamination.

With the SMP in place and proper implementation, it is considered that potential adverse effects related to the disturbance of contaminated land can be avoided, remedied or mitigated. Development and implementation of the SMP in conjunction with erosion and sediment controls (discussed in section 7.6) for the site are key measures to avoid environmental effects from land contamination discharges.

Based on the assessment undertaken, it is considered that the adverse effects for land contamination is less than minor, subject to the recommended protocols being complied with.

7.5 ARCHAEOLOGICAL AND HISTORIC HERITAGE EFFECTS

7.5.1 ASSESSMENT METHODOLOGY

An archaeological risk check (ArchCheck) was undertaken in February 2022 to identify potential risk of encountering archaeological deposits within the Project footprint and to identify any legal requirements if any risks were identified. These risks include the discovery of previously unrecorded archaeological sites which are afforded protection under the HNZPTA. The ArchCheck is provided in **Appendix G.1**.

Assumptions for the ArchCheck prepared at the time of concept design include cut depths (being approximately 2.5m), foundation depths (1m deeper than the finished level) and maximum excavation depth (being approximately 3.5m).

CFG Heritage Ltd subsequently undertook a field survey of the Project site and provided an archaeological assessment of effects to support the resource consent application. The archaeological assessment is provided as **Appendix G.2** to this report.

A review of historical records and historic inventories were undertaken, as well as a site survey of the Project area on the 6 July 2022. The survey consisted of a visual assessment supplemented by probing using a 1m gum spear and did not employ any intrusive methods of investigation.

7.5.2 ARCHAEOLOGICAL AND HISTORIC HERITAGE EFFECTS

The ArchCheck describes the historical context to the Project site noting the Bombay township settlement from 1863 and the origins of the adjoining GSR of same name but largely a rough track in the late 1850s. Since the 20th century, the Bombay area has been an established market garden area.

The archaeological assessment also provides an insight into pre-European Māori history considering potential for gardening and food storage, in relation to the volcanic soils. The assessment identifies the closest archaeological site is approximately 800m southeast of the Project site, and there are known historic sites further north, but most are situated more than a kilometre away.

While no known archaeological sites will be affected by the proposed work, as the site has not been previously developed, there was a residual risk there could be archaeological and historical sites given the lack of previous systematic survey or thorough archaeological investigations in the broader Bombay area. On balance, however, the ArchCheck notes that evidence of pre-European fertile gardening cultivation ground would likely be destroyed or covered by subsequent farming and agricultural practices, or any rural development (i.e. farm buildings are present on the site). As such, landscape indicators have not been recorded at the site or vicinity. In addition, the extensive modification of the GSR corridor over time has been assessed as having low archaeological potential.

The findings of the archaeological assessment confirms that the site is heavily modified from past activities. Due to accessibility issues, it is noted that the stream banks were not included in the survey.

The assessment concludes that the likelihood of encountering and disturbing in-situ archaeological material is very low.

7.5.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

Overall, the findings of the archaeological assessment confirmed that the site is heavily modified from past activities. The assessment concludes that the likelihood of encountering and disturbing in-situ archaeological material is very low, and so no specific measures to address potential effects are required. CFG Heritage considers the Project works may be carried out under an Accidental Discovery Protocol (ADP), which is the same conclusion drawn by the ArchCheck.

7.5.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

The archaeological assessments conclude the likelihood of encountering and disturbing in-situ archaeological material is very low. This conclusion is supplemented by site survey. As such the potential effects of the proposed work disturbing or encountering archaeological and historic heritage is assessed as being less than minor, and any residual risk can be appropriately managed via the implementation of an ADP.

7.6 STORMWATER AND FLOOD MANAGEMENT EFFECTS

An assessment of Stormwater and Flooding has been prepared to support the application (**Appendix I**). The following considers the actual and potential effects of stormwater and flooding generated by the Project works.

7.6.1 ASSESSMENT METHODOLOGY

The Flood Assessment has analysed the potential effects of the proposed work in relation to 2yr, 5yr, 10yr and 100yr average recurrence interval (ARI) flooding events, based on two scenarios:

- **Existing Development Case (EDC):** Pre and Post development with current rainfall depth and existing land development pervious/impervious percentage.
- **Future Development Case (MPD):** Pre and Post development with future rainfall depth- adjusted for climate change and future land development pervious/impervious percentage (maximum probable).

Due to the differing hydraulic complexity between the two key downstream flood prone areas (Figure 16), each has been assessed using two different approaches for flood analysis:

1. Volumetric Floodplain Assessment (for the large floodprone area further downstream of the site/Upstream of SH1):
A simple volumetric calculation to determine the potential increase in water level downstream due to the additional volume of runoff from the site post-development, based on the *Guidelines for stormwater runoff modelling in the Auckland Region* (Technical Publication 108)⁷, method for 100yr storm events. This was expected to be a conservative approach.
2. 2D Hydraulic Model (for the area immediately downstream):
A more detailed model of hydraulic impact on the existing two culverts immediately downstream of the site for the Future Development Case, being the private accessway culvert – adjoining induced wetland (culvert 1), and the GSR Culvert (culvert 2).

The flood plain as shown in Auckland Council’s Geomaps (Figure 16) was produced as part of Rapid Flood Hazard assessment (RFHA) modelling and does not represent the key culverts immediately downstream of the site, including the 1050mm culvert under GSR which drains the gully beside the CVSC. To accurately assess the existing flood level or future impacts on flood level associated with the development, the assessment has updated the RFHA model.

⁷ Guidelines for stormwater runoff modelling in the Auckland Region (TP 108), Auckland Regional Council, April 1999

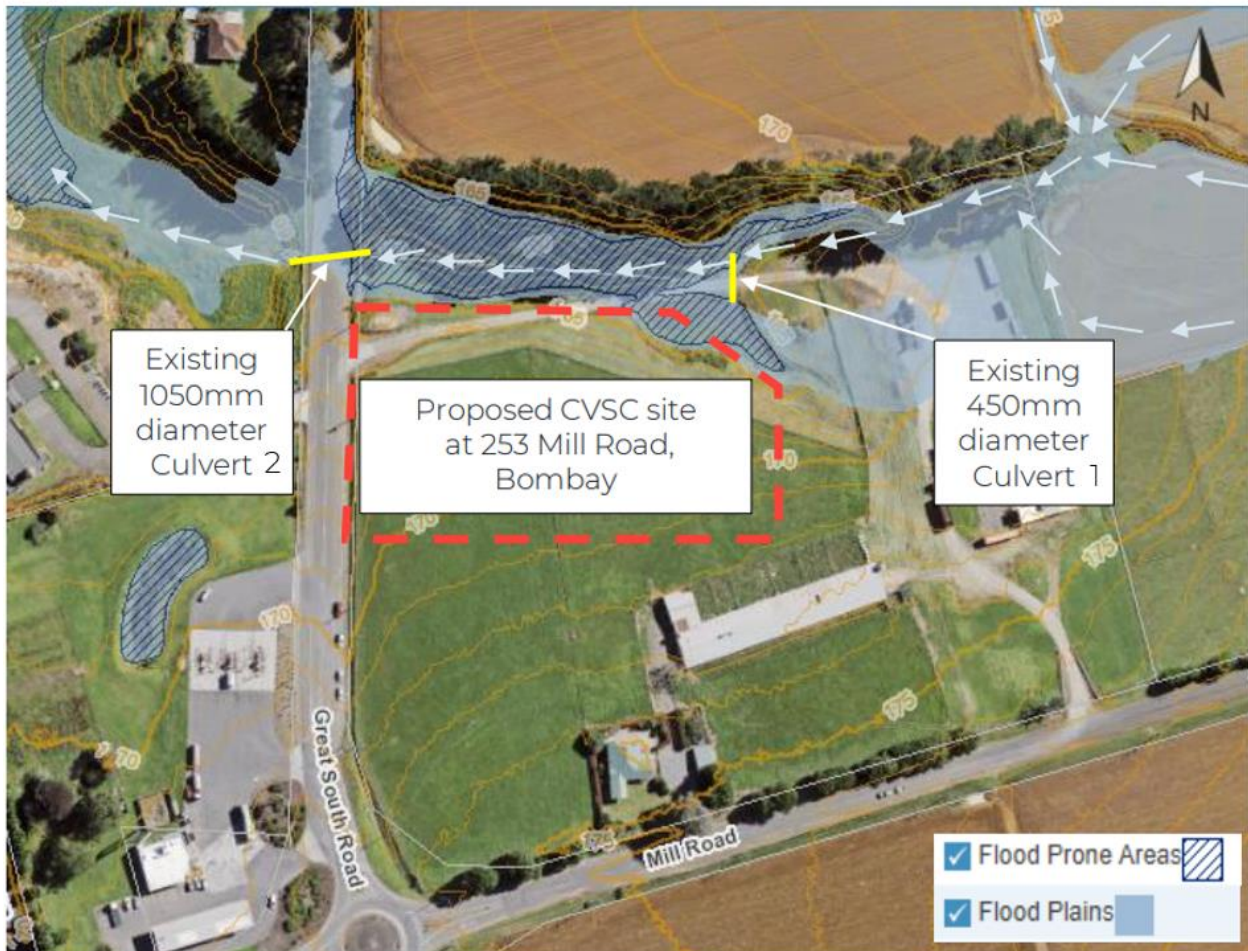


Figure 16 - Location of proposed CVSC and existing culverts within the 1% probability Flood Plain and 10% AEP Flood Prone Areas

7.6.2 STORMWATER AND FLOODING EFFECTS

The Project works will result in an impervious site coverage of approximately 6,315m², resulting in an increase in stormwater discharge. Without appropriate management measures, the increase in stormwater discharge can generate adverse effects upon the receiving environment.

The private accessway to the adjoining property has its low point within the identified flood plan (Figure 16), and as such, during an event water spreads into the wetland. The flood plain through the wetland however, is not solely the product of a backwater effect from the main adjacent flood plain, or of a separate tributary catchment. The main flood plain approaching the site from the east bifurcates upstream of the site, with part of it flowing through the wetland and part following the main gully of the Ngakaroa Stream.

The stormwater runoff from the site and the greater upstream catchment must also pass through the culvert beneath GSR (culvert 2) or, in the peak 100-year storm event, flow over it. The potential effects on GSR may result from increased water levels in the stream, and at the property immediately to the north of the CVSC site, as the 100-year flood plain straddles the boundary between the two properties.

GSR therefore represents a barrier to stormwater flowing westward past the site and stormwater runoff ponds upstream of it. The Existing Development Case (EDC) flood assessment modelling results, considering the GSR culvert (culvert 2), finds peak 100-year storm runoff produces a maximum flood water level of 163.8mRL (increase of approximately 20mm) as it crosses GSR.

With regards to the private accessway (over culvert 1) the AUP allows driveways to be inundated by up to 200mm in a 100-year storm event (Standard E36.6.1.8). The Flood Assessment has calculated that the

depth of water crossing the surface of the private accessway (at culvert 1) will be 80mm (ED) and 300mm (MPD) in the existing case (undeveloped).

There is limited capacity in the existing culverts such that overtopping of the private accessway (culvert 1) and at GSR (culvert 2) is expected to occur more frequently during the 100yr ARI, as a result of the CVSC development. However, the assessment finds no flood depth effect with inundation depths such that flood hazard risks are not increased. The predicted increase in peak water level due to the proposed development is 14mm for the 100yr ARI (EDC scenario).

No further measurable increase and overtopping is predicted for the MPD scenario, for the more frequent rainfall events 10yr, 5yr and 2yr ARI. The maximum relative increase was approximately 0.01m for the 10yr MPD event, however this occurs with 1.24m of freeboard and is contained within the main channel.

In summary, the capture and conveyance of runoff will see a reduction in flood level over the private access road (which will be partially reinstated) versus the existing condition for 10yr ARI and smaller storm event. The levels are below the permitted activity standards for roads. As per existing conditions, both of the culverts included in the model are only expected to be overtopped in 100yr ARI storm event but this is a relatively small increase in both of the culverts predicted.

The modelling scenarios have also considered the downstream effects (flood extent and depth) for properties between GSR and SH1 (within a known flood depression area). Attenuation for the 100yr ARI (ED scenario) would only be needed if there are buildings in the flood zone downstream, that could be affected by an increase in flow and inundation.

The Volumetric Floodplain Assessment assessed the impact on the downstream flood plain, in particular the property (farm shed/building) at 1994 Great South Road, to confirm whether there are any buildings within the flood plain that may be affected by the proposed work. The assessment finds the general extent and peak water level in the downstream flood plain is changed by 25.8mm for 100yr EDC case and 27.6mm for 100y MPD case, and this post-development change will have a less than minor effect.

Overall, no structures or buildings will be located where the depth of flood waters in the 100yr ARI (EDC scenario) event exceeds 300mm above ground level. The modelling has not shown a significant increase in the downstream flood levels post-development and the attenuation volume requirements provided by on site hydrologic detention for the 95th percentile 24-hour storm event (SMAF-1) is sufficient.

7.6.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

The on-site stormwater management provided through the attenuation detention tanks will protect streams against frequent storms that could contribute toward stream erosion. Sufficient storage volume to hold an accumulated depth of runoff of an 95th percentile storm, being relatively minor storm events (approximately half of a two-year storm) is provided, allowing slow release over the subsequent 24-hour period.

If the attenuation device capacity is exceeded, any further flows at the inlet are channelled via a designed overflow mechanism to the pipeline that discharges to the Ngakoroa Stream in conjunction with the first overflow from the 10-year ARI storm. Storms in excess of the 10-year ARI storm will produce runoff that will flow overland into the stream.

To avoid localised scouring and reduce erosion and sedimentation in the downstream environs, an energy dissipation structure at the outlet provides protection utilising a rip-rap apron. This will transition piped stormwater from the site outlet to the stream with reduced flow velocity, particularly during larger storms with higher peak flow rates discharged to the stream.

While road flooding / culvert overtopping for all 100yr ARI storm events is expected to continue (as per EDC) at the existing culverts (1 and 2), the levels will continue to meet the AUP permitted activity standards for roads, and for this reason no additional mitigation is required.

Modelling has demonstrated that additional pipe capacity (single barrel to a double barrel 450mm diameter culvert) would be sufficient to reduce the flood level over the private accessway versus the existing condition, but is considered unnecessary on the basis of the inundation depth and this potential future upgrade does not form part of the Project scope.

The stormwater proposal provides measures to mitigate potential operational stormwater effects.

An indicative Erosion and Sediment Control Plan (ESCP) is included within **Appendix D** and outlines the indicative site- specific erosion and sediment control measures to ensure effective isolation of the work area from the downstream environment (induced wetland and stream) during construction. The ESCP includes measures to be implemented as part of any controlled dewatering procedures to remove sediment from water collected within the open excavations. As part of the series of options, sediment settling tanks and devices may be adopted.

Surface run off and sediment erosion will be managed during the construction of the site with measures in accordance with the AUP Guidelines, Auckland Council's document Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region (2016, version 2) known as GD05, as well as the Waka Kotahi "Erosion and Sediment Control Guidelines for State Highway Infrastructure SP/M/023".

Appropriate sediment control measures will be installed before earthworks commence. These controls and measures to minimise the extent of soil erosion and sediment entrained surface run-off from the site include:

- Avoidance wherever practicable, of the use of any areas within the flood plain and approximate to the wetland for storage of spoil, refuelling or maintenance of plant and equipment;
- Any diversion bunds or structures will be constructed to direct clean water flows around the site construction areas. These measures will cause the least disruption to the existing flow path and will return flows to their original path as soon as possible;
- Silt fences and check dams will be used to cordon off smaller areas, as well as to provide protection around watercourses and culvert entries.

In summary, the ESCP will provide a series of options to be adopted to suit the specific requirements and ensure effective isolation of the work area from the downstream environment (including wetland and stream).

7.6.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

The stormwater diversion and discharge will protect existing natural systems such as the site induced wetland and adjoining Ngakoroa Stream by implementing hydrologic measures such as detention and erosion control measures at the outlet point.

Treated, attenuated runoff from the site will be discharged to the Ngakoroa Stream receiving environment. Attenuation of runoff from the 95th percentile storm volume and slow release of stormwater over 24 hours will mitigate stream erosion.

These measures will address stormwater effects as close to source as possible, which is consistent with best practice, objectives and current guidelines⁸ on water sensitive design.

Further, the measures are suitable for the site operations proposed, to ensure capture and treatment of contaminants before discharge. With these measures in place, it is considered the effects of the proposed work on flooding and from site discharges will be less than minor on the environment.

7.7 ECOLOGICAL EFFECTS

The Ecological Impact Assessment (EclA), provided in **Appendix H**, has assessed the impacts of the proposed work on the terrestrial and freshwater receiving environment including hydrological effects, and the potential for contaminant discharge.

7.7.1 ASSESSMENT METHODOLOGY

The EclA includes a review of the following:

- Aerial Photography and site layout
- AUP maps and schedules

⁸ Water Sensitive Design for Stormwater (GD04)

- Auckland Council databases and online maps

The EclA findings are supported by the preceding WSP ecological technical assessment review, referred here as the ‘technical assessment’ (*Appendix A* of the EclA), and an Ecological Impact Assessment (‘Morphum’s EclA’) (*Appendix B* of the EclA) prepared by Morphum in 2020.

Freshwater ecosystems identified within and adjacent to the site are:

- The induced wetland;
- A natural intermittent stream feeding the induced wetland; this is connected to the Ngakoroa Stream through a culvert under the access road (referred to as the “site watercourse”); and
- Ngakoroa Stream running along the northern boundary of the site.

As part of the technical assessment, WSP conducted a site visit to verify the findings and classify the site watercourse following the New Zealand Wetland Delineation Protocols as a tool to determine vegetation, soil type and hydrology (Ministry for the Environment, 2020). A high-level assessment was carried out only on the induced wetland and site watercourse, including classification of aquatic features, documentation of overall aquatic quality and determining the likely presence of native fish based on habitat. No fish or macroinvertebrate surveys, or stream valuations were undertaken.

A wetland was delineated in site survey plots 1, 2 and 4 on the north-eastern corner of the site, as shown in Figure 12. The extent of the induced wetland is as mapped in the General Arrangement Plans (**Appendix B**) submitted.

The induced wetland is classed as a natural wetland in accordance with the Ministry for the Environment Guidelines⁹ and is protected under the National Policy Statement-Freshwater Management, 2020 (NPS-FW) & National Environmental Standards (NES-FW), 2020. Further, as the NPS-FW underwent an amendment process in December 2022, the EclA reviewed the requirements against the proposed work.

The Environmental Institute of Australia and New Zealand (EIANZ, 2018) guidelines have been used to assess the ecological values, and magnitude of effects of the Project, in a consistent and transparent way. Recommendations for mitigating actual and potential impacts are outlined, with the aim of mitigating effects as close to source as possible (within the proposed footprint of the site).

7.7.2 ECOLOGICAL EFFECTS

VEGETATION

Within the induced wetland, the dominant species observed consisted of mercer grass, water pepper, Yorkshire fog, creeping buttercup and lotus. As these species are all introduced, long established and naturalised within the region, the intrinsic quality and ecological value of the vegetation and species present has been assessed as very low and the removal of vegetation will have a less than minor effect.

There will be no vegetation alteration or removal within 10m of the Ngakoroa Stream (a rural stream) and the vegetation alteration or removal within or approximate to the induced wetland will be limited to pest species including exotic grass species and grassland, and exotic wetland plants, in and around the wetland.

AVIFAUNA

The ecological site visit undertaken by WSP confirmed the presence of common native and exotic bird species such as common mallard and chaffinch. With a notable lack of quality habitat, it is expected these species would be transient visitors within the site. Further, with a corresponding low value habitat present on site, any residual construction impacts will be short-term and contained to the disturbed site areas.

BATS

The EclA confirms that the potential for bats is very low within the CVSC site, given there are no suitable habitats for roosting or foraging. The potential presence of bats and intermittent use of the habitat for

⁹ Ministry for the Environment. 2021. Defining ‘natural wetlands’ and ‘natural inland wetlands’. Wellington: Ministry for the Environment.

foraging and commuting or occasional roosts is considered limited to the stand of pine trees immediately to the north of the site (in and around the Ngakoroa Stream). This stand would then have potential high ecological value if long-tailed bats are present.

As the proposed construction works will not result in land disturbance or require removal of any habitat near the existing pine stand/riparian margin planting, and operational lighting effects during the night can be controlled, the overall effect on bats is considered to be less than minor and no further mitigations are proposed.

HERPETOFAUNA

No native lizards were confirmed as present on-site during brief manual searches during the site walkover. However, without an appropriate lizard survey it cannot be confirmed that these animals are not present on-site or within the zone of influence.

Despite the sparseness of habitat for ground dwelling lizard species being of low value for lizards, the EclA considers earthworks and vegetation clearance on-site may result in a loss of potential habitat and resources for resident lizards and has the potential to result in lizard mortality.

The classification status of the copper skink was upgraded to 'At Risk – Declining' in 2020 (Hitchmough et al. 2021), therefore if they were present on-site, the Project area would have 'High' ecological value. The magnitude of effects on these skinks, if present, would likely be 'Moderate' and the potential magnitude of effect of the Project would be 'High' if unmitigated, as a result of a loss of potential habitat and resources for resident lizards or potential to result in lizard mortality. Due to the potential 'High' level of effect, measures to avoid, remedy or mitigate the actual or potential effects on lizards are necessary.

FRESHWATER HABITAT AND FISH

A high-level assessment was carried out on the site watercourse, including classification of aquatic features, documentation of overall aquatic quality and determining the likely presence of native fish based on habitat. No fish or macroinvertebrate surveys, or stream valuations were undertaken, however, no visual observations of presence were noted by the ecologists during the site visit.

The EclA identifies several potential impacts on the site watercourse as a result of the proposed construction and operational activities. This includes uncontrolled release of sediment, changes to stormwater volume (agricultural pasture to impervious surface) and quality (agricultural contaminants to heavy metals from construction and operation of the CVSC). These changes are considered a substantial shift from the baseline rural conditions and will be of 'Moderate' magnitude effect to freshwater values, giving an overall 'Low' level of effect.

Changes to freshwater habitat values as a result of stormwater discharge, increased erosion of stream banks, or increase in levels of heavy metals have the potential to cause harm or mortality to any native fish present if not appropriately mitigated. Native freshwater fish (short-fin eels) are potentially present within the site (in the induced wetland) or further downstream of the site (within the Ngakoroa catchment), and may be affected.

The Ngakoroa catchment however, contains numerous fish passage barriers both natural and physical. These barriers restrict native fish with poor climbing ability to the lower catchment and restrict them accessing the upper extent of the catchment.

Further, in the summer under low rainfall, site conditions for fish within the induced wetland is considered unfavourable due to the wetland becoming anoxic and any inhabitants would have to relocate or die. The EclA therefore finds the induced wetland is unlikely to provide habitat for most freshwater species of fish, with some potential to support a small population of short fin eels (*Anguilla dieffenbachii*). A review of the New Zealand Freshwater Fish Database records was undertaken to support this conclusion.

The overall magnitude of effects of the Project on freshwater fish and habitats is therefore assessed as 'Moderate', giving an overall 'Low' (minor) level of effect, without mitigation.

WETLAND

The Project will avoid reclamation of the induced wetland in accordance with the NPS-FW effects management hierarchy, when undertaking construction of specified infrastructure such as the CVSC.

The wetland is not listed as a significant wetland in Schedule 1 (Wetland Management Areas Schedule) or under Section D8 (Wetland Management Areas Overlay) of the AUP.

The impact of magnitude from the permanent retaining wall and rip-rap protection has been assessed as having 'Low' impacts on the ecosystem function of the wetland (see *Table 3-3* in the EclA).

The overall impact from the Project works (magnitude) on the wetland with mitigation, combined with the (ecological value) of the wetland, results in the overall level of effect that is less than minor.

NGAKOROA STREAM

The stormwater proposal for the site includes site detention prior to discharge of treated stormwater into the Ngakoroa Stream tributary. The point of discharge outlet for the CVSC stormwater is located in the north-western corner of the site. Overland flow from the eastern boundary diversion channel will go to the induced wetland. The drainage channel along the southern boundary will discharge to a new stormwater pipe along the GSR frontage which will then discharge, in conjunction with the site stormwater, to the stream (also refer CVSC Stormwater Layout Plan in the General Arrangement Plans, **Appendix B**).

The location of the outlet is of similar grassed habitat to the bulk of the CVSC site. There are no existing trees or other vegetation that will require removal. The belt of pine trees that line the banks of the Ngakoroa Stream are outside of the site footprint. The value of habitat around the immediate outlet is therefore, assessed as 'Low'. The magnitude of the impacts with the combined discharge point to the stream (as opposed to uncontrolled overland flow that occurs presently) will be "Low" with the mitigations provided.

In summary, the ecological impacts on flora, fauna and freshwater from the construction and operation of the CVSC are assessed as being no more than minor, prior to mitigation being applied. The EclA finds the effects on the Ngakoroa Stream and its tributaries with sufficient stormwater treatment and controlled site discharge mitigation measures, will be less than minor. The maintenance of some overland flow to the wetland once the CVSC is operational is assessed as a positive effect.

The site preparation works including bulk earthworks approximate to the induced wetland in the north-east corner of the site extent will require necessary erosion and sediment controls and monitoring, such that the temporary effects on the wetland during construction will be less than minor.

7.7.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

The EclA recommends a design to address freshwater values within the receiving environment. The proposed measures include riparian planting to help filter contaminants and improve habitat for native fish species; and ongoing stormwater treatment measures once the site is operational. Erosion and sediment control measures, and ecological supervision during any dewatering for fish salvage and relocation during construction, will be implemented.

FRESHWATER HABITAT AND VEGETATION REMEDIATION

The overall level of effect from the removal of the existing site vegetation, including within the wetland, is assessed as less than minor, given the low quality and ecological value it currently provides. For this reason, mitigation for the effects of vegetation removals is not considered necessary and no further management measures are necessary.

The effects management hierarchy is demonstrated by the proposed work, featuring a retaining wall design which has avoided footprint of the platform within the induced wetland, while still meeting site functional and operational requirements.

Other options such as a cantilevered structure for the platform were briefly explored but also had potential for adverse environmental effects (i.e. shading of the induced wetland). Design development undertaken to reduce the encroachment of the site into the induced wetland also considered relocation of the site platform towards the south, internal site orientation, and changes to internal landscaping. To achieve full avoidance of the wetland under the effects management hierarchy, required a change to the location of two inspection bays (split) and tapering of the north-east turn with new retaining wall design.

In summary, permanent reclamation works within the wetland extent have been avoided through design optioneering. The CVSC is sized as necessary to fulfil its purpose, minimising any works required within

the wetland, to planting and fencing, and avoiding changes to assimilative capacity, base flow, and quality of the streams.

The hydrology mitigation methods have been discussed in the preceding section 7.6 of this report. In summary, the proposed work remedies any potential changes in water quality and hydrological regime post-development, by providing an adequate on-site detention tank, holding stormwater release, and avoiding adverse erosion and scour effects at the point of discharge.

Stormwater is not expected to enter the wetland via site flow from the CVSC impervious surface under normal operating conditions and will be treated to prevent heavy metals, hydrocarbons, and sediment discharge. Partial conveyance of overland flow from the broader catchment to the wetland is however, provided for via drainage at the bottom of the retaining wall. Maintenance of this water source will benefit the health of the wetland, as its flora and fauna rely upon a stormwater source.

The EclA finds the reinstatement of site-specific planting within and around the induced wetland and the site, will be an enhancement of the quality and ecological value potential of the Project site, and the ecosystem function of the wetland.

Suitable wetland plant species selected for this development are detailed in the General Arrangement Plans (**Appendix B**), the EclA and provided in Table 12. These plants have been chosen as they are resilient, easily available and support wetland functionality. This will also assist with reducing long-term maintenance requirements over time. Fencing is also proposed along the site boundary (which passes through the wetland) to protect the proposed planting area from livestock and clearly delineate the planting maintenance area.

Table 12 - Selected plant species for the induced wetland and surrounding planted area

Scientific Name	Common Name	Māori Name	Threat Classification
<i>Leptospermum scoparium</i>	Tea Tree	Mānuka	At Risk - Declining
<i>Austroderia fulvida</i>		Kakaho	Not Threatened
<i>Carex secta</i>	Makura sedge		Not Threatened
<i>Carex virgata</i>	Swamp sedge	Pukio	Not Threatened
<i>Cyperus ustulatus</i>	Giant Umbrella Sedge		Not Threatened
<i>Juncus edgariae</i>		Wiwi	Not Threatened
<i>Phormium tenax</i>	NZ Flax	Harakeke	Not Threatened
<i>Podocarpus totara var. totara</i>	Tōtara (WF& Pūriri Forest)	tōtara	Not threatened
<i>Sophora Microphylla</i>	Kōwhai (WF7 Pūriri Forest)	kōwhai	Not Threatened

Inspection and the maintenance schedule of the wetland planting will be carried out according to the recommended maintenance schedule. The EclA recommends a maintenance period for the Project planting of at least three years to ensure plants establish and that there will be a wide range of diversity. If plant mortality is greater than 5% over this time for a particular section, it is recommended the contractor replant the area with recommended species that meet particular grades.

The actual and potential operational effects on the induced wetland are mitigated by planting in and around part of its extent, and through maintenance of the hydrological regime of the induced wetland. Stormwater treatment and hydrologic detention with permanent erosion and sediment protection at the discharge outlets, will also minimise the generation and discharge of sediment and contaminants to the wetland or stream, such that effects on the surrounding freshwater environment will be less than minor.

Implementation of appropriate erosion and sediment control measures during construction, to prevent the generation and discharge of sediment and contaminants to the wetland or stream, will also ensure temporary effects are less than minor on the surrounding environment.

The proposed mitigation is as close to the location of the development, ensures the best ecological outcome and will provide a net gain in ecological values for the site. Riparian planting of part of the wetland will also help to filter contaminants and improve habitat for native fish species in the long-term.

Overall, the above measures will ensure the effects of the proposed work and discharges is less than minor on the stream, and on the natural wetland.

BIRDS

The proposed work will not result in the loss of any woody vegetation or high value native bird habitat. Potential effects on birds will be limited to short-term and intermittent noise and light disturbance from construction activities and no measures to avoid, remedy or mitigate these effects are necessary. As the CVSC will not typically operate during the night, no measures to avoid, remedy or mitigate these effects are necessary.

BATS

There will be no loss of habitat to existing riparian tree and vegetation in the only potential bat habitat external to the proposed work, during construction. The potential effects on bats are limited to intermittent light and noise disturbance from construction and operation. This would give an overall 'Low' level of effect.

The 'Low' to 'Very Low' levels of effect do not trigger the requirement for management measures.

HERPETOFAUNA

As native lizards afforded protection under the Wildlife Act may be disturbed during construction, the EclA recommends a site-specific Lizard Management Plan be developed for the site. This will confirm the presence or absence of native copper skink and the introduced plague skink, and outline measures for salvage. The Lizard Management Plan will be prepared as required by conditions of an existing Wildlife Act permit, as set out in Section 4.4.2 of this report.

WATER QUALITY MONITORING

The Flood Assessment confirms the hydrological function of the induced wetland will be maintained following construction of the retaining wall. The EclA recommends water quality monitoring is to be carried out pre-development to allow for baseline conditions to be determined and quarterly during construction. Construction monitoring is to be determined in conjunction with the developed erosion and sediment control plan, in general accordance with the GD05 guidelines.

FISH SALVAGE

The EclA finds the only freshwater species potentially in the induced wetland that could be supported, is a small population of short fin eels (*Anguilla dieffenbachii*). If short fin eels are found on site, the contractor should be required to carry out a fish salvage under the supervision of a suitably qualified ecologist.

Given the low potential presence of native freshwater fish, the EclA recommends dewatering and earthworks are carried out under supervision by a suitably qualified ecologist, to monitor for freshwater eels.

7.7.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

With the implementation of the mitigation recommendations outlined in the EclA, there is potential for an overall 'Net-Gain' effect from the development in the mid to long term for the freshwater habitat within and adjoining the induced wetland. The recommendations are focussed on riparian planting and fencing of the planted areas within the site boundary.

Overall, the Project will have an overall less than minor environmental effect on ecological habitat and values within the induced wetland, and Ngakoroa Stream riparian margin, and with a 'Net-Gain' effect achieved in the middle to long term.

7.8 LANDSCAPE AND VISUAL EFFECTS

7.8.1 ASSESSMENT METHODOLOGY

A landscape and visual effects assessment (LVA) has been prepared in accordance with the NZILA Te Tangi a Te Manu Aotearoa New Zealand Landscape Assessment Guidelines 2021 to assess the landscape and visual effects associated with construction, operation and maintenance of the CVSC. The LVA is provided as **Appendix J**, with the associated Planting Plan included within the General Arrangement Plans (**Appendix B**).

The NZILA guidelines provide rating criteria for the nature and scale of landscape (character) and visual (amenity) effects that may be used to determine the corresponding scale of effects under the RMA. The assessment is consistent with Waka Kotahi Guidelines, as referenced in the LVA.

The LVA assesses natural character as a combination of elements, how they are perceived and experienced, which contributes to an overall finding on the degree of naturalness for the site.

A methodological approach consisting of desktop analysis, review of other technical assessments as necessary, and a site context study through field site visit to key locations in the site context is described. The LVA identifies the potential receivers of landscape and visual effects, and the temporary or permanent nature of these effects, with or without mitigation.

The LVA also acknowledges the mātauranga Māori concepts conveyed in both the cultural values assessment prepared by Ngaati Te Ata Waiohua as well as feedback received by southern iwi groups during the SIIG Hui which has informed the landscape response to the Project.

7.8.2 LANDSCAPE AND VISUAL EFFECTS

The likely effects of the proposed work relate to the introduction of new buildings, ancillary structures and impervious surface area (6,315m² of asphaltic pavement) into a site currently in pastoral farmland with no existing buildings or structures. The proposed work will also increase the presence of HCVs that will access and egress the Project site from GSR.

The LVA identifies primary receivers that are not only immediately adjacent to the CVSC but include identified properties which overlook the site from the east, within the Bombay Village. Key representative viewpoints for the LVA are provided in Figure 17.



Figure 17 - Viewpoints used in the LVA

NATURAL CHARACTER

The northern, eastern and southern boundaries will require cut and fill with retaining. This will change the physical delineation between the development site and its physical surrounds to that presently, where the land drops away in a more naturalised profile across the site.

The Ngakoroa Stream is outside of the extent of the site, and there are no anticipated effects of the proposed work on its natural character. The planting proposed as part of the landscape mitigation will

reinforce and link the vegetation along the Ngakoroa Stream with the induced wetland, improving natural character, landscape amenity and ecological values for both.

In conclusion, the effect of the proposed work on the introduction of impervious surface, buildings and structures, on natural character, following establishment of mitigation planting, will be Very Low negative, being a less than minor effect. The site has potential to improve natural character and landscape amenity following the initial establishment period.

A summary of the potential landscape natural character effects of the Project, at outset to medium term (after seven years establishment) and following establishment (after 10-15 years), is provided in Table 13.

Table 13 - Summary of landscape effects

	Landscape effects at outset to medium term (after 7 years plant establishment)	Landscape effects following establishment of mitigation planting (after 10-15 years plant establishment)
Landscape effects	Low - Moderate Low positive for the wetland	Low

VISUAL EFFECTS AND AMENITY

The CVSC site is outside of the AUP Rural Urban Boundary (RUB). The RUB identifies land potentially suitable for urban development, and defines rural-residential settlement areas, such as the Bombay Village. The wider landscape however, includes a mix of uses, activities and built form, including numerous large sheds, farm buildings and ancillary buildings. The potential adverse visual effects from the built development range from Moderate to Very Low before planting mitigation establishment, depending on the aspect and viewpoint.

The vertical aspects of the proposed work including the buildings, security fencing, retaining walls, lighting and signage will be a noticeable change and addition in the landscape, visible from a range of locations. In addition, there will be a reduction in the area of pervious rural land and a loss in rural amenity provided by the unbuilt, 'green' open space in the landscape. Comparable developments of this scale (subject to consent) in the Rural-Rural Production zone would need to consider the character, scale, intensity and location of buildings and infrastructure in accordance with AUP provisions.

The visual effects for actual or potential receivers is summarised in Table 14. The most affected receivers are those closest to the site, or situated at an elevation overlooking the site (Christa Place, namely No. 9 Christa Place).

The dwelling at 253 Mill Road (parent parcel, adjoining) is located at a slightly elevated position to the south of the CVSC and is almost fully enclosed by established tree and shrub planting within the property. Given the screening provided by existing vegetation within the property, combined with the perimeter planting, lower level of the Project platform in the landform, and ability to select recessive building colours for built structures, the potential visual effects of the proposed work on this receiver are considered to be Low-Moderate negative, a minor effect in the initial establishment period, reducing to very low over time.

Given the utilitarian context of the Fibreglass site, also at 253 Mill Road located to the east of the CVSC, the potential visual effects are assessed as Low-Moderate negative reducing to Very Low following mitigation planting establishment, a less than minor effect.

The siting of the CVSC platform set into the landform will act to visually reduce the overall bulk and height of the buildings, and visible extent of pavement area, particularly when viewed from the temple at 1998 Great South Road.

Intervening vegetation, landform and built development may also partially screen or obscure views. As well as providing screening, the existing pine stand along the Ngakoroa Stream gully will visually soften and assist with integrating the bulk and form of the proposed buildings in the landscape.

Although the proposed buildings and ancillary structures are not out of keeping with the scale of built development in the wider landscape, for this property the potential visual effects of the built development are assessed as Moderate reducing to Low- Moderate negative, with mitigation planting establishment. This is assessed as a minor effect.

A summary of visual effects for each location, following establishment, and mitigation measures applied, is provided in Table 14.

Table 14 - Visual effects summary for the proposed work

Location	Existing mitigating factors	Visual effects at outset to medium term (after 7 years establishment) with landscape planting plan	Visual effects following establishment of mitigation planting as shown on landscape plan (after 10-15 years plant establishment)
253 Mill Road (Adjoining property)	Existing screen planting within property	Residential: Low-Moderate negative Rural Industry (Gecko Fibreglass Repairs): Low negative	Very Low Very Low
No 8, 9 and 10 Christa Place (Within Residential - Rural-Residential Settlement Zone)	Intervening buildings for some properties along Christa Place (including No. 8 and 10 Christa Place) Intervening screening within properties	Moderate to Low-Moderate negative: Moderate (for No.9) Low- Moderate (No.8 and 10)	Low- Moderate (for No.9) to Low (No. 8 and 10)
Views from Bombay Village including residential views from Bombay Road	Intervening structures, buildings and shelter belt planting	Low dependant on intervening screening	Very low to neutral
More distant views from Barber Road and Bombay Football Club playing fields and courts	Intervening structures, buildings and shelter belt planting	Very Low	Very low
More distant residential views along Mill Road	Existing shelter belt planting	Low - Very Low dependant on intervening screening	Very Low
Shri Guru Ravidas Temple, GSR	Internal site planting Similar site elevation	Low-Moderate	Low
More distant views from GSR	Distance and wider context of existing built development in Bombay. The Z Service Station is slightly elevated above the Project site. Potential for internal screening maintenance to limit open views from	Z Station: Low negative Other views: Very Low	Z station: Very Low Other views: Very Low

	<p>both the Z service station forecourt and parking areas.</p> <p>Potential for internal screening of outdoor seating area at the café located at the corner of the centre.</p> <p>Transient nature of users.</p> <p>Intervening vegetation and landform.</p>		
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The visual effects on the majority of receivers is assessed as being less than minor. For 9 Christa Place, the adjoining property at 253 Mill Road, and the SGR Temple, the assessment finds the visual effects to be minor under the RMA.

CONSTRUCTION EFFECTS

The construction period for the Project is expected to be in the order of 12 months and there will be temporary landscape-related effects during this time. These will relate to site preparation and earthworks for the building platform. This includes retaining structures, construction of the buildings and ancillary structures, stormwater facilities and services, realignment and reinstatement of the existing driveway along the northern extent of the site and the formation of the site entrance / egress. There will also be the physical and visual activity of heavy machinery and related traffic management activities during the construction period. The removal of grass cover for formation of the building platform is likely to have the most noticeable visual effect from more elevated vantage points, but will be temporary in nature.

ASSESSMENT OF CUMULATIVE EFFECTS (RMA S3)

The proposed work will introduce further built development and new impervious surfaces. The scale and intensity of the proposed development is assessed as not being out of context with development that has already occurred in the surrounding and wider landscape. However, the loss in open farmland has potential to compromise the rural character and the visual amenity provided by the 'buffer' of pastoral farmland between the Bombay Village and the GSR corridor, without appropriate mitigation.

While there is potential for increased cumulative adverse effects from changes to the rural environment in this context, the LVA finds the proposed mitigations including built structure placement and design, planting of the wetland and floodplain will minimise cumulative effects by introducing treatments that promote biodiversity and enhance natural landscape character values and minimises visual effects.

Over time, as the proposed landscape mitigation planting becomes well established, the planting will be at a size where it will start to balance out the proposed CVSC infrastructure with natural elements and forms.

7.8.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

The measures recommended to remedy and mitigate any potential adverse landscape and visual effects includes restoration native planting within and around the induced wetland, and internal site planting with grassed terramesh walls and perimeter screening.

The planting plan is informed by the landscape context of the Project area, and developed in partnership with Mana Whenua and ecological specialists, to address potential landscape and visual effects. The outcome provides mitigation for the loss of rural character and amenity, with expected natural character and ecological enhancement in the long term.

Another constraint for internal plant selection was the need to meet technical clearance requirements for oversized vehicles and around the security fencing, along with engineering considerations to ensure the integrity of the retaining structures, and to accommodate space requirements for other infrastructure.

The site design has limited the land requirement, which is a positive outcome for reducing effects of impervious extent on natural character. While the platform in cut limits the visual height intrusion of the necessary retaining walls, the LVA finds the steep cut and fill for the battering limits the opportunity for more natural contouring beyond the wall. Ground shaping is proposed from a mid-point on the timber pole retaining wall adjoining the wetland, down to the north-east corner of the site minimising this delineation to minimise this transition.

The RSEs provide a suitable top soil layer of appropriate substrate for certain planting, above the structural fill, enabling on-site landscaping. The green terramesh walls also have units which can be filled with vegetated topsoil, as illustrated in the General Arrangement plans (**Appendix B**). This affords some opportunities to screen and visually integrate the development through greening of the walls around the perimeter that will assist with visually softening the otherwise hard features.

Internal site planting acts to visually soften the bulk and form of the buildings and extent of sealed area. Perimeter planting is provided along the full extent of the eastern and southern boundaries of the site to assist with screening views of the site from locations in close proximity. The proposed planting of tree and shrub screen planting along the CVSC boundary frontage at GSR also further screens the proposed work when viewed from the SGR Temple.

On the eastern boundary, the fencing and proposed planting in and next to the induced wetland will enhance the legibility and natural character of the wetland, which is presently dominated by exotic species and lacks definition from the grassed pasture which surrounds it.

With time, these measures will reinforce the integrating framework of vegetation already along the Ngakoroa Stream, extending to the wetland as illustrated in Figure 4.

Finally, ongoing monitoring is recommended as part of the landscape maintenance regime proposed to ensure the successful long-term establishment of the landscape treatments, including grass cover.

MEASURES FOR CONSTRUCTION EFFECTS

Activities associated with the construction phase of the Project will be industrial in nature. However, these effects are temporary, with a portion of the construction area (as delineated by temporary fenced area outside the CVSC platform) intended to be reseeded and returned to rural productive use post-construction.

Screening along fence lines could be investigated to provide temporary visual relief during the construction phase. From more distant elevated viewpoints it is likely the landscape and visual effects would still be evident, with distance being a key mitigating factor.

7.8.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

The overall potential landscape effects of the Project on natural character are assessed as Low-Moderate, reducing to Low following establishment of the recommended mitigation planting.

The visual effects for identified receivers range from Very Low to Moderate before mitigation. With the proposed mitigation planting, it is anticipated that the long-term effects will reduce to Low-Moderate for the most affected receivers at 9 Christa Place, and residential dwelling at 253 Mill Road, a residual minor effect.

For other receivers, landscape and visual effects are adequately mitigated by distance from the Project site, views of the wider context, intervening vegetation and landform which will partially screen the proposed work.

Landscape measures to avoid, remedy or mitigate any potential adverse landscape and visual effects have been incorporated into the planting plans provided in the General Arrangement Plans (**Appendix B**) for the proposed work.

The extent of visual effects will reduce over time as the mitigation planting establishes, such that the landscape and visual effects of the proposed work will be considered no more than minor for limited receivers outlined in the LVA, and less than minor for others assessed. The provision for ongoing maintenance (as part of the standard contract requirements) will also ensure mitigations are well established post-construction.

7.9 OPERATIONAL NOISE AND VIBRATION EFFECTS

7.9.1 ASSESSMENT METHODOLOGY

An Operational Noise and Vibration Assessment has been prepared to assess the potential noise and vibration impacts from the operation of the CVSC. The assessment is provided as **Appendix K** to this report.

Taking account of the rural context of the site, the assessment has considered the potential effect of operational noise beyond the site boundary. An assessment against the noise (rating) level at the notional boundary¹⁰ of the neighbouring sites in the rural zone in accordance with AUP Chapter E25 standards, has been considered.

The proposed CVSC site is located in a Rural-Rural Production Zone, however, the immediate surrounding area comprises a mixture of residential and commercial properties including the Bombay neighbourhood centre (The Junction). The surrounding properties are as indicated on the site plan (Figure 18) and have formed the properties used for assessment purposes. All other properties and locations will be located at a greater distance away from the site (exceeding 350m) and will therefore be subject to a lower level of any potential noise impact from the proposed work.

¹⁰ Notional boundary is defined in the AUP as *a line 20m from any side of a building containing an activity sensitive to noise, or the legal boundary where this is closer to the building.*



Figure 18 - Aerial plan showing surrounding properties considered in the noise and vibration assessment

Whilst the residential properties will have the potential to be affected during the daytime or night-time, “The Junction” within the Business- Neighbourhood Centre Zone is commercial use only, and the SGR Temple at 1998 Great South Road operates 9-5pm as a community facility. Therefore, these have been considered as daytime occupation only for the purpose of the acoustic assessment, with no night-time impacts. It was also assumed that the petrol station, opposite, is not noise sensitive and did not need to be assessed.

The main source of pre-existing noise in the local area will be traffic from SH1. Furthermore, the established petrol station opposite the site operates 24/7, and as such truck and vehicle noise may be present.

The main source of noise on site, once operational, will be the movement of vehicles onto and around the site. The CVSC will be sign posted with a 10 km/hr speed limit, and operating speed is assumed to be 10 km/hr too. The speed limit over the weigh bridge scale must be a maximum of 5 km/hr.

For the purposes of assessment, the typical sound pressure level for trucks has been used, sourced from BS 5228-1:2009 ‘Code of practice for noise and vibration control on construction and open sites’. Noise levels for electric and diesel forklift trucks have been taken from measurements of similar movements. For the purposes of the assessment, the highest noise level of a diesel forklift has been used, should electric units be used, the associated noise levels would be lower.

Given the requirement for flexibility in when the site may be operational, three scenarios were assessed to reflect the typical and likely busiest periods:

- A) Daytime: 3 trucks on site concurrently; and,
- B) Daytime: 8 trucks on site concurrently; and,
- C) Night-time (10pm – 7am): 1-2 trucks on site concurrently.

For the purposes of assessment, it was assumed that each vehicle on site will have its engine on for a total of five minutes total for idling or manoeuvring. Generally, engines will be switched off for both the inspections and weighing. It has also been assumed that a single diesel forklift will be in operation for 50% of the assessment period.

As outlined in NZS 6802:2008, where a sound source is not present for the entire daytime period, an adjustment to the measurement can be applied. A 3 dB adjustment can be applied for a sound that occurs for less than 50 % of the daytime period. No adjustments can be used during the night-time period.

A 30-minute assessment period has been used which is considered approximately equivalent to the time it might take for a vehicle to pass through the facility. A time weighting of 5 minutes engine on time per 30-minute assessment period, has been applied to the predictions to reflect the LAeq30mins noise level.

For each of the assessment scenarios, noise from the total number of vehicles was summed assuming notional vehicle locations around the site. The resulting levels were assessed at the nearest residential locations using standard noise propagation formulae assuming propagation over soft ground. A screening effect was applied at the closest residential property, 253 Mill Road, due to the site level being lower than the ground beyond the southern boundary.

7.9.2 OPERATIONAL NOISE AND VIBRATION EFFECTS

The acoustic assessment has assessed the potential emission of noise and vibration from the operational CVSC site against the relevant AUP Chapter E25 noise emission criteria and vibration limits, and the New Zealand Standard NZ6802:2008 Acoustics-Environmental Noise.

The assessment demonstrates operational noise and vibration will not exceed reasonable levels when operating under the scenarios expected. The assessment against the noise (rating) level at the notional boundary of the neighbouring sites in the rural zone have been considered.

The exceedances to AUP noise limits will be either negligible, infrequent, or up to 3dB in exceedance, considered to be a less than minor exceedance for the following receivers:

- Properties within the Rural and Coastal Settlement Zone (compliant with AUP noise limit)
- Bombay Neighbourhood Centre/The Junction (compliant with AUP noise limits under applicable Scenario A and B)
- 1998 Great South Road/ SGR Temple (compliant with AUP noise limits under applicable Scenario A and B)

For six properties, the exceedance is between 3dB to 6dB for Scenario C. Given that the exceedances will occur infrequently, the effect is considered to be less than minor with mitigation measures in place. Table 15 provides a summary of the properties that will experience infrequent predicted noise level exceedances.

Table 15 - Properties with minor but infrequent predicted noise level exceedances

Location	Frequency of predicted noise level exceedance	Distance from site	Exceedance of AUP noise limits
253 Mill Road (Lot 1 DP 124783)	Night-time (Scenario C) only	100m	2 to 5 dB exceedance
GSR residential north-west of the site including: <ul style="list-style-type: none"> • 1994 Great South Road (Lot 1 DP 47888), • 1988 Great South Road (Part Lot 4 DEEDS 46), and • 1998 Great South Road (corner Lot 2 DP 47888) 	Night-time (Scenario C) only	Approx 140m - 175m	3 to 6 dB exceedance
Mill Road (Lot 3 DP 124783)	Night-time (Scenario C) only	190m	3 to 6 dB exceedance
287 Mill Road (Lot 2 DP 89604)	Night-time (Scenario C) only	240m	<4 dB exceedance

There may be some building services and ventilation equipment associated with the control building on site. While details of the proposed equipment were not available at the time of the assessment, given the size of the control room, the equipment was expected to be relatively small in size, and that it would be possible to easily mitigate noise emissions. Therefore, building services equipment was not considered further in the acoustic assessment. The proposed mechanical services are consistent with the assessment assumptions and include a point extract system and ventilation extract on the roof of the inspection shed.

The assessment of a Daytime operational scenario (Scenario A) finds all noise predictions are within the AUP noise limits applicable to Rural Zones and operations at this scale would have negligible associated noise impacts at all surrounding properties.

Under Scenario B, the predicted noise levels at 287 Mill Road, The Junction and the Rural and Coastal Settlement Zone will comply with the AUP noise limits. Noise levels at the other properties (Mill Road and GSR in *Table 5.1* of the Noise Assessment) are predicted to exceed the AUP limits by up to 3 dB which is considered the smallest perceivable real-world difference in noise levels in a similar context. This is assessed as a less than minor effect.

A 3 dB reduction in noise levels under Scenario B (Daytime) would be equivalent to halving the number of vehicles on site. Therefore, compliance would be achieved if there were a maximum of four HCV's on site at once. The likelihood and frequency of there being more than four vehicles simultaneously moving around the site is expected to be low, as the nature of activities and site configuration means HCV can occupy the site without being mobile (and generating noise emissions) at the weigh-bridge and at the inspection bays/shed.

As per NZS 6802:2008, a -3 dB adjustment can be applied for a sound that occurs for less than 50 % of the daytime period. This has not been applied to the assessment, but a time correction for the duration 'on-time' of a vehicle during the assessment period has been accounted for. If the -3 dB adjustment were applied, then the noise predictions at all of the above properties would comply with the AUP noise limits.

The properties on GSR are located approximately 140-160m from SH1. Therefore, it is expected that road and state highway traffic noise is an inherent part of the existing noise environment at these locations for these properties.

The SGR temple and The Junction commercial properties are not assessed as noise sensitive at night. Three dwellings north-west of the CVSC on GSR and one at Lot 3 DP 124783 (south-east) (shown in *Appendix B* of the Noise Assessment) are predicted to exceed the AUP limit by up to 3 - 6 dB, when the CVSC is operational.

On occasion, evening operations on site may continue past 10pm. It is anticipated that operations rostering will be based on commercial vehicle intelligence (routes, times, traffic volumes, events etc), and the site staffed when risks are highest (i.e. crash risks, vehicle volumes) typically 6am to 9pm. Therefore, frequent night-time operations after 10pm are not expected.

An assessment of a Night-time operational scenario (Scenario C) finds on the basis that night-time operations are likely to be infrequent, or will not occur continuously through the night.

When two vehicles (rather than four) are using the CVSC concurrently during the night-time, a 6 dB exceedance of the AUP noise limits is predicted at the GSR residential locations, halved when a single vehicle is using the facility. When operations do occur at night, this will only happen irregularly and on occasion. The effects of this exceedance for GSR receivers is considered acceptable and will not require further mitigation. The overall assessment is that operational noise will have a less than minor effect for receivers.

Following a review of the expected site operations, the assessment finds no significant levels of vibration will be generated on the site.

7.9.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

The assessment of a daytime operational scenario (Scenario A) finds all noise predictions are within the AUP noise limits applicable to Rural Zones and operations at this scale would have negligible associated noise impacts at all surrounding properties.

Under Scenario B the predicted noise levels at 287 Mill Road, The Junction and the Rural and Coastal Settlement Zone will comply with the AUP noise limits. Noise levels at the other properties are predicted to exceed the AUP limits by up to 3 dB which is considered the smallest perceivable real-world difference in noise levels in a similar context. This is assessed as a less than minor effect.

A 3 dB reduction in noise levels under Scenario B (Daytime) would be equivalent to halving the number of vehicles on site. Therefore, compliance would be achieved if there were a maximum of four HCV's on site at once. The likelihood and frequency of there being more than four vehicles simultaneously moving around the site is expected to be low. There could be up to a maximum of eight HCVs accommodated within the site, and on occasion, there may be times where evening operations on site continue past 10pm.

253 Mill Road is the closest receiver to the site. Noise levels at this location will be mitigated by the natural berm formed due to the site surface level being lower than the surrounding ground level. The cut depth along the southern site boundary varies but is up to approximately 4m at the eastern end of the site furthest from the road. For the purposes of the assessment, line of sight from this receiver to the noise sources (vehicle engines) traversing the site was assumed to be obstructed.

With regards to noise arising from or affecting rural zones, the findings of the assessment are that there is no further mitigation for the adverse effects of noise in the rural environment, having regard to both the working nature and current land uses within the existing environment. Therefore, it is expected that road traffic noise is an inherent part of the existing noise environment at the location of the properties on GSR the closest being 140m from the CVSC.

The effects on the closest receiver to the site, property at 253 Mill Road, will be effectively mitigated through the retaining wall and cut depth along the southern boundary, which provides an acoustic barrier.

The ability to control multiple vehicle usage of the site during the night will provide suitable mitigation for operational noise effects.

7.9.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

During the assumed busiest daytime conditions at full capacity, some minor exceedances of the AUP noise standards for rural zones are predicted. However, these exceedances are not expected to cause significant adverse effects for the receivers assessed, and as they are not expected to occur frequently, will be less than minor.

During the night-time period (Scenario C) some effects may be experienced at the nearest dwellings on GSR, 253 Mill Road and at Lot 3 DP 124783. However, the magnitude of the noise predictions above the AUP noise standards is assessed as not significant and given that this will not occur either frequently through the night or regularly at night at all. The overall impact with mitigating design factors is assessed as being minor with the proposed site operations, limiting operating times and movements, where practicable. As many of the surrounding properties are commercial the noise and vibration effect for these receivers will be less than minor.

7.10 OPERATIONAL LIGHTING EFFECTS

7.10.1 ASSESSMENT METHODOLOGY

A Lighting Assessment has been prepared to assess the effects from site lighting upon the receiving environment. A copy of the assessment is provided in **Appendix L**.

The assessment has been undertaken in accordance with the requirements of AS/NZS 1158.3.1:2020 (Lighting for roads and public spaces) and guidance from Table 3.1 AS/NZS 1680.5:2012 (Outdoor workplace lighting) and the Chapter E24 Lighting of the AUP.

Spill Lighting Threshold Increment and Glare calculations were performed in AGI32 lighting software and the results compared to the criteria set out in the AUP.

7.10.2 LIGHTING EFFECTS

The potential obtrusive lighting effects relate to the introduction of new artificial lighting to the environment, including light spill and glare on residential dwellings and adjacent roadways. The closest residential dwellings are identified in section 7.9. Limited street lighting is currently provided along the eastern side of GSR.

The proposed outdoor lighting for night operations is comprised of twenty-five (25) lighting columns at a 7m design height. The relevant design areas and calculation grids have been defined in accordance with the lighting standards. Lighting spill can be controlled by pointing the luminaires inwards and away from the boundaries where practical, with one luminaire per column. The proposed luminaire types specified for the CVSC are detailed in Table 3-1 of the Lighting Assessment (**Appendix L**) and illustrated in the General Arrangement Plans combined services plan on Sheet C-4100 (**Appendix B**).

The Lighting Assessment confirms any minor position changes to lighting columns within the site are unlikely to alter the spill and glare results enough to result in different lighting effects for the proposed work. Compliance with the horizontal average illuminance and uniformity requirements for the CVSC is achieved.

Based on the calculations undertaken for obtrusive light, the proposed lighting design demonstrates compliance with the relevant standards for each design element as well as, the requirements of the AUP Chapter E24 Lighting. No further mitigation measures to address light spill or glare on residential properties is required.

Additional street lighting is proposed along GSR, between the Mill Road roundabout to the CVSC site entrance. The proposed design responds to the outcomes of the road safety audit and is in accordance with AT's road network requirements. Street lighting will be installed as part of the Stage 4 separable works.

Glare (Threshold Increment) has been assessed as compliant and therefore the proposed work or any associated lighting safety improvements, pose no risk to traffic using GSR.

7.10.3 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

While the proposed lighting installation is designed to operate 24 hours/day, lighting may be reduced when the site is not operating at night. Some lighting will be retained however, for security reasons.

With regards to night sky viewing, the amount of light directly emitted above the horizontal, into the night sky has been kept to a minimum through limiting the tilt angles of all luminaires to 0 degrees to the horizontal. Some light will be reflected upwards from the lit area (i.e. pavement surface over which there is no control) noting pavement design and typology will be finalised during detailed design.

7.10.4 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

Overall, the lighting assessment confirms there will be no obtrusive lighting effects for the Project relating to spill light and glare from the introduction of new artificial lighting on neighbouring properties and adjacent roadways.

The potential lighting effects associated with the proposed work will be less than minor.

7.11 CULTURAL VALUES AND EFFECTS

7.11.1 ASSESSMENT METHODOLOGY

Iwi engagement has primarily taken place through the SIIG, as set out in section 6.3. Regular engagement has been undertaken since 2021 throughout the design and pre-lodgement process. A summary of issues raised and Project responses is provided below.

A cultural values assessment (CVA) has been prepared by Ngaati Te Ata Waiohua (NTAW, July 2022).

Ngāti Tamaoho have a statutory acknowledgement over the Ngakoroa Stream and its tributaries. Ngāti Tamaoho kaitiaki representatives have been present at many of the SIIG hui to date.

7.11.2 EFFECTS ON CULTURAL HERITAGE AND VALUES

Effects on cultural and natural heritage and values have been identified in the SIIG hui, via the cultural values assessment and also conveyed while out on a site visit with Waka Kotahi and Project team representatives. The Project team’s understanding of the key issues, interests and desired outcomes for iwi are summarised in Table 16.

Table 16 - Kaitiaki outcomes and summary of project responses

Desired Kaitiaki Outcomes	Project response
<p>Road safety: General support conveyed of projects that promote road safety especially with regards to heavy vehicles, however, this must not be to the diminishment and or violation of cultural values, tikanga, waahi tapu and taonga.</p>	<p>The Project aligns with the desire for road safety while considering cultural values and the natural environment.</p>
<p>Stormwater and freshwater management that does not compromise cultural values including:</p> <ul style="list-style-type: none"> • Mauri (innate energy such as in water and on land) • Taonga (including flora and fauna and fish species) • Ngaa tikanga (including traditional customary practices such as harvesting and resource gathering) 	<p>Site stormwater will be discharged to the stream following treatment and detention, to ensure the ecological condition and cultural use of the stream is not compromised. Erosion and sediment control measures will be implemented during construction of the proposed work and an indicative Erosion and Sediment Control Plan (ESCP) is provided with the Application.</p> <p>These matters are also addressed in section 7.6.</p>
<p>Land disturbance that does not compromise cultural values including:</p> <ul style="list-style-type: none"> • Whakapapa (including any recorded or unrecorded cultural heritage/sites of significance) • The removal or bringing in of soil from the site • Where flocculation is necessary during the earthworks phase of construction, the use of organic flocculants is preferred. 	<p>As addressed in section 2, the bulk earthworks will entail use of fill from cut, wherever the actual site conditions allow and are suitable for the proposed work.</p> <p>Both the ESCP (Appendix D) and Site Management Plan (Appendix F) will also be implemented during construction.</p> <p>The ESCP will outline the need for use of flocculants during construction and other measures such as silt (or super silt) fencing.</p>
<p>Improved natural character of the area to provide a better habitat for birds, and enhance water quality for freshwater species.</p>	<p>The Project incorporates stormwater treatment measures and planting of indigenous vegetation to enhance site habitat. Proposed site landscaping has been developed with Iwi input.</p>
<p>Support for restoration of wetlands and riparian margins in and around the local area of Pukekura in recognition of their purification role and for the improvement and protection of mauri.</p>	<p>Mitigation planting is proposed in and next to the wetland, within the site boundary. This planting will assist with improving water quality in the freshwater environs and provide ecological connection between the site and the Ngakoroa Stream outside it. Fencing is proposed along the site boundary (which passes through the wetland) to protect the proposed planting area from livestock.</p>
<p>Use of eco-sourced plants and trees from within the Pukekura, Pukekohe, Paeraataa and Drury areas.</p>	<p>Eco-sourcing is proposed, and the proposed planting list reflects the ability to source these species as well as their ecosystem extents.</p>

Establish new, and enhance existing, ecological corridors as a high priority.	The proposed planting will facilitate and enhance an ecological corridor between the induced wetland and the Ngakoroa Stream environs.
Encourage use of mechanisms such as rainwater harvesting, rain gardens, roof gardens, and onsite storage and retention.	The CVSC will include a rainwater tank for on-site uses.
Remove or reduce pest plant and animal species.	Pest plant removal is proposed to support the establishment of native planting within the site.
Enable ongoing engagement with iwi on environmental, cultural and ecological management plans, water management, heritage, biodiversity and cultural monitoring.	Waka Kotahi will continue to engage with iwi and provide opportunity for ongoing input from the SIIG representatives as the site proceeds to construction phase.
Greater understanding of iwi history, values and connection to place. Respect for tikanga and kaitianga obligations during construction of the Project.	An Archaeological assessment with site survey has been undertaken ahead of construction to address concerns that waahi tapu, taonga and or kooiwi may be discovered, especially near undisturbed waterways and or in undeveloped areas. Site protocols will be implemented pre-commencement and as the site proceeds to construction phase. Appropriate provision will be made for a cultural induction of the contractor's staff prior to the start of construction to support greater awareness of cultural values and potential for undiscovered waahi tapu (sites) and or taonga. An Accidental Discovery Protocol will apply in the event of any unexpected discovery of archaeological material.

7.11.3 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

The Project demonstrates measures taken to address potential cultural effects as a result of the proposed work.

This assessment finds the Project will appropriately mitigate its effects. This is aligned with the desired outcomes identified by iwi, and follows a stepped process to first avoid, then remedy or mitigate effects in the first instance, such that the effects on cultural values, tikanga, whakapapa and taonga will be no more than minor with the implementation of the proposed mitigations.

7.12 AIR QUALITY

7.12.1 AIR QUALITY EFFECTS

The AUP recognises that the air quality in rural areas, with lower densities of development, can be managed through good on-site management practices and adequate separation to avoid effects of contaminants into air on human health and neighbourhood dust and odour levels.

Auckland Ambient Air Quality Targets are outlined in AUP Chapter E14, Table E14.3.1. Policy E14.3 3(c) specifically provides for minor and localised elevation of dust and odour levels where the air discharge is from the operation of infrastructure or location specific industry.

An air quality report was not required for the proposed work as the sole emissions relate to mobile vehicle sources. HCV inspections will occur within the CVSC inspection shed, emissions will be captured by the exhaust systems contained in the inspection shed.

7.12.2 MEASURES TO AVOID, REMEDY OR MITIGATE POTENTIAL EFFECTS

Potential dust emissions during the construction phase are a temporary effect. Appropriate dust control procedures will be implemented by the contractor during construction. Methods to avoid, remedy or mitigate potential effects will include the following:

- Timing of works with consideration of prevalent wind direction;
- Dampening any exposed soils with water during dry or windy conditions;
- Wheel wash facilities at the site exit to ensure dust is minimised and all vehicles are clean prior to leaving site; and
- Stabilisation and covering of stockpiles.

7.12.3 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

With appropriate dust control procedures in place, the air quality effects of the proposed work will be less than minor.

7.13 CONSTRUCTION NOISE AND VIBRATION EFFECTS

7.13.1 ANTICIPATED CONSTRUCTION EFFECTS

An indicative construction methodology is provided in section 2 of this report. The extent of the CVSC designation includes land required for temporary construction activities and is set back from surrounding land uses.

7.13.2 MEASURES TO AVOID, REMEDY OR MITIGATE EFFECTS

Construction noise will be managed in accordance with the noise and vibration criteria and requirements of NZS 6803:1999 “Acoustics- Construction Noise” and NZS 6801:2008 “Acoustics – Construction Noise”.

NZS 6803:1999 is considered the current best practice assessment methodology for construction noise and recommends upper limits for construction noise in residential zones and dwellings in rural areas, outlined in Table 17.

Construction noise vibration levels will be monitored and assessed in accordance with the requirements of the German Standard DIN 4150-3:1999 “structural vibration – Part 3: Effects of vibration on structures”.

The works could take 12 months or more, and therefore the ‘long term duration’ noise limits in NZS 6803:1999 apply. Preparation of a site-specific Construction Noise and Vibration Management Plan (CNVMP) is appropriate and will be prepared at such time as a detailed construction methodology is available and equipment is confirmed.

Table 17 - Recommended upper limits for construction noise received in residential zones and dwellings in rural areas (Source: NZS 6803:1999)

Time of week	Time period	Noise Limit, dB	
		L _{Aeq}	L _{AFmax}
Weekdays	0630-0730	55	75
	0730-1800	70	85
	1800-2000	65	80
	2000-0630	45	75
Saturdays	0630-0730	45	75
	0730-1800	70	85
	1800-2000	45	75
	2000-0630	45	75
Sundays and public holidays	06030-0730	45	75
	0730-1800	55	85
	1800-2000	45	75
	2000-0630	45	75

As the construction activities will typically occur during normal working hours, construction noise effects are temporary and can be suitably managed to ensure the effects are less than minor.

7.13.3 SUMMARY OF ACTUAL AND POTENTIAL EFFECTS

The anticipated construction noise effects will be appropriately managed such that the effects on the environment will be less than minor. A CNVMP will be prepared and implemented on site during construction to manage potential effects (including noise and vibration) upon receivers.

7.14 Overall summary of actual and potential effects

The assessment of the proposed work concludes that the majority of the actual and potential adverse effects will be less than minor, and can be suitably mitigated.

The visual effects of the proposed work is assessed as being minor for a limited number of receivers, these being:

- No. 8, 9 and 10 Christa Place, Bombay and specifically the receiver(s) at 9 Christa Place, and
- The landowner and/or occupier at 253 Mill Road, Bombay, and
- The Shri Guru Ravidas Temple.

With the implementation of mitigation measures, the potential landscape effects overall are assessed as low, and the potential visual effects on the receivers above are assessed as Low-Moderate to Low-Very Low in the medium – long term.

A summary of measures incorporated in the design or proposed to manage adverse effects is provided in Table 18.

Table 18 - Summary of measures to manage adverse effects of the proposed work

Effect	Key measures to manage adverse effects
Archaeological or historic heritage	Ongoing iwi engagement; cultural induction at start of works; Accidental Discovery Protocol
Lighting	Minimised light spill incorporated within lighting design
Landscape and visual	Landscape Planting Plan and planting maintenance
Stormwater and flooding	On-site stormwater treatment Stormwater hydrologic detention Outlet protection
Operational traffic and noise	Roading and pavement treatments Extra detection loop Management of CVSC site operations to manage number of HCVs on site at one time
Ecological	Lizard management plan Ecological supervision during dewatering Water quality monitoring pre/during construction Wetland planting and fencing
Contaminated land	Site management plan
Construction effects	Erosion and Sediment Control Plan Construction Noise and Vibration Management Plan Construction Traffic Management Plan

There are no residual adverse effects that require offsetting or compensation as a result of the proposed work.

The proposed designation conditions are provided in **Part A- Attachment B**.

The suggested resource consent conditions are provided in **Part B- Attachment A**.

8 NOTIFICATION

The steps which inform a decision whether to notify the Notice of Requirement and resource consent application on a limited or public basis are set out in Sections 95A – 95E RMA. A public notification analysis in accordance with Section 95A is provided in Table 19 below:

Table 19 - Public Notification Analysis

Step 1 – Mandatory Public Notification in certain circumstances	YES	NO
Has the applicant requested public notification? [s95A(2)(b)]		X
Is public notification required under s95C?		X
The application is made jointly with an application to exchange recreation reserve land under Section 15AA of the Reserves Act 1997		X
Step 2 – Public notification precluded in certain circumstances:		
Does a rule or NES preclude public notification of the application? [s95B(2)]		X
A controlled activity; and/or		X
Restricted-discretionary or discretionary activities for: a subdivision of land a residential activity [s95A(6)] a boundary activity [87AAB]		X
Step 3 – Public notification required in certain circumstances:		
Does a rule or NES require public notification of the application [s95B(2)]		X
Are adverse effects on the environment more than minor? [s95A(2)(a)]		X
Step 4 – Public notification required in special circumstances		
Do special circumstances apply that warrant public notification [s95A(4)]		X

An analysis in accordance with Section 95B, that the consent authority must follow to determine whether to limited notify, is provided in Table 20 below:

Table 20 - Limited Notification Analysis

Step 1 – Certain affected groups and affected persons must be notified	YES	NO
Are there any affected protected customary rights groups? [s95F]		X
Is the activity on, adjacent to or likely to affect a statutory acknowledgement area? And; would you consider the person(s) for whom the statutory acknowledgement is made to be affected? [s95E(2)(c)]		X
Step 2- Limited notification precluded in certain circumstances:		
Does a rule or NES preclude limited notification of the application? [s95B(2)]		X
Is the land use consent a controlled activity?		X
Step 3 – certain other affected persons must be notified		
Are adverse effects on any person minor or more than minor?		X
Step 4 – limited notification required in special circumstances		
Do special circumstances apply? [s95A(4)]		X

The AEE for the Project is supported by technical reports relating to traffic, three-waters, contaminated land, ecological, landscape and visual, lighting and noise effects. In addition, consultation and engagement has been undertaken to identify potential matters of concern for the community, Iwi, and stakeholders such as Auckland Transport and utility providers (section six).

Waka Kotahi does not request that the NOR be publicly notified. The assessment undertaken in the AEE indicates that the majority of temporary and permanent effects on the environment will be less than minor and appropriate mitigation will be provided as part of the proposed work to address these effects. On this basis, the Project does not require full notification.

The potential landscape effects overall are assessed as low, and the potential visual effects on the majority of properties are assessed as Low-Moderate in the short-term establishment phase only, reducing to Low-Very Low in the medium – long term.

In terms of limited notification (Sections 149ZCC and 149ZCF RMA), the technical assessments conclude that there may be minor residual adverse effects on:

- Limited properties being No. 8, 9 and 10 Christa Place, Bombay and specifically the receiver(s) at 09 Christa Place, and
- The landowner and/occupier at 253 Mill Road, Bombay and SGR Temple.

With reference to relevant provisions of Sections 95A – 95E, and 169 in the RMA it is considered that no-one else is a potentially affected person and appropriate mitigation will be provided as part of the proposed work to address visual effects.

9 STATUTORY ASSESSMENT

9.1 STATUTORY CONSIDERATIONS

Section nine sets out the relevant legislative and statutory framework against which the Project has been assessed. An assessment of the proposed work against the provisions of the RMA that are relevant to the NOR and resource consents for the Project, including Part 2 which sets out the purpose and principles of the Act, are covered in this section of the AEE.

The applicable RMA planning documents, and the relevant provisions that relate to this Project are provided in **Appendix C.3 (Statutory Assessment- Objectives and Policies)**. The relevant RMA planning documents that the proposed work must be assessed against in accordance with s171 for a NOR and s104 for a resource consent are provided in Table 21 below.

Table 21 - RMA planning documents - statutory assessment requirements

NOR	Resource consent
<i>Any relevant provisions of the:</i>	<i>An assessment against:</i>
National Policy Statement	National Policy Statement
Regional Policy Statement	National Environmental standard
Auckland Unitary Plan (non-RPS)	Regional Policy Statement
Alternative sites, routes or methods of undertaking the work	Auckland Unitary Plan (non-RPS)
	Other regulations

The environmental legislation, national direction instruments, regional and district plans, which the Project has been assessed against are:

- Resource Management Act 1991
- Resource Management (National Environmental Standards for Freshwater) Regulations 2020
- Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
- National Policy Statement for Highly Productive Land 2022
- Auckland Unitary Plan (Operative in Part)

An assessment across numerous objectives and policies has been necessary for the Project and corresponds with identified regional policy statement issues including environment, rural land, infrastructure and transport.

9.2 PURPOSE AND PRINCIPLES OF THE RMA (PART 2)

Consideration is required of the purpose and principles within Part 2 of the RMA (Sections 5,6,7 and 8) that are to be applied to the management of all resources.

Section 5 Purpose

The purpose of this Act (Section 5) is to promote the sustainable management of natural and physical resources. Sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

As the AUP has been prepared in accordance with the RMA and contains a coherent set of policies designed to give effect to and achieve clear environmental outcomes, an assessment against the AUP provisions in section 9.7 is considered sufficient without reference back to Part 2. Brief commentary on the Part 2 matters however, is provided as follows:

Comment:

The AEE has discussed how the Project responds to Section 5 Purpose of the RMA concerning sustainable management of natural and physical resources. It is considered the Project will:

- Enable the region to provide for its social, cultural and economic wellbeing through the reduced maintenance of transport networks in the Auckland Region from lessened wear/damage and risk, and improvements to safety; and
- Make efficient use of land by locating the activity and siting, on a portion of the parent site which has minimised the footprint of the activity to the extent possible; and
- Implement measures that, avoid, remedy or mitigate adverse effects on the environment.

Section 6 Matters of National Importance

In achieving the purpose of the RMA, Section 6 requires that persons exercising functions under the RMA shall recognise and provide for the following matters of national importance:

a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development:

b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development:

c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:

d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:

e) The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:

f) The protection of historic heritage from inappropriate subdivision, use, and development:

g) The protection of protected customary rights.

Comment:

Only matters (a) and (e) of national importance are directly relevant to this application and this assessment addresses these.

The CVSC is part of the effective, efficient, and safe operation and maintenance of the state highway network and must be located within close proximity to the state highway. Therefore, it is not an inappropriate use or development in this location. The proposed work will avoid impacts on the wetland and the stream, and with the implementation of the proposed planting in and next to the wetland (within the site boundary), has the potential to enhance the natural ecological values of the site which is presently used for pastoral purposes. The relationship of Māori to this land, the stream and broader cultural landscape have been given particular regard in the design development of the site, and proposed planting plan.

The LVA assessment finds the proposed site has low natural character. With the planting mitigations the CVSC will not be an inappropriate use and development.

Section 7 Other Matters

Section 7 identifies a number of “other matters” to be given particular regard. Those of relevance are:

(c) The maintenance and enhancement of amenity values:

(b) The efficient use and development of natural and physical resources:

(f) Maintenance and enhancement of the quality of the environment:

Comment:

The CVSC site demonstrates an efficient use and development of natural and physical resources, through minimising the footprint of the activity to the extent possible; and measures that, avoid, remedy or mitigate adverse effects on the environment.

Ecological values are enhanced, and amenity values mitigated through landscaping, and building/structure treatments which will reduce the visual intrusion into the landscape.

Section 8 Treaty of Waitangi

Section 8 relates to the Treaty of Waitangi and directs that:

“In achieving the purpose of this Act, all persons exercising the functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)”.

Comment:

The proposed work has considered the principles of the Treaty and the relevant planning provisions of both the National Policy Statements, National Environmental Standards and the AUP (see Statutory Assessment in **Part C- Appendix C**) with integration of these matters, from the early design phase through to detailed design.

A statutory acknowledgement for the Ngakoroa Stream and its tributaries (OTS-129-20) applies to the entire site and wider context. This acknowledgement forms part of the settlement for Ngāti Tamaoho.

As outlined in Chapter E21 Treaty Settlement Land of the AUP, the purpose of statutory acknowledgements is articulated in each claim settlement. In general, this includes:

(1) a requirement that consent authorities forward to the post-settlement governance entity summaries of resource consent applications for activities within, adjacent to, or impacting directly on statutory areas and providing for the post-settlement governance entity to waive its rights to be notified;

(2) a requirement that consent authorities must have regard to the statutory acknowledgement relating to a statutory area in forming an opinion in accordance with section 95E of the Resource Management Act 1991 as to whether the post-settlement governance entity is an entity that may be adversely affected by the granting of a resource consent for activities within, adjacent to, or impacting directly on the statutory area; and

(3) enabling the post-settlement governance entity and any member to cite statutory acknowledgements as evidence of the association that the entity has with the statutory areas in submissions to, and in proceedings before a consent authority concerning activities within, adjacent to or impacting directly on the statutory area. This is not binding as deemed fact but may be taken into account.

AUP Appendix 21 Treaty Settlement Legislation – statutory acknowledgements description for OTS_129-20 reads:

The Ngakoroa Stream begins from north of the ancient Tuhimata kāinga, near what is known today as Ravenhorpe Scenic Reserve. From here it flows north through the Manukau lowlands toward Te Manukanuka O Hoturoa (Manukau Harbour). The banks toward the lower portion of Ngakoroa were occupied by several kainga and mahinga kai sites.

The Ngakoroa Stream is associated with the Pahurehure Inlet and Drury Creek sites of significance.

It is noted that Rohe maps (held by council) indicated another five Iwi with potential interest in the site: Te Ākitai Waiohua, Ngāi Tai ki Tāmaki, Ngāti Te Ata, Ngāti Maru, and Waikato-Tainui.

The consultation and engagement process included sharing information with the SIIG Hui as a key forum to discuss the Project with Iwi, as discussed in section six. A Cultural Values Assessment prepared by Ngaati Te Ata Waiohua has also informed the CVSC design development.

An assessment of the proposed work against the RMA statutory framework has demonstrated that it aligns with the relevant planning provisions. Competing objectives particularly in relation to infrastructure, rural land use, and the natural environment have been assessed, and the Project has responded to both the need for the proposed work while providing the necessary environmental mitigation that achieves a positive outcome.

9.3 NATIONAL POLICY STATEMENTS

Section 171(1)(a)(i) requires territorial authorities to have regard to the relevant provisions of any National Policy Statements (NPS) when considering a requirement. This section provides an assessment against the relevant NPS.

9.3.1 NATIONAL POLICY STATEMENT FOR HIGHLY PRODUCTIVE LAND 2022

The National Policy Statement for Highly Productive Land 2022 (NPS-HPL) came into force on 17 October 2022.

Auckland Council's GIS database identifies the New Zealand Land Resource Inventory (NZLRI) Land Use Capability classification for the site (and broader Bombay context) as being Prime Soils (LUC 2 & 3). A map of the site with the AUP Management Layer for Highly Productive Land (HPL)- Transitional definition is provided in Figure 19¹¹. The layer applies to much of the site with the exception of a northern portion of the site which is not covered.

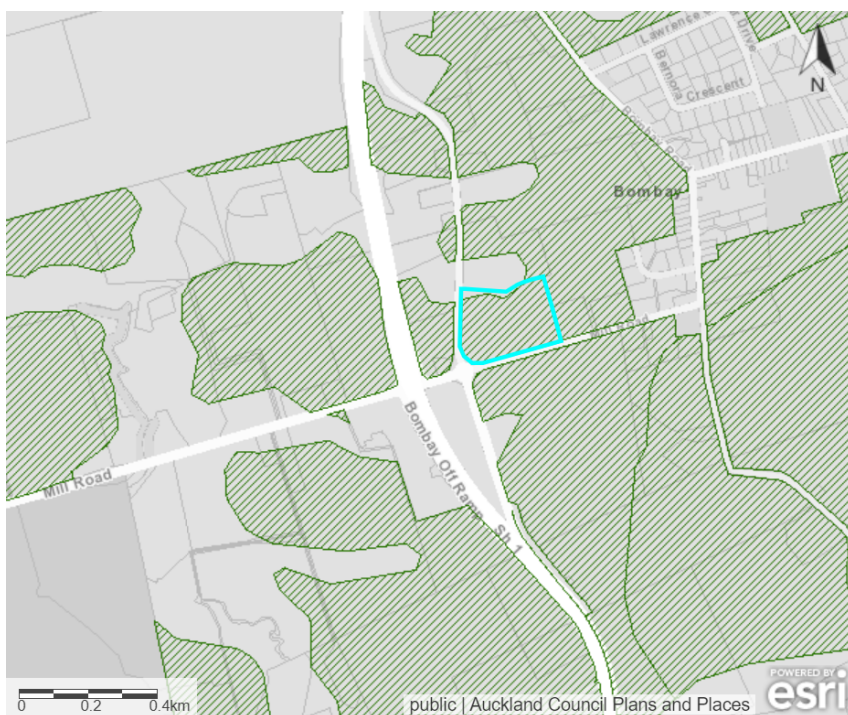


Figure 19 - Land Use Class 2 and 3 areas in relation to the CVSC site (outlined in blue)

¹¹ Figure 15 depicts an IDMY/ISCC estimate for each 1:50,000 NZLRI polygon. IDMY/ISCC has been attached to the main FARM LUC corresponding to each polygon's NZLRI LUC. The map assumes a standard rainfall (1500 mm) and vegetation cover (improved pasture), so that productive potential of NZLRI LUC classes/subclasses/units can be compared and spatially depicted region wide. To find out actual IDMY/ISCC for a particular property, it is necessary to field-map FARM LUC at 1:5,000 - 1:10,000; ascertain extent and composition of pasture; and adjust estimates to actual rainfall".

The NPS-HPL defines ‘highly productive land’ (HPL) to mean land that has been mapped in accordance with clause 3.4 and is included in an operative regional policy statement as required by clause 3.5. Reference to clause 3.5(7) is required in determining highly productive land before the maps are included in an operative regional policy statement.

As per clause 3.5(5), it is expected that all maps of highly productive land in proposed regional policy statements, regional policy statements, and district plans must be updated at the next appropriate plan review to reflect relevant changes to zoning, land use capability classification, or any other matter affecting the classification of land as HPL.

As illustrated in Figure 19, known developed areas and properties within the Bombay context and approximate to the CVSC site are covered by the LUC classification. While land use zoning in and around GSR reflects some of the actual land use and development, other developments west of GSR are similarly situated on rural zoned land but do not reflect this land use. Further analysis by Auckland Council as required by clause 3.5.(5) may change and refine the final mapped extent currently shown in Figure 19¹².

The extent of rural zoned land along the state highway corridor is also noted. As discussed in the alternatives assessment (section 3), the majority of other alternatives were also on rural land.

Under Clause 7 (7) the NPS-HPL is applicable to land that at the commencement date were HPL as per the transitional definition¹³ with an assessment of the proposed work against the provisions of the NPS-HPL provided in Table 22.

Table 22 – Assessment against the NPS-HPL

Relevant policies in the NPS-HPL	Relevant Implementing clause	Assessment under NPS-HPL
<p>Land-use consent 1,2,4,6,8,9</p> <p>2.1 Objective</p> <p>Highly productive land is protected for use in land-based primary production, both now and for future generations.</p> <p>2.2 Policies (1 – 9)</p>	<p>3.5(6) and (7) – Transitional definition of HPL</p> <p>3.9 – Protecting HPL from inappropriate use and development</p>	<p>Under clause 3.5.9(7) applies as the land is zoned rural production and combination of LUC 2 and 3 land.</p> <p>The proposed work falls within the accepted list of land uses and activities which may be appropriate on HPL in accordance with clause 3.9(2)(h), as well as clause 3.9(2)(j) when implementing policy 8.</p> <p>The activity is in relation to a designation or notice of requirement for specified infrastructure. No rezoning is sought and a designation approach is considered appropriate.</p> <p>Before clauses in 3.9(2) can be applied, the measures in clause 3.9(3) must be applied. The proposed work applies both ‘minimisation’ and ‘mitigation’ to the loss of productive capacity.</p>
<p>Updating policy statements and plans 1,2,4,5,6,7,8,9</p>		<p>See above row for assessment under clause 3.9.</p>

¹² Unitary Plan – Management Layers

¹³ Ministry for the Environment. 2023. National Policy Statement for Highly Productive Land: Guide to implementation. Wellington: Ministry for the Environment

	<p>3.9 – Protecting HPL from inappropriate use and development</p> <p>3.12 – Supporting appropriate productive use of highly productive land</p> <p>3.13 – Managing reverse sensitivity and cumulative effects</p>	<p>The CVSC will be situated on HPL. The proposed work protects HPL within the Bombay area through limiting its land extensiveness, considered to be an efficient and effective use of the land required and an appropriate use and development. The CVSC once operational should not obstruct or prevent the use of any neighbouring HPL or generate reverse sensitivity effects.</p>
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The proposed work will:

- Address a high risk to public health and safety; and
- Is for a purpose associated with, a matter of national importance under section 6 of the Act; and
- The presence of specified infrastructure at this location will not preclude the balance of the HPL from being used by land-based primary production around the activity; and
- The location of the activity has been sited on a portion of the parent site which minimises the impact on the productive capacity of HPL; and
- Demonstrated an effort to minimise the footprint of the activity to the extent possible to minimise the actual loss of HPL

For the above reasons, the proposed use and development is considered appropriate on a site currently demarcated as being HPL.

9.3.2 NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT (NPS-FW)

The National Policy Statement for Freshwater 2020 (NPS-FW), provides local authorities with direction on how they should manage freshwater under the RMA. The NPS-FW contains policies and regulations to protect 'natural wetlands' with nationally consistent standards.

The sites induced wetland meets the definition of natural inland wetlands, in subpart 3 of the NPS-FW.

The EclA (**Appendix H**) has confirmed the presence of an induced wetland on the north-east corner of the site. A review of the wetland status in light of the proposed changes to the NPS-FW in December 2022 (discussed in section 7.8) did not change the wetland classification and application of the effects management hierarchy¹⁴, as defined in the NPS-FW and associated guidelines apply to the site.

SPECIFIED INFRASTRUCTURE

The NPS-FW provides for 'specified infrastructure', which is defined in the NES-FW. The CVSC is a 'lifeline utility', and business described in Part B of Schedule 1 – 6 of the Civil Defence Emergency Management Act 2002 being 'An entity that provides a road network (including State highways)'. The CVSC is part of the state highway network function, and it serves to ensure the safe operation of the network as a lifeline utility.

Section 3.22 (1) of the NPS-FW, exempts specified infrastructure from promoting the loss of extent or values of natural inland wetlands where the maintenance or operation of specified infrastructure, or other

¹⁴ (a) the council is satisfied that the applicant has demonstrated how each step of the **effects management hierarchy** will be applied to any loss of extent or values of the wetland (including cumulative effects and loss of potential value), particularly (without limitation) in relation to the values of: ecosystem health, indigenous biodiversity, hydrological functioning, Māori freshwater values, and amenity value; and

(b) any consent is granted subject to:

(i) conditions that apply the effects management hierarchy; and

(ii) a condition requiring monitoring of the wetland at a scale commensurate with the risk of the loss of extent or values of the wetland.

infrastructure (as defined in the NES-FW) arises, or under subclause (2) Auckland Council is satisfied that the:

- (i) the activity is necessary for the construction or upgrade of specified infrastructure; and*
- (ii) the specified infrastructure will provide significant national or regional benefits; and*
- (iii) there is a functional need for the specified infrastructure in that location; and*
- (iv) the effects of the activity are managed through applying the effects management hierarchy.”*

Subclause (3) applies to an application for a consent for an activity:

- (a) that falls within any exception referred to in paragraph (a)(ii) to (vii) or*
- (b) of the policy in subclause (1); and*
- (b) would result (directly or indirectly) in the loss of extent or values of a natural inland wetland.*

The CVSC is ‘specified infrastructure’ as it falls within scope of 3.22(1)(ii) and (iii). As assessed in section 2, it is not practicable to locate all CVSCs immediately adjacent to the state highway roading network they serve. However, the CVSCs are intrinsically tied to supporting its function. For this reason, it is considered the Project meets the subclause exemptions under 3.22(1)(b) with regard to necessity, regional benefits, and the functional need for the specified infrastructure at this location.

9.4 NATIONAL ENVIRONMENTAL STANDARDS

9.4.1 RESOURCE MANAGEMENT (NATIONAL ENVIRONMENTAL STANDARDS FOR FRESHWATER) REGULATIONS 2020 (NES-FW)

The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-FW) set requirements for carrying out certain activities that pose risks to freshwater and freshwater ecosystems.

If an activity provided for in the AUP rules is also regulated by the Freshwater NES, where there is conflict then the most restrictive provision will prevail. The application is assessed as a Discretionary activity under the Auckland Unitary Plan Section E3, and Discretionary activity under the NES-FW pursuant to clause 45 (1) to (6) for the following activities when constructing specified infrastructure:

- Vegetation clearance within or within a 10m setback of the natural induced wetland
- Earthworks or land disturbance within a 10m setback from the natural induced wetland
- take, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland; and
- discharge of water into water within a 100m setback from a natural inland wetland

The proposed discharge of water into water within, or within a 100m setback from, a natural inland wetland is for the purpose of constructing or upgrading specified infrastructure; and there is a hydrological connection between the discharge and the wetland; and the discharge will enter the wetland. The discharge however, is unlikely to change the water level range or hydrological function of the wetland.

An assessment against the relevant objectives and policies in both the AUP and NES-FW is provided in **Appendix C**.

All natural wetlands are protected under the NPS-FW and NES-FW, but provision is made for limited circumstances where the loss of extent of natural wetlands may not be avoided, and the protection of values and the promotion of restoration is not absolute.

The construction of specified infrastructure such as the CVSC is one circumstance, and the proposed work outlined here in the AEE, as well as the EclA, have demonstrated among other criteria in NPS Clause 3.22 (1), and NES-FW clause 45(6)(c) that the effects management hierarchy has been applied.

The functional need for the CVSC at this site is addressed in both sections two, three and Table 3 of this AEE.

9.4.2 RESOURCE MANAGEMENT (NATIONAL ENVIRONMENTAL STANDARD FOR ASSESSING AND MANAGING CONTAMINANTS IN SOIL TO PROTECT HUMAN HEALTH) REGULATIONS 2011

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS) alters the permitted activity standards for works involving contaminated land.

As identified within the Contaminated Land Assessment (DSI), a controlled activity consent is required under Regulation 9 of the NES-CS given the volume of soil disturbed and Contaminants of Potential Concern (CoPC) concentrations. In accordance with NES-CS Regulation 9, the matters over which control is reserved has been adequately addressed within the DSI.

In relation to changing the use of the land, it is considered highly unlikely that human health will be impacted as a result of changing the use of the land from rural to commercial/industrial, and therefore, consent is not required under Regulation 9(3) of the NESCS for this activity. Consent is sought under Regulation 9(1) of the NESCS for the discharge of contaminants from disturbance of soil only.

A draft Site Management Plan (**Appendix F**) has been developed setting out the requirements for soil management during the works in the event of encountering unexpected contamination, to adequately manage contaminated soils and protect human health during the works. This has been discussed in section 7.4.

9.5 SPATIAL PLANS

9.5.1 THE AUCKLAND PLAN 2050

The Auckland Plan (AP) outlines the Region’s Development Strategy and six outcomes set to 2050. The AP is regularly updated to reflect emerging or changing issues, data and evidence across the region. The outcomes relating to ‘Transport and Access’, ‘Opportunity and Prosperity’, and ‘Environment and Cultural Heritage’ are considered most relevant to the Project context.

Transport inter-connectedness

Transport links between Northland / Whangarei, Auckland, Hamilton and Tauranga are considered critical to the economic and social success of each area. These linkages, whether by sea, road or rail, move significant freight volumes, particularly of imports and exports.

Specific directions relating to transport and access outcomes identified in the AP that are relevant to the Project are outlined in Table 23.

Table 23 - Auckland Plan Outcome: Transport and Access

Direction	Focus Area
<p>Direction 1</p> <p>Better connect people, places, goods and services</p>	<p>Focus Area 1: Make better use of existing transport networks</p>
<p>Direction 2</p> <p>Increase genuine travel choices for a healthy, vibrant and equitable Auckland</p>	<p>Focus Area 2: Target new transport investment to the most significant challenges</p> <p>Focus Area 3: Maximise the benefits from transport technology</p>
<p>Direction 3</p> <p>Maximise safety and environmental protection</p>	<p>Focus Area 4: Make walking, cycling and public transport preferred choices for many more Aucklanders</p> <p>Focus Area 5: Better integrate land-use and transport</p> <p>Focus Area 6: Move to a safe transport network, free from death and serious injury</p> <p>Focus Area 7: Develop a sustainable and resilient transport system</p>

The AP Development Strategy illustrates the state highway and strategic arterial road network, and the distribution of Rural-Rural Production zoned land in the north and south of the region (Map 18) as well as the projected future urban growth areas further north of the site (at Drury/ Papakura) and south-west of the site in and around Pukekohe. The future growth areas¹⁵ will provide for additional commercial and industrial development, and the Bombay CVSC intends to capture any associated HCV traffic.

The Project is considered to align with the outcomes and priorities of the AP and specifically addresses focus areas 3, 6 and 7.

9.6 REGIONAL POLICY STATEMENT

A statutory assessment of the proposed work against the Auckland Regional Policy Statement is provided in **Part C- Appendix C**. Overall it is found that the Project is consistent and aligns with the relevant provisions of the RPS.

9.7 AUCKLAND UNITARY PLAN (NON-RPS)

The proposed work have been assessed against the relevant provisions of the AUP. An assessment against the relevant matters is provided in **Appendix C**. Overall, it is considered that the Project is consistent with the relevant objectives and policies of the AUP.

9.8 STATUTORY ASSESSMENT ITEMS FOR NOR

Section 171 of the RMA sets out the matters that must be considered by a territorial authority.

With respect to section 171(1), an assessment of effects on the environment has been prepared and mitigation measures outlined in section seven. The proposed work will have a number of positive effects, as addressed in section two. The potential adverse effects of the proposed work on the environment are assessed as being no more than minor, prior to implementation of the mitigation proposed.

In relation to section 171(1)(a), a statutory assessment has been prepared assessing the NOR against the relevant planning instruments. It is considered that sufficient information is provided to demonstrate that the proposed work is aligned with the statutory framework and the provisions of relevant planning instruments.

The assessment of the proposed work concludes that the majority of adverse effects will be less than minor and can be suitably mitigated. The adverse landscape and visual effects of the proposed work on a limited number of receivers are assessed as being minor.

With the proposed mitigations, this assessment finds the NOR will not be contrary to the objectives and policies of the Auckland Unitary Plan, as assessed in **Part C- Appendix C**.

As required by section 171(1)(b), an assessment of alternatives has been undertaken, as while the potential adverse effects of the proposed work are assessed as being no more than minor (and not “significant”), Waka Kotahi does not have an interest in all of the land sufficient for undertaking the proposed work. The assessment of alternatives is provided in section three of this report. It is considered that sufficient information is provided to demonstrate that adequate consideration has been given to alternative sites, routes and methods that meets the requirements of Section 171(1)(b) of the RMA.

In response to section 171(1)(c), it is considered that sufficient information has been included within this report to show that both the work and designation are reasonably necessary to achieve the Project objectives and strategic objectives of Waka Kotahi road safety programmes (section 2). The purpose of the designation will support the ability of Waka Kotahi to manage the existing roading infrastructure, in the best interests of the local community and the wider region, as required by law. The designation is of direct service to the safe and effective functioning of the state highway network. A full assessment is provided in section seven of this report.

Section 171(1)(d) matters are also addressed in Sections 2 through to 9 of this report.

¹⁵ Auckland Future Urban Land Supply Strategy July 2017

Section 171(2)(c) allows the territorial authority to recommend to the requiring authority that it impose conditions upon the designation being sought. A set of proposed conditions is provided in **Part A- Attachment B**.

9.9 STATUTORY ASSESSMENT ITEMS FOR RESOURCE CONSENT

The resource consent for the proposed work is in accordance with section 88 and Schedule 4 of the RMA. All requirements of Schedule 4 have been addressed in this AEE.

s105 Matters relevant to certain applications

There are no matters to be addressed under s105 relevant to this application. The AEE describes the proposed work within and approximate to, the induced wetland extent requiring resource consent, and no reclamation is proposed. An esplanade reserve or esplanade strip is not considered necessary for this particular location, given the location of the induced wetland surrounded by private land and no public access. The planted areas in and next to the wetland to be maintained will be demarcated by fencing.

s107 Restriction on grant of certain discharge permits

The stormwater proposal for the site has carefully considered the necessary capture and treatment of contaminants and hydrologic detention requirements such that the effects of the operational site discharge into a receiving waterbody will not contravene section 15 or section 15A of the Act and the matters contained in s107(1). A description of the stormwater proposal is outlined in section seven.

9.10 OTHER MATTERS

There are no other matters considered reasonably necessary in order for the Council to make a recommendation on the requirement under section 171(1)(d) of the RMA. All matters have been addressed throughout the AEE, and in particular sections two, three and seven. These matters include strategic planning documents and other projects relevant to the proposed work, covered in section nine.

9.11 MATTERS FOR CONSIDERATION – OUTLINE PLAN OF WORKS

Section 176A of the RMA sets out the matters that are to be addressed by an Outline Plan of Works (OP) in relation to Requiring Authority undertaking works within a designation.

Sufficient information has been provided as part of this combined NOR and Resource Consent application to address the specific matters of an OP (as per section 176A(3) of the RMA). Table 24 identifies the locations in which the specific matter has been addressed by this application.

Table 24 - Outline Plan matters addressed by the Application

Section 176A(3) matters	Response
<i>a) the height, shape, and bulk of the public work, project, or work</i>	The height, shape and bulk of the proposed work is provided in section 2.3. The necessary design plans are also provided in Part C- Appendix B .
<i>b) the location on the site of the public work, project, or work</i>	The location of the site of the proposed work is described in section 2 and section 5 of this report, illustrated in Part A- Attachment A Designation Plans, and the General Arrangement (GA) plans in Part C-Appendix B .
<i>c) the likely finished contour of the site</i>	The likely finished contours of the CVSC site are provided in the General Arrangement plans, Appendix B .
<i>d) the vehicular access, circulation, and the provision for parking</i>	These matters are addressed in section 2.3 and 7.2 of this report.
<i>e) the landscaping proposed</i>	These matters are addressed in section 2.3 of this report, and section 7.8 concerning landscape and visual effects.

f) any other matters to avoid, remedy, or mitigate any adverse effects on the environment

Any other matters are covered in sections two and seven.

The details of the proposed work, as referred to in section 176A(3) of the RMA are included with the NOR, AEE and drawings. In this case, a subsequent outline plan will not need to be submitted to the Auckland Council, as provided for by section 176A(2)(b) of the RMA.

10 CONCLUSION

The Bombay/Pukekura CVSC will provide the necessary facility to efficiently and safely carry out HCV inspections in conjunction with the operation and maintenance of the state highway network in the Auckland Region. The CVSC also ensures the necessary flexibility and certainty for Waka Kotahi and the NZ Police to respond to road safety events or initiatives when necessary.

An assessment of environmental effects has been undertaken, demonstrating that the project will provide positive benefits at a regional and national significant scale, and that the construction and operational effects from the project are for the majority, less than minor. Mitigation measures have been identified to address operational traffic effects, ecology, and landscape and visual amenity effects. Proposed designation and resource consent conditions are provided with this Application, in accordance with the mitigation measures identified.

The assessment concludes that the visual effects will be minor for a limited number of receivers and the majority of effects will be less than minor in the long-term. Adequate consultation and engagement has been carried out and appropriate mitigation methods are proposed as part of the works, particularly to address landscape and visual effects.

The proposed work has been assessed against the RMA statutory framework, finding the works are aligned with the intended outcomes of the relevant planning provisions. Waka Kotahi request that the Council recommends confirmation of the new designation and grants the regional resource consents sought.

APPENDIX A Certificate of Title

APPENDIX B General Arrangement and Design Plans

B.1 General Arrangement Plans

B.2 Architectural Design Plans

APPENDIX C Planning Assessment

APPENDIX D Erosion and Sediment Control Plan

APPENDIX E Traffic Impact Assessment

APPENDIX F Site Management Plan

APPENDIX G Archaeological Assessment

APPENDIX H Ecological Impact Assessment

APPENDIX I Stormwater and Flood Management

APPENDIX J Landscape and Visual Assessment

APPENDIX K Operational Noise and Vibration Assessment

APPENDIX L Operational Lighting Assessment