CIVIL CONTRACTORS NEW ZEALAND

Environmental guide

Providing information and advice to prevent environmental harm and legal consequences

Contents

Introduction

The Civil Contractors' Environmental Guide (CCEG) has been developed to provide small to medium-sized contractors with environmental support and advice across the stages of a project.

The objective of this guide is to prevent environmental harm resulting from construction activities. It provides helpful information on industry best practices for an infrastructure construction site and how to manage, control and minimise the environmental impact in line with:

- the Resource Management Act (RMA)
- the Wildlife Act
- the Fisheries Act
- the Heritage New Zealand Puohere Taonga Act

A lack of care can result in enforcement proceedings which can be time-consuming, costly and damaging to a company's reputation.

Please note that the information in this guide is not exhaustive. It is intended to provide general guidance only and is not a substitute for specific advice.

Guidelines for use

Environmental hazards are divided between three categories:

LAND

Trees,
Archaeology
Contaminated land
Vibration

AIR

Noise
Dust

WATER

Erosion and sediment control
Dewatering
Works in waterways
Hazardous substances
Concrete runoff
Wastewater

Within each category, tools and technical knowledge are provided to help identify risks and apply the controls required across the three phases of a job:

- site planning
- site preparation
- site works

It is important to check the contract documents to determine which level of Environmental Management Plan (EMP) is required to manage the risk on a job. This guide can be used as a reference point to develop the plan.

Hold discussions with the client and/or person conducting the business undertaking to ensure that all environmental requirements have been considered and recognised, such as resource consent conditions, permits and work methodologies that require approval e.g. works in waterways plans.

The job can then get under way.

Considerations

When planning a job, always consider ecological and cultural factors.

Ecological Considerations

Is the site in or near a high natural value area, such as a waterway, estuary or beach?

Even if it is not, do not assume that the site and surrounding area are not worth protecting—valued wildlife and ecology live in a range of environments.

Cultural Considerations

Is the site in or near an area that may have special importance to local communities or cultural groups?

Local maori people often have traditional and contemporary authority and responsibilities for land and natural resources. Contact the local iwi or hapu to discuss the impact of a project on tangata whenua. A list of runanga contacts is available from regional councils.

For more information about cultural protocols, visit the New Zealand Trade and Enterprise website: https://www.nzte.govt.nz/en/how-nzte-can-help/te-kete-tikanga-maori-cultural-kit/

SECTION 1

LAND

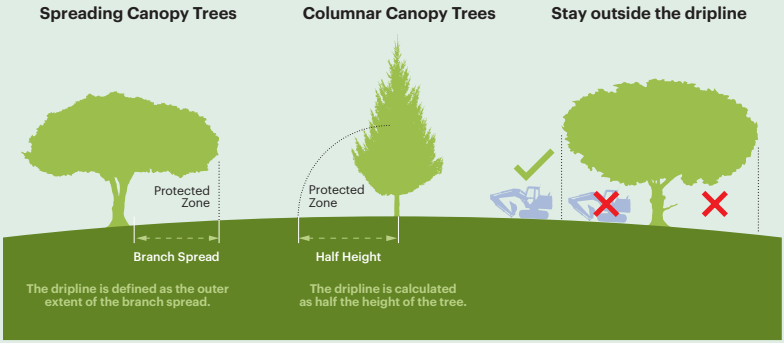
1.1 Trees

Trees have ecological and social value, especially in urban areas. They absorb carbon dioxide, filter toxins from the air, provide a home for wildlife and contribute to the beauty of the neighbourhood.

They are either owned by residents or a local council, so rules apply when working around or near trees.

Site Planning

Prior to starting work, it is important to identify if any excavation or work will be within the dripline of a tree. Examples of tree driplines are shown below.



Examples of tree driplines

Check the status of the tree (private, street or protected). A tree consent may apply if a tree is protected.

Organise a site walkover with a qualified and approved arborist to discuss supervision, pruning, topping or removal requirements. Note that a removal approval with a local community board can take up to two months.

Site Preparation

Some trees may require fencing, which will need to be erected before a job starts.

Have damp sacking available to prevent roots and severed roots or branches from drying out if they become exposed.

Protective fencing for a tree on a work site.

Site Works

Before starting a job, complete a daily hazard ID to see if trees may be an issue.

If so, ensure that experienced operators and spotters are available to prevent damage. Arborist supervision may be required to oversee any excavation work (hand-digging or hydro-excavation), so check the EMP to ensure this is covered.

In general, the following rules apply to all trees (private, street and protected):

- do not store materials, contaminants, equipment or vehicles within the dripline to avoid damaging trees and their roots
- do not cut roots over 25 millimetres in size without an arborist's permission
- do not cut branches or drive close to them
- do not nail signs onto trees
- do not drive over exposed roots

Additional rules apply to protected trees—check the consent, which should be found in the contract documents.

Work around tree roots.

1.2 Archaeology

An archaeological site is any place associated with pre-1900 human activity—Maori or European. These sites provide a unique window into the past and are protected by the Heritage New Zealand Pouhere Taonga Act 2014.

Site Planning

Check the contract documents or resource consent for the archaeological risk status of a site. If it is classified as medium or high risk, a supervising archaeologist may be required for the job and/or an archaeological authority (a permit to work) may be needed. Seek advice from the person conducting a business or an undertaking, the client or Heritage NZ on how to proceed.

Site Preparation

For medium and high risk sites, ensure that a pre-start talk by a qualified archaeologist has been organised, in order to detail potential site discoveries.

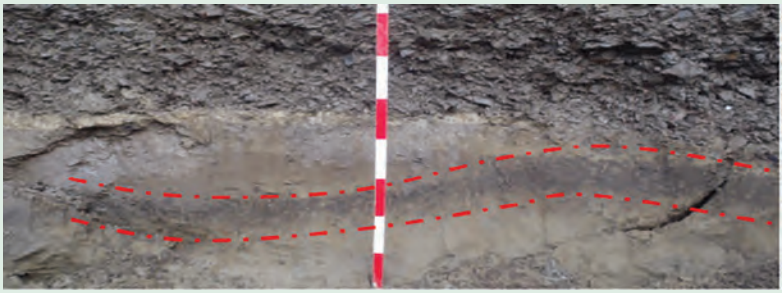
Discoveries from the Armagh Street Bridge site in central Christchurch.

Site Works

Monitoring the ground during excavation is essential to ensure that no artefacts or remains are damaged. As discussed above, a supervising archaeologist may be required on site to guide and assist per the contract requirements.

Where the site has been classified as low risk (ie there have been no previous archaeological finds in the area), a find will be defined as accidental and the following protocol must be adhered to:

- immediately stop work, notify the supervisor and secure an area of at least 20 metres diameter around the discovery
- contact the local Heritage NZ office, which will arrange for an archaeologist to visit the site
- do not restart work until authorisation and instructions have been provided by the archaeologist
- if human remains are found, local police must be contacted



The cultural layer: a thin band of charcoal – stained sand (difficult to identify but significant) in Main Road, Redcliffs, Christchurch.

1.3 Contaminated land

Land contamination (eg heavy metals, hydrocarbons) can affect human health if it makes its way through the soil into the groundwater network, affecting the local drinking water supply.

Management of potential contaminants on a worksite is paramount. The diagram on page 11 illustrates how contaminants can impact people and the environment.

Site Planning

To find out if any hazardous activities have taken place on the land, check the contract documents and/or contact the local or regional council. You can also check out the Listed Land Use Register (LLUR) here www.llur.ecan.govt.nz

Examples of hazardous activity include:

- mining (including historical)
- timber treatment
- production or use of gas, coal and petroleum
- sheep dipping
- manufacture and use of pesticides

If there has been hazardous activity on the site, engage a contamination land specialist (CLS), who will help manage the risk. This is a requirement under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health.

A CLS will:

- identify the contaminants on a site, develop a Site Management Plan (SMP) and help with permissions to work, if required
- provide suitably qualified environmental professionals (SQEPs) to take samples and test the potential contaminants, if required
- outline the correct disposal method based on the results
- ensure appropriate site signage is available for the type of contaminants expected

Site Preparation

If contamination has been identified, designated lined stockpile areas are necessary to segregate potentially contaminated material from clean-fill while it awaits testing. This should be clearly marked and covered, especially if there are strong winds.

If asbestos has been identified, special bins for storage and transportation will have to be obtained.

In all cases, health and safety practices—eg boots, gloves, masks, disposable overalls, gas meters, wash-down facilities—are required to protect all workers. This must be outlined in the SMP.

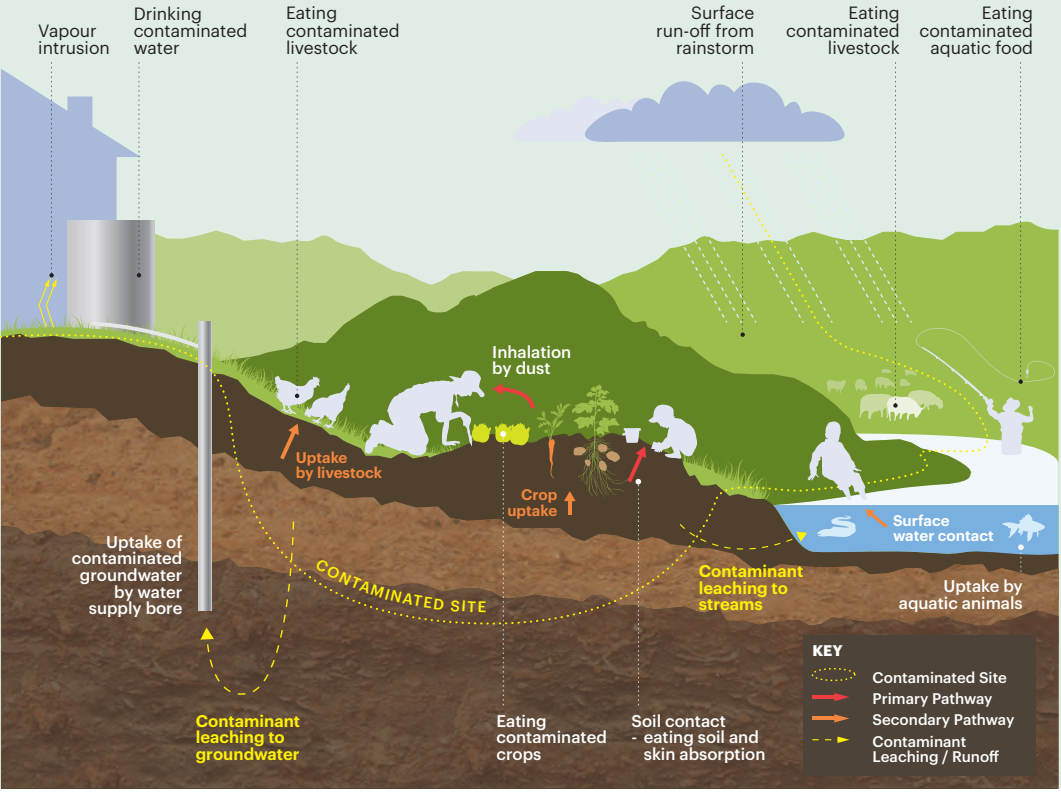
Site Works

If contamination is expected, stockpile material and always use a SQEP to test. This is a requirement under the National Environmental Standards (NES).

In other cases, where contamination has not been identified, always be prepared for an accidental discovery:

- check excavations regularly for signs of contamination, such as distinct colour, odour, oily sheens or evidence of landfill
- if there are contamination concerns, stop work immediately, evacuate trenches and call a CLS, who will send a SQEP to inspect and sample

The diagram below illustrates how contaminants can move.



1.4 Vibration

High levels of vibration can have a negative impact on sensitive ecosystems (species and their habitats) by disrupting established movement and migration patterns and by exposing unstable soil.

This can result in the collapse of riverbanks and can affect the structural integrity of properties. Vibration is also a nuisance to the public and a hazard to workers.

Construction activities that produce vibration include:

- piling
- blasting
- compaction
- drilling
- heavy vehicles

A sheet-piling installation.

Site Planning

Establishing the vibration levels of machinery and equipment allows for the protection of employees and the environment by predicting the impact of work. Work that causes vibration should be limited to areas where ground condition surveys and condition assessments of properties have been undertaken in a bid to understand the nature of the structural stability of surrounding soils and ground types. Talk to clients and their consultants, as well as nearby residents, well in advance of starting work to determine a robust management plan.

Site Preparation

Communicate hours of work and the type of work being done to any party that could be affected.

Site Works

Vibration monitoring may be a contractual requirement. If vibration levels exceed those allowed in the contract then mitigation measures will be required to reduce the vibration levels. These can be in the form of cut off trenches, changing out or replacing equipment, keeping equipment maintained or even pre-digging.

SECTION 2

AIR

2.1 Noise

Noise from construction work can be a nuisance to people and animals and should be minimsed to an acceptable level. Approach this issue through careful management and community engagement.

Site Planning

The key to noise minimisation is good planning. Schedule work to tie in with local residents, rest homes and schools. Purchase or hire silent equipment and machinery, choosing areas on the site plan that are as far from noise receivers as possible. Keep noise-suppressing materials, such as hay bales or acoustic barriers, on stand-by to allow for immediate action if it is difficult to comply with the noise limits outlined below.

Acceptable noise limits for residential zones and dwellings can be found in the New Zealand Standard 6803:1999:

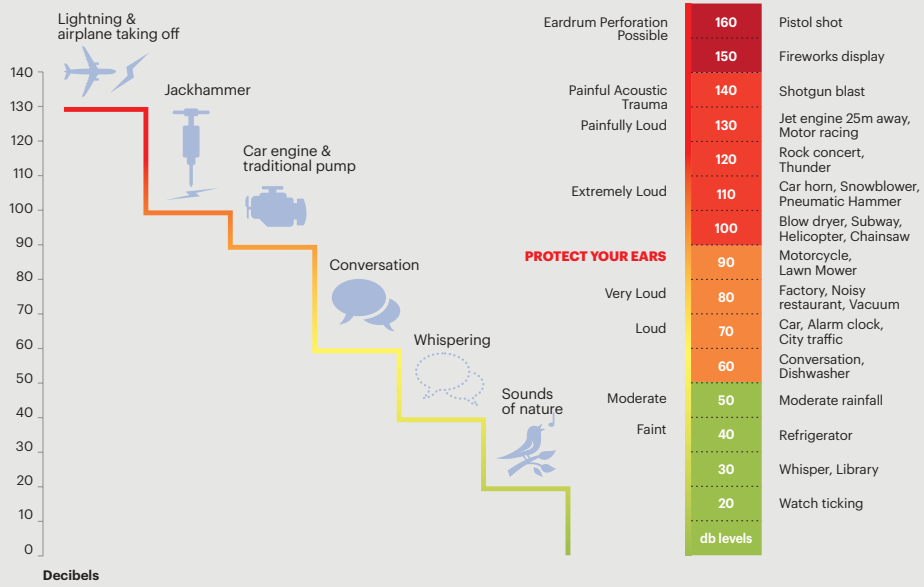
Time of week	Time period	Duration of work					
		Typical duration (dBA)		Short-term duration (dBA)		Long-term duration (dBA)	
		Leq	Lmax	Leq	Lmax	Leq	Lmax
Weekdays	0630–0730	60	75	65	75	55	75
	0730–1800	75	90	80	95	70	85
	1800–2000	70	85	75	90	65	80
	2000–0630	45	75	45	75	45	75
Saturdays	0630–0730	45	75	45	75	45	75
	0730–1800	75	90	80	95	70	85
	1800–2000	45	75	45	75	45	75
	2000–0630	45	75	45	75	45	75
Sundays and public holidays	0630–0730	45	75	45	75	45	75
	0730–1800	55	85	55	85	55	85
	1800–2000	45	75	45	75	45	75
	2000–0630	45	75	45	75	45	75

Check with the local council for urban area noise limits.

Site Preparation

Locating equipment as far as possible from neighbours will help reduce noise impact. Servicing older equipment regularly can reduce noise levels by as much as 50 per cent.

See the diagram below for decibel levels.



Site Works

Monitoring noise levels is essential, particularly if the job involves sheet-piling or hydro-excavation. Rent or buy a noise meter for ongoing noise monitoring, particularly if there have been complaints. Noise impact can be managed by:

- placing barriers and screens around equipment
- turning off machinery when not in use
- using mains power instead of a generator
- communicating with residents and businesses before starting work
- having good work practices and being a considerate neighbour

Ensure that workers wear the correct class of ear protection.

Sound boxes are available for hire from pump companies.

2.2 Dust

Dust is a nuisance to communities, leaving unwanted layers on properties and washing lines. It can be time consuming and expensive to clean up.

Dust also reduces air quality, presenting an increased health risk. This risk increases with warm, dry and windy conditions.

Site Planning

When planning a job that requires robust dust control, consider the volume of water required, the source of water, whether permission to use the water has been granted (eg standpipes) and the application method. Where immediate progressive stabilisation is required, a polymer may be considered. Other options are to limit the area exposed, progressively restabilising work areas, surface protection (covers or grass) and stockpiling in sheltered areas on site.

Another important aspect of good site planning is the EMP. Identification of key workers to be responsible for weather monitoring and the availability of workers to react to out of hours incidents need to be detailed in the EMP.

Site Preparation

Ensure an adequate water or polymer application vehicle is fit for purpose and ready to deal with challenging weather conditions. Irrigators may also be installed as an additional control while stockpile locations must be set up as far away from dust receivers as possible.

Site Works

Eliminate and minimise the dust on a site by:

- minimising disturbed areas/stockpile volumes
- keeping the site, truckloads and/or stockpiles dampened down or covered
- reducing drop heights when loading/unloading
- installing dust barriers
- limiting vehicle speed and trafficking of unsealed areas

Try to locate stockpiles in sheltered areas away from prevailing winds.

Work with the weather conditions, so plan ahead and monitor throughout the day.

If a complaint is received, stop work immediately and reassess the suitability of the controls to prevent the situation from escalating.

A water cart in use.

A reduced drop height is helpful.

SECTION 3

WATER

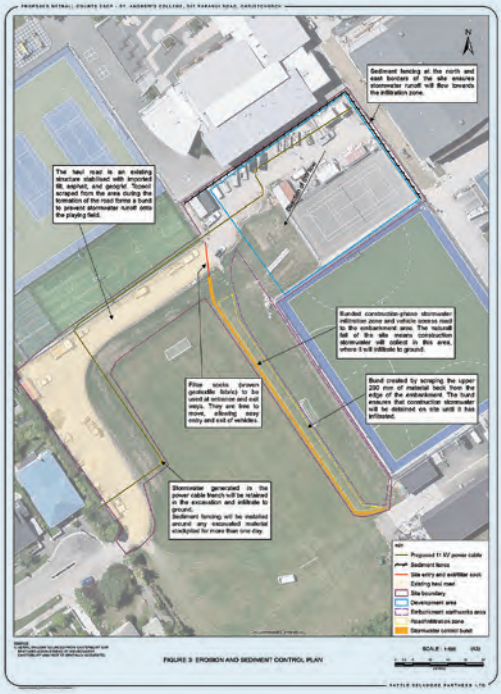
3.1 Erosion and sediment control

A high sediment load can affect the health of a waterway, clogging the gills of fish, smothering aquatic plants and animals, damaging spawning areas and diminishing food accessibility for aquatic life.

Site Planning

For small, localised sites, the EMP/hazard ID must consider soil type, land gradient, discharge points and receiving environment. It must also consider the types of controls required to implement stockpile bunding, stockpile drainage, catch-pit protection and possibly silt fences or filter socks, if working close to a riverbank or on slopes.

For larger projects that involve major earthworks, local councils will expect an erosion and sediment control plan (ESCP) to be prepared and approved by the client and the regulator prior to the start of work as per resource consent requirements. This will be part of the contract documents. It is important to ensure that all the conditions outlined in the plan are implemented on the site by building the controls (eg decanting earth bunds, sediment retention ponds, diversion bunds) to specification, and regularly monitoring and maintaining them. Specifications vary per council, so be sure to source the correct reference documents.



An example of an Erosion and Sediment Control Plan for an earthworks site.

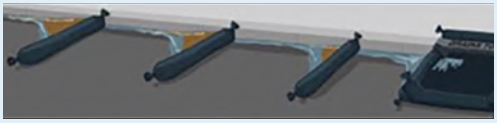
Image: Pattle Delamore Partners and St Andrews College

Site Preparation

There are many tasks necessary to prepare a site to prevent erosion and subsequent sediment generation. For localised site works (ie drainage and roading), sump protection and stockpile management are generally sufficient.

SUMP PROTECTION

Before works starts, all sumps within the work area and downstream of the work should be isolated from runoff. Sumps can be protected by installing filter inserts such as witches' hats, or using filter socks around the sump perimeter. Sandbags can be used to stop runoff going down a sump but consideration is needed to check the impact of potential flooding this may cause.



Filter socks / logs act as filter dams for steep sites.

A filter insert, known as a witch's hat.

STOCKPILE MANAGEMENT

Choose a stockpile area away from the kerb and channel, bund it and cover it if necessary, eg in wet or windy conditions. If stockpiles need to sit on the kerb and channel (eg due to space constraints), to prevent the accumulation of water on site, run diversion pipes beneath the stockpile to allow a flow pathway. Protect and secure the stockpile.

Covered stockpile with kerb diversion pipe.

SEDIMENT CONTROL

For major earthwork projects, decanting earth bunds, sediment retention ponds, diversion channels, a silt fence and stabilised entry/exit points may need to be installed per the ESCP. These controls often have specific sizing and installation requirements, so, if in doubt, seek expert advice.

Check the Canterbury erosion and sediment control guide, for details: http://www.crc.govt.nz/advice/your-land/earthworks-soil-eroison/Pages/soil-erosion-sediment-guidelines.aspx

A silt fence installed along land contours.

Image: Geofabrics

Follow the link to see a video on how to install a sediment fence: http://www.bpg.co.nz/fences-install.html

Site Works

Regular inspections and maintenance of controls are an essential part of the job and should be done daily. They are particularly important prior to and shortly after rain, and should always be recorded on a site inspection form. Having callout staff on stand-by for after hours and/or weekend weather events is necessary.

In general, work should be staged in order to prevent erosion and stabilised as soon as practically possible. Stockpiles should be minimised by loading directly onto trucks and controls should be corrected if they become damaged.

If the plan needs to be altered, it cannot be done without the approval of the local council.

3.2 Dewatering

The purpose of dewatering is to create a safe, dry area for workers.

This activity can create large volumes of sediment that must be filtered/cleaned before the dewatering water can be discharged to a waterway.

Dewatering is made up of three activities:

- pumping of groundwater
- treatment
- discharge of water

The commonly used methods of dewatering a site are:

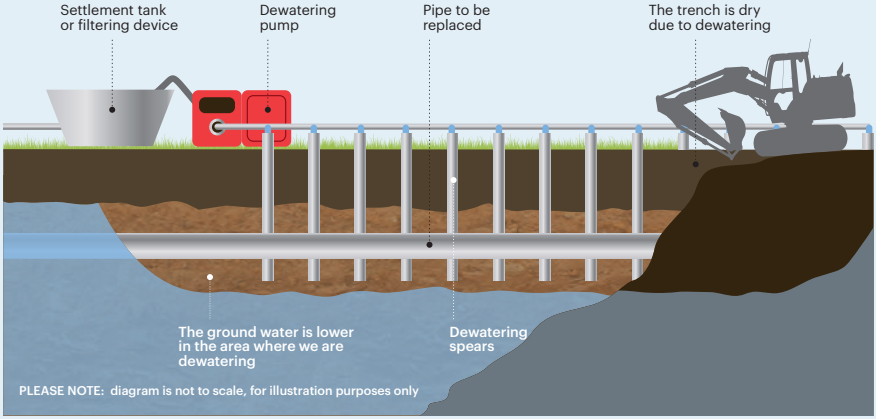
- wells or bores
- well points or spears
- submersible pumps

Site Planning

Always check with the local council about dewatering rules before starting work. In general, a permit to dewater is required. It will outline the total suspended solids (TSS), turbidity or water clarity limit, being the amount of sediment that can be discharged to a waterway.

If dewatering to land or to a stormwater network, written permission must be gained.

Always consider soil types, groundwater levels, nearby waterways and the network capacity.



A dewatering set-up diagram.

Site Preparation

Dewatering needs treatment or settling time to ensure water is clean enough to be discharged. Be prepared by having various controls available, including:

- settling tanks or turkeys' nests
- ponding areas
- filter socks/sediment bags
- chemical additives, such as flocculent
- filter socks for kerbs and channels
- catch-pit protection

These controls will ensure sites meet and maintain the allowed TSS limit.

Well points are installed for dewatering.

Bottled sediment – TSS limits.

A catch-pit protection.

A dewatering tank with baffles.

Site Works

Filtered dewatering water can be discharged to:

- vegetated grassed areas (with permission)
- the storm water system (thus, leading to a waterway)
- directly to a waterway (approval is likely to be required from the local council)
- the wastewater network, if prior permission from the local council is obtained (generally, this is allowed if E. coli contamination is present)

A stabilised splash pad and bund to prevent scour and erosion.

Controls must be monitored and regularly maintained/inspected to ensure they meet council limits:

- settling tanks need to be cleaned out and sediment bags/filter socks need to be replaced regularly
- chemical additives should only be used if authorised by the local council (refer to supplier instructions for the dosage rates) and to select the best additive for the sediment type
- after hours and weekend work needs to be monitored, plan for refuelling (if required) along with security

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Please note that if water needs to be removed from a trench, a trash or sump pump is not capable of removing the sediment load to an acceptable level. Removal by a sucker truck is the best option. Another option is to redirect the water back into another part of the trench and/or treatment process.

3.3 Works in waterways

Works in waterways activities include bridge construction, siphon repairs, water outfall construction, river dredging and widening as part of enhancement work. In the absence of adequate controls, riverbanks can destabilise and collapse, while dewatering from cofferdams can present the same sediment discharge challenges as dewatering excavations.

Site Planning

A works in waterways methodology must be developed and approved by the local council before any work can start. This will need to outline the scope of work, such as whether cofferdams and dewatering, or dam and diversions are required. For each method, the corresponding controls will be required in detail.

Water dam barriers, pumps, silt curtains with floating booms and sediment fences in succession downstream are some of the controls that may be required for the work.

Consideration also needs to be taken on the effect of the works on fish and aquatic life, especially around fish mortality. Fish salvage must be undertaken with the appropriate permits by an ecologist using electric fishing, traps or nets.

Site Preparation

The correct set-up and installation of these controls is essential to prevent erosion to riverbeds and banks and to prevent migration of sediment downstream of the work site. If in doubt, seek expert advice.

Cofferdams and stabilised riverbanks.

Site Works

- Dam and diversions require over-pumping. When over-pumping, ensure that the flow of the water does not scour the waterway bed. Steel panels on the bed or discharge point can be used to absorb the impact, reducing the likelihood of erosion.
- Cofferdams require dewatering. Filter before discharging back into the waterway and implement controls to protect the riverbed. Cofferdams minimise the flow of the waterway, so ensure that the opposite river bank is protected from the concentrated flow to stop erosion.
- In dewatered cofferdams fish salvage must be undertaken with the appropriate permits using electric fishing, traps or nets—contact a specialist aquatic ecologist to carry out these works.
- When dredging or widening, install sediment gates in a series to catch sediment migration. Often this material is contaminated, so designated stockpiling and testing are generally required. Take samples per the contract requirements. Test results will determine the correct disposal destination.
- With outfall construction, it is common practice to install a silt curtain with floating booms around the mouth of the outfall. This will help to capture and contain any sediment released during construction work.
- Monitor the weather and be prepared to install additional controls or even stop work if adverse weather (rain) is forecast. Protect exposed banks and anticipate higher water flows and levels.

A sediment curtain with floating booms.

3.4 Hazardous substances

Spills to a waterway, such as hydrocarbons, lubricants, paints, chemicals and emulsion discharges, can result in long-term environmental and ecosystem harm.

Plants, animals and aquatic life that are essential links in the food chain may not survive a large spill.

Site Planning

Ensure there is a site-specific spill response plan and all crew are aware of what to do in the event of a spill. The spill response plan must include contact details for the local councils.

Organising a spill kit at the planning stage is also mandatory. Choose the correct spill kit for the substances used on site:

- yellow contents – aggressive chemicals
- white contents – hydrocarbons and marine
- grey contents – universal

Check the colour of the materials in the bin when it arrives. The bin colour is not always an indicator of the materials stored inside.

Site Preparation

Fuel should be stored in a secure and appropriate location while bunding (secondary containment) is required around all fuel stores and vehicles. Bunding must be able to contain more than the volume of the product container. For example, a 20-litre container should be placed within a bund or secondary containment able to hold 30 litres. For larger or permanent fuel tanks, a watertight bunded area can be created. Cover the storage area to prevent rain runoff and the bund filling with water.

Clearly label all storage containers and store plant securely to avoid vandalism or fuel theft. Locate storage areas away from the stormwater network (kerb and channel and sumps) and waterways if the site allows. Safety Data Sheets (SDS) must be available for every product being used or stored on site. Spill kits must be readily available on the site and kept in an easily accessible and visible location.

Site Works

Conduct regular maintenance and inspections of pumps, equipment and machinery to ensure spills are minimised.

Spill kit refills

PADS

White = oil only

Grey = general purpose

Use: Can be placed on the ground, under plant or on surface of stationary water.

SOCKS

White = oil only

Grey = general purpose 1.2m or 2.4m lengths

Use: Containment—place around a spill, a stormwater sump or across the surface of a dewatering tank.

BOOMS

3m x 12.5cm

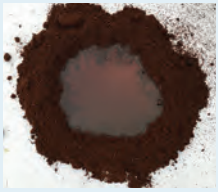
Use: Spills on open water—rivers, lakes, estuary.

PILLOWS

White = oil only

Grey = general purpose

Use: Place in sumps or under leaking plant. Can insert into sump protection (witches' hats)



LOOSE ABSORBENT SPILL FIX ORGANIC COCONUT FIBRE

Use: Small spills

Place around and over spill, leave to absorb, then sweep up and dispose of appropriately.

Once the spill kit material has absorbed a spill, it is classed as hazardous.

When refuelling, a drip tray and absorbent material must be placed under and around refuelling points to capture spills and prevent contamination. Do not leave canisters uncapped.

Refuelling near waterways or storm water sumps must be avoided. Designate loading and unloading areas, and have a designated wash-down area.

A generator with spill protection in place on a work site.

An example of secondary containment for hazardous substances.

In the event that a spill does occur, follow the Spill Response Plan:

- protect waterways and block sumps (eg sandbags, silicone covers / plastic mats)
- stop the source
- start the clean-up using the correct spill kit—use only white kits for hydrocarbon spills in water, not grey, as grey materials will absorb the water as well as the spilt chemical
- notify the local council
- dispose of the waste at a hazardous waste facility
- re-stock the spill kit

Follow this link to see a video on how to clean up a spill: http://bpg.co.nz/spill-management.html

3.5 Concrete runoff

Concrete and cement slurry is toxic to wildlife and hazardous to waterways as it has the potential to burn and kill aquatic life.

Dilution is not the solution—it takes 100,000 litres of fresh water to dilute one litre of cement-contaminated water to safe levels. Concrete cutting and concrete pouring activities must therefore be managed very carefully.

Site Planning

When preparing the EMP, consider whether a pH meter, pH strips and/or pH socks are required to monitor the potential effects of work on a waterway. HDPE liner may be needed for the construction of a lined washout area to capture and contain all runoff. Furthermore, it is important to schedule concrete work during dry weather.

A concrete washout area.

Site Preparation

Works in waterways: if pouring concrete in a waterway i.e. the installation of bridge abutments, the area needs to be isolated and contained using water dam barriers.

Concrete pours on land: if a concrete washout area is required to capture any excess slurry, it must be located away from streams or storm water drains.

Concrete-cutting activities: ensure a WetVac or a sucker truck is available to remove concrete slurry. Plastic mats should be placed on sumps in preparation for these works. Note that filter cloth does not prevent dissolved concrete particles from entering the storm water system.

Site Works

Works in waterways:

- monitor waterway quality outside the isolation zone using pH meters and strips—if levels are not within the acceptable limit, stop work immediately and use pH socks to reduce the pH level to neutral

Concrete pours on land:

- wash out into a lined skip or a soak pit and use an approved liquid waste handler for disposal
- hardened concrete must be removed from the pit—dispose of it with other clean hardfill
- inspections must be conducted to look for overfilling of the soak pit or skip

Concrete-cutting activities:

- use plastic mats to block sumps or divert to a vegetated area using soil or sandbags
- use as little water as possible when cutting
- remove all concrete slurry using a WetVac or sucker truck
- remove concrete dust from the site
- never try to filter water that has been contaminated with cutting wastes

A contained concrete wash-off.

3.6 Wastewater

Sewage contains many types of bacteria and pathogens that can cause serious health effects.

Work on the wastewater network, if not managed carefully, can easily cause a health outbreak if contaminated water is consumed. Ensure staff have the correct and up to date vaccinations when working on the wastewater network.

Site Planning

Knowledge of the wastewater network is essential when planning to work on any wastewater line. Over-pumping, bypassing and storing of waste during pipe repair or replacement works and pump station commissioning all present a high risk. For this reason, a permit to work must be prepared, submitted and approved by the local council prior to starting work. The permit allows for understanding of the storage capacity of the line, peak flow rates and times, discharge rates and the subsequent pump set-up required (ie the number and size of pumps). The local council and pump providers will assist with this process.

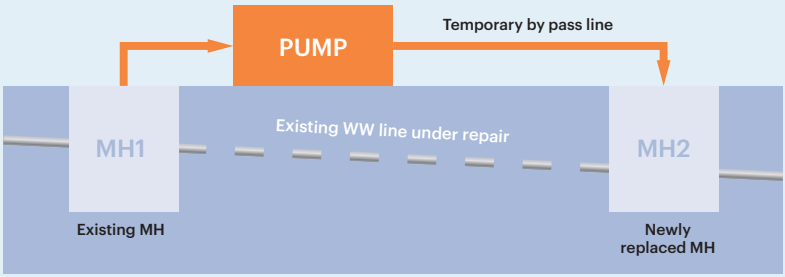
Site Preparation

Depending on the type of set-up, different types of controls are required:

- over-pumping and bypassing require pump and hose (PE or lay-flat) set-up and bung installation
- storage requires bung installation

In addition, float alarms may need to be installed, access-way ramps positioned and security fences erected.

Place pumps as far away from neighbours as possible and have noise-suppression barriers on stand-by in case noise becomes an issue.



An example of an over-pump set-up.

Site Works

Equipment maintenance and monitoring of flow levels and weather are paramount when working on the wastewater network. Alarms and floats can help monitor levels in the line. Also adhere to the following:

- ensure lay-flat connections/couplings are secured with cable ties
- always check hoses and pipes for kinks and defects
- service and fuel pumps regularly
- to prevent vandalism, protect pumps with secure fencing
- remove bungs if rain has been forecast

Couplings for added security on a discharge pipe.

Float alarms in a manhole.

Security to prevent vandalism.

Access ramps to prevent pipe damage.

In the event of a wastewater overflow, follow these emergency response steps:

- protect storm water outlets and sumps immediately
- identify the cause of the overflow and correct, where possible
- divert the public away from the overflow
- notify the local council on its pollution hotline telephone number
- use a sucker truck and disinfectant to thoroughly clean the site
- inform local residents
- complete all the required incident and investigation reports for the local council

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The local council will provide water sampling results at a later date for the required report.

After a discharge to a waterway, the local council will erect 'polluted water' signage.

SECTION 4
Legal and key resources

4.1 Consequences

Under the RMA the regional and district councils must monitor construction activities. Following the rules will ensure that enforcement will not occur. Failed environmental controls could lead to enforcement in the form of fines, site shutdowns and court proceedings. Following the rules will also ensure that business reputation and margins are not negatively affected by poor environmental controls.

Types of enforcement include:

- abatement notice—a specific action must be taken to mitigate effects
- infringement notice—a fine will be issued without a conviction record
- enforcement order—issued by the Environment Court, rather than a council
- interim enforcement order—issued by the Environment Court
- prosecution—breach of the RMA can result in severe penalties, including up to two years imprisonment or a fine of between $300,000 and $600,000, and further fines of $10,000 a day while an offence continues

Taking the time to assess and manage risk (EMP development) will help avoid getting into one of these situations. If in any doubt ask an expert (the local council or regulator) for advice.

4.2 Resources

Ecan

https://ecan.govt.nz/

Christchurch City Council

https://ccc.govt.nz/

Waimakariri District Council

http://www.waimakariri.govt.nz

Selwyn District Council

http://www.selwyn.govt.nz

Environment Canterbury Erosion and Sediment Control Guide for Small Sites

https://ecan.govt.nz/document/download?uri=3033470

Builders Pocket Guide

http://bpg.co.nz/

Listed Land Use Register

http://www.llur.ecan.govt.nz

Resource Management Act

http://www.mfe.govt.nz/rma/

NZTA Erosion and Sediment Control Guidelines

http://www.nzta.govt.nz/resources/erosion-sediment-control/erosion-sediment/

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