

A Methodology for Identifying Environmental Risks for Bridge Maintenance

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Abbreviations

BPO	Best Practical Option
CS-VUE	NZTA Consent Compliance Management System
DOC	Department of Conservation
ESMP	Environmental and Social Management Plans
ESR	Environment and Social Responsibility
HPA	Historic Places Act
HSNO	Hazardous Substances and New Organisms Act
LTMA	Land Transport Management Act
MoU	Memorandum of Understanding
NZTA	NZ Transport Agency

1. Introduction

1.1 Background

The NZ Transport Agency (NZTA) manages bridge structures as part of the state highway network, which requires a range of maintenance activities to be undertaken. These activities include repainting, resurfacing, structural repairs for strengthening and protection, cleaning and alteration for changes in uses. Bridge maintenance works typically occur over waterways which are sensitive to ecological and water quality effects. Controlling the effects on the environment of maintenance works is the responsibility of contractors engaged by the NZTA.

1.2 Purpose

The *Guideline for Preparing an Environmental and Social Management Plan* details the minimum requirements for all NZTA Environmental and Social Management Plans (ESMP). This methodology provides additional specific information for developing an ESMP for a Bridge Management Contract.

1.3 Document Structure

This document assists in identifying environmental risks associated with proposed maintenance works, and developing appropriate environmental controls to manage these risks in line with any statutory requirements and best practice.

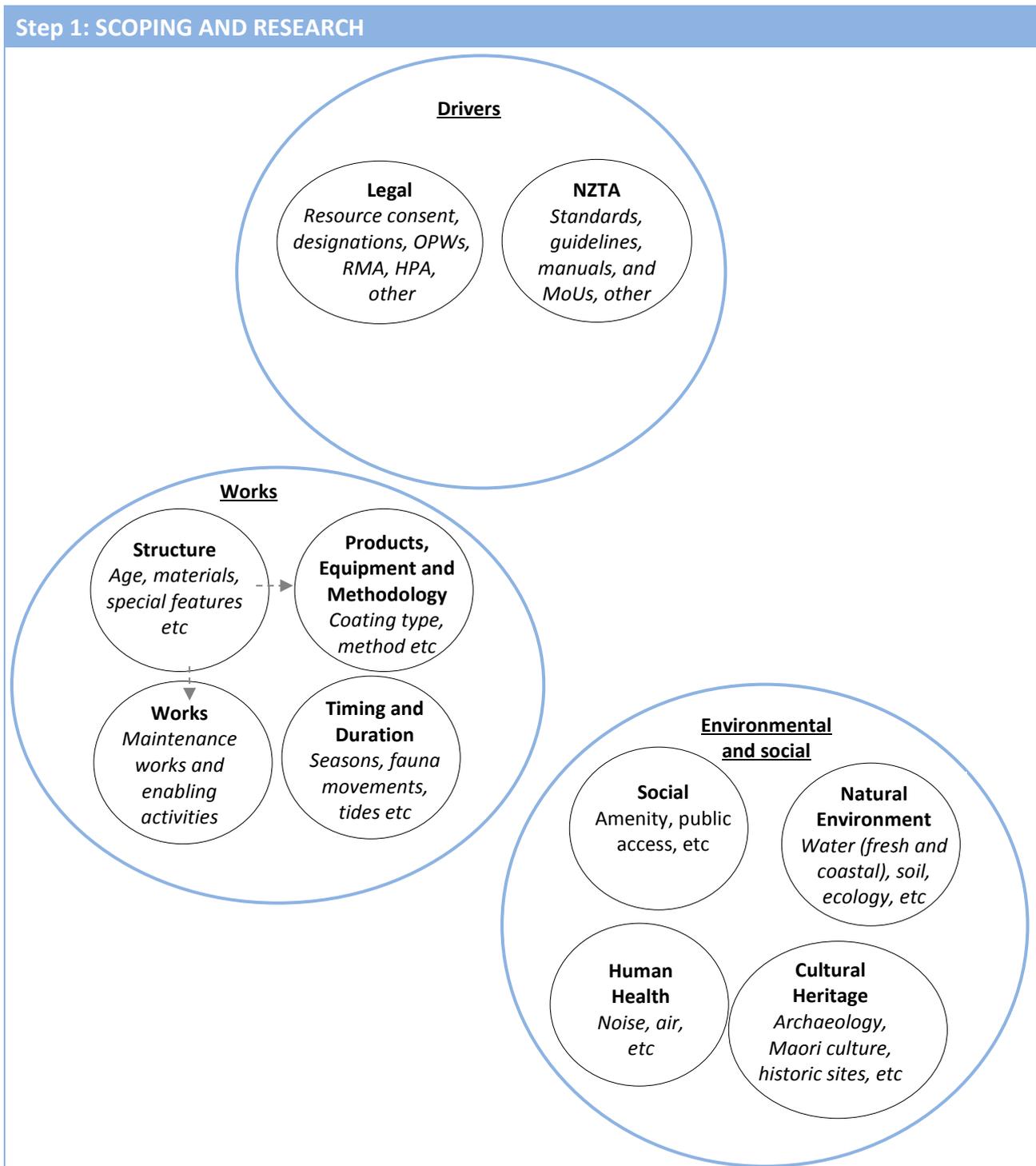
Section 2 sets out a methodology for identifying environmental risks and controls. Section 3 identifies the steps to identifying risk associated with the proposed maintenance works, the legal requirements and the controls required.

While the methodology is prescriptive to illustrate the key issues that need to be included in planning and implementing management of bridge maintenance, it is accepted by the NZTA that Contractors Quality Control and Environmental and Social Management Systems may require different formats. However, the key steps and factors to be considered will be included in the final ESMP.

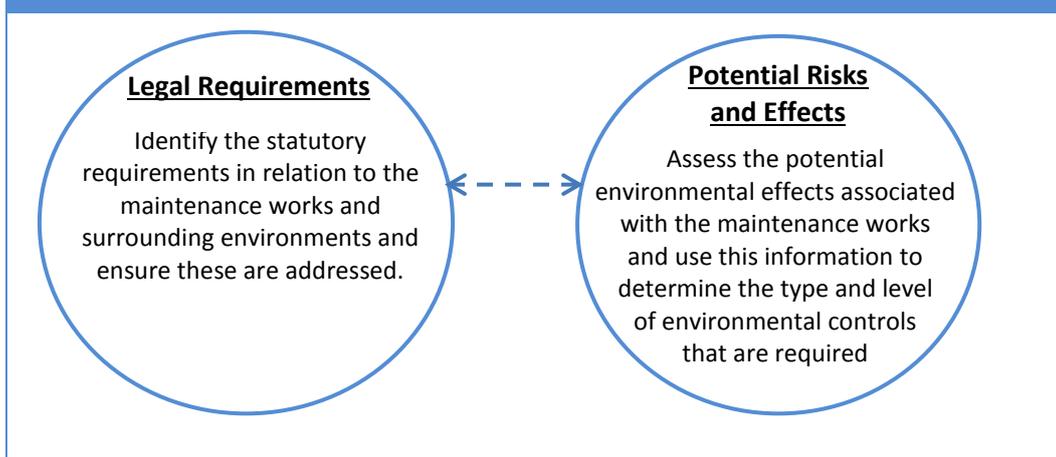
2. Environmental Risks and Controls

The purpose of this part of the guide is to illustrate the keys steps needed to identify the risks associated with proposed maintenance works and develop appropriate environmental controls to manage these risks in line with any statutory requirements. In order to achieve this, three key steps have been identified along with a series of tasks under each step. The steps are briefly illustrated in Figure 1 and outlined in further detail below.

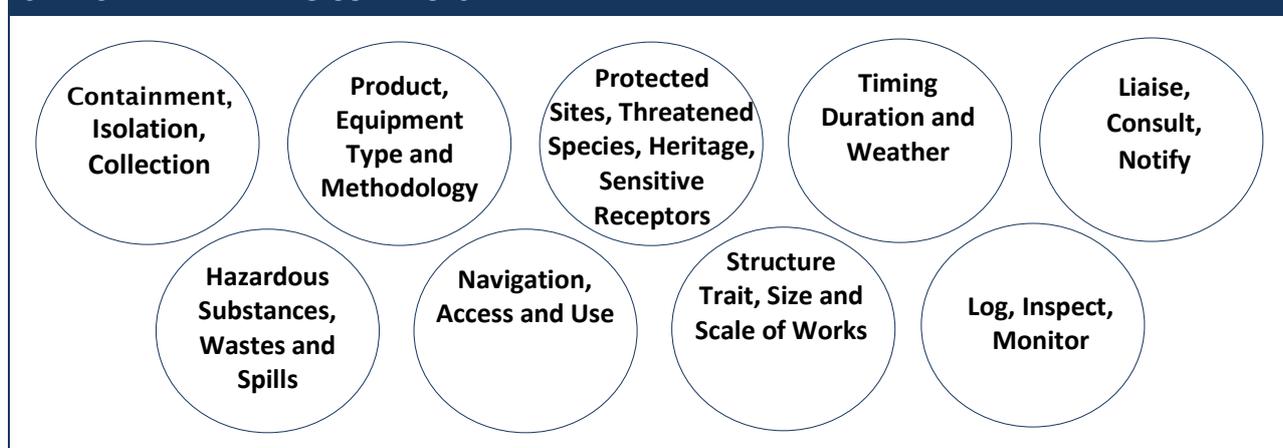
Figure 1: Identifying Your Risks and Controls



STEP 2: ASSESSMENT



STEP 3: DETERMINING CONTROLS



2.1 Step 1: Scoping and Research

Structure Traits: Confirm what materials the bridge is made of and any existing coatings it may have. Identify any unusual features of the bridge.

Works: Identify which maintenance activities and enabling works are proposed as part of the project and determine the urgency of works.

Products, Equipment and Methodology: Identify the products, methodology and equipment which will be required to undertake the proposed bridge maintenance.

Timing and Duration: Determine when the works will be carried out and how long they are likely to take.

Environmental and Social – Natural Environment, Social, Human Health and Cultural Heritage: Identify the characteristics of the environment which surrounds the proposed works including natural environment, cultural heritage and social and Human health elements.

Legal Drivers: Identify any existing approvals or consents that relate to the proposed works such as resource consents, designations, Outline Plan of Works (OPW) or other approvals (e.g. HPA

authority). Determine the environmental legislation relevant to the proposed works. CS VUE is a tool that will assist in this.

NZTA Drivers: Understand NZTA expectations. Identify any NZTA guidelines or supporting documents that should be used.

2.2 Step 2: Assessment

Legal Requirements: Evaluate the information gathered in Step 1 to confirm statutory requirements in relation to the maintenance works and surrounding environments.

Potential Risks and Effects Assessment: Assess the potential environmental effects associated with the maintenance works and use this information to determine the type and level of environmental controls that are required in Step 3

2.3 Step 3: Determining Controls

Identifying Controls: These tasks are about developing environmental controls for different aspects of the works in relation to the information gathered in the previous two steps.

Final Appraisal: Apply a number of filters to the 'possible' controls identified in the previous tasks to determine which controls are the most appropriate in terms of costs and constraints. Costs should also be balanced against the benefits of controls (e.g. increased productivity) before the final 'actual' controls are confirmed. The final controls may need to be prioritised in terms of risk, cost and timeframes.

3. Systematic Approach

3.1 Step 1: Scoping and Research

Scoping and research is the first step required to identify the risks associated with the proposed maintenance works. This involves identifying the appropriate factors such as core maintenance works, timing, duration, and the natural environment, human health, social and cultural heritage environment and answering the appropriate key actions/questions to determine the outcomes/outputs.

SCOPING AND RESEARCH: Works	
<p>Objective Identify the core maintenance works and enabling activities required for bridge maintenance and outline the key purpose and reason they are being carried out. This is likely to be based on information gathered during maintenance inspections and from maintenance schedules.</p>	
Who	Role
✓ NZTA Project Team (if required)	Input and approve maintenance schedule
✓ NZTA Asset and Environmental Teams	Develop maintenance schedule
× Principal Contractors Environmental Team*	n/a
✓ Principal Contractor Maintenance Team* / Crew	Inspect bridges and confirm maintenance requirements
<i>* including external consultants where necessary</i>	
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • What maintenance works are required? • Why are the maintenance works required? <i>E.g.</i> is the purpose of works for aesthetic reasons or structural / safety reasons? • Determine the urgency of works – are works being undertaken as regular maintenance or are they reactive maintenance or emergency works (e.g. repairs following a car accident)? • Are there any unusual or different maintenance activities proposed that are not considered standard maintenance? 	
<p>Tools and References</p> <ul style="list-style-type: none"> • NZTA / Contractor bridge maintenance manual and schedules • NZTA / Contractor bridge maintenance inspection records 	
<p>Outcomes / Outputs</p> <ul style="list-style-type: none"> ☞ A brief description about the type(s) and purpose of maintenance works ☞ An outline of the type of bridge maintenance works and enabling activities proposed ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' 	

SCOPING AND RESEARCH: Products, Equipment and Methodology	
<p>Objective Identify the products, equipment and methodologies necessary to carry out the maintenance activities, including any enabling works.</p>	
Who	Role
✓ NZTA Project Team (if required)	Input and review
× NZTA Asset and Environmental Teams	n/a
✓ Principal Contractor Environmental Team*	Input re products, equipment and methodology
✓ Principal Contractor Maintenance Team* / Crew	Outline products, equipment, methodology used
<i>* including external consultants where necessary</i>	
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • What products or chemicals will be used for the works and what spec info is available? – E.g. for abrasive blast agents or coatings, are up-to-date and accurate Safety Data Sheets (SDS) available? • Are there specific hazardous substance requirements for any products • What equipment is used for the works and what condition are they in? • How will the works / enabling works be done – methodology, high level or contractor specific • Are there standard maintenance methodologies or procedures for the maintenance works identified in the previous task – if so do they accurately reflect how the works are done? • Are there a variety of methods used depending on factors such as timing, risks or budgets? 	
<p>Tools and References</p> <ul style="list-style-type: none"> • Contractor manuals, operating methodologies, procurement data • Environmental Protection Authority website for hazardous substances factsheets and other information • Product manufacturer’s website for SDS • NZTA guidance on products, equipment or methodologies such as Specification (TNZ C/26): Cleaning and Recoating of Steelwork Coated with Lead Based Paint • NZTA or Contractors manuals or standard Maintenance Methods / Procedures 	
<p>Outcomes / Outputs</p> <ul style="list-style-type: none"> ☞ An outline of the products, equipment and methodologies may be used, including for enabling works ☞ A list of the type of bridge maintenance works and enabling activities proposed. Attach supporting specifications / methodologies to be followed on site. ☞ The information collected in this task will assist in preparing Section 2 of the ‘NZTA Bridge ESMP Template’ 	

SCOPING AND RESEARCH: Structure		
<p>Objective Identify features and specifications of the target bridge(s) including the age of the bridge, construction materials, coating type (if relevant) and previous maintenance history.</p>		
Who		Possible Role
✓	NZTA Project Team (if required)	Input and review
✓	NZTA Asset and Environmental Teams	Assist with compiling structure information
×	Principal Contractor Environmental Team	n/a
✓	Principal Contractor Maintenance Team* / Crew	Check bridge database(s) for information
✓	Coating Specialist (if works will remove existing layers)	Input into coating type(s) of structure if unknown
* including external consultants where necessary		
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • Confirm what type of materials the target bridge(s) is made from • Confirm if the target bridge(s) has previous lead or chromate coatings – this may require samples of coating(s) to be collected and analysed. <i>Note: bridges built prior to 1960 have a high risk of historic coatings which have the potential to be hazardous.</i> • Confirm whether the structure itself is protected due to heritage values (refer to the ‘Environment - Natural, Social and Cultural Heritage’ task below) • Note down any unusual characteristics or features of the target bridge(s) • Size / scale of bridge • Previous maintenance history (if available) 		
<p>Tools and References</p> <ul style="list-style-type: none"> • NZTA or Contractor project files and asset databases e.g. RAMM • Maintenance logs / databases • NZTA / Contractors ‘historic coatings’ information • Previous consents and approvals that may contain background information on the bridge – CS VUE. 		
<p>Outcomes / Outputs</p> <ul style="list-style-type: none"> ☞ An outline of the characteristics of the bridge including size, construction material, coating type, previous maintenance history (if available). Attach supporting plans or photos. ☞ Results of any coating analysis that has been undertaken to identify whether historic lead or chromate is present in the target bridge(s) ☞ The information collected in this task will assist in preparing Section 2 of the ‘NZTA Bridge ESMP Template’ 		

Tip: If the bridge has unique features, check the standard methodologies identified in the previous task to see if they need to be modified

SCOPING AND RESEARCH: Timing and Duration	
Objective Identify when bridge maintenance works will occur and how long they will occur for.	
Who	Role
✓ NZTA Project Team (if required)	Confirm timeframe for proposed maintenance works
✓ NZTA Asset and Environmental Teams	Input into alternatives if high risk works identified
✓ Principal Contractors Environmental Team*	Assess risk associated with timing and duration of works
✓ Principal Contractors Maintenance Team* / Crew	Confirm likely duration of works
<i>* including external consultants where necessary</i>	
Key Actions / Questions	
<ul style="list-style-type: none"> • What time of year are the works proposed for and how long will they continue? • Consider whether or not the works timing or duration impact on fauna movements and/or breeding e.g. fish migration • Is the location of work subject to tides or high flow events? • Is the type and timing of work such that noise disruption may affect sensitive receivers? • Consider whether the timing of work is flexible using the information gathered about the urgency of works (refer to 'Works' task above) • Will works need to occur during winter or summer in terms of winter high flows? 	
Tools and References	
<ul style="list-style-type: none"> • Contractor maintenance schedules or forward works plans 	
Outcomes / Outputs	
<ul style="list-style-type: none"> ☞ State the proposed timing and duration of works and initial indication of possible issues / effects ☞ Identify if there is flexibility with any timeframes proposed ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' 	

SCOPING AND RESEARCH: Environment – Natural, Social, Human Health and Cultural Heritage	
Objective Identify the characteristics of the surrounding environment. Consider natural, cultural heritage and social aspects.	
Who	Role
✓ NZTA Project Team (if required)	Input and review
✓ NZTA Asset and Environmental Teams	Provide additional information as required
✓ Principal Contractors Environmental Team*	Carry out site assessments and document key features of site
✓ Principal Contractors Maintenance Team* / Crew	Assist with site assessments as required
✓ Technical Specialists / Consultants	Identify characteristics of the structure, site and wider surroundings. Specialist input is very likely to be required for all but basic works.
<i>* including external consultants where necessary</i>	
Key Actions / Questions	
<ul style="list-style-type: none"> • Does the structure have significant heritage values? (i.e. registered in District/Regional Plans, NZHPT, constructed pre-1900) • Undertake a site visit and document key features of the site by taking photographs and notes, when required. • Use any existing information / databases to build information about site ecology. • Check if there are known sensitive receptors in or around the area where maintenance will occur e.g. threatened species, residential areas etc. • Does the area surrounding the site(s) have known heritage values? • Does the site / structure have significance to Maori – is there a Memorandum of Understanding (MoU) with local iwi groups or are there any known waahi tapu. 	
<div style="border: 1px solid gray; border-radius: 15px; padding: 5px; background-color: #f0f0f0;"> <p>Tip: Don't just look at the immediate site – look upstream, downstream and also at areas nearby</p> </div>	
Tools and References	
<ul style="list-style-type: none"> • NZTA Environment and Urban Design Team – email environment@nzta.govt.nz • Photographs of the area – including aerial photographs and historic photographs and from site visit • Planning documents with information about valuable and/or protected sites • Sources such as the Department of Conservation (DOC) website and NIWA NZ Freshwater Fish Database • District/Regional schedules, NZ Historic Places Trust register and NZ Archaeological Association database, IPENZ heritage register • NZTA regional or project level agreements – Memorandum of Understanding (MoU) with tangata whenua, DOC etc. 	
Outcomes / Outputs	
<ul style="list-style-type: none"> ☞ Site visit record. Attach supporting photos and notes from visit. ☞ Description of the environment surrounding proposed works in terms of the natural, cultural heritage and social aspects. Attach supporting documentation, aerial photos ☞ A specific Heritage Management Plan prepared by a heritage specialist may be required for structures with significant heritage values. ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' 	

SCOPING AND RESEARCH: Legal Drivers	
<p>Objective</p> <p>Identify resource consents, designation, an Outline Plan of Works (OPW) or other approvals (e.g. HPA) along with any environmental legislation relevant to the proposed works. There may be provisions that the works must comply with or approvals may be required.</p>	
Who	Role
✓ NZTA Project Team (if required)	Review preliminary statutory assessment
✓ NZTA Asset and Environmental Teams	Provide information on project approvals obtained
✓ Principal Contractors Environmental Team*	Preliminary statutory assessment, identify stat triggers
✓ Principal Contractors Maintenance Team* / Crew	Confirm information provided about works (if required)
✓ Planning Specialists / Consultants * including external consultants where necessary	Identifying legal drivers relevant to works. Specialist input is very likely to be required for all but basic works.
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • What legislation is relevant and what provisions might be triggered? • Are there existing relevant resource consents for the bridge? • Is there a designation for the bridge? • Are there permitted activity conditions or other planning provisions that it must comply with? • Are there any heritage or archaeology authorisations for the bridge? <div style="border: 1px solid gray; border-radius: 15px; padding: 10px; margin-top: 10px;"> <p>Tip: Don't just look at relevant consent conditions also look at the supporting documentation and reports.</p> </div>	
<p>Tools and References</p> <ul style="list-style-type: none"> • Relevant legislation is available on the New Zealand legislation websites and includes: <ul style="list-style-type: none"> <u>Resource Management Act (RMA)</u> - relevant to maintenance activities on all structures. The RMA is largely implemented through National Environmental Standards, Regional Plans, and District Plans. These should all be checked for relevance to the bridge maintenance activities proposed. <u>Land Transport Management Act (LTMA)</u> - relevant for all activities involving transport infrastructure. <u>Historic Places Act (HPA)</u> - relevant for structures or areas that may have heritage significance. Check heritage registers to understand if the bridge, surrounding structures/features are of heritage and/or archaeological significance. <u>Conservation Act</u> - may be relevant where bridges are within or nearby areas of conservation significance or near fauna or flora of conservation significance. <u>Hazardous Substances and New Organisms Act (HSNO)</u> - may be relevant for activities where hazardous substance will be used e.g. for coating or cleaning. <u>Bylaws</u> - local bylaws may include restrictions relevant to bridge maintenance such as noise, signage or access. Approvals under bylaws may be required. • NZTA Consent Compliance Management System (CS VUE) • NZ Historic Places Trust register and NZ Archaeological Association database and IPENZ register • Council resource consent databases • Asset databases e.g. RAMM, Bridge Data System <div style="border: 1px solid gray; border-radius: 15px; padding: 10px; margin-top: 10px;"> <p>Tip: Remember to also check the requirements for enabling works such as stream diversions or machinery in a watercourse</p> </div>	
<p>Outcomes / Outputs</p> <ul style="list-style-type: none"> ☞ A list of relevant environmental legislation, relevant resource consents, designations and other approvals. The following will be used in the 'Legal Assessment' task ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' 	

SCOPING AND RESEARCH: NZTA	
<p>Objective</p> <p>The ESMP will need to be consistent with the NZTA <i>Guideline for preparing an Environmental and Social Management Plan</i> and factor in the contractual obligations, timing, risk, cost etc.</p>	
Who	Role
✓ NZTA Project Team	Outline specific drivers relating to works
✓ NZTA Asset and Environmental Teams	Outline specific drivers relating to works
✓ Principal Contractors Environmental Team*	Review relevant NZTA document and liaise with NZTA
✓ Principal Contractors Maintenance Team* / Crew	n/a
<p>* including external consultants where necessary</p>	
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • Contact the NZTA Environment and Urban Design Team to confirm the expectations for the ESMP – environment@nzta.govt.nz • What are the NZTA documents including specific standards or guidelines that need to be met? • Are there any site or works specific aspects that make the ESMP different to the norm? Does this require a different process? – E.g. are the works particularly high profile or risky and might warrant other NZTA teams such as Communications or Iwi Liaison to be involved? • Does the risk of the maintenance works warrant undertaking a ‘risk assessment’ as part developing the ESMP? 	
<p>Tools and References</p> <ul style="list-style-type: none"> • NZTA expectations for ESMPs – as set out in Section 1 of this Guideline • NZTA related documents – including those set out in Section 1 of this Guideline • NZTA Risk Management Process Manual (Z/44) • Other ESMPs for similar works that are considered by NZTA to be good examples • Contractor contractual documents and environmental guidance documents 	
<p>Outputs</p> <ul style="list-style-type: none"> ☞ An outline of the NZTA drivers that need to be met by the ESMP and other documents that may require to be integrated with the ESMP ☞ The information collected in this task will be used by the project team throughout the development of the ESMP and if relevant can be summarised in the resulting ESMP 	

3.2 Step 2: Assessment

Step 2 requires a legal assessment, and an assessment of potential risks and effects on the natural environment, social, human health and cultural heritage. In this step the information gathered in step 1 is an input into each assessment where the key actions/questions are required to be answered to determine the outcomes/outputs.

ASSESSMENT: Legal Requirements	
<p>Objective Use the information gathered during the 'Scoping and Research' step to identify the statutory requirements in relation to the maintenance works and surrounding environments.</p>	
Who	Role
✓ NZTA Project Team (if required)	Input and review
✓ NZTA Asset and Environmental Teams	Approval of key statutory decisions such as notification
✓ Principal Contractors Environmental Team*	Assess statutory triggers and activity status for works
✓ Principal Contractors Maintenance Team*	Confirm info about works methodology, products etc
✓ Planning and Resource Management Specialists	Assess works in terms of legal drivers. Specialist input is very likely to be required for all but basic works.
* including external consultants where necessary	
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • Using the 'legal drivers' information gathered during the 'Scoping and Research' step, confirm the provisions that are definitely triggered by the works • Are any new consents or approvals required? • Are some aspects of the works not covered by existing approvals but permitted by legislation – check that these aspects meet all permitted activity requirements? • Identify and assess the implications of existing resource consents and other approvals • Do the existing approvals cover all aspects of the proposed works? • Are the approvals still relevant (no changes to methodologies since approval)? • Discuss implications with the project team and regulatory authority as necessary 	
<p>Tools and References</p> <ul style="list-style-type: none"> • NZTA guidance documents • Ministry for the Environment guidance documents • NZ Historic Places Trust guidance documents • Refer to the tools and references in 'Legal Drivers' task along with: <ul style="list-style-type: none"> ○ NZ legislation websites (RMA, LTMA, HPA, HSNO, Conservation Act) ○ NZ Historic Places Trust register and NZ Archaeological Association database ○ Regional and district plans, bylaws 	
<p>Outputs</p> <ul style="list-style-type: none"> ☞ Preliminary assessment (such as a planning assessment) identifying statutory requirements ☞ An outline of environmental controls required in order to meet the relevant legislation provisions ☞ If relevant, a pre-lodgement meeting with Regulatory Authority ☞ Apply for new approvals for maintenance activities as required ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' 	

Important Note: Not complying with authorisations and regulatory requirements may result in enforcement action from the regulatory

ASSESSMENT: Potential Risks and Effects – Natural, Social, Human Health and Cultural Heritage

Objective

Use the information gathered in the scoping and research step to assess how the maintenance works may affect the surrounding environment. Determine the degree of any potential adverse effects, and also consider positive effects.

Who	Role
✓ NZTA Project Team (if required)	Input and review
✓ NZTA Asset and Environmental Teams	Approval of preliminary effects assessment
✓ Principal Contractors Environmental Team*	Preliminary effects assessment
✓ Principal Contractors Maintenance Team* / Crew	Confirm info about works methodology, products etc
✓ Technical Specialists – natural, social, human health, cultural heritage	Assess works in terms of specialist area (natural, social, human health or cultural heritage). Specialist input is very likely to be required for all but basic works.

* including external consultants where necessary

Key Actions / Questions

- Using the information gathered during the ‘Scoping and Research’ step, consider the type, level and likelihood of potential adverse effects
- What is the proximity and vulnerability of the sensitive receptors or valuable/protected sites identified during the ‘Scoping and Research’ step? – remember natural, cultural heritage, human health and social aspects
- If the works include the discharge of contaminants, consider air, land or water (freshwater and coastal), and impacts on human health
- If the works involve using chemicals, assess the characteristics and toxicity of all products and link this to the Health and Safety Plan.
- Will the works generate noise with the potential to disturb nearby residents or fauna?
- Will the works impact on cultural heritage values?
- Make a conclusion of the overall potential adverse effects, remembering cumulative effects
- If the ESMP is for a resource consent application, also identify the positive effects of the works

Tools and References

- NZTA Environmental and Social Responsibility (ESR) Standard/Screen and Risk Maps
- NZTA Environmental Plan
- Characteristic or performance specs such as Safety Data Sheets

Important Note: The type and level of environmental effect will influence the environmental controls that are determined in Step 3

Outcomes / Outputs

- ☞ Preliminary effects assessment identifying key risks
- ☞ An outline of environmental controls required in order to appropriately manage risks
- ☞ The information collected in this task will assist in preparing Section 2 of the ‘NZTA Bridge ESMP Template’

3.3 Step 3: Identifying Controls

Identifying the controls to manage the risks identified through steps 1 and 2 is Step 3.

IDENTIFYING CONTROLS: Timing and Duration	
<p>Objective</p> <p>Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls in relation to the timing and duration of works.</p>	
Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible
<i>* including external consultants where necessary</i>	
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> • Using the information from the 'Assessment' step, identify any controls relating to 'timing or duration' • Does the bridge span a waterway and will the works affect fish migration or spawning? • Do the proposed works generate loud noise and will they occur near a residential area, if so can night time work be avoided? • Do you need to develop a Noise Management Plan? • If winter works are being carried out – are additional approvals required 	
<p>Tools and References</p> <ul style="list-style-type: none"> • Information collected in Step 1 and 2 • NZTA or Contractor guidance of control options • Regulatory Authority guidance on issues such as fish passage / migration • NZTA Noise Data / Information and NZTA Noise Management Plan template 	
<p>Outcomes / Outputs</p> <ul style="list-style-type: none"> ☞ An outline of the controls relating to 'timing or duration' ☞ Updated methodology and/or management plans to reflect any restrictions in terms of timing and duration ☞ Additional approvals such as winter works (if required) ☞ Noise Management Plan (if required) ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' <p> If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls</p>	

IDENTIFYING CONTROLS: Containment, Isolation, Collection

Objective

Use the information gathered in the Scoping and Research step and the Assessment step to determine appropriate environmental controls in relation to the containment, isolation and collection of any discharges arising from bridge maintenance works.

Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible

* including external consultants where necessary

Key Actions / Questions

- Using the information from the 'Assessment' step, identify 'contain, isolate and collect' controls
- Consider what types of discharges or wastes may arise such as washwater, chemicals, paints, abrasive agent and solid wastes
- Consider what options are available to achieve the required level of containment, isolation or collection
- Will the control equipment perform to the required level? – E.g. for containing wastes using geotextile, what's the pore size?
- Are there any logistical barriers to any of the controls? – E.g. for contaminated washwater, can a sucker truck get access?
- Are there any restrictions to the type and level of control that can be implemented? – E.g. are there physical restrictions that would prevent containment of abrasive blasting wastes?

Tools and References

- Information collected in Step 1 and 2
- NZTA or Contractor guides or manuals on containment or collection options and waste management
- Regulatory Authority guidance – e.g. sediment control
- Existing information such as previous containment plans or drawings or site specific stormwater plans

Outcomes / Outputs

- ☞ An outline of the controls relating to 'contain, isolate and collect'
- ☞ Specification (including plans and design information) for systems to 'contain, isolate or collect' – include type and configuration, efficiency (% capture, pore size)
- ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template'
- 🔄 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls

Full Containment vs Partial Containment: Full containment means a system that collects all discharges whereas partial containment will allow washwater and dissolved contaminants to pass through.



Full containment



Washwater collection



Partial containment

IDENTIFYING CONTROLS: Product, Equipment Type and Methodology	
<p>Objective</p> <p>Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls in relation to the products or equipment being used and the techniques or methodology being proposed.</p>	
Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible
* including external consultants where necessary	
<p>Key Actions / Questions</p> <ul style="list-style-type: none"> Using the information from the 'Assessment' step, identify the controls required for 'products, equipment and methodology' Consider the products or chemicals that can be used, and any limits on rates of use or application Consider the equipment being used and confirm specifications - e.g. water blasting PSI, spray-paint applicators Develop methodologies or review existing ones to ensure they reflect the requirements - e.g. if using machinery, does the operating procedure show whether it can or can't be used in a watercourse? 	
<p>Tools and References</p> <ul style="list-style-type: none"> Information collected in Step 1 and 2 Manufacturer's information such as product standards, specifications for use and maintenance of equipment Contractors or manufacturers methodologies such as operating procedures 	
<p>Outcomes / Outputs</p> <ul style="list-style-type: none"> An outline of the controls relating to 'products, equipment and methodology' Equipment specification and operational efficiencies (if relevant) Works and/or site specific methodology Approved product list for maintenance works The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' <p>🔄 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls</p>	

Methodology: If using machinery to enable maintenance works ensure methodologies state whether it can or can't be used in a watercourse.



Product: If works involve the use or discharge of products, ensure there are controls around the type, concentration



IDENTIFYING CONTROLS: Protected Sites, Threatened Species, Heritage, Sensitive Receptors

Objective

Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls when works have the potential to impact protected sites, threatened species, heritage or sensitive receptors.

Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible

* including external consultants where necessary

Key Actions / Questions

- Using the information from the 'Assessment' step, identify any controls required to manage effects on 'protected sites, threatened species, heritage values, and sensitive receptors'
- Consider if works need to be done in a certain way to minimise impacts on protected sites or threatened species – e.g. if threatened species are adjacent to the bridge, can works be done to avoid critical times such as the breeding season?
- If there are cultural heritage features near the works sites, what needs to be done to manage impacts? – e.g. if a site is protected as an archaeological site, what controls are needed to meet specific legal requirements?
- If there is a contaminants discharge or noise disruption, what controls will reduce impacts on nearby residents or threatened species?

Tools and References

- Information collected in Step 1 and 2
- NZTA or Contractor guidance on reducing impacts on protected sites, threatened species, sensitive receptors such as the NZTA Guidelines in the NZTA ESR Standard
- Specific documents such as Management Plans (including Iwi Management Plans) relating to protected sites, threatened species, cultural values, or sensitive receptors
- External documents including Standards such as New Zealand Standard (NZS 6803:1999) Acoustics - Construction noise

Outcomes / Outputs

- ☞ An outline of the controls for 'protected sites, threatened species, heritage values, and sensitive receptors'
- ☞ Site specific methodology and/or management plans relevant to any protected sites, threatened species or sensitive receptors
- ☞ Consultation / notification options (if required) in relation to heritage aspects and/or sensitive receptors
- ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template'
- 🔄 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls

Threatened Species: If threatened species are near the site, can works be timed to avoid critical times such as breeding season



NZ Dotterel

IDENTIFYING CONTROLS: Liaise, Consult, Notify	
Objective	
Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls in relation to liaison, consultation and notifying.	
Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible
<i>* including external consultants where necessary</i>	
Key Actions / Questions	
<ul style="list-style-type: none"> • Using the information from the 'Assessment' step, identify any requirements in relation to liaison, consulting, or notifying • Are there downstream water users e.g. water takes • Does the harbourmaster or Regulatory Authority need to be notified before certain works? 	
Tools and References	
<ul style="list-style-type: none"> • Refer to the information collected in Step 1 and 2, and where relevant other control options with consultation / notification requirements 	
Outcomes / Outputs	
<ul style="list-style-type: none"> ☞ An outline of controls relating to liaison, consultation and notifying ☞ Consultation Management Plan (if required) ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' 	
 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls	

IDENTIFYING CONTROLS: Logs, Inspections and Monitoring

Objective

Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls in relation to logging, inspections and monitoring requirements.

Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible

* including external consultants where necessary

Key Actions / Questions

- Using the information from the 'Assessment' step, identify any required logs, inspections or monitoring
- Who is responsible for onsite monitoring during work?
- Is there a requirement to report the outcome of inspections and monitoring?
- Is there a requirement to keep a daily log of works?

Tools and References

- NZTA or Contractor guidance and forms
- NZTA Inspection and Monitoring checklists / templates (if available)

Outcomes / Outputs

- ☞ An outline of the controls relating to 'logs, inspections or monitoring'
- ☞ Daily log template
- ☞ Inspection and Monitoring checklists
- ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template'

- 🔄 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls

IDENTIFYING CONTROLS: Hazardous Substances, Wastes and Spills

Objective

Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls in relation to the management of hazardous substances on site and the potential for spills as well as controls for waste management.

Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible

* including external consultants where necessary

Key Actions / Questions

- Using the information from the 'Assessment' step, identify any controls relating to 'hazardous substances, wastes and spills'
- Consider the products or chemicals that can be used and what storage, secondary containment or handling controls are needed
- Consider the wastes that are generated and how they need to be handled, stored, collected and disposed of
- Is there a chance of accidental spills or other incidents, and is a spill / contingency plan needed?

Tools and References

- Information collected in Step 1 and 2
- NZTA or Contractor guidance and manuals on wastes or spills e.g. NZTA Spill / Contingency Plan
- Secondary containment product info
- Approved waste contractor lists

Outcomes / Outputs

- ☞ An outline of the controls relating 'hazardous substances, wastes and spills'
- ☞ Details of secondary containment equipment or site set up (if relevant)
- ☞ Details of waste contractor
- ☞ Updated methodology and/or management plans to reflect any additional controls relating to specific hazardous substances
- ☞ Spill / Contingency Plan
- ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template'



If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls

IDENTIFYING CONTROLS: Navigation and Access

Objective

Use the information gathered in the Scoping and Research step and the Assessment step to determine any appropriate environmental controls where bridge maintenance works have the potential to impact navigation or access.

Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible

* including external consultants where necessary

Key Actions / Questions

- Using the information from the 'Assessment' step, identify any controls relating to 'navigation and access'
- Consider aspects of the work that may affect navigation – e.g. temporary scaffolding
- Will access be restricted during works?
- Do the harbourmaster, waterway users or private land owners need to be notified?

Tools and References

- Information collected in Step 1 and 2
- NZTA or Contractor guidance on dealing with navigation and access issues
- NZTA or Contractor agreements with other parties such as the harbour master and private land owners

Outcomes / Outputs

- ☞ An outline of the controls relating to 'navigation and access'
 - ☞ Specifications for aspects such as temporary scaffolding to ensure navigation and access are appropriately managed – e.g. the type of scaffolding and placement that will enable navigation to continue
 - ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template'
- 🔄 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls

IDENTIFYING CONTROLS: Structure Trait, Size and Scale of Works	
Objective	
Use the information gathered in the Scoping and Research step and the Assessment step to determine any additional environmental controls in relation to the characteristics of structure and/or the size and scale of works.	
Who	Role
✓ NZTA Project Team (if required)	Input and review if high cost or risk
✓ NZTA Asset and Environmental Teams	Approve control options if high cost or risk
✓ Principal Contractors Environmental Team*	Propose control options
✓ Principal Contractors Maintenance Team* / Crew	Confirm if proposed controls are feasible
<i>* including external consultants where necessary</i>	
Key Actions / Questions	
<ul style="list-style-type: none"> • Using the information from the 'Assessment' step, identify any controls relating to 'structure traits, size and scale of works' • Are there known traits of the structure that mean a higher level of control will be needed? – E.g. are there historic coatings such as lead or chromate that will be removed during the works? • Are there controls need to ensure the works stay within any specific size or scale limits? – E.g. if removing vegetation to gain access to a bridge, how much can be removed? 	
Tools and References	
<ul style="list-style-type: none"> • Information collected in Step 1 and 2 • NZTA and Contractor guidance or manuals • NZTA and Contractor guidance on managing risks associated with historic coatings • NZTA guidance such as Specification (TNZ C/26): Cleaning and Recoating of Steelwork Coated with Lead Based Paint • Australian and New Zealand Standard for the Removal of Lead Based Paints 	
Outcomes / Outputs	
<ul style="list-style-type: none"> ☞ An outline of the controls relating to 'structure traits, size and scale of works' ☞ Updated methodology and/or management plans to reflect additional controls relating to structure trait and/or the size and scale of works ☞ The information collected in this task will assist in preparing Section 2 of the 'NZTA Bridge ESMP Template' <p style="margin-left: 20px;">🔄 If the controls identified are different to those used in the Step 2 Assessment (Legal and Environmental Effects), revisit assessment based on the new or additional controls</p>	

IDENTIFYING CONTROLS: Final Appraisal of Controls

Objective – undertake a final overarching appraisal of the controls that have been identified in Step 3. This may involve a best practicable option analysis. The final ESMP controls can then be confirmed.

Appraisal of Controls

- **Legal and NZTA drivers:** are relevant requirements met. Does the proposed level of control meet your project timeframes and expected costs? Cost appropriateness: are the costs, both capital and operating, appropriate in terms of project or special budgets?
- **Bridge Constraints:** do bridge traits mean a specific control is not feasible
- **Timing and Duration:** are works urgent? Will controls extend timeframe or create delays? Can all controls be implemented straight away?
- **Good Neighbour:** will the control make a positive contribution to NZTA's good neighbour commitment?
- **Flow-on Implications:** do the controls have flow on implications which make the option prohibitive

Cost Example: containment may increase costs for waste disposal but create savings in terms of increased operating window and reduced spill risk

Bridge Constraints Example: weight loading issues which do not allow capturing washwater without significant strengthening (costly) works

Best Practical Option

- Do the above aspects represent the BPO? Some analysis may be required to support your final decision

Flow-on Example: physical controls may impede traffic or require lane closures

Note: Supporting information about how you came to your decisions is important especially if your ESMP is part of a resource consent.

Confirm Controls

- Final decision on the controls to be included in your ESMP

Phasing in of controls: in some cases environmental controls may not be able to be put implemented immediately often as a result of cost constraints. If some controls are to be phased in over time, include information on timing in your ESMP control section

4. Key Contacts

For further information, tools and templates please refer to our website www.nzta.govt.nz or alternatively please contact the Environment and Urban Design Team at environment@nzta.govt.nz