
Site Specific Environmental Management Plan

– Peka Peka to Ōtaki Project

SSEMP BR01a: Waitohu Stream Bridge (Bridge 1)

FCCL-EV-MPN-0102

July 2019 – Rev C

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AUTHORISATION AND REVISION RECORD

Revision	Status	Author	Date	Description
A	Draft	Alice Naylor	16/08/18	Draft For Review
A.1	Draft	Alice Naylor	06/09/18	Updated following PA review
B	Draft	Alice Naylor	16/05/19	For Council Review
C	Final	Alice Naylor	30/07/19	For Council Certification

Certification Record

Revision	Action	Name	Position	Date	Signature
	Approved by:	Richard Percy	Project Leader	3/09/2019	
	On behalf of GWRC:				

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Revision	Action	Name	Position	Date	Signature
	Approved by:				
	On behalf of KCDC:				

CERTIFIED
VIJAY SOMA
 Resource Consents & Compliance Manager
 Kapiti Coast District Council
 DATE: 19/8/2019



1 INTRODUCTION

This Site Specific Environmental Management Plan (SSEMP) provides the necessary information to demonstrate how the project team plan to avoid or mitigate potential adverse environmental effects relating to construction of the Peka Peka to Ōtaki Expressway.

This document covers construction of the Waitohu Stream Bridge (Bridge 1) which will carry the new Expressway alignment over the Waitohu Stream and Taylors Road realignment located at the northern end of the Project. It accommodates two lanes of traffic in the south bound direction and one lane north bound (to tie into existing State Highway One (SH1)).

This SSEMP reflects the requirements of the Construction Environmental Management Plan (CEMP) and its appendices, and is intended to be utilised by the construction team to clearly identify any site specific environmental requirements that must be adhered to prior to, and during works. A suite of over-arching environmental management plans have been drawn from to inform the contents of this SSEMP. All works will be carried out in general accordance with these management plans.

Works are not to commence on site until certification of this SSEMP has been confirmed in writing by Kapiti Coast District Council (KCDC) and Greater Wellington Regional Council (GWRC).

1.1 Related Documents

A number of SSEMP and SSEMP Change documents are relevant to works associated with Bridge 1 construction. Works to date have been completed in accordance with these documents and will continue to be closely linked to general bridge works outlined in this SSEMP. Related SSEMPs and SSEMP Changes are as follows:

- SSEMP *FCCL-EV-MPN-0045*: Bridge 1 Stage One Enabling Earthworks
- SSEMP Change *FCCL-EV-MPN-0052*: Waitohu Stream Proof Bores
- SSEMP Change *FCCL-EV-MPN-0058*: Bridge 1 Bored Piling
- SSEMP Change *FCCL-EV-MPN-0092*: Bridge 1 Columns

This over-arching SSEMP for Bridge 1 full construction ties everything together as a final document but does not repeat the detailed methodologies already included (and in most cases completed) in the above documents.

1.2 Location and Site Description

Works will be undertaken at the northern end of the Expressway between chainage 700 – 900. The bridge is located approximately 175m west of the existing State Highway 1 (SH1) and north of the North Ōtaki Interchange. The surrounding land is relatively flat farm land to the north of the Waitohu Stream, and rolling sand dunes to the south. The ground at the bridge location mainly comprises of clean river gravels overlying interbedded beach alluvium.

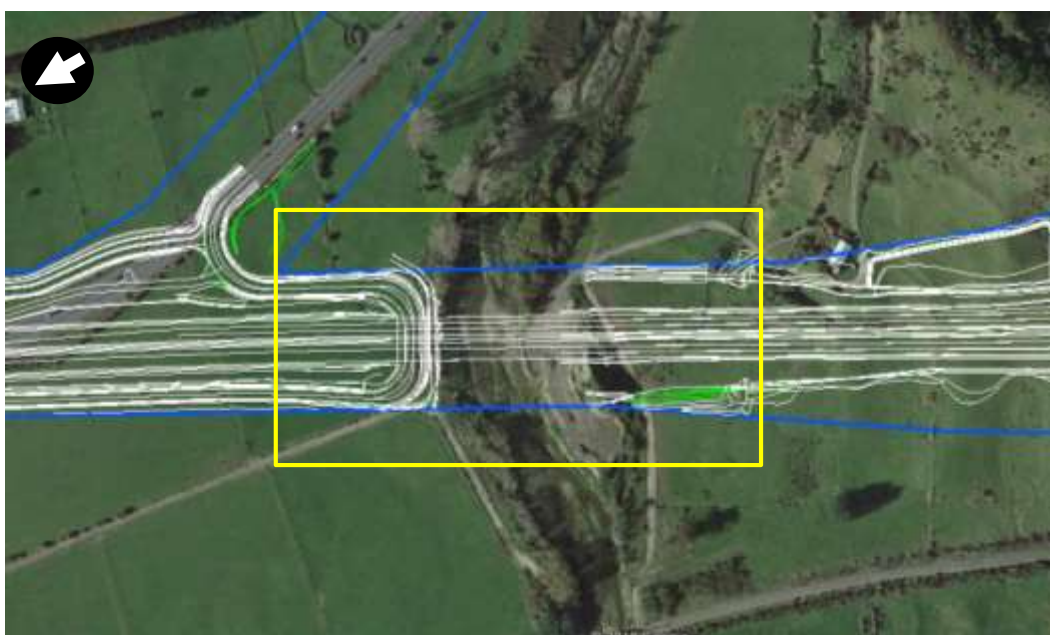


Figure 1: Location of works outlined in yellow

1.3 Programme

Bridge 1 works commenced in late 2018 and will continue into early 2020. Refer to Appendix D for a programme summary.

2 PLAN IMPLEMENTATION

2.1 Responsibilities

The following provides a summary of responsibilities relevant to the planning and implementation of this SSEMP.

Table 2: Roles and responsibilities

Role	Person	Contact Details	Responsibilities
Construction Manager	Steve Findlay	stevef@fcc.co.nz	<ul style="list-style-type: none"> Ensures there is a system in place so that construction works do not proceed until required environmental sign-offs are completed. Overviews systems and processes to ensure consent requirements are captured for construction works.

			<ul style="list-style-type: none"> • Ensures adequate resources are provided to ensure environmental issues are appropriately managed. • Reviews environmental incidents and complaints with the Environmental Manager and acts to address issues where needed. • Reviews and monitors construction work methods to ensure compliance with RMA conditions
Environmental Manager	Alice Naylor	A.Naylor@Higgins.co.nz	<ul style="list-style-type: none"> • Develops, implements and reviews environmental management systems and environmental management plans. • Coordinates all environmental auditing functions and ensures relevant records are maintained. • Responds to and investigates all environmental complaints, issues or incidents. • Coordinates the SSEMP implementation process and pre-works requirements to ensure that environmental requirements are adhered to. • Provides training and briefings to site staff to ensure that there is sufficient knowledge of environmental requirements in the field. • Acts as the primary point of communication between regulatory bodies and the project. • Coordinates a team of experts in specialist disciplines such as contaminated land, ecology, groundwater, noise and vibration. • Communicates environmentally sensitive areas to the construction team.
Environmental Coordinator	Sevasti Hartley	sevastih@fcc.co.nz	<ul style="list-style-type: none"> • Supports the Environmental Manager and provides leadership to ensure all staff comply with environmental management systems. • Provides support in the formation of SSEMPs.

			<ul style="list-style-type: none"> • Undertakes as-builting of environmental controls. • Undertakes regular site inspections and audits. • Coordinates all site monitoring including but not limited to groundwater, water quality, ecological, dust, noise, and vibration monitoring. • Manages maintenance and monitoring of Chemical Treatment Systems (if used). • Ensures spill kits are available and stocked and provides training on equipment use. • Conducts regular site inspections of erosion and sediment control devices and co-ordinates maintenance where necessary. • Monitors site controls during rain storms. • Trains staff in site specific environmental procedures.
Stakeholder & Communications Manager	Ed Breese	ebreese@tonkintaylor.co.nz	<ul style="list-style-type: none"> • Organises, co-ordinates and facilitates engagement with affected property holders and community prior to and during construction. • Works in partnership with Environmental Manager on engagement and construction activities in accordance with RMA conditions
Site Superintendent / Supervisors / Foreman	Simon Fifield	SimonF@fcc.co.nz	<ul style="list-style-type: none"> • Provides leadership to the site construction team. • Ensures environmental controls including erosion and sediment control works are protected and maintained on a day to day basis. • Ensures that the SSEMPs and Archaeological Authority requirements are implemented appropriately by the construction team. • Maintains contactability 24/7 during construction and has authority to initiate immediate response actions.

			<ul style="list-style-type: none"> • Reports all environmental incidents, compliance issues and complaints to the Environmental Manager. • Reviews the need to use a water cart or sprinklers to control dust.
Project Engineers	Richard Rakovics (Civil) Craig Service (Structural)	RichardR@fcc.co.nz CraigS@fcc.co.nz	<ul style="list-style-type: none"> • Responsible for ensuring environmental controls and erosion and sediment control works are installed and modified as appropriate for each stage of construction. • Develop, implements and monitors construction methods and environmental protection measures to ensure compliance with the SSEMPs. • Demonstrate understanding of major environmental and community issues and environmentally sensitive areas. • Coordinate environmental interfaces with subcontractors and suppliers. • Reports all environmental incidents, compliance issues and complaints to the Environmental Manager.
Specialist support (contaminated land, ecology, noise and vibration)	Dean Miller (Principal Ecologist) Genevieve Smith – Contaminated land Brendon Shanks – Noise and Vibration	DCMiller@tonkintaylor.co.nz Genevieve.Smith@beca.co.nz Brendon.Shanks@mars-hallday.co.nz	<ul style="list-style-type: none"> • Provide expert advice to the Environmental Manager and Environmental Coordinator regarding specific site requirements. • Submits reports to the Environmental Manager to fulfil requirements of consents relevant to their field. • Briefs the construction team of site specific requirements for environmentally 'sensitive areas'.
Iwi	Te Waari Carkeek (Ngā)	TeWaariC@fcc.co.nz	<ul style="list-style-type: none"> • Provide input into project documentation such as management

	Hapū o Ōtaki Kiarahi)		<p>plans, design processes, planning documents.</p> <ul style="list-style-type: none"> • Reviews permits to work and coordinates the level of involvement of kaitiaki in site activities • Coordinates all aspects of iwi monitoring. • Key point of contact for Ngā Hapū o Ōtaki.
	Caleb Royal (Ngā Hapū o Ōtaki Consents Processing Officer)		<ul style="list-style-type: none"> • Reviews consent applications and coordinates cultural monitoring activities. • Provides specialist advice to Ngā Hapū o Ōtaki
Iwi	Muaupoko Tribal Authority		<ul style="list-style-type: none"> • Point of contact for any archaeological discoveries in accordance with the agreed accidental discovery protocols and MTA agreement.

2.2 SSEMP Changes

In the event that changes in works scope or methodology are required, changes may need to be made to this document in accordance with resource Consent Condition's DC.18B and / or G.21A. Any changes that are considered minor in accordance with SSEMP 'Project Minor Changes' FCCL-EV-MPN-0037 will be submitted for information to the respective Manager 2 working days prior to implementation of that change. Any change that is not covered by the Project Minor Changes SSEMP must be submitted to the respective Manager for certification prior to implementation of that change.

3 GENERAL SITE MANAGEMENT

3.1 Site Access

Access to the site will be as follows:

- Southern access – Site Access Point 12 (SAP-12) off SH1
- Northern access – Site Access Point 13A (SAP-13A) off SH1

Physical access to the Waitohu Stream has been indicated on Appendix C 'ESC Layout' drawings via use of haul roads. The legal property IDs to pass through to access the Waitohu Stream are as follows:

Northern access points to the Waitohu Stream:

- ID CT WN12C/1232
- ID 604572

Southern access to the Waitohu Stream:

- ID 604572
- ID 12: 604571

The access/egress points will be stabilised using clean aggregate or sealed to avoid any construction related material leaving the site. Any migration of material from the site onto SH1, the local road or footpaths will be removed immediately.

Stormwater from the local road or SH1 will not be impeded by vehicle crossing during and after construction and any damage made to road infrastructure as a direct result of these works shall be recorded and repaired immediately. Refer to the attached Site Specific Traffic Management Plan for a general layout of Site Access Points (SAPs).

3.2 Site Establishment

An existing parking / sign in area is established on the north side of the Waitohu Stream. A second site compound will be setup on the Southern side of the Stream at the southern abutment as structural works progress.

These areas will be utilised for parking, sign-in sheds, storage of miscellaneous materials, stockpiling Reinforced Earth (RE) fill material and portalos (refer to Appendix C ESC layout drawings).

All areas of the site will be maintained in a tidy state with redundant materials removed off-site once no longer required.

3.3 Construction Plant

The plant items to be used are generally as follows:

Earthworks tying into the Bridge

- 6 – 20T excavators
- Motor scrapers
- Dump trucks
- Dozers
- Water cart as required
- Light vehicles

Bridge Construction

- 350T crane x 2

- 20T excavator
- Concrete pump
- 30T crane
- Franner crane
- Merlo
- Hiab
- Light vehicles
- Drill rig
- Trucks

Where practicable, plant will refrain from working within 10m of a live watercourse to minimise any risk of causing bank instability or spills to the receiving environment. Any unavoidable works within the Waitohu Stream corridor will be undertaken as quickly as possible to limit the amount of time spent in close proximity to the main channel.

All plant is required to be inspected prior to commencing works and during construction activities at regular intervals. Unwanted vegetation, seeds or contaminants will be cleared prior to plant entering the site to avoid the introduction or spread of weeds or pest species.

Plant inspections will be recorded on daily plant inspection forms to demonstrate that all plant used on this project are in good working order and have been cleared of unwanted weeds and pest species. Any faulty equipment will be stood down until the necessary repairs are carried out and the given plant is fit for purpose.

Spill control kits will be available on site in areas where heavy machine is working. Refuelling activities will take place using a mini-tanker at least 10m away from any watercourse to prevent additional risk of spillage to water.

3.4 Pre-works Requirements

Prior to works commencing on site the following mitigation measures will be implemented to avoid or minimise adverse environmental effects:

- Site specific information, including environmental constraints and requirements, will be discussed at the relevant pre-construction site meetings with input from specialists as required.
- Prior to works commencing in this area, the project surveyors will use GPS to identify the extent of works. The works area will be clearly marked-out with regular input from the survey team throughout works as required.
- Areas identified as ‘retained vegetation’ as per the approved vegetation retention plans will be clearly delineated using physical markers on site.
- Environmental requirements for any given area will be noted on each project ‘Permit to Work’. These permits are required for any activity on site and must be in place and signed off by the environmental team prior to works commencement.

- Signage and safety fencing will be erected to clearly discourage the public from entering the site. Regular updates will be provided to the community regarding upcoming works and changes to works sequencing.

3.5 Water Supply

Construction water may be required to prevent dust discharge from site during works, or to assist with construction. Water required for these works will be collected from off-site.

Any water supply bores required on site must be constructed in accordance with Resource Consent Conditions BC.1 – 4 with any water take done so in accordance with GT. 4-7.

4 WORKS METHODOLOGY

Note that a number of activities have already been completed under separate SSEMP / SSEMP Change documents. These activities have been listed here for completeness.

Works covered under this SSEMP will typically be sequenced as follows:

- Installation of erosion and sediment controls in accordance with Section 5.2 below (ongoing)
- Construction of suitable access points as indicated on Appendix C drawings (complete)
- Establishment and maintenance of a working platform on the northern side of the Stream (ongoing)
- Bored piling at pier's 1 and 2 (complete)
- Undercutting and replacing unsuitable materials from the abutment areas and preparing ground for MSE walls (complete)
- MSE wall construction
- Abutment construction
- Column construction
- Crosshead construction
- Undercutting and replacing unsuitable materials from the abutment areas and prepare ground for MSE walls
- MSE Wall construction
- Abutment construction
- Bearing and beam placement
- Deck construction
- Barrier and rail installation
- Drainage and service installation
- Surrounding earthworks and scour protection

4.1 Existing Site

Early bridge works are underway on both sides of the stream. A level working platform is established immediately north of the stream channel between Pier's 1 and 2. This is set at a consistent level of RL

23.5m with a perimeter gravel bund to provide additional protection between the works and the stream channel.

Works underway on the south side of the stream are elevated well above the stream level and do not pose a risk of flood inundation.



Figure 2: Existing Site Layout

4.2 Bridge Construction

The Waitohu Stream Bridge is to be an approximately 93m long, three span bridge supported on MSE abutments at the piers and in general will be constructed as follows:

4.2.1 Piling

Piling was undertaken in accordance with SSEMP Change *FCCL-EV-MPN-0058: Bridge 1 Bored Piling*. Piling work is now complete.

4.2.2 Substructure

The Bridge 1 piers consist of reinforced tapered crossheads with up stands, each supported by two 1600mm diameter columns on 2100 diameter piles.

Column construction

- Install formwork with bracing

- Pour concrete
- Cure
- Strip

Crossheads

- Install falsework corbel
- Fit out falsework
- Install falsework
- Form soffit
- Install pre-fabricated reinforcing cage
- Form stage 1 (Bottom shelf)
- Pour stage 1
- Cure stage 1
- Strip stage and associated falsework 1
- Form stage 2
- Pour stage 2
- Cure stage 2
- Strip stage 2
- Patch
- Repeat above for remaining crossheads

4.2.3 MSE Walls

The construction sequence for each RE wall is as follows:

- Install temporary works as required
- Install environmental controls such as silt fences or bunds as required
- Construct RE base layer
- Excavate for footing beam
- Construct footing beam
- Construct RE Wall layers and any earthworks that ties into RE wall. All RE panels to be delivered progressively
- Note that the RE wall will be constructed up to the underside of the abutment beam at which point the abutment beam will be constructed

As the RE wall progresses the earthworks tying into the wall will be placed at the same time which will allow better access to the site.

Approximately 11,500m³ of gravel fill will be sourced from the Waitohu Quarry to be used as RE fill and final abutment backfill. This will be temporarily stockpiled on site at the laydown areas prior to use. The following sections outline the general sequence of works.

4.2.4 Abutment beams

The sequence for the abutment beams will follow directly on from the MSE wall as follows:

- Erect abutment beam edge protection
- Prep and Pour blinding
- Fix reinforcing

- Form
- Pour
- Cure
- Strip
- Prep abutment beam for bearing and beam placement

4.2.5 Beams and bearings placement

- Construct crane construction pads
- Mobilise the crane to site into position
- Deliver the first set of steel beams to site ready for fit out and lifting into position
- Dress the first beams with walkways and any other required items such as bridge services and fall protection. Once the beam has been fitted out, install in position
- Deliver and fit out remaining beams
- With beams installed, fit out any remaining bracing items
- Establish crane for installation of precast deck panels
- Deliver and install precast deck panels

4.2.6 Deck construction

- Seal deck using timber, ply and sealant for any voids between precast panels
- Erect deck edge form and stop ends ready for reinforcing
- Fix reinforcing to height
- Establish screed rails
- Setup pump and associated secondary environmental and/or hazard controls where required, such as polythene over streams or catch nets over walkways
- Place and finish concrete
- Setup curing system which will consist of hessian and black plastic with a water feed on trickle
- Remove curing system and dispose of accordingly
- Remove walkways off beams and install temporary edge protection ready for installation of the precast barriers

4.2.7 Continuation of MSE wall, settlement slab, and abutment backfill

- Form, reinforce and pour the insitu stitch between the abutment and MSE wall panels
- Complete the final layers of the RE wall
- Construct Settlement slab
- Setup curing system which will consist of hessian and black plastic with a water feed on trickle
- Remove curing system and dispose of accordingly
- Backfill to required level

4.2.8 Barrier construction

- Establish crane on abutment and atop MSE wall for installation of precast barriers
- Deliver precast units to site and install
- Install and grout rail atop of precast barrier

4.2.9 Complete remaining MSE Walls

- Remove temporary works installed

4.2.10 Completion Works and Scour Protection

- Complete majority of the final scour protection and final earthworks in the dry, outside of the stream channel.
- Following consultation with GWRC Flood Protection and Nga Hapu o Ōtaki, a separate SSEMP Change document will be submitted to allow for the construction of the final Waitohu Stream channel between Pier's 1 and 2, and subsequent filling of the existing channel to allow final landowner access to be formed along the southern bank.

5 ENVIRONMENTAL REQUIREMENTS

5.1 Erosion and Sediment Control

5.1.1 South of the Stream

- Dirty water diversion bunds are already established on the southern side of the Waitohu Stream to protect the stream from site runoff. These were constructed in accordance with SSEMP *FCCL-EV-MPN-0045: Bridge 1 Stage One Enabling Earthworks* and will remain in place for the full duration of bridge works (except final southern bank scour protection and earthworks to be completed under a separate document at a later date). Changes to the layout of these controls will be managed through the minor change process outlined in Section 2.2 above.

5.1.2 North of the Stream

A gravel bund is in place along the southern extent of the established northern working platform to protect the Waitohu Stream. This is adequate to assist with minor spills and ground disturbance on the platform itself which will be maintained in a clean state as far as practicable. Maintaining a clean platform will provide a clean and stable flow path for flood flows in the event of flood inundation (refer to Section 6 below).

The upper northern RE Wall working area and stockpiles will generally be contained within dirty water diversion bunds as per the attached layout drawings in Appendix A. Any minor areas that do not fall directly to dirty water bunds will be controlled by use of cut-off drains where necessary to effectively direct runoff.

5.1.3 Installation and decommissioning

Where required, erosion and sediment controls (ESCs) will be installed prior to all construction activities. Upon completion of the installation of all approved structural ESCs as-built certification

plans will be provided to Council in writing prior to the activity commencing. The Project will submit certification documentation 2 Working Days prior to the commencement of construction in that area of work as per Condition E.6 and will retain the as-built record on site.

5.2 Ecological Requirements

Project ecological requirements are set out in the Ecological Management Plan (EMP) which outlines a number of locations that have specific requirements in regards to terrestrial and aquatic species that need to be considered prior to and during works. These have been further refined following input from the project ecologists to ensure that potential effects are minimised as far as practicable.

5.2.1 Terrestrial Ecology

All pre-works terrestrial surveys are now complete in this area. No further surveys are required prior to works under this SSEMP.

5.2.2 Aquatic Ecology

Macroinvertebrate baseline surveys have been completed within the Waitohu Stream. Construction monitoring will be carried out in accordance with the EMP to monitor any change over the course of the Project with reports provided to GWRC on a quarterly basis.

The Waitohu Stream has been identified in the draft Cultural Monitoring Plan as a culturally significant waterbody that requires pre-construction, construction and post-construction monitoring to be carried out. Nga Hapu o Ōtaki have completed pre-construction baseline monitoring within the Stream in accordance with the Project Cultural Monitoring Plan and are underway with quarterly monitoring of the stream to detect any changes during construction. Nga Hapu o Ōtaki representatives will be actively involved in all site works undertaken under this SSEMP.

5.2.3 Water Quality Monitoring

Triggered turbidity monitoring using hand-held turbidity meters will be carried out in accordance with Section 6.3 and Section 6.6 of the EMP within the Waitohu Stream. During initial enabling works within the Waitohu Stream where river gravels will be pushed from the northern bank to encourage the main flow to the south, the following monitoring will be undertaken:

- Hand-held calibrated turbidity meters will be used to monitor NTU levels immediately upstream of the bridge location and approximately 50m downstream.
- Samples will be taken at least once daily until works within the bed of the stream are complete. Following which, only triggered monitoring will be required in accordance with Section 6.3 and Section 6.6 of the EMP.

5.3 Cultural Monitoring

The Waitohu Stream has been identified in the draft Cultural Monitoring Plan as a culturally significant waterbody that requires pre-construction, construction and post-construction monitoring to be

carried out. Nga Hapu o Ōtaki have completed pre-construction baseline monitoring within the Stream in accordance with the Project Cultural Monitoring Plan and are underway with quarterly monitoring of the stream to detect any changes during construction. Nga Hapu o Ōtaki representatives will be actively involved in all site works undertaken under this SSEMP.

A Kaiarahi (iwi guide / leader) is the key point of contact and coordination for Ngā Hapū o Ōtaki. The Kaiarahi will be involved in the design process, construction supervision and environmental monitoring. The Kaiarahi will be supported by Pūkenga (specialists / experts) and Kaitiaki (guardians) who provide support in supervision, monitoring activities and provision of specialist advice in regards to cultural monitoring.

Contact must also be maintained with Muaupoko Tribal Authority (MTA) in accordance with MTA agreement and confirmed accidental discovery protocols.

5.4 Archaeology

All works under this SSEMP will be carried out in accordance with the approved archaeological authority and the Archaeological Site Management Plan. The Archaeological Site Management Plan outlines high, medium, and low probability archaeological areas across the Project footprint.

Access to the southern bridge works pass through what is identified as ‘high probability’ of archaeological discovery in the Archaeological Management Plan.

The following is required as a minimum during works:

- The Project Archaeologist and kaitiaki will be on site during topsoil stripping in areas identified in Figure 3 below.
- If in situ archaeological features or deposits are identified, the protocols outlined in the Archaeological Site Management Plan will be adhered to.



Figure 3: High probability area – North Ōtaki Dunes (outlined in yellow).

5.5 Noise and Vibration

The Construction Noise and Vibration Management Plan (CNVMP) identifies the noise and vibration performance standards that must, where practicable, be complied with. It also sets out best practicable options for noise and vibration management for the Project, including mitigation measures, monitoring requirements, and communication and complaint procedures. All works under this SSEMP will be carried out in general accordance with the CNVMP.

Sensitive areas in regards to potential noise and vibration effects as a result of works have been identified in Appendix C. Individual dwellings located within these sensitive areas have also been listed below.

In accordance with the CNVMP, works carried out under this SSEMP will generally be restricted to take place between the hours of:

- 0630 and 2000hrs on weekdays; and
- 0730 and 1800hrs on Saturdays.

As far as practicable, works will be scheduled to avoid noisy activities in areas identified as sensitive receivers on the attached drawings between 0630 – 0730hrs in the morning, and between 1800 – 2000hrs in the evening to align with noise level criteria outlined in the CNVMP.

It is not anticipated that works will be required to take place outside of normal working hours for works outlined in this SSEMP. In the event that this changes, the procedures outlined in the CNVMP will be followed. Any works outside of the hours of 7am to 7pm require written approval from the Project Engineer.

The primary mitigation measure in regards to reducing the impacts from construction noise and vibration will be ongoing effective community consultation, particularly when transitioning from one works phase to another.

Noise and vibration monitoring will take place throughout the works to assess the impacts on adjacent properties at various locations. In the event that noise or vibration criteria is exceeded, mitigation options will be reassessed in an effort to comply with the construction limits, and a site specific noise 'schedule' will be submitted to Kapiti Coast District Council in accordance with the CNVMP.

Dwellings located within the noise and vibration boundary are as follows:

- Nil

Dwellings within the vibration boundary only are as follows:

- Pt Lot 2 DP 7971 Parcel 7227139

5.5.1 Pre-condition building surveys

Section 7 of the CNVMP outlines activities that are expected to generate vibration that will potentially cause medium and high level vibration and therefore must be assessed to determine whether a pre-condition building survey is required. There are no dwellings that trigger the requirement for a pre-condition building survey prior to these specific works.

5.6 Air Quality

There is potential for works to generate dust discharge if the site is not managed effectively. The Construction Air Quality Management Plan (CAQMP) outlines methods to be used to prevent dust and odour nuisance during construction from the site. All works under this SSEMP will be carried out in general accordance with the CAQMP.

To ensure that dust does not become an issue across the boundary of the site, the following measures will be implemented as a minimum:

- Use of water carts as required, particularly around public interface points such as site entry/exits to local roads
- Imposing a speed limit if required
- Use of stabilising agents such as polymers if required
- Assessing wind speed and direction on a daily basis and implementing additional mitigation based on conditions (or ceasing / re-programming works as required)

Due to the location of the works, risk of causing air quality issues beyond the boundary of the site is very low. Two properties are located within the 'high risk air quality' zone as identified in Appendix C 'Environmental Constraints Drawings' at the very southern extent of the site (291 SH1), and the very northern extent of the site (115 SH1). Provided that the site is managed effectively, it is not anticipated that these works will cause any adverse impacts.

5.7 Management of Concrete

Concrete pours during deck construction will need to be managed carefully to ensure that water is channelled to an allocated area during pouring and curing.

Deck edge form will be erected higher than the deck to ensure that potential runoff is directed to the north or south of the stream to land within established site controls.

As a precautionary measure, polythene or similar may also be utilised during curing to catch concrete runoff.

All concrete wash down must be undertaken off site.

6 FLOOD MANAGEMENT

The following flood response information aligns with what has previously been submitted and certified in relation to works in close proximity to the Waitohu Stream.

Water level and flow information has been reviewed by the PP20 Stormwater Team based on previous flood frequency analysis at the 'Waitohu Stream at Water Supply Intake' gauge. From the 10% AEP event a stage-discharge rating curve has been derived to determine the water level at the proposed Bridge 1 site for a given flow at the Water Supply Intake location or vice versa based off the flood modelling results. The following trigger levels and response will be applied during works due to be carried out under this SSEMP.

Mean Annual Flood

The mean annual flood discharge (approx. 2.3y ARI) is approximately 46 m³/s (Flow at Water Supply Intake) and the corresponding water level at the bridge site – 24.4 mRL.

Flow relating to water level at bridge of 23.5mRL (working platform level)

Water level at bridge site – 23.5 mRL

Flow at Bridge - 6 m³/s

Flow at Water Supply Intake – 5.1 m³/s

Flow relating to water level at bridge of 23.7mRL (top of spillway)

Water level at bridge – 23.7 mRL

Flow at Bridge – 15 m³/s

Flow at Water Supply Intake – 12.8 m³/s

The Waitohu Stream catchment is relatively small and steep with its response quick to rainfall and the flow gauge relatively close to the bridge (approx. 5km). For these reasons, a conservative low flow trigger level has been recommended for the flow gauge. There will be limited time (as little as 0.5-2 hours potentially) to move gear to high ground after experiencing a specified flow at the gauge.

After looking at the flow gauge results over 12 months it has been recommended that a preliminary trigger be set at 3 m³/s. This trigger requires an action to check the gauge activity and rain forecast. If the flow is rising quickly then gear should be moved away from the stream to a level of >25.0m RL (outside of the 20y ARI), and at least 50m back from the stream before the flow reaches 10 m³/s. The working platform should also be cleared of any loose materials to above 25.0m RL. The operational procedures and trigger levels for heavy rain forecasts, and gauge trigger flows can be adapted following some observation of the response on site. Rainfall forecast monitoring for the Tararua Ranges will be undertaken on a daily basis.

Storage of hazardous materials, stockpiles, non-working plant and machinery, sign-in sheds and miscellaneous materials will be stored away from the Stream on higher ground above the 20 year flood level (>25.0m RL).

In the event that any project plant or materials are swept downstream during a flood event, it will be the responsibility of the PP20 project to repair any damage and clean-up / remove any plant or materials downstream of the site in a timely manner.

7 TRAFFIC

Site Access Points (SAPs) have been outlined in Section 3.1 above. A Site Specific Traffic Management Plan (SSTMP) has been included as Appendix E. To ensure that potential impacts on local traffic movements are managed effectively and efficiently, more specific information will be submitted for approval to the relevant Road Controlling Authority if required i.e. the State Highway Network (NZTA) and the local road network (KCDC).

APPENDIX A – SSEMP AUTHORS

Name	Role	Company	Input
Alice Naylor	Environmental Manager	Higgins Projects	All
Harry Singh	Structural Site Engineer	FCC	Bridge Construction Methodology

APPENDIX B – CONSULTATION RECORD

Group	Date
Community Liaison Group	Distributed to CLG Group for comment 15/08/18
Nga Hapu o Ōtaki	Distributed to Nga Hapu o Ōtaki Kaiarahi 15/08/18

Outstanding Queries

The following outlines any queries (relevant to works covered under this SSEMP) that have not been resolved through the SSEMP preparation process, but will instead be closed out via alternative project stakeholder and communication channels:

NIL

APPENDIX C – DRAWINGS

ESC Layout Plan

Environmental Constraints Drawings

Construction Drawings

APPENDIX D – PROGRAMME





APPENDIX E: SITE SPECIFIC TRAFFIC MANAGEMENT PLAN

APPENDIX C – DRAWINGS

ESC Layout Plan



Key:

- Dirty water diversion bunds >600mm 
- Gravel Bund 
- Working Platform 
- Column Locations 

Layout of diversion bunds to be confirmed on site to allow for both access and containment of site runoff.

Temporary stockpile area

Downstream water monitoring location

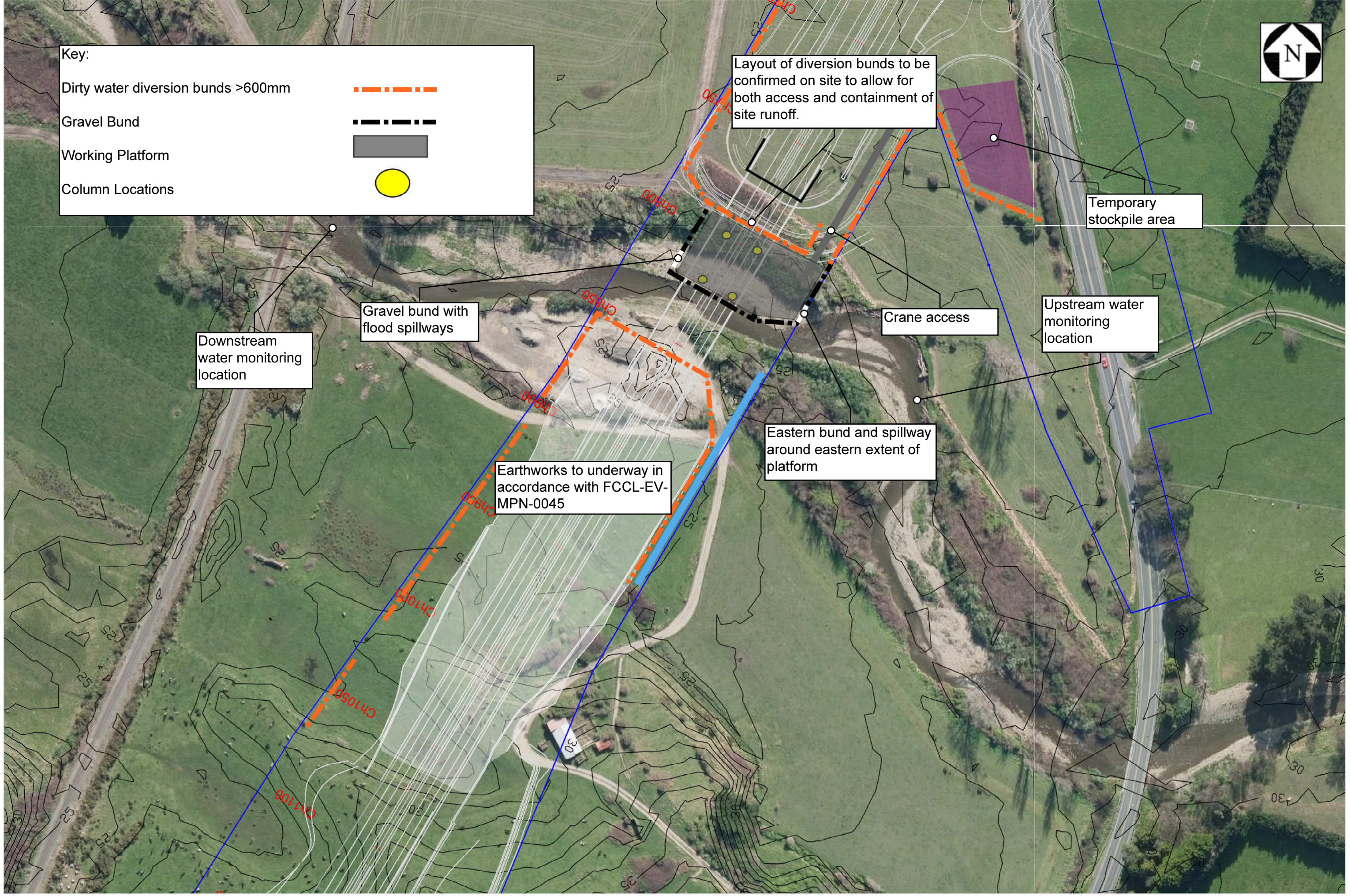
Gravel bund with flood spillways

Crane access

Upstream water monitoring location






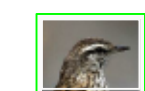

Eastern bund and spillway around eastern extent of platform

Earthworks to underway in accordance with FCCL-EV-MPN-0045



Environmental Constraints Drawings

ECOLOGY LEGEND:

-  TERRESTRIAL ECOLOGY REQUIREMENTS:
-  LIZARD SURVEYS, SALVAGING AND MONITORING
-  NATIVE TREE LOG SALVAGE
-  PERIPATUS MANAGEMENT
-  POWELLIPHANTA TRAVERSI OTAKI SURVEY
-  BIRD SURVEY
-  PIPIT SURVEY
-  BANDED DOTTEREL SURVEY





NOISE VIBRATION LEGEND:

-  VIBRATION - LOW RISK (RESIDENTIAL)
-  VIBRATION - LOW RISK (COMMERCIAL)
-  COMMERCIAL STRUCTURES WITHIN VIBRATION BOUNDARY
-  DWELLINGS WITHIN VIBRATION BOUNDARY
-  DWELLINGS WITHIN BOTH NOISE AND VIBRATION BOUNDARIES

AIR QUALITY:

-  AIR QUALITY SENSITIVE RECEIVERS


DRAINAGE LEGEND:

-  DESIGNATION
-  RAILWAY DESIGNATION
-  EXISTING STREAMS
-  STORMWATER WETLAND/POND

SITE COMPOUNDS:

-  HARD STAND AREA
-  SITE ENTRY AND EXIT

LANDSCAPE:

-  EXISTING VEGETATION RETAINED



**FOR INFORMATION
NOT FOR CONSTRUCTION**

No.	Revision	By	Chk	Appd	Date
A	SSEMP FOR INFORMATION	AK	GD	AN	20.07.17

Scale (A1)	1:1000	Design	AN	13.07.17	Approved For Construction
Scale (A3)		Drawn	AK	13.07.17	
		Dsg Verifier			
		Drg Check			

* Refer to Original Handcopy for Signature

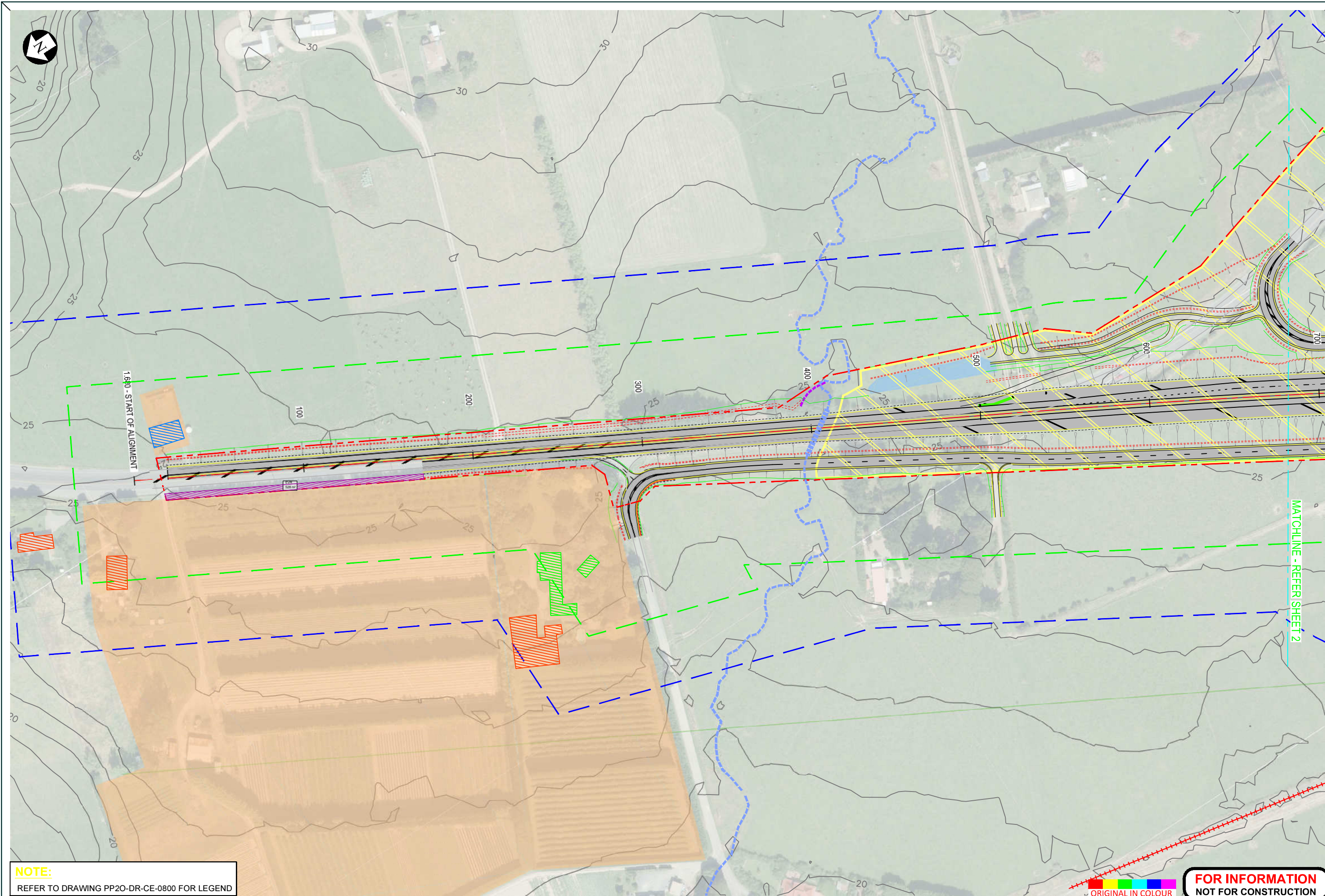
NZ TRANSPORT AGENCY Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

BECA **Tonkin+Taylor**

Subject	SSEMP PW2	Discipline	CIVIL
Title	LEGENDS	Drawing No.	SSEMP PW2-00

Rev.	B
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NOTE:
REFER TO DRAWING PP20-DR-CE-0800 FOR LEGEND

**FOR INFORMATION
NOT FOR CONSTRUCTION**

No.	Revision	By	Chk	Appd	Date
B	SSEMP FOR INFORMATION	WW			14.09.17
A	SSEMP FOR INFORMATION	AK	GD	AN	20.07.17

Scale (A1)	Design	Drawn	Dag Verifier	Dwg Check	Approved For Construction	Date
1:1000	AN	AK				13.07.17
Scale (A3)						

* Refer to Original Handcopy for Signature



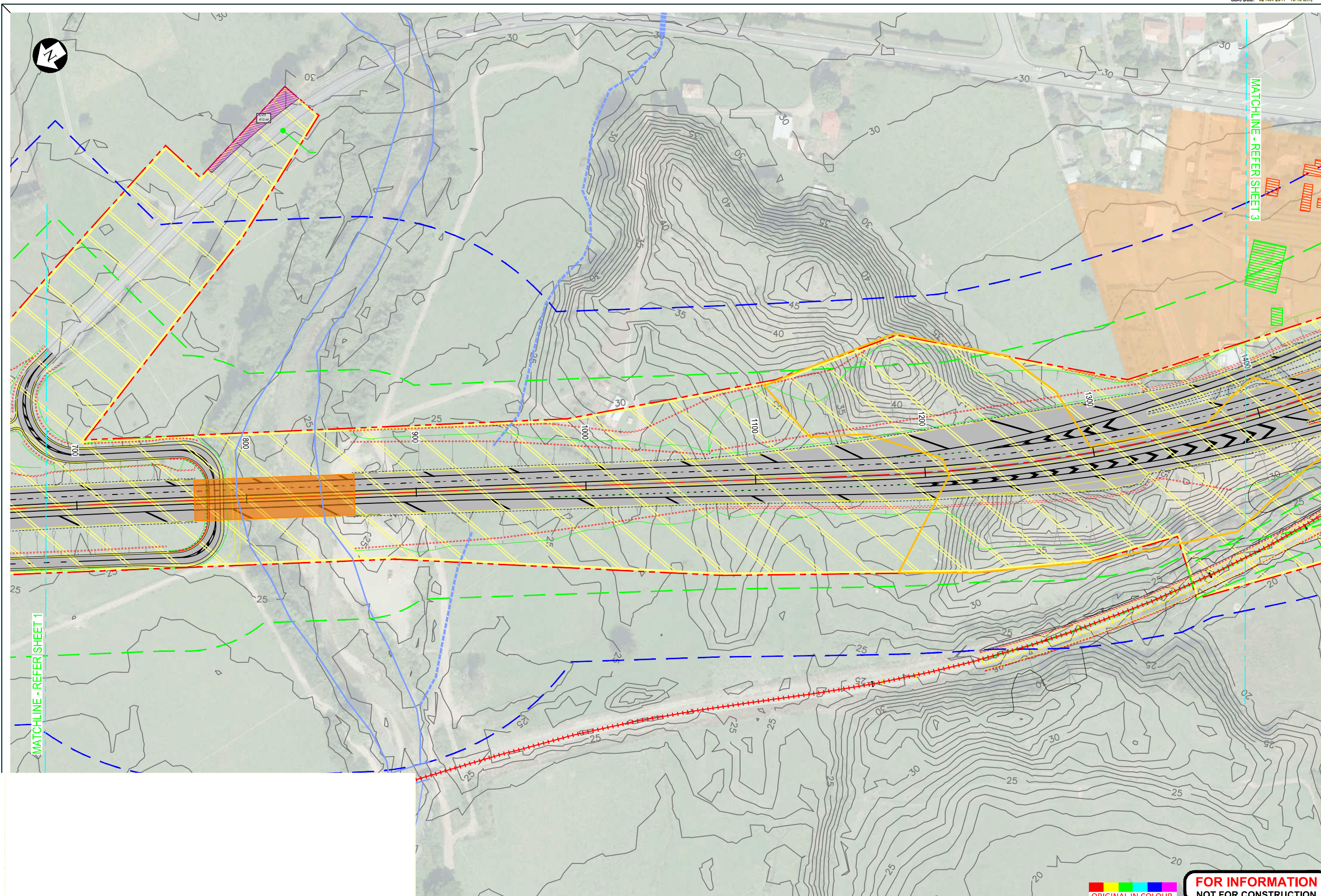
Peka Peka to Otaki Expressway



Subject:	ECOLOGY
Title:	LAYOUT PLAN SHEET 1 OF 18

Discipline:	CIVIL
Drawing No.:	PP20-DR-CE-0801
Rev.:	B

Document No. \\MPPSP-FCC-INTERNAL\DATA\WIR\0012020\2017\08-29- STANDARD\PP20-DR-CE-0801-0818_29-09-SET2.DWG



ORIGINAL IN COLOUR

**FOR INFORMATION
NOT FOR CONSTRUCTION**

No.	Revision	By	CHK	Appd.	Date
B	SSEMP FOR INFORMATION	WW			14.09.17
A	SSEMP FOR INFORMATION	AK	GD	AN	02.07.17

Design	AN	13.07.17	Approved For Construction
Drawn	AK	13.07.17	
Design Verifier			
Design Check			
* Refer to Original Handcopy for Signature			

NZ TRANSPORT AGENCY
WAIWA KAITIHI

Peka Peka to Ōtaki Expressway

BECA

Tonkin+Taylor

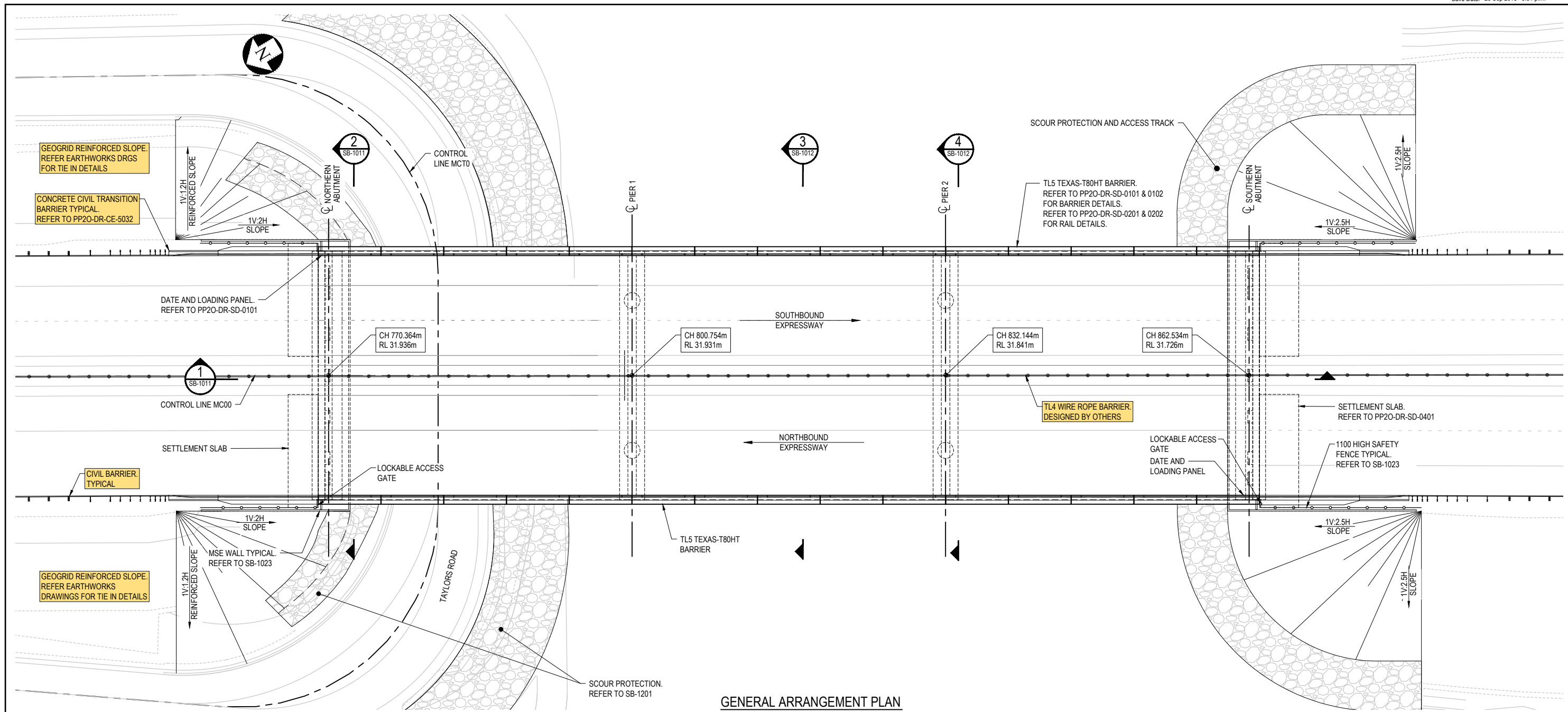
HIGGINS

Subject:	ECOLOGY
Title:	LAYOUT PLAN SHEET 2 OF 18

Discipline:	CIVIL
Drawing No.:	PP20-DR-CE-0802
Rev:	B

\M2PPSP\FCC\INTERNAL\DAV\WORK\2017\270 SECTOR GENERAL\PRECAST WORKING SHOP DRAWINGS\PP20\DR-CE-0802-1818-2017-06-26-STANDARD\PP20-DR-CE-0802-1818_25-09-SET.DWG

Construction Drawings



GENERAL ARRANGEMENT PLAN
SCALE 1:200

NOTES:

1. REFERENCES
 - 1.1. REFER TO PP20-DR-SA-0001 TO PP20-DR-SA-0004 FOR GENERAL NOTES.
 - 1.2. REFER TO RELEVANT CIVIL DRAWINGS FOR CONTROL LINES ROADING GEOMETRY, BARRIER EXTENTS, LANE WIDTHS ETC.
 - 1.3. REFER TO RELEVANT CIVIL DRAWINGS FOR LOCATION OF UTILITIES AND SERVICES.
 - 1.4. ALL LEVELS GIVEN ARE TO STRUCTURAL SURFACE UNO.
2. DESIGN STANDARDS
 - 2.1. NZTA BRIDGE MANUAL, THIRD EDITION (AMENDMENT 1, SEPT. 2014), WITH PROJECT SPECIFIC AMENDMENTS.
 - 2.2. NZS 3101:2006 CONCRETE STRUCTURES STANDARD WITH PROJECT SPECIFIC AMENDMENTS. REFER TO DESIGN STATEMENT REPORT FOR FURTHER DETAILS.
3. DESIGN LOADING
 - 3.1. SUPERIMPOSED DEAD LOAD ALLOWANCE:
 - a) SURFACING = 2.0kPa (INCLUDING 0.5kPa FOR LEVELLING COURSE)
 - b) SERVICES = ALLOWANCES ARE MADE AS FOLLOWS:
 - i) 1 No 100mm TELECOMMUNICATIONS DUCT
 - ii) 2 No 150mm DUCTS FOR FUTURE SERVICES (ONE EACH SIDE)
 - iii) PLUS ADDITIONAL UNIFORMLY DISTRIBUTED LOAD APPLIED OVER ENTIRE DECK AREA OF 0.25kPa.
 - 3.1. TRAFFIC LOAD HN-HO-72
 - 3.2. SEISMIC LOAD BASED ON NZS1170.5 & SSSHA STUDY WITH:
 - a) SUBSOIL CLASS D
 - b) ULS AEP (1/2500)
 - c) ULS DESIGN PGA 0.567g.
 - d) ULS DESIGN ACCELERATION 1.05g (ONCE SLIDING TRANSVERSE DIRECTION)
 - 3.1. TEMPERATURE AND DIFFERENTIAL TEMPERATURE AS PER NZTA BRIDGE MANUAL.
 - 3.2. CREEP AND SHRINKAGE BASED ON AS3600 AND NZTA BRIDGE MANUAL 3rd EDITION FOR RELATIVE HUMIDITY 80%.
 - 3.3. JACKING OF BRIDGE DECK FOR BEARING/ HORIZONTAL RESTRAINT REPLACEMENT THE DESIGN INCLUDES THE FOLLOWING REQUIREMENTS:
 - a) TRAFFIC SHALL BE RESTRICTED TO 40km/h, ONCE BRIDGE DECK IS JACKED.
 - b) SEE ABUTMENT AND PIER DRAWINGS FOR JACKING LOCATIONS AND LOADS.
 - c) JACKING LOADS ARE BASED ON HN LOADINGS.
 - d) ALL JACKS AT EACH DIAPHRAGM SHALL BE HYDRAULICALLY LINKED AND HAVE A CENTRAL MECHANISM TO ENSURE THAT THE SAME VERTICAL DISPLACEMENTS OCCUR AT EACH JACKING POINT AT ALL TIMES DURING THE JACKING OPERATION.
 - e) AT PIER LOCATIONS BOTH BEAM ENDS ON THAT PIER SHALL BE JACKED UP SIMULTANEOUSLY.
 - f) BRIDGE BEARINGS ARE DESIGNED TO BE REPLACED USING LIFTS OF NOT GREATER THAN 10mm.
 - g) STEEL PLATES SHALL BE PLACED BETWEEN CONCRETE BEARING SURFACE AND HYDRAULIC JACK.
 - h) MAXIMUM ALLOWABLE CONTACT PRESSURE BETWEEN CONCRETE SURFACE AND STEEL PLATE SHALL BE 25MPa.
 - i) HORIZONTAL RESTRAINTS AT ABUTMENTS SHALL BE MAINTAINABLE.
4. DRAWING LIST
 - 4.1. FOR THE LIST OF ALL DRAWINGS APPLICABLE TO THIS BRIDGE, REFER TO DRG. SB-1000.
5. SPECIFICATIONS APPLICABLE TO THIS BRIDGE:
 - 5.1. C0203 - BULK EARTHWORKS
 - 5.2. C0226 - ROCK ARMOUR
 - 5.3. C0310 - INSTRUMENTATION AND MONITORING
 - 5.4. C0501 - BORED PILES
 - 5.5. C0600 - REINFORCED CONCRETE SUPPLY
 - 5.6. C0601 - REINFORCED CONCRETE CONSTRUCTION
 - 5.7. C0607 - PRESTRESSED CONCRETE ELEMENTS
 - 5.8. C0614 - ANTI-GRAFFITI COATINGS
 - 5.9. C0700 - STRUCTURAL STEELWORKS
6. CONSTRUCTION LOADS
 - 6.1. BRIDGE BEAMS ARE DESIGNED FOR CONSTRUCTION LIVE LOAD OF 1.5kPa. TEMPORARY WORK SHALL BE ADEQUATE FOR 1600 APE (R = 1.0) SEISMIC AND WIND LOADING.

7. STRUCTURAL ELEMENTS INCLUDED IN PACKAGE:
 - 7.1. BRIDGE PILES, ABUTMENTS, SETTLEMENT SLABS, PRESTRESSED BEAMS, BEARINGS, TL5 TEXAS-T80HT BARRIERS WITH FASCIA.
 - 7.2. TRAFFIC BARRIERS DETAILED IN THE STRUCTURAL DRAWINGS TERMINATE AT THE EXTENT OF THE BRIDGE (BARRIERS BEYOND THAT ARE CONSIDERED TO BE STANDARD ROAD TRAFFIC BARRIERS. FOR THESE REFER TO THE RELEVANT CIVIL DRAWINGS).
8. COATING FOR EXPOSED CONCRETE SURFACES:
 - 8.1. FOLLOWING TYPES OF COATING SHALL BE APPLIED TO EXPOSED CONCRETE SURFACES:
 - a) GRAFFITI SOLUTION COATING OR EQUIVALENT APPROVED BY THE DESIGNERS.
 - 8.2. FOR THE APPLICATION OF SURFACE COATING, REFER TO THE SPECIFICATION C0614.
 - 8.3. TABLE 1 SUMMARISES THE EXTENT OF COATINGS TO CONCRETE SURFACES.

TABLE 1. CONCRETE SURFACE COATINGS

BRIDGE ELEMENTS	EXPOSED SURFACE	ANTI-GRAFFITI COATING
BRIDGE BARRIER	INSIDE FACES (FACING EXPRESSWAY)	YES
	TOP SURFACE, OUTSIDE OF FASCIA PANEL	YES
ABUTMENTS	FRONT FACES (FACING LOCAL ROADS)	YES
	SIDES OF ABUTMENTS	YES
PIER CROSSHEADS	ALL EXPOSED AREAS	NO
COLUMNS	ALL EXPOSED SURFACES TO FULL HEIGHT	YES
DECK SOFFIT	1.5m HORIZONTALLY FROM AN ACCESSIBLE SUBSTRUCTURE ELEMENT	YES

9. MAINTENANCE AFTER MAJOR FLOOD EVENT:
 - 9.1. THE SCOUR PROTECTION SHALL BE INSPECTED AFTER ANY MAJOR FLOOD EVENT (100 YRS FLOOD). ANY DAMAGE TO SCOUR PROTECTION SHALL BE RE-INSTATE TO THE ORIGINAL DESIGN STAGE.

10. CONSTRUCTION SEQUENCE:

TABLE 2. CONSTRUCTION SEQUENCE

SEQUENCE	ACTIVITY
1.	BORE, CONSTRUCT PIER PILES AND PLUNGE COLUMN CAGE IN WET PILE CONCRETE.
2.	PREPARE ABUTMENT GROUND FOR MSE WALLS.
3.	CONSTRUCT MSE WALLS, ALLOW TWO MONTHS CONSOLIDATION PERIOD.
4.	BUILD UP GROUND AROUND MSE WALLS. PLACE SCOUR PROTECTION.
5.	CONSTRUCT PIER COLUMNS.
6.	CONSTRUCT PIER CROSS HEAD AND ABUTMENT BANK SEAT.
7.	INSTALL BEARINGS.
8.	INSTALL PRECAST SUPER T BEAMS.
9.	CAST BEAM DIAPHRAGMS AND BACKWALL.
10.	POUR DECK SLAB.
11.	CONSTRUCT SETTLEMENT SLAB.
12.	INSTALL SERVICES.
13.	COMPLETE BACKFILL ADJACENT TO ABUTMENT BACKWALLS.
14.	INSTALL BARRIERS.
15.	LAY LEVELLING COURSE AND SURFACING.

THE ABOVE CONSTRUCTION SEQUENCE SHOWS THE SEQUENCING AS ASSUMED FOR DESIGN PURPOSES. CONSTRUCTOR TO ADVISE DESIGNER IF ALTERNATIVE CONSTRUCTION SEQUENCE IS PROPOSED.

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	ARK	JK	28.09.18

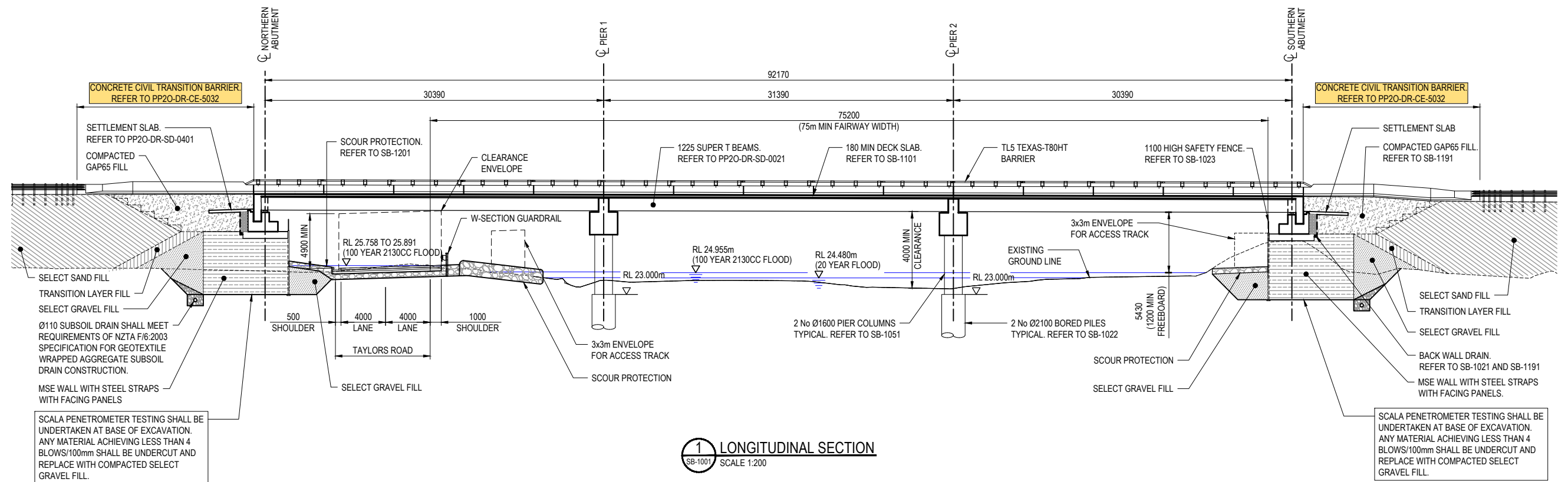
Scale (A1) AS SHOWN	Design	Date	Approved For Construction
Scale (A3)	L.CHEN	16.05.17	S.WATERS
	M.JULATON	10.05.17	
	G.BROWN	24.08.18	
	C.BURKE	17.07.18	

NZ TRANSPORT AGENCY | **Peka Peka to Ōtaki Expressway** | **Fletcher HIGGINS** | **BECA** | **Tonkin+Taylor**

Subject:	WAITOHU STREAM BRIDGE (BRIDGE 1)
Title:	GENERAL ARRANGEMENT PLAN

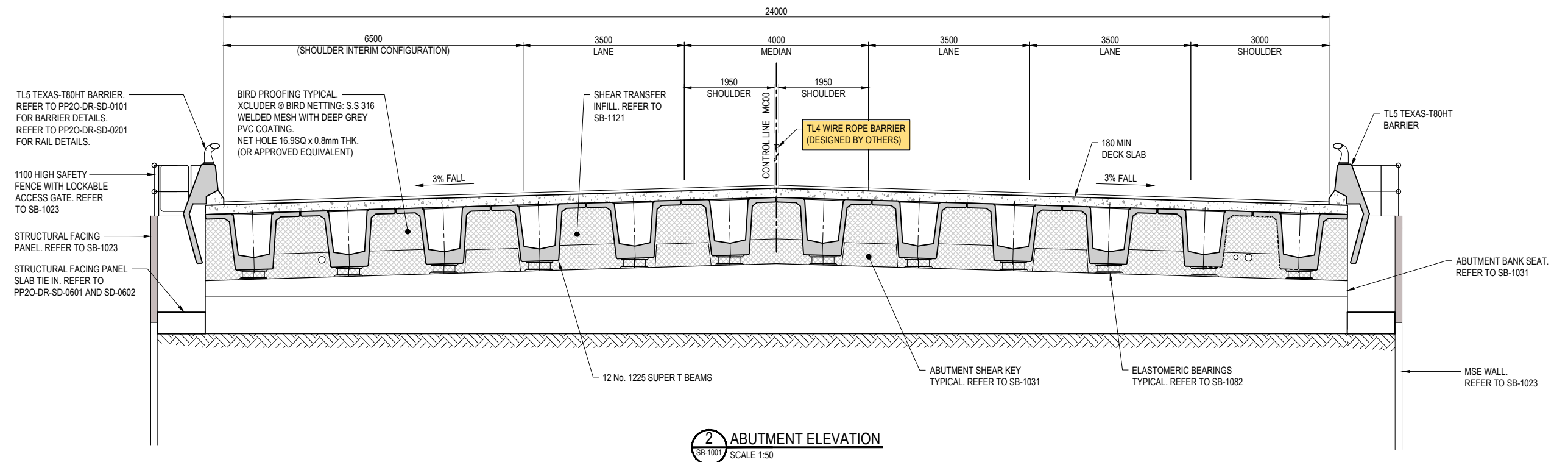
Discipline:	STRUCTURAL
Drawing No.:	PP20-DR-SB-1001
Rev.:	1

- NOTES:**
1. REFER TO PP20-DR-SA-0001 TO PP20-DR-SA-0004 FOR GENERAL NOTES.
 2. REFER TO PP20-DR-SB-1001 FOR BRIDGE SPECIFIC NOTES.
 3. MSE WALLS SHALL BE DESIGNED BY REINFORCED EARTH LTD (REL). REFER TO DRAWINGS 6089D/C/01 TO 6089D/C/14 FOR MSE WALL INFORMATION.



SCALA PENETROMETER TESTING SHALL BE UNDERTAKEN AT BASE OF EXCAVATION. ANY MATERIAL ACHIEVING LESS THAN 4 BLOWS/100mm SHALL BE UNDERCUT AND REPLACE WITH COMPACTED SELECT GRAVEL FILL.

SCALA PENETROMETER TESTING SHALL BE UNDERTAKEN AT BASE OF EXCAVATION. ANY MATERIAL ACHIEVING LESS THAN 4 BLOWS/100mm SHALL BE UNDERCUT AND REPLACE WITH COMPACTED SELECT GRAVEL FILL.



FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	ARK	JK	28.09.18

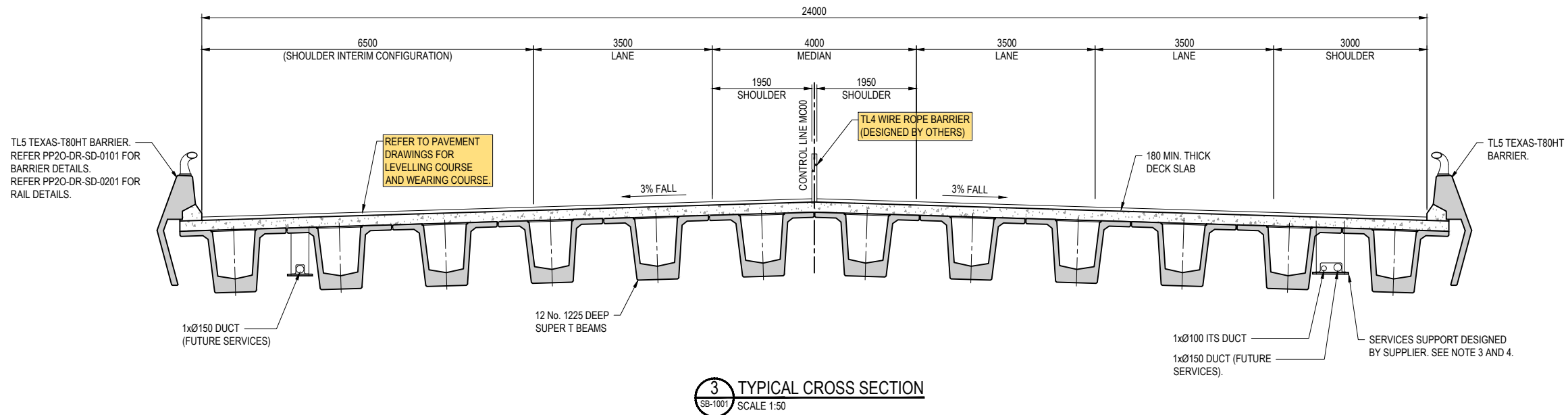
Scale (A1)	Design	L.CHEN	16.05.17	Approved For Construction
AS SHOWN	Drawn	M.JULATON	10.05.17	S.WATERS
Scale (A3)	Design Check	G.BROWN	24.08.18	
	Design Check	C.BURKE	17.07.18	Date 25.09.18

* Refer to Original Hardcopy for Signature

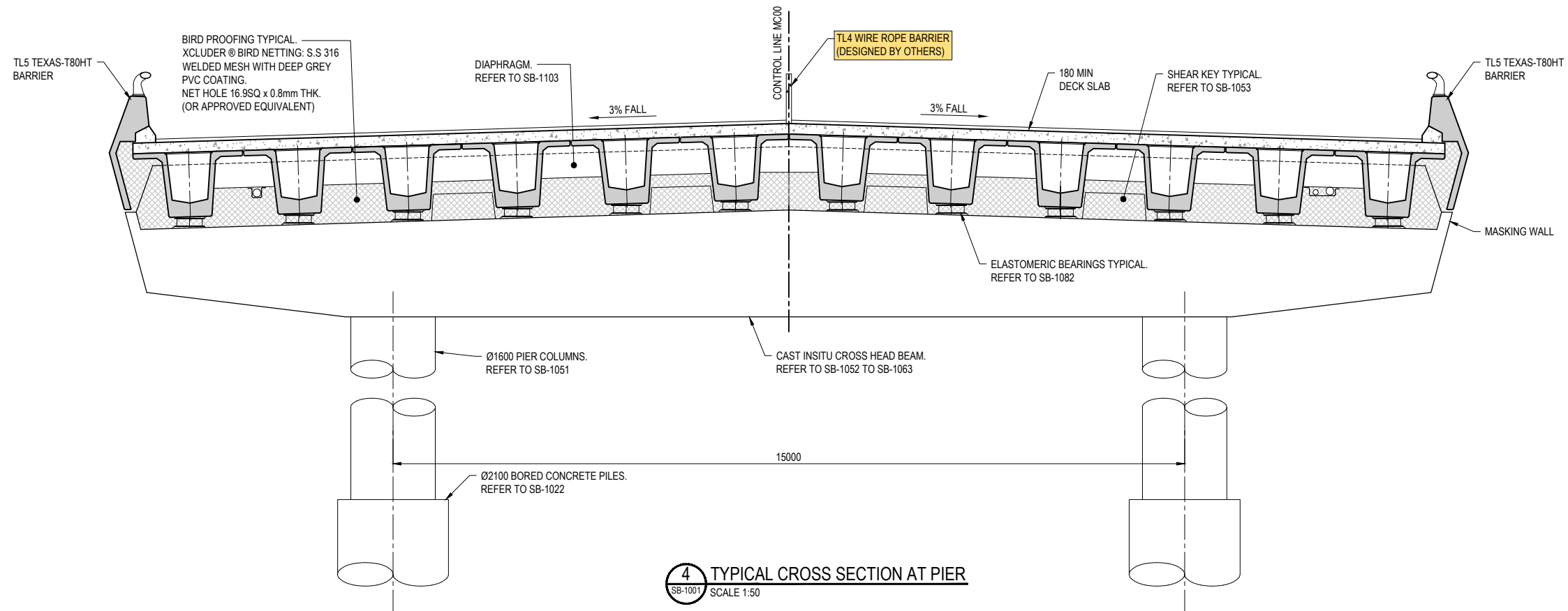
Subject:	WAITOHU STREAM BRIDGE (BRIDGE 1)	Discipline:	STRUCTURAL
Title:	GENERAL ARRANGEMENT SECTIONS SHEET 1	Drawing No.:	PP20-DR-SB-1011
		Rev.:	1

NOTES:

1. REFER TO PP20-DR-SA-0001 TO PP20-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP20-DR-SB-1001 FOR BRIDGE SPECIFIC NOTES.
3. THE SERVICES SUPPORT SYSTEM SHALL BE A UNISTRUT PROPRIETARY SYSTEM DESIGNED BY THE SUPPLIER.
4. THE SUPPLIER SHALL PROVIDE THE FIXING REQUIREMENTS FOR THE SERVICES SUPPORT SYSTEM TO CAST IN TO THE DECK SLAB.
5. MSE WALLS SHALL BE DESIGNED BY REINFORCED EARTH LTD (REL). REFER TO DRAWINGS 6089G/C/01 TO 6089G/C/14 FOR MSE WALL INFORMATION.



3 TYPICAL CROSS SECTION
SB-1001 SCALE 1:50



4 TYPICAL CROSS SECTION AT PIER
SB-1001 SCALE 1:50

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	ARK	JK	28.09.18

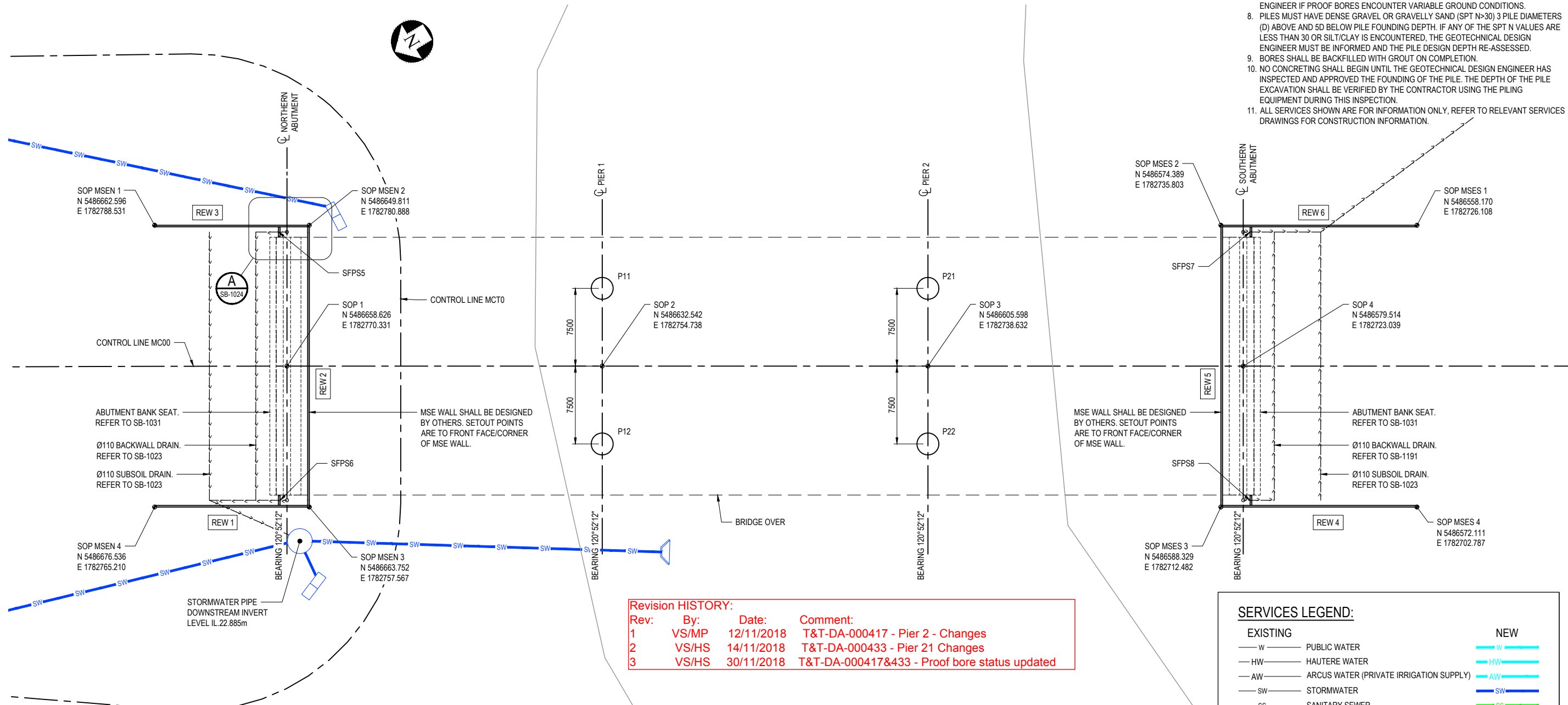
Scale (A1)	Design	L. CHEN	16.05.17	Approved For Construction
AS SHOWN	Drawn	M. JULATON	10.05.17	S. WATERS
Scale (A3)	Design Verifier	G. BROWN	24.08.18	
	Design Check	C. BURKE	17.07.18	Date 25.09.18

* Refer to Original Hardcopy for Signature

Subject:	WAITOHU STREAM BRIDGE (BRIDGE 1)	Discipline:	STRUCTURAL
Title:	GENERAL ARRANGEMENT SECTIONS SHEET 2	Drawing No.:	PP20-DR-SB-1012
		Rev.:	1

NOTES:

- REFER TO PP20-DR-SA-0001 TO PP20-DR-SA-0004 FOR GENERAL NOTES.
- REFER TO PP20-DR-SB-1001 FOR BRIDGE SPECIFIC NOTES.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH PP20-DR-SB-1022.
- TABLE 1 SHOWS PRELIMINARY PILE TOE ELEVATIONS ONLY. THIS SHALL BE CONFIRMED BY THE GEOTECHNICAL DESIGN ENGINEER BASED ON RESULTS OF PROOF BORES.
- PROOF BORES SHALL BE DRILLED AT LOCATIONS PRESENTED IN TABLE 1. PROOF BORES SHALL BE LOGGED BY GEOTECHNICAL DESIGN ENGINEER (OR REPRESENTATIVE). REFER TO C0501-BORED PILE SPECIFICATION FOR PROOF BOREHOLE REQUIREMENTS. BORES SHALL BE SONIC DRILLED (PO SIZE) WITH SPT TESTING AT 1.5m CRS. PROOF BORES SHALL BE LOCATED 1.5m FROM PILE CENTRE, IN LINE WITH THE PIER.
- SEE PROOF BORE INVESTIGATION TARGET RLs IN TABLE 1. PROOF BORES SHALL ONLY BE TERMINATED WHEN INSTRUCTED TO DO SO BY THE GEOTECHNICAL DESIGN ENGINEER. IT IS REQUIRED THAT THE GEOTECHNICAL DESIGN ENGINEER WILL HAVE RECEIVED AND REVIEWED THE DAILY DRILL RECORDS FOR A PARTICULAR BOREHOLE BEFORE INSTRUCTING THE CONTRACTOR TO TERMINATE THAT BOREHOLE.
- ADDITIONAL PROOF BORES MAY BE REQUIRED BY THE GEOTECHNICAL DESIGN ENGINEER IF PROOF BORES ENCOUNTER VARIABLE GROUND CONDITIONS.
- PILES MUST HAVE DENSE GRAVEL OR GRAVELLY SAND (SPT N>30) 3 PILE DIAMETERS (D) ABOVE AND 5D BELOW PILE FOUNDING DEPTH. IF ANY OF THE SPT N VALUES ARE LESS THAN 30 OR SILT/CLAY IS ENCOUNTERED, THE GEOTECHNICAL DESIGN ENGINEER MUST BE INFORMED AND THE PILE DESIGN DEPTH RE-ASSESSED.
- BORES SHALL BE BACKFILLED WITH GROUT ON COMPLETION.
- NO CONCRETING SHALL BEGIN UNTIL THE GEOTECHNICAL DESIGN ENGINEER HAS INSPECTED AND APPROVED THE FOUNDING OF THE PILE. THE DEPTH OF THE PILE EXCAVATION SHALL BE VERIFIED BY THE CONTRACTOR USING THE PILING EQUIPMENT DURING THIS INSPECTION.
- ALL SERVICES SHOWN ARE FOR INFORMATION ONLY, REFER TO RELEVANT SERVICES DRAWINGS FOR CONSTRUCTION INFORMATION.



Revision HISTORY:

Rev:	By:	Date:	Comment:
1	VS/MP	12/11/2018	T&T-DA-000417 - Pier 2 - Changes
2	VS/HS	14/11/2018	T&T-DA-000433 - Pier 21 Changes
3	VS/HS	30/11/2018	T&T-DA-000417&433 - Proof bore status updated

SERVICES LEGEND:

EXISTING	NEW
— W — PUBLIC WATER	— W — PUBLIC WATER
— HW — HAUTERE WATER	— HW — HAUTERE WATER
— AW — ARCUS WATER (PRIVATE IRRIGATION SUPPLY)	— AW — ARCUS WATER (PRIVATE IRRIGATION SUPPLY)
— SW — STORMWATER	— SW — STORMWATER
— SS — SANITARY SEWER	— SS — SANITARY SEWER
— OH — ELECTRA - OVERHEAD POWER CABLES	— OH — ELECTRA - OVERHEAD POWER CABLES
— P — ELECTRA - UNDERGROUND POWER CABLES	— P — ELECTRA - UNDERGROUND POWER CABLES
— G — GAS	— G — GAS
— T — CHORUS - TELECOMMUNICATIONS	— T — CHORUS - TELECOMMUNICATIONS
— K — KIWIRAIL FIBRE CABLE	— K — KIWIRAIL FIBRE CABLE
— S — KIWIRAIL SIGNALS CABLE	— S — KIWIRAIL SIGNALS CABLE
— R — RAILWAY	— R — RAILWAY
— TO BE REMOVED	— TO BE REMOVED

SUBSTRUCTURE SETOUT PLAN
SCALE 1:200

TABLE 1. PILE DATA

PILE LOCATION	DESIGN			GEOTECHNICAL DEPENDABLE COMPRESSION CAPACITY WITH SRF, ØN (kN)	MAXIMUM ULS AXIAL LOAD, N* (kN)	PROOF BORE INVESTIGATION			
	PILE SIZE	PILE TOE LEVEL (RL m)	TOP OF PILE (RL m)			PROOF BORE	START SPT TESTING (RL m) (MIN NO OF SPT TESTS)	PRELIMINARY TARGET RL (m)	PROOF BORE COMPLETED
P11	Ø2100	3.65	23.0	16000	13500	Y	22.5 (N/A)	N/A	Y - 801
P12	Ø2100	3.65	23.0	16000	13500	Y	22.5 (N/A)	N/A	Y - 906
P21	Ø2100	1.50	23.0	16000	13500	Y	11.5 (13)	-11	Y - 907
P22	Ø2100	5.00	23.0	16000	13500	Y	11.5 (13)	-11	Y - 908

FOR CONSTRUCTION
RED LINE

RL2 Red Line Markup	HS	30/11/18			
RL1 Red Line Markup	VS	14/11/18			
RL1 Red Line Markup	MP	12/11/18			
1 FOR CONSTRUCTION	CRB	ARK JK 28.09.18			
No.	Revision	By	Chk	Appd	Date

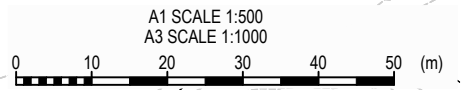
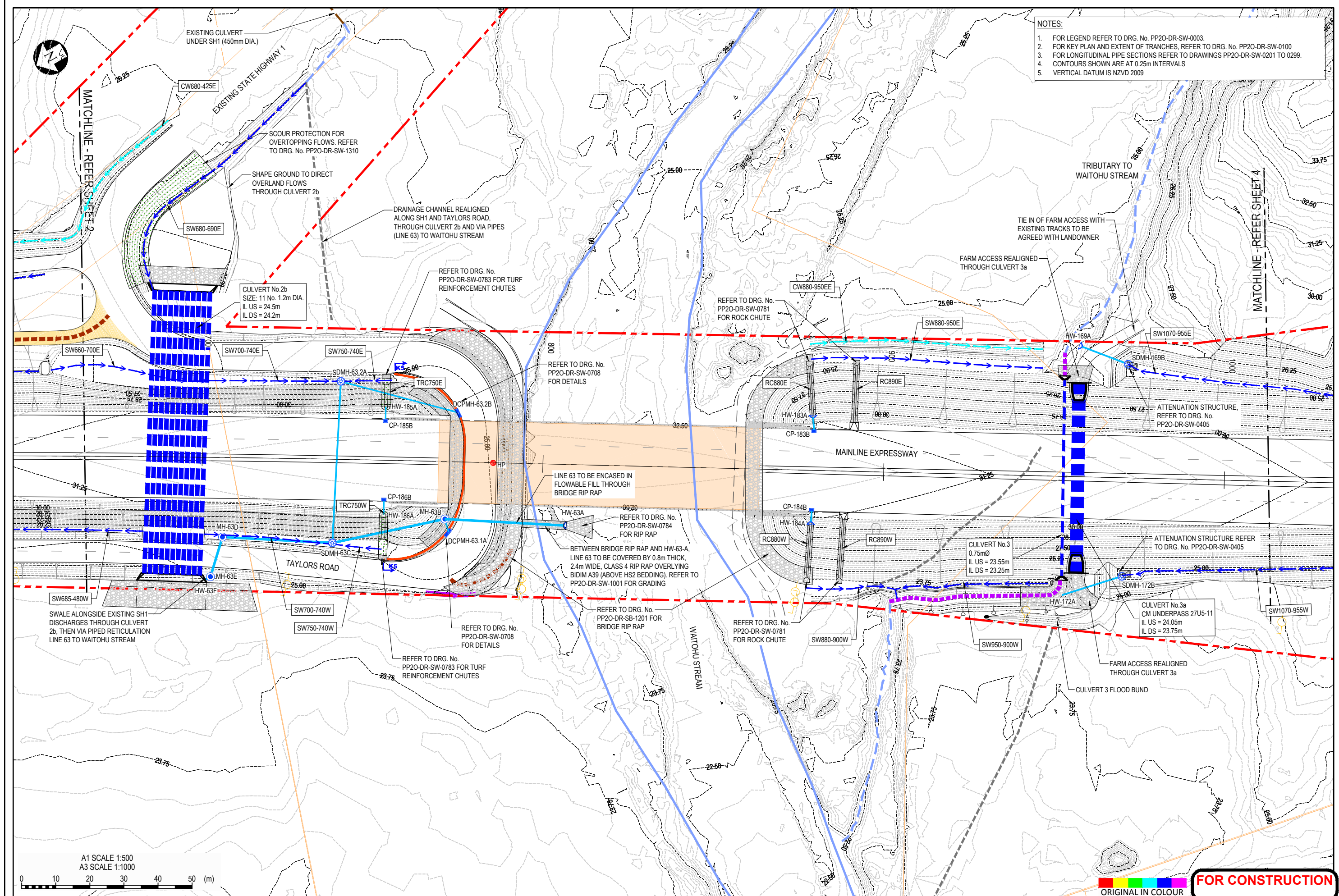
Design	L.CHEN	16.05.17	Approved For Construction
Drawn	M.JULATON	10.05.17	S.WATERS
Drawn	G.BROWN	24.08.18	
Check	C.BURKE	17.07.18	Date 25.09.18

NZ TRANSPORT AGENCY | **Peka Peka to Ōtaki Expressway** | **Fletcher HIGGINS** | **BECA** | **Tonkin+Taylor**

Subject:	WAITOHU STREAM BRIDGE (BRIDGE 1)	Discipline:	STRUCTURAL
Title:	GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN	Drawing No.:	PP20-DR-SB-1021

Rev:	RL1
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- NOTES:**
1. FOR LEGEND REFER TO DRG. No. PP20-DR-SW-0003.
 2. FOR KEY PLAN AND EXTENT OF TRANCHES, REFER TO DRG. No. PP20-DR-SW-0100.
 3. FOR LONGITUDINAL PIPE SECTIONS REFER TO DRAWINGS PP20-DR-SW-0201 TO 0299.
 4. CONTOURS SHOWN ARE AT 0.25m INTERVALS
 5. VERTICAL DATUM IS NZVD 2009



FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
2	ISSUED FOR CONSTRUCTION TRANCHE 3	RMT	DK	BS	13.03.19
1	ISSUED FOR CONSTRUCTION TRANCHE 1	RMT	DK	BS	14.09.18

Scale (A1)	Design	Drawn	Checked	Date	Approved For Construction
1:500	D.Knappstein	S.Halliday	T.Bassett	29.09.17	B.Symmans
1:1000	D.Knappstein	T.Bassett	D.Knappstein	14.09.18	

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKA KOTAHU

Peka Peka to Otaki Expressway

Fletcher HIGGINS

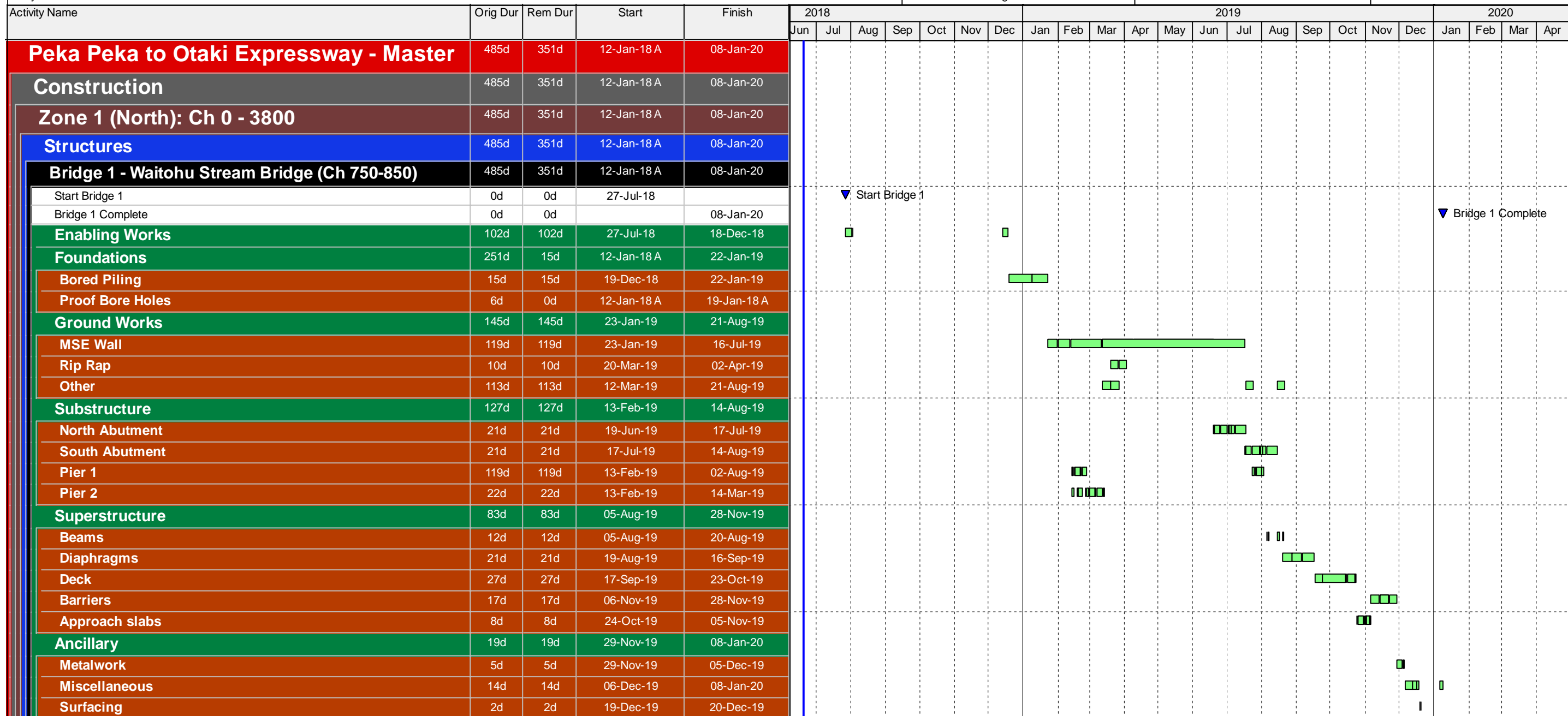
BECA **TFT** **Tonkin+Taylor**

Subject: GENERAL ARRANGEMENTS
STORMWATER LAYOUT PLANS
SHEET 3 OF 47

Discipline	Drawing No.	Rev.
STORMWATER	PP20-DR-SW-0103	2

Document No. R3000 - DESIGN DEVELOPMENT GENERAL09 CAD/DRAWINGS/SWP20-DR-SW-0101-0147.DWG

APPENDIX D – PROGRAMME



APPENDIX E: SITE SPECIFIC TRAFFIC MANAGEMENT PLAN

Site Specific Traffic Management Plan

– Peka to Ōtaki Project

Bridge 1

August 2018

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1 INTRODUCTION

This Site Specific Traffic Management Plan (SSTMP) provides the necessary information to demonstrate how the project team plan to avoid or mitigate potential construction traffic effects from activities associated with the construction of the Waitohu Stream Bridge (Bridge 1).

This SSTMP reflects the requirements of the Construction Traffic Management Plan (CTMP) including sections 1.3 (Performance Standards) and section 3.2.1 - specifically the need to interface with TTM on other networks. This plan is also consistent with the requirements set out in the over-arching Construction Environmental Management Plan (CEMP).

This document is intended to be utilised by the construction team to clearly identify any site specific traffic management requirements that must be adhered to prior to, and during works in any given area.

The temporary traffic management required to carry out these works across the site will consist of various types of Temporary Closures including, but not limited to, Site Access, Shoulder, Footpath, Stop/Go, Contra Flow and Temporary Concrete Barrier installations.

Specific Traffic Management methodologies will be finalised and submitted to the relevant Road Controlling Authority as the construction programme is finalised and becomes more detailed. These more specific Traffic Management Plans (TMPs) will cover specific mitigation for each individual temporary traffic management requirement. This document will be a living document that will have multiple stages and traffic layouts that will be amended as and when required to suit varying construction stages and required traffic management.

1.1 The SSTMP and TMP Process

This SSTMP provides the necessary information from a project level on how the effects of construction traffic related to the site activities will be avoided or mitigated across the two roading networks in the location of the expressway works i.e. the State Highway Network (NZTA) and the local road network (KCDC).

Each of the two Road Controlling Authorities (RCA's) has its own processes and procedures for the approvals (TMP's) and implementation of temporary Traffic management within their respective networks which is separate to the SSTMP process.

It is recognised that approval / implementation of TMPs associated with this SSTMP will be staged and implemented at differing times over the course of the works. In addition, it is recognised that the TMP's themselves may alter due to both project and surrounding community requirements.

The purpose of this SSTMP is to provide the base (minimum) standard of service / maximum practical level of mitigation to be incorporated into the development of the respective TMP's all the while ensuring that the BOI consent conditions and subsequent CTMP requirements are met during the construction process.

2 SSTMP CONSENT CONSIDERATIONS

Reference should also be made to section 3.2 of the CTMP.

2.1 Proposed Temporary Traffic Management Measures - BOI condition 34 b (i)

Each of the work areas will have the required (CoPTTM) signage and early warning delineation provided by a combination of cones and line marking – all in accordance with the respective RCA TMP requirements. Each Traffic Management Plan will be submitted to the relevant RCA and Approved prior to implementation. Until site specific construction plans are finalised a location specific Traffic Management Plan cannot be prepared. Once methodologies are finalised location specific Traffic Management plans will be prepared and submitted to KCDC for approval.

2.2 Assessment of delays - BOI condition 34 b (ii)

Each Traffic Management plan will incorporate an assessment of expected delays and will also provide delay calculations where any are expected to occur. It is not envisaged that any significant delays will occur at any time. Any oversized loads will be escorted with Pilot Vehicles again with no anticipated delays with their operations covered by Oversized Vehicle Permits. These oversized movements will be of an occasional nature only to move large plant in and off site.

2.3 Detour Routes - BOI condition 34 b (iii)

Detours are not expected to be required for works in this area. As the works progress, the necessary TMPs will be submitted to KCDC or NZTA for approval.

2.4 Existing Accesses - BOI condition 34 b (iv)

The proposed Temporary Traffic Management measures do not knowingly affect existing accesses to private or commercial properties. Should this occur consultation will be undertaken with affected parties to ensure they retain access at all times.

2.5 Pedestrian and Cyclist Access - BOI condition 34 b (v)

Detours are not expected to be required during works in this area. Sequencing of traffic management during the works is demonstrated in the attached drawings. As the works progress, the necessary TMPs will be submitted to KCDC for approval.

2.6 Maintaining Existing Transport Services - BOI condition 34 b (vi)

The proposed Temporary Traffic Management measures for implementation of the work areas will not affect any existing public transport services and facilities such as bus stops.

2.7 Temporary Speed Limits (TSL) - BOI condition 34 b (vii)

The use of TSL's will be kept to a minimum and will be identified as and when required in Site Specific Traffic Management Plans submitted to and approved by the relevant RCA.

2.8 Access to & From the Construction Site - BOI condition 34 b (viii)

The primary objective of this SSTMP is the planning (TMP's), approvals (RCA's) and incorporation of Site Access Points (SAP's) as outlined in this SSTMP to ensure the safe and efficient access to and from site of construction related traffic.

The operating hours of the SAP's will be in accordance with the proposed hours of work included within the **CNVMP i.e.**

- Monday to Friday 6.30am to 8pm
- Saturday 7.30am to 6pm

Operation outside those hours will be at the approval of the Engineer and in accordance with the provisions of the **CNVMP**.

2.9 Communications and Stakeholders - BOI condition 34 b (ix)

As the effects of the proposed measures are as yet unknown, implementation and operation of the SSTMP's will be communicated to stakeholders, road users and the community via the methods and processes as included within the project Stake Holder and Communications Management Plan, with particular emphasis on the key groups identified in Section 3.1 of the CTMP as required.

3 ADDITIONAL CTMP CONSIDERATIONS

3.1 Kiwirail NIMTR - CTMP section 2.1.2

The implementation and operation of some SSTMP's may involve the need to collaborate with Kiwirail as sites may cross the NIMT Railway or existing at grade carriageway crossings. Traffic Management strategies will include having no delays created for Kiwirail and the NIMT.

3.2 Emergency Action Plan(s) – CTMP section 3.2.3.8

All emergency services shall have unimpeded access along all State Highway and local roads 24 hrs. per day. Should any roads be affected by temporary traffic management any likely delays will be communicated prior to works to all Emergency Service Providers by way of weekly Road Works Reporting procedures as required by both RCA's. All major works that impact the roading network will have SSTMP's developed with consultation of Emergency Services.

3.3 Access to KCDC Owned and Operated Water and Waste Water Assets – CTMP section 3.2.1.1.7

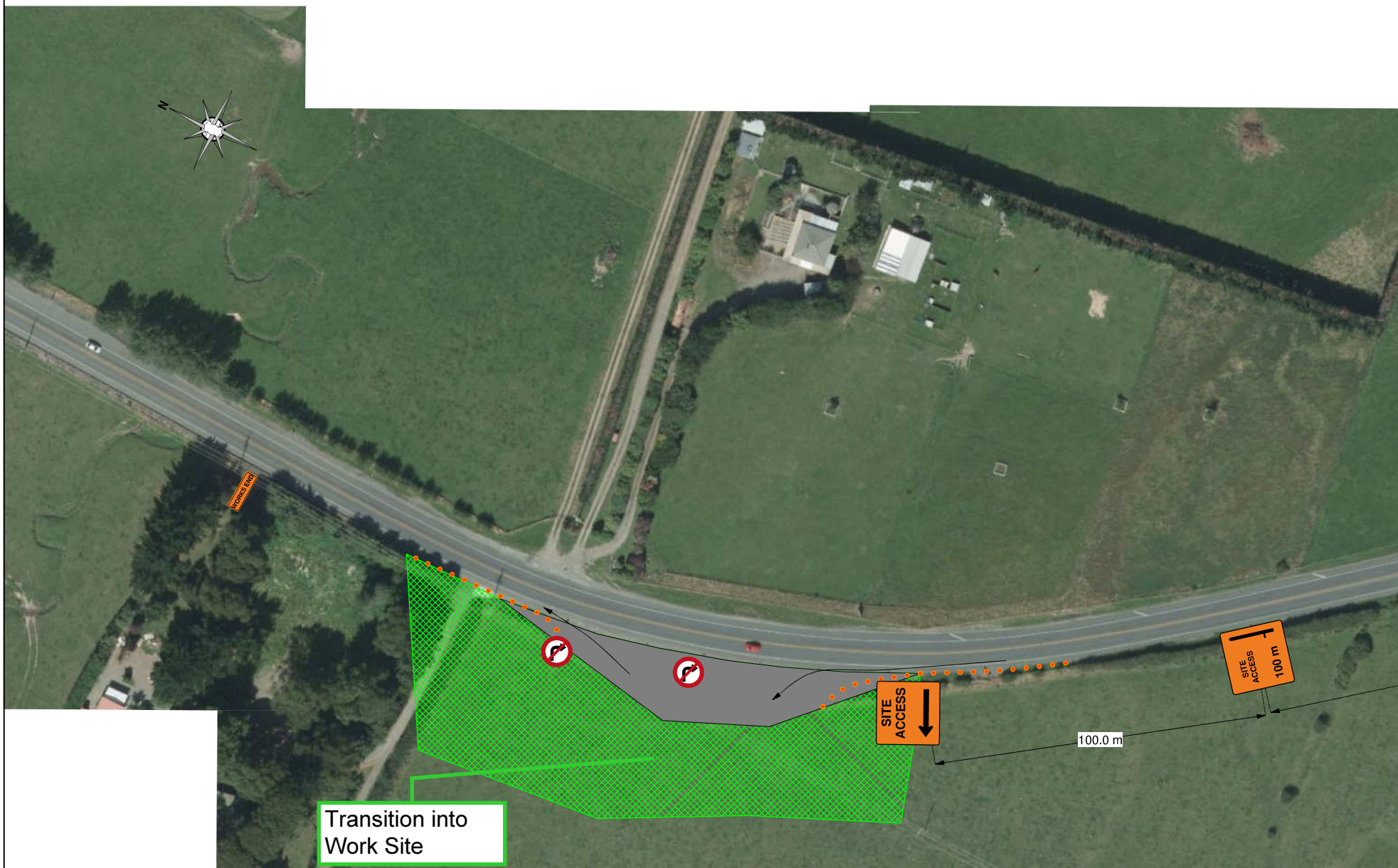
Access to existing KCDC water and waste water assets will not be impeded by any SSTMP's.

3.4 Monitoring, Auditing & Reporting – CTMP sections 3.3 & 3.4

Monitoring, Auditing and Reporting of the Traffic Management Measure (once implemented) shall be in accordance with the CTMP and CoPTTM guidelines.

3.5 Complaints – CTMP sections 3.5

Feedback including complaints received related to the implementation of Temporary Traffic Management measures covered within this SSTMP shall be recorded and processed in line with the CTMP.



Transition into Work Site

SITUATION : Site Access 13A Bridge 1	REVISION : 1.0
DRAWING TITLE : Site Access	DRAWING BY : Travis Medhurst
DRAWING No : P2O - SAP13 Sheet 1	CHECKED :
	DATE : 04/09/2018
	TMC APPROVAL :

Peka Peka to Ōtaki Expressway

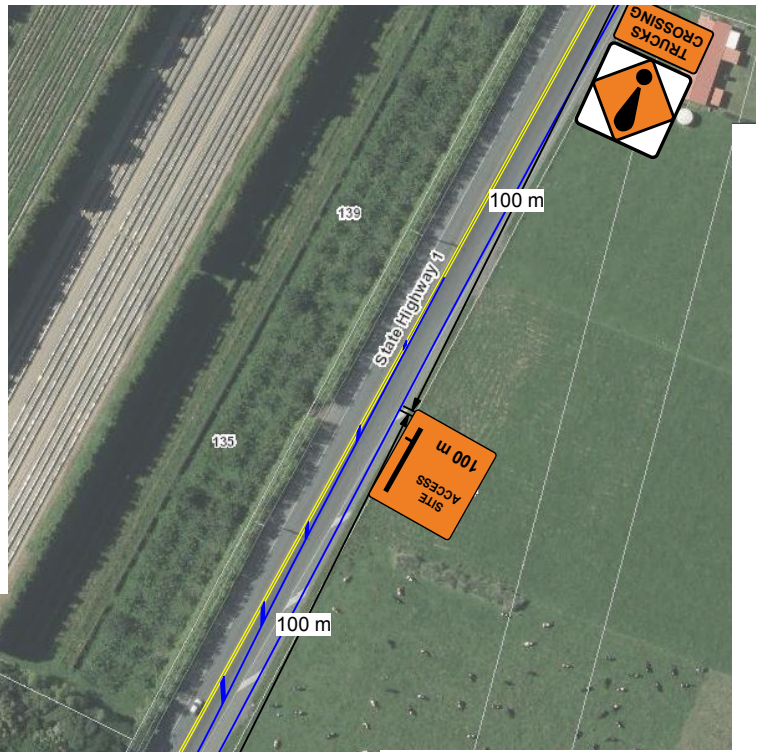
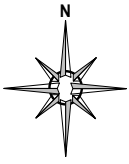




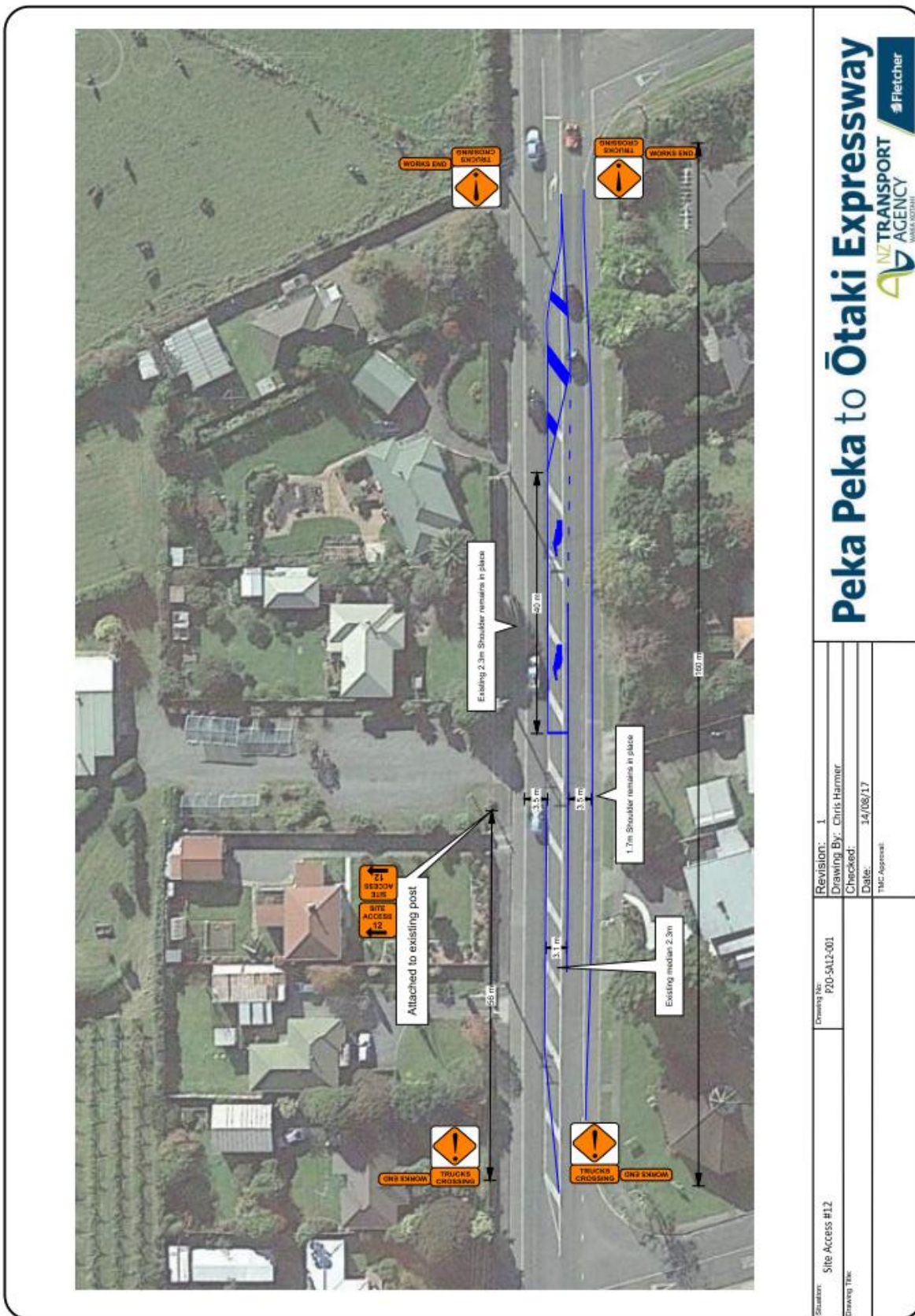
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DRAWING TITLE : Site Access	DRAWING BY : Travis Medhurst
DRAWING No : P2O - SAP13 Sheet 2	CHECKED :
	DATE : 04/09/2018
	TMC APPROVAL :

Peka Peka to Ōtaki Expressway





SAP 12



Peka Peka to Ōtaki Expressway

NZ TRANSPORT AGENCY
WAKA KOTAHITI

Fletcher

Situation:	Site Access #12	Revision:	1
Drawing Title:		Drawing By:	Chris Harmer
Drawing File:	P20-SAL2-001	Checked:	
		Date:	14/08/17
		TAC Approval:	