

INDICATIVE SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN (SSEMP)

Waitangirua Focus Area

This Document, that is in the form of an SSEMP, is one of a number that have been developed for key focus areas along the TG Alignment. The focus areas were chosen to be representative of the range of sites along the route and to have between them the full range of environmental management issues likely to be encountered during construction of the route.

The aims in producing these documents are to:

- Provide confidence in design;
- Provide an indication as to how works can be staged and programmed;
- Assist in assessing effects;
- Assist in developing mitigation strategies; and,
- Assist in consultation with stakeholders regarding construction management issues.

The SSEMP for Horokiri specifically explores the interface between this Project and the Waitangirua community including:

- Noise & vibration;
- Dust;
- Traffic;
- Stormwater; and,
- Communication with the local community.

The SSEMPs have been prepared using the best information available and are not intended to be final. They will be refined further during the specimen and detailed design stages and will be to relevant local authority as required by conditions.

July 2011
Version 5 FINAL

1 INTRODUCTION

This SSEMP relates to those detailed design and construction matters that have potential or actual effects on aspects of the local human environment in Waitangirua.

This SSEMP covers a length of alignment of approximately 0.25 kilometres in the area of the proposed Waitangirua intersection. The works proposed are likely to include:

- Installation of temporary noise wall
- Establishment of dust screens
- Establishment of sediment control ponds
- Installation of one culvert
- Formation of a two-lane highway including cut slopes and batter fills
- Formation of a signalised junction including pedestrian crossing points
- Installation of stormwater treatment devices
- Landscape planting and installation of a permanent noise wall.

Due to the urban nature of the Waitangirua Focus Area, the SSEMP has been developed to address particular risks around the interface of the Project with the community, including noise, dust, traffic, stormwater and erosion & sediment control effects. Other effects are expected to be minor and are therefore not covered in this SSEMP.

Note that the CEMP contains generic details common to the route standard details and methodologies for a range of activities such as diversions, culvert installation, sediment and erosion control, monitoring and mitigation which are not repeated in this SSEMP.

This site specific management plan relates to those matters that are unique to this section of the alignment.

1.1 Consents

The following consents are relevant to this SSEMP:

CONSENT	CONDITION
Greater Wellington Regional Council	
Porirua City Council	

The following activities relevant to this SSEMP are permitted:

ACTIVITY	RULE
Greater Wellington Regional Council	
Porirua City Council	

2 PREPARATION OF DOCUMENT

The SSEMP has been prepared by the following people:

NAME	ORGANISATION	ROLE
Peter Ward	NZTA	Project Manager
Mark Edwards	Opus	Civil Engineering design
Lucie Desrosiers	Beca	Urban design inputs
Stephen Chiles	URS	Noise inputs
Mathew Noonan	Beca	Air quality inputs
Nic Conland	SKM	Environmental management inputs
Craig Martell	SKM	Stormwater inputs

3 CONTACT DETAILS

NZTA

POSITION	NAME	CONTACT DETAILS
Project Engineer		
Project Manager		
Site Supervision		
Environmental Management Auditor		
XXX		

CONTRACTOR

POSITION	NAME	CONTACT DETAILS
Contractors Representative		
Site Supervisor		
Site Safety Supervisor		
XXX		

4 PLANS

Attached to this SSEMP is drawing SSEMP/D1 which show the location of the proposed works and proposed permanent noise wall.

5 SOCIAL AND ENVIRONMENTAL CONSIDERATIONS

5.1 Porirua Harbour (Pauatahanui Arm)

The area covered by this SSEMP falls within the wider watershed of Pauatahanui Inlet, the northern arm of Porirua Harbour. This harbour is recognised as nationally significant. It is the ultimate receiving environment for any discharges from site. Considerable care is therefore essential in the management of sediment and contaminants.

Methods for management of potential contaminants, other than sediment, such as the storage of fuel and lubricants and refuelling are described in the CEMP.

5.2 Erosion and Sediment control

The SSEMP for the proposed Waitangirua link road includes a proposed construction footprint which includes laydown areas and site facilities associated with the construction of this section of the project. The SSEMP recognises the need to control the potential effects from stockpiling and construction entrances and other effects associated with bulk earthworks in an urban setting.

The proposed Waitangirua link road crosses a tributary of the Kenepuru Stream in the SSEMP area. The loss of sediment from the works may result in a sediment-laden discharge to the stream. The potential effects from the discharge include the loss of habitat and the interruption of ecosystem function around the point of discharge of the stormwater network and potential sediment inputs to the Porirua Harbour.

The soil in this area is likely to be unconsolidated clays (featuring loess) and will require chemical treatment of the sediment retention devices to control these soils. The work area is space constrained both in terms of the designation and the availability of flat areas to site sediment treatment devices.

These environmental risks have been considered when forming this draft SSEMP for the works occurring in and around the proposed Waitangirua link road.

5.3 Stormwater

The proposed Waitangirua link road area crosses the Porirua City Council stormwater network and requires several new connections for proposed operational stormwater management devices. All connections will require the approval of the Porirua City Council and meet the discharge standards for stormwater in the Regional Plans.

5.4 Stream Works

There are no stream works within this SSEMP.

5.5 Indigenous Fish

Indigenous fish is not an issue for this SSEMP.

5.6 Habitats / Flora / At Risk - threatened plant species

Flora habitats are not an issue for this SSEMP.

5.7 Terrestrial Fauna / At Risk or Threatened fauna species

Terrestrial fauna is not an issue for this SSEMP.

5.8 Landscape

There are no visual issues for this SSEMP.

5.9 Visual

There are no particular visual issues for this SSEMP.

5.10 Social & Amenity

Special attention has been paid to detailed design of the Link Road near the Waitangirua community and the Warspite Avenue junction to avoid or minimise effects on the local community and amenity.

In particular, the following aspects need to be considered:

- Efficient use of land during construction;
- Pedestrian / cyclist safety and convenience of movement;
- Security during construction;
- Noise and vibration;
- Communication.

During the construction stage, management of community expectations is to be undertaken through a comprehensive communication program. The CEMP provides the appropriate mechanisms for on-going communication, as well as monitoring programs to keep in control of any effects arising from these activities.

Specific recommendation related to historical & cultural sites, dust, noise and construction traffic effects during the construction stage are presented below.

5.11 Historical & Cultural Sites

There are no known sites of historical interest within the area covered by this SSEMP. Accidental Discovery protocols are contained within the CEMP.

A placenta is buried on the marae site in the area affected by the construction works. Suitable removal and relocation of the remains must be arranged with the marae prior to the earthworks commencing.

5.12 Dust

Special attention needs to be paid to:

- Marae and Tokelau Christian Church
- Residential buildings at the rear of the marae
- Residential premises along Warspite Avenue in the vicinity of the new junction

In these locations, a high standard of emissions control and management will be employed to adequately avoid or mitigate the effects of discharges of construction dust in accordance with the CEMP and draft Construction Air Quality Management Plan (CAQMP).

5.13 Noise & Vibration

Special attention needs to be paid to:

- Residential buildings at the rear of the marae; and,
- The marae.

5.14 Traffic

Special attention will be required to site access, traffic movement and public safety, at the Warspite Avenue interchange.

5.15 Forestry

There is no exotic forestry within this SEMP.

5.16 Restricted 'NO GO' Areas

There are no restricted areas within this SEMP.

5.17 Water Abstraction

Harvesting of treated water from sediment ponds for dust management may occur.

6 WORK PROGRAMME

The works will be undertaken in a sequential manner. Where practical, all sediment control measures will be completed prior to commencement of bulk earth works.

A detailed work programme will be prepared in due course by the constructor. The duration of activity has not been outlined as this was not the focus of this SSEMP. The programme may be undertaken in the following sequence:

No.	ACTIVITY	DURATION	PRECEDING ACTIVITY
	ENABLING WORKS	(to be agreed)	
1	Upgrade existing access track (widening) / build access of Commercial Crescent		
2	Install culvert within proposed alignment.		
3	Build sediment control ponds		
4	Install marae temporary noise fence		
5	Build site facilities		
	CONSTRUCTION WORKS		
6	Initial erosion and sediment control structures		
7	Bulk earthworks chainage xxx-xxx		
9	Site Stabilisation		
10	Bulk earthworks chainage xxx-xxx		
11	Site Stabilisation		
12	Bulk earthworks chainage xxx-xxx		
13	Construct signal junction and final road entrance		
14	Remove temporary sediment ponds		
15	Install final marae noise wall		
16	Construct operational stormwater devices		
17	Carry out landscape planting		
	POST CONSTRUCTION WORKS		
18	Install and construct operational stormwater devices		
19	Monitor and maintain planting		
20	Monitor and adjust operational stormwater devices		

* Unforeseen circumstances may result in re-programming of the above works. These changes will be discussed as necessary with regulatory authorities.

7 ENABLING WORKS

7.1 Site Access

Construction of the Waitangirua Link Road will be undertaken from the James Cook Interchange end of the Link Road. Therefore, general construction traffic access will not be required from Warspite Avenue during the construction of the road itself. However, construction of the intersection and tie-in will require some interaction from Warspite Avenue.

In terms of construction vehicle numbers, these will be consistent with the construction or upgrade of any typical intersection in an urban environment and will be easily accommodated within the capacity of the local road network. Because this is a local road environment with a 50km/h posted speed limit, care to maintain safe and visible routes for other road users including pedestrians and cyclists, is important.

Where construction access is required from Warspite Avenue, this will be carefully managed in accordance with the draft Construction Traffic Management Plan (CTMP), which forms the basis for the contractor's methodology. This plan seeks to manage works in a safe manner in order to limit impacts on both motorists and other road users such as pedestrians and cyclists.

7.2 Traffic Management

A key matter for consideration in the Waitangirua area is the potential for conflict between pedestrians and cyclists and local traffic at the tie-in to Warspite Ave.

7.2.1 Pedestrian / cyclist safety:

Non-vehicular movement around the proposed Warspite Avenue junction and the impact of both the construction works and permanent junction arrangements on pedestrian and cycle movement between the Waitangirua shopping mall, new community Park, Maraeroa Marae, Natone primary school and park, the local churches and other community facilities nearby. Safe pedestrian movement is also to be provided for during the construction period.

7.2.2 Community Access:

Earthworks and other construction works encroaching into the Maraeroa Marae and Tokelau Christian Church sites and the impact of such works on the continued use of these sites for marae and church-related activities during the construction period. Careful consideration of construction methods is needed and will be developed in consultation with neighbouring land uses.

7.3 Noise

Prior to earthworks commencing a temporary 1.8m high noise wall will be erected at the interface between the marae and the construction area.

7.4 Site Clearance / Forestry

Earthworks and other construction works encroaching into the Maraeroa Marae and Tokelau Christian Church sites and the impact of such works on existing trees (including mature Pohutukawa tree) and other vegetation.

7.5 Laydown & Stockpile

None proposed within this SSEMP.

7.6 Utilities

Localised movement of power and phone lines will be carried out at Waitangirua intersection.

7.7 Species Translocations

Not required within the areas of this SSEMP.

7.8 Stream Works

None proposed during enabling works.

7.9 Site Security / Fencing:

The construction of a new public road alongside the marae may facilitate uncontrolled access to the marae site, and raise safety issues for the residential units at the rear of the site and for any people staying in the marae overnight. Security and access is to be considered when finalising construction methodology in consultation with the affected parties.

There will be a new fence constructed between the new road and the marae site, which will remain in place permanently. It is intended that this barrier be constructed early in the Project both to manage construction noise and permanent traffic noise, and to provide improved security.

7.10 Communication:

Construction-related anxiety impacts are expected to be more pronounced where adjacent to densely populated areas. This is the case in Waitangirua, where the proposed Link Road is to be constructed within the town centre. From experience on other projects, people can generally tolerate a degree of temporary adverse effects provided they are kept informed, their concerns are taken account of and they have a pleasant and approachable person to talk to when there is a problem. This is to be addressed through a suitable communication plan which is a requirement of designation conditions.

8 CONSTRUCTION WORKS

8.1 Culvert

A single culvert will be constructed offline during dry weather. The existing watercourse will be temporarily diverted with a coffer dam and pipe, which will discharge to the stream bed downstream of the culvert works. Upon completion the stream will be re-diverted through the new culvert. Prior to using a pipe the Project Environmental Performance Manager will confirm that the use of this method will not adversely affect fish passage.

Detailed design of the culvert has not been completed at this stage. Preliminary details of the culvert are as follows:

Pipe reference	Pipe diameter (mm)	Indicative gradient (m/m)	Catchment (ha)	Q10 Design Flow (m ³ /s)	Height below pipe soffit in Q10 (m)	Q100 Design Flow (m ³ /s)	Height below road level in Q100 (m)
D26	600	1 in 22	3.0	0.27	0	0.48	0.7

Fish passage is not required in this culvert.

8.2 Noise and vibration:

The Link Road is in close proximity to residential units and places of assembly, including the Marae and Tokelau Christian Church. Waitangirua has a high percentage of people who are not in the labour force (39.4%) and a further 8.8% unemployed. This may mean that these residents stay at home during the day, and therefore may be subjected to long periods of noisy works. Noise and vibration impacts should be minimised through careful selection of construction methods and equipment as well as working time controls.

As discussed above, there will be a boundary fence constructed between the road and these properties which will provide noise attenuation benefits.

8.3 Dust Control

Selections of the following controls are to be deployed as required, on the construction sites.

- Water (water cart irrigation), provides good short term solution. Caution is required to avoid erosion from over application of water. All areas identified as dust sources including roads are to be kept dampened during dry weather periods to minimise public nuisance from windborne dust.
- Chemical adhesive sprays, provide longer term solutions to small areas which aren't able to be treated by water such as hill slopes or long term stock piles.
- Wind fences, are good for small areas and provide for effective control for areas of ten times the height and length of the fence. The Wellington City District Plan Wind Design guide gives an indication of how wind effects may be avoided - or markedly reduced.
- Mechanical treatment, such as slopes rolled with mulch or aggregate provide effective control for wind erosion. However, these can't be used in active work areas, so require careful planning for installation.
- Cover blankets for stock piles.

Where dust control is identified as a specific issue, an investigation by the Construction Supervisor into the cause will be required. When the cause has been identified the specific controls can be applied to the problem area(s).

8.4 Transporting of Materials

There are also risks from the delivery and removal of materials from the sites. All materials transported to and from the sites will need to be assessed for the risk of dust release during transit. Where the load is identified as being a potential dust nuisance such as crushed concrete or topsoil, etc, then the load may need to be covered or dampened down prior to transporting.

Care will also be required to ensure that weeds are not imported with materials such as aggregate or topsoil, or on delivery trucks.

The Construction Supervisor will be responsible for keeping a record of:

- Date and time of movement;
- Transport provider;
- Material moved on and off site;
- Potential for dust release; and,
- Actions taken to control the material.

8.5 Erosion and Sediment Control Methods

The primary construction methodology for mitigation against sediment release to the environment is targeted erosion control. An indicative sequence of earthworks for the project is described below.

- Establish temporary erosion and sediment control measures within each working area prior to the commencement of works in that area. The erosion and sediment control measures for each location have been designed to divert clean stormwater into the existing stormwater system and away from the earthworks area, and to treat sediment laden runoff from within the earthworks areas, prior to discharge to the site stormwater system.
- The main focus of erosion and sediment control works within the Waitangirua work area will be the prevention of erosion in the first instance. The primary source of erosion will be works on the new culvert (D26) to contain the tributary of the Duck Creek.
- As part of the initial phase of works the tributary will be diverted, so the new culvert can be constructed offline. The culvert will be constructed during dry weather. Once the culvert is successfully installed with appropriate measures to prevent erosion (ie pre-cast wingwalls

and stabilised outfall), the stream will be diverted through the completed culvert. The redundant stream bed will then be backfilled.

- Move or demarcate the existing sewer, stormwater and services connections to the site, depending on the works area. Trenching will be staged to ensure a preferential flow path does not develop.
- Construct the sediment control devices at the confirmed locations.
- Commence earthworks, working progressively from the flat area at the Mana Coach Services site. This site may be utilised as a spoil area for stripped topsoil and stockpiles, depending on the size, will require controls for runoff and dust management.
- At the end of each day the active work area will be contoured to treatment flow pathways, stabilised and bunded to contain water where required. The works can be staged to avoid longer slope lengths, limit offsite discharges and reduce the impact of the earthworks on the surrounding community.
- On the satisfactory completion of each area, the surfaces will be progressively stabilised with aggregate or hardstanding in order to minimise the total area of exposed soils open at any time and thus the potential for erosion. The verge areas will be planted in keeping with the final road design. The cut batters will be treated for erosion control with hydroseeding or another method as appropriate.

On the completion of the works the chemically treated sediment control devices will be decommissioned and the device adjacent to the Marae (if selected) converted to an operational stormwater treatment wetland.

The following summarises erosion and sediment controls at the site:

CHAINAGE	MEASURE	COMMENT
N/A	Offline culvert construction	The installation of a culvert for a tributary of the Kenepuru Stream will be completed offline to reduce the potential for erosion. Once complete the stream will be diverted through the culvert to reduce erosion potential during earthworks.
N/A	Clean water diversion bunds	Constructed around all aspects of the earthworks site where land not to be worked lies up-gradient. The diversion bunds will lead to existing small watercourses.
N/A	Sediment diversion bunds and channels	Installed down gradient of earthworks areas to direct sediment-laden water to silt ponds and earth decanting bunds
N/A	Silt fences	Installed between the small stream and earthworks to prevent sediment laden water or dust entering the watercourse
N/A	Sediment ponds	Located downstream of each discrete work area / catchment in the steeper section of works
N/A	Earth decanting bunds	Installed along contours to provide settlement for small volumes of sediment-laden runoff from diversion bunds and around stream works section
N/A	Chemical treatment	For use in sediment ponds and earth decanting bunds

Calculation summary for sediment retention ponds are as follows.

CHAINAGE	SPOIL VOLUME (m3)	CATCHMENT AREA (ha)	POND SIZE	POND NUMBER	COMMENTS
n/a	TBA	TBA	6 x 28	TBA	
n/a	TBA	TBA	6 x 29	TBA	
n/a	TBA	TBA	6 x 28	TBA	

8.6 Stormwater Treatment

The link road will require specific stormwater treatment. This will be sizing to provide for appropriate connection to the existing Porirua City Council stormwater network. These treatment device(s) will be sized and located during detailed design.

8.7 Soil Recovery

CHAINAGE	MATERIAL	ACTION
400 - 1000	Gravel mix	None prone to flood inundation, will allow to regenerate naturally.
1000 - 1180	Thin soil gravel matrix	Windrow on stream side of gabion baskets for spreading later.
1180 - 1540	Thin stony soil interspersed with rock	Windrow on down hill side of road for respreading later on road margin.

8.8 Revegetation

The approach to revegetation is spelled out below. Chainage will be provided as part of the detailed design stage.

CHAINAGE	CURRENT VEGETATION	PROPOSED VEGETATION	METHOD
n/a	Mainly gorse and broom	None	
n/a	Mainly gorse and broom	Grass native mix	Hydroseeding
n/a	Mainly exotic grasses	Grass native on box cut, grass on open areas	Hydroseeded on cuts. Hydroseeding or drilling on open areas.
n/a	Mainly exotic grasses and rushes	Riparian Planting	Hydroseeding and planting
n/a	Mainly grasses	Semi Swamp forest Planting	Hydroseeding
n/a	Mixed shrub and rank pasture	Enrichment Planting	Hydroseeding

9 TRAINING

Within this SSEMP site, all contractors will receive a full briefing on the Environmental Considerations and training in relation to specific techniques required to be used.

10 MONITORING

Performance monitoring of the proposed ESC devices is intended to ensure that they operate as designed and that their performance is maintained over the lifespan of their use on the project. The discharges from the site works and the proposed treatment devices (chemically treated) will enter watercourses throughout the catchments. The following monitoring of the receiving environment is proposed to check whether the effects of the discharges are as anticipated.

Monitoring of erosion and sediment control measures will be as follows:

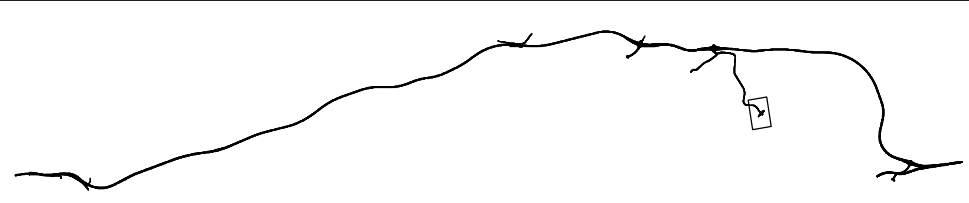
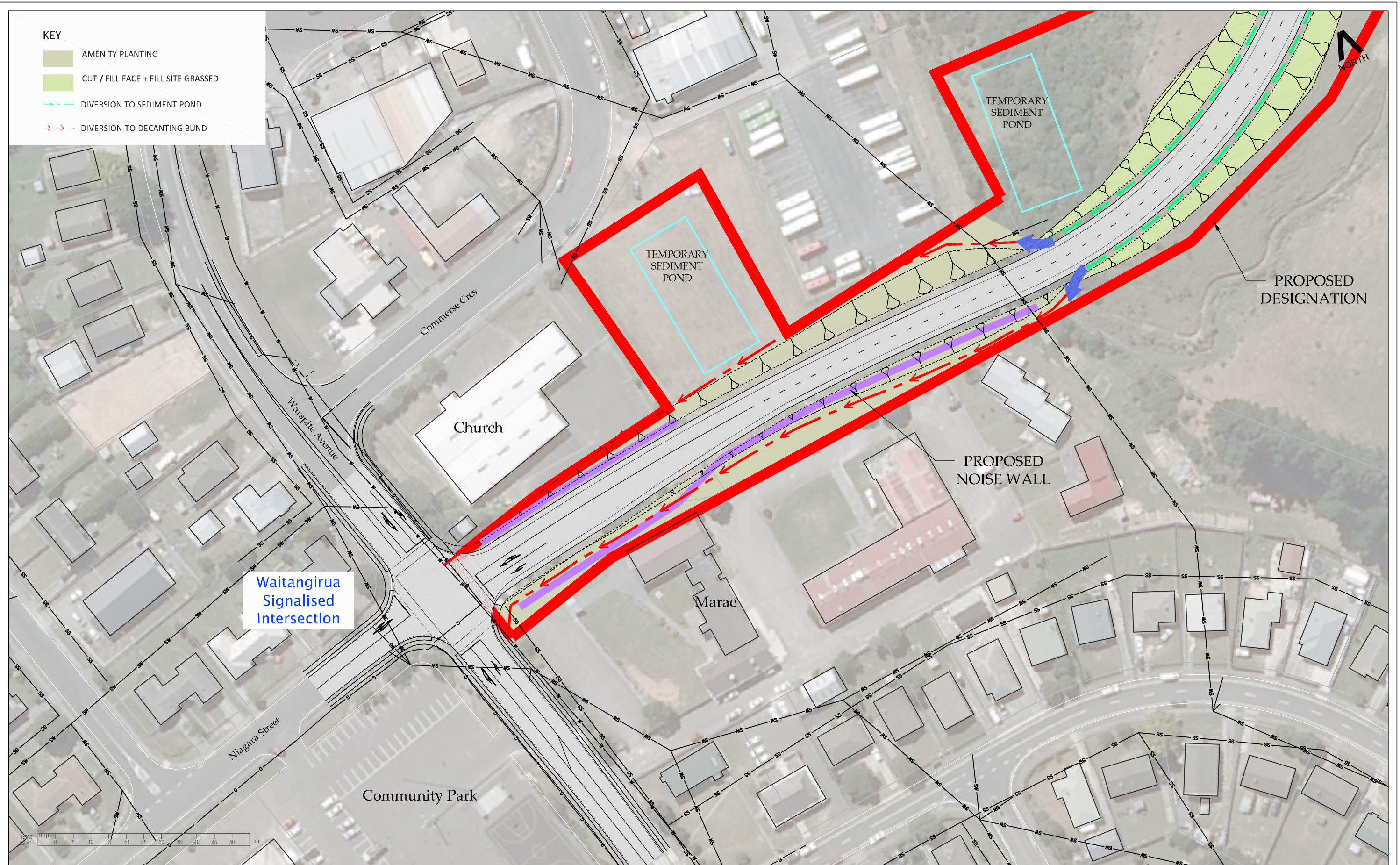
Control Measure	Routine Inspection	Wet Weather And Incident Inspections		Performance Measures	Management Action	Reporting
			Inspect For			
Control and retention of disturbed soil at earthwork sites (Improve Soil Health)	Weekly	During heavy rain (Q10 event) and after all rain	Soil loss Rill erosion Surface water flow pathways	Retention of soil	Rectify any erosion or channel formation Re-grade surface as required	Inspection, outcomes and management action in site log
Provide Short Term Soil Cover	Weekly	When rainfall predicted through weather monitoring. After all rain	Surface water pathways / erosion	Design specifications	Undertake straw mulching Hydro seeding	Inspection, outcomes and management action in site log
Provide Long Term Soil Cover	Weekly	During heavy rain (Q10 event) and after heavy rain (Q10 event)	Damage / erosion Growth of plantings (including gaps)	90% cover or stabilised	Rectify and repair damage to blankets/netting Replant gaps/dieback	Inspection, outcomes and management action in site log
Steep Slope Techniques	Weekly till 90% stabilised (i.e. 90% gassed or equivalent)	During heavy rain (Q10 event) and after heavy rain (Q10 event)	Damage / erosion Growth of plantings (including gaps)	Design specifications	Rectify and repair damage to blankets/netting Replant gaps/dieback	Inspection, outcomes and management action in site log
Clean water diversion bund	Weekly	During heavy rain (Q10 event) and after all rain	Damage / erosion Blockages Sediment build-up	Design specifications	Rectify any damage / erosion or blockages Remove accumulated sediment in diversion channel.	Inspection, outcomes and management action in site log
Rock check dam	Weekly	After all rain	Damage / erosion Blockages Sediment build-up	Design specifications	Rectify any damage / erosion or blockages Remove accumulated sediment behind dams when 50% full	Inspection, outcomes and management action in site log
Pipe drop structure/ flume	Weekly	After all rain	Damage / erosion Blockages	Design specifications	Rectify any damage / erosion or blockages	Inspection, outcomes and management action in site log
'Pinned' Silt socks or gravel check	Weekly	During heavy rain (Q10 event) and	Damage / erosion Sediment	Design specifications	Rectify and damage / erosion or	Inspection, outcomes and management

Control Measure	Routine Inspection	Wet Weather And Incident Inspections		Performance Measures	Management Action	Reporting
			Inspect For			
dams		after heavy rain (Q10 event)	build-up		blockages Replace/ repair gaps	action in site log
Sediment Retention Pond	Daily	After all rain. During heavy rain (Q10)	Sediment build up	Measure depth of sediment versus pond volume	Remove sediment when 20% full	Inspection, outcomes and management action in site log
			Damage/ Function of the decants/ Level Spreaders / Fore bay	Design Specifications	Rectify any damage / blockages to fore bay	Inspection, outcomes and management action in site log Advise GWRC within 24hrs of significant damage and management actions
Chemical treatment System	Weekly	After all rain. During heavy rain (Q10)	Damage, low dosing supply	Design Specifications	Rectify any damage or blockages. Replace flocculent	Inspection, outcomes and management action in site log
Sediment Fence / Silt Socks	Weekly	After all storm events (Q2-Q10)	Sediment build-up	Measure depth of sediment versus fence height	Remove sediment when 20% of height occupied	Inspection, outcomes and management action in site log
			Damage/ erosion/ water bypass	Design Specifications	Rectify any damage / erosion. Relocate devices to deal with bypass	Inspection, outcomes and management action in site log
Decanting Earth Bund	Weekly	After all rain events During heavy rain (Q10)	Sediment build-up	Measure depth of sediment versus pond volume	Remove sediment when 20% full	Inspection, outcomes and management action in site log
			Damage/ erosion Blockages	Design Specifications	Rectify any damage / erosion or blockages	Inspection, outcomes and management action in site log Advise GWRC within 24hrs of significant damage and management actions

Control Measure	Routine Inspection	Wet Weather And Incident Inspections		Performance Measures	Management Action	Reporting
			Inspect For			
Stormwater Inlet Protection	Weekly	After all rain	Damage/ erosion Blockages	Design Specifications	Rectify any damage / erosion or blockages	Inspection, outcomes and management action in site log
Works in watercourse s	Weekly	After all rain	Visual release of sediment into the water above that envisaged for works	Documented method for works	Investigate source of sediment and rectify works/modify method	Inspection, outcomes and management action in site log

11 REPORTING

No reporting above and beyond the requirements of the CEMP are required for this SSEMP.



Revision	Amendment	Approved	Date



Project:		TRANSMISSION GULLY PROJECT	
Title:		Site Environmental Management Plan Waitangirua Link General Arrangement Plan	Status: For Consenting
		Sheet No. SSEMP/D1	Version No. A