

Environmental Compliance Education in the Rebuild of Christchurch City's Earthquake Damaged Infrastructure

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For the Environmental Compliance Conference 2016, Rydges Hotel, Auckland
On behalf of the Stronger Christchurch Infrastructure Rebuild Team and AECOM

AECOM

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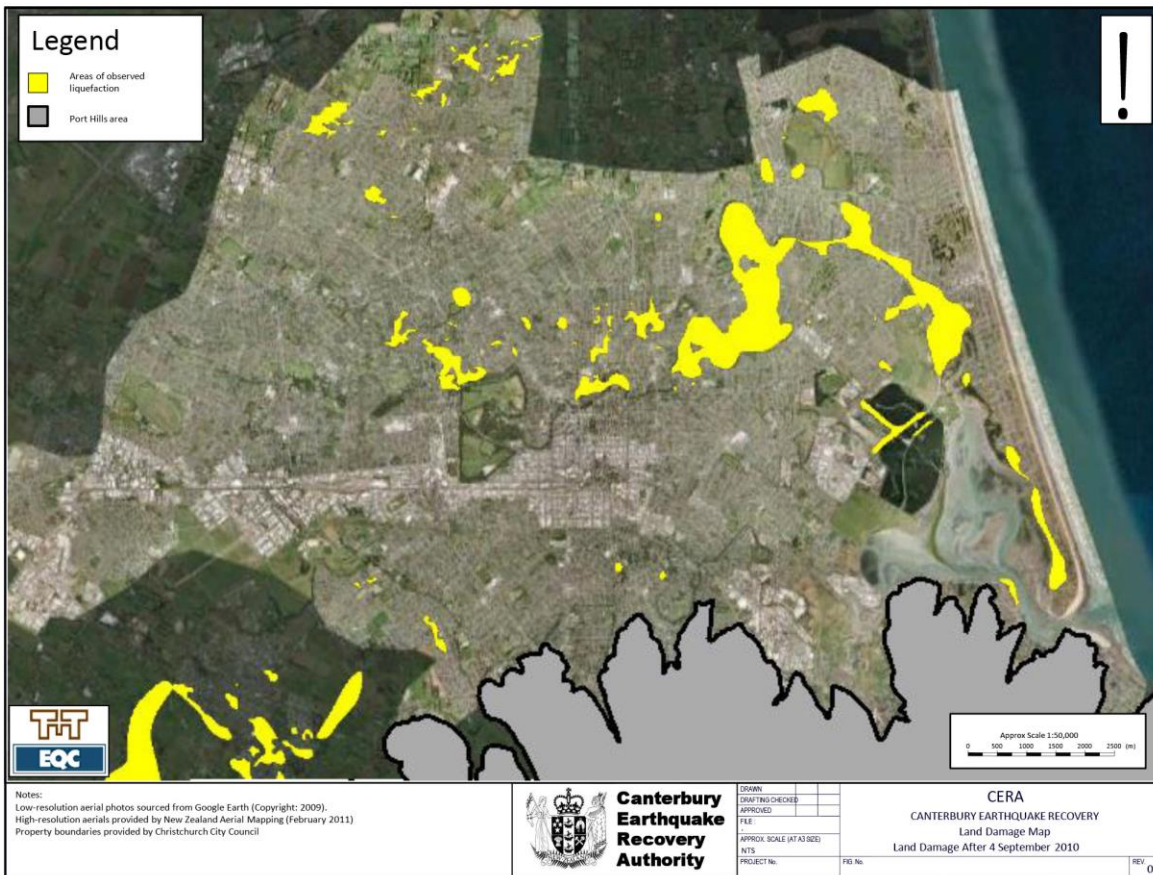
Structure

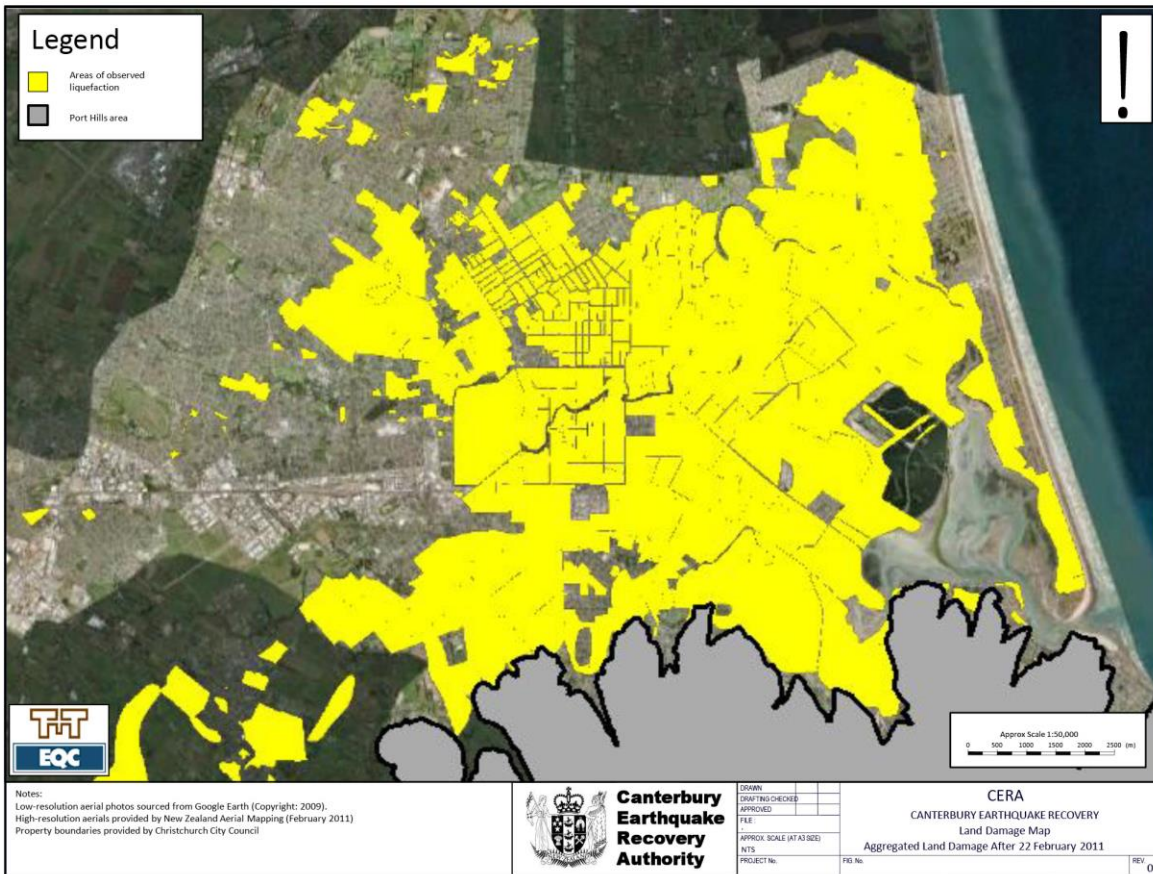
- Why SCIRT?
- Coordinated response methodology
- Education to improve compliance

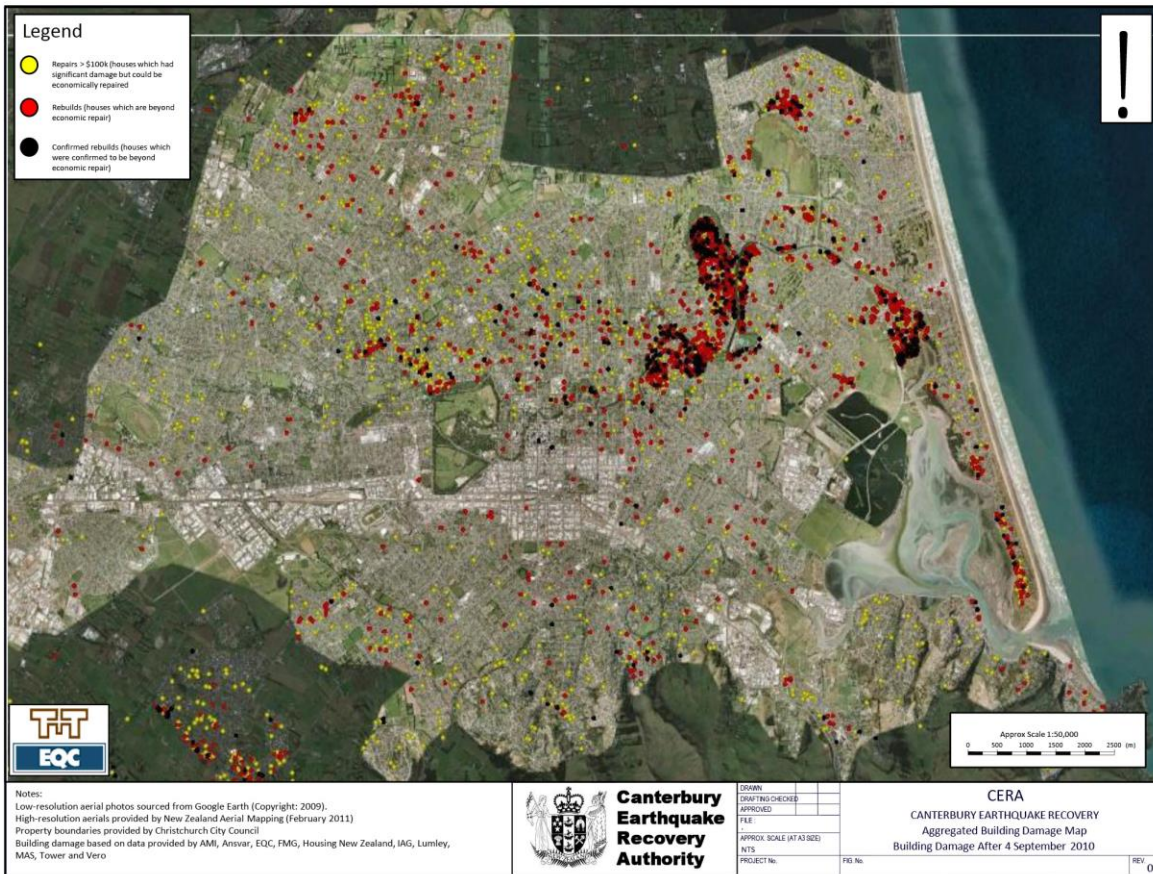
SCIRT (Stronger Christchurch Infrastructure Rebuild Team) is rebuilding the City's earthquake damaged roads, bridges, retaining walls, fresh water, wastewater and storm water networks

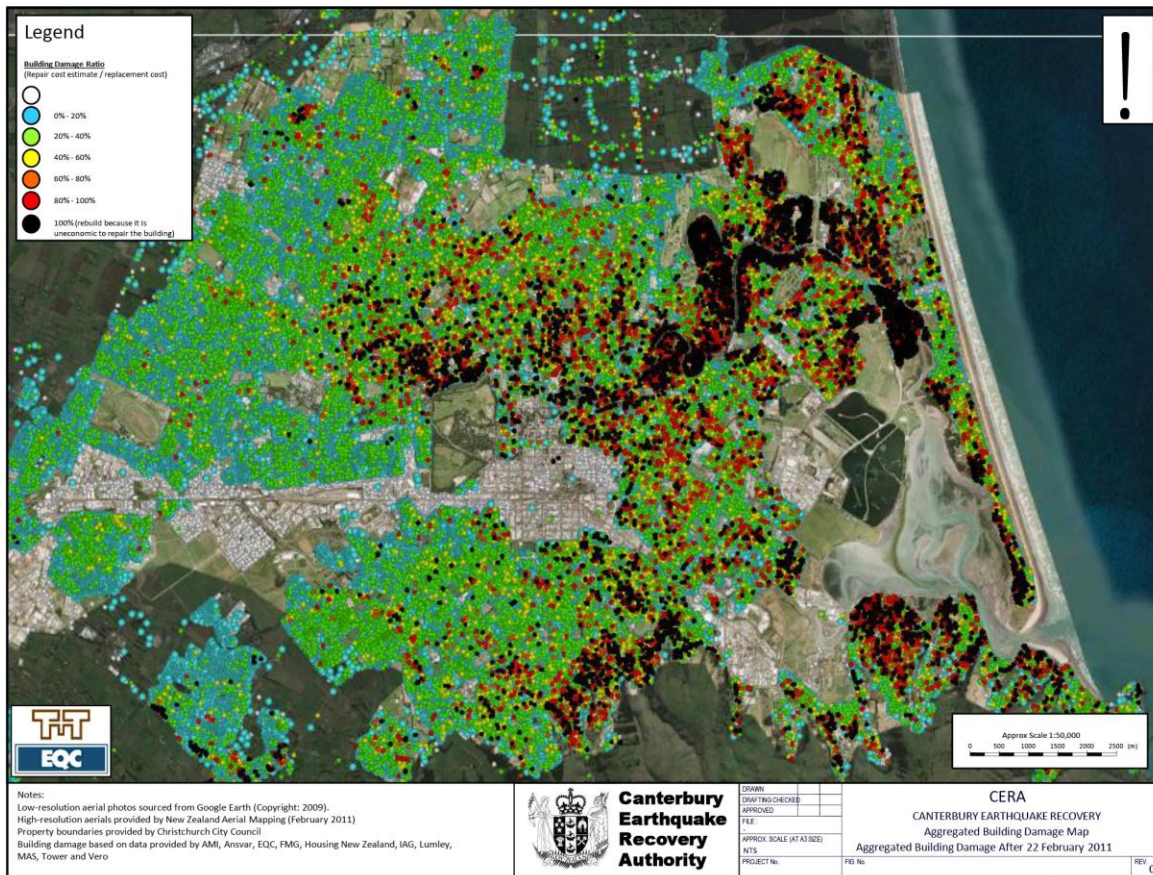




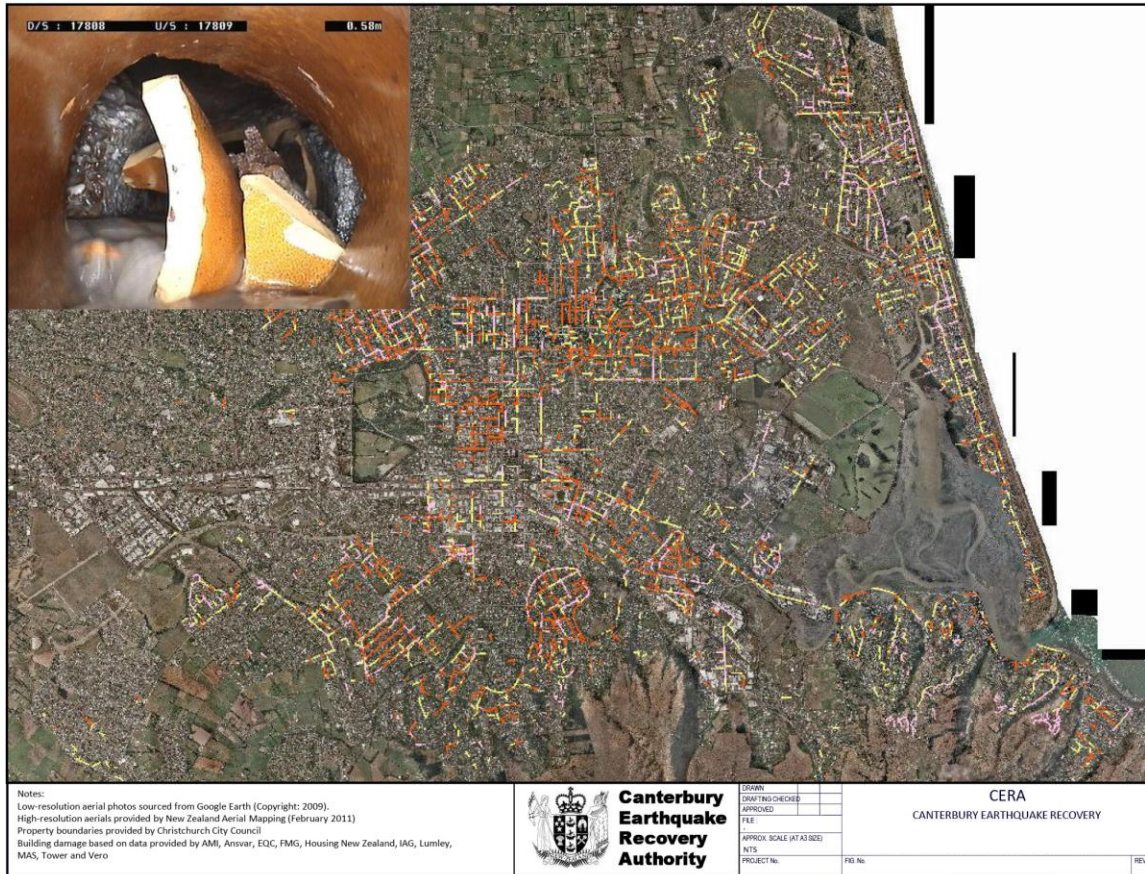




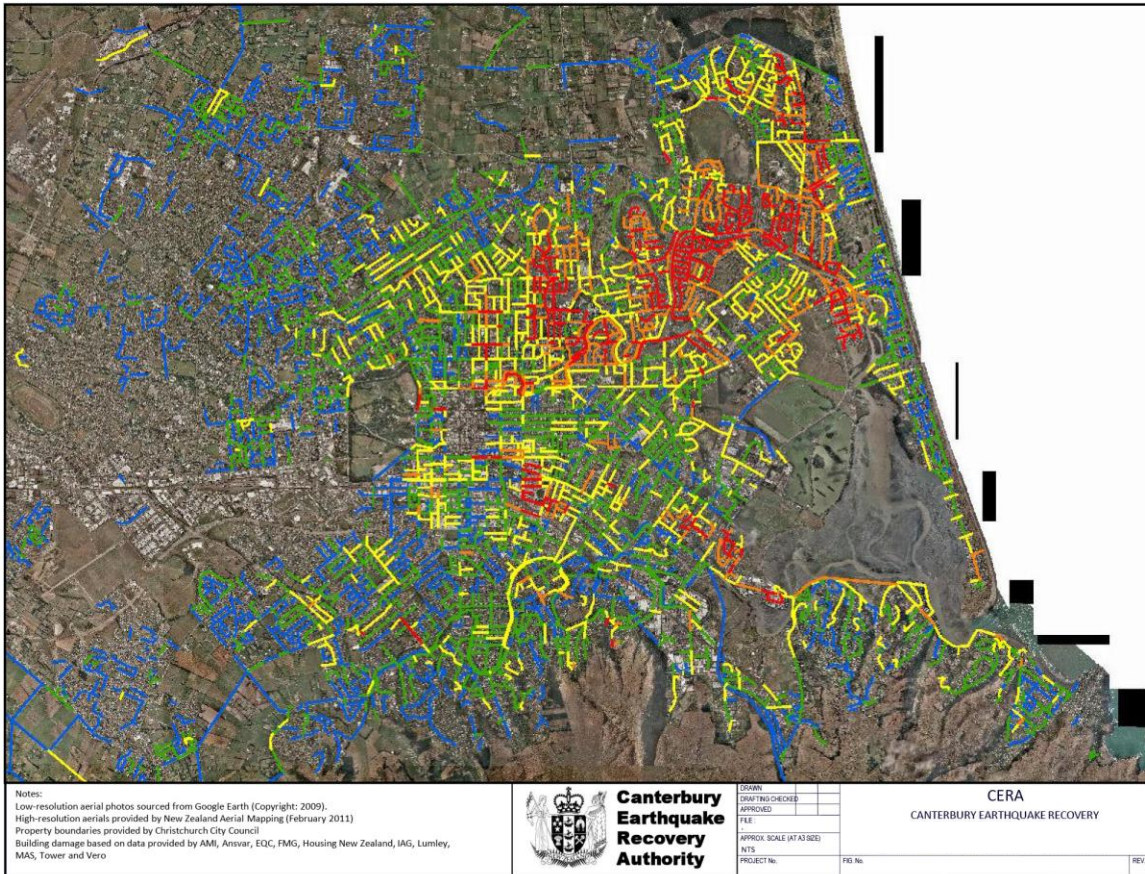




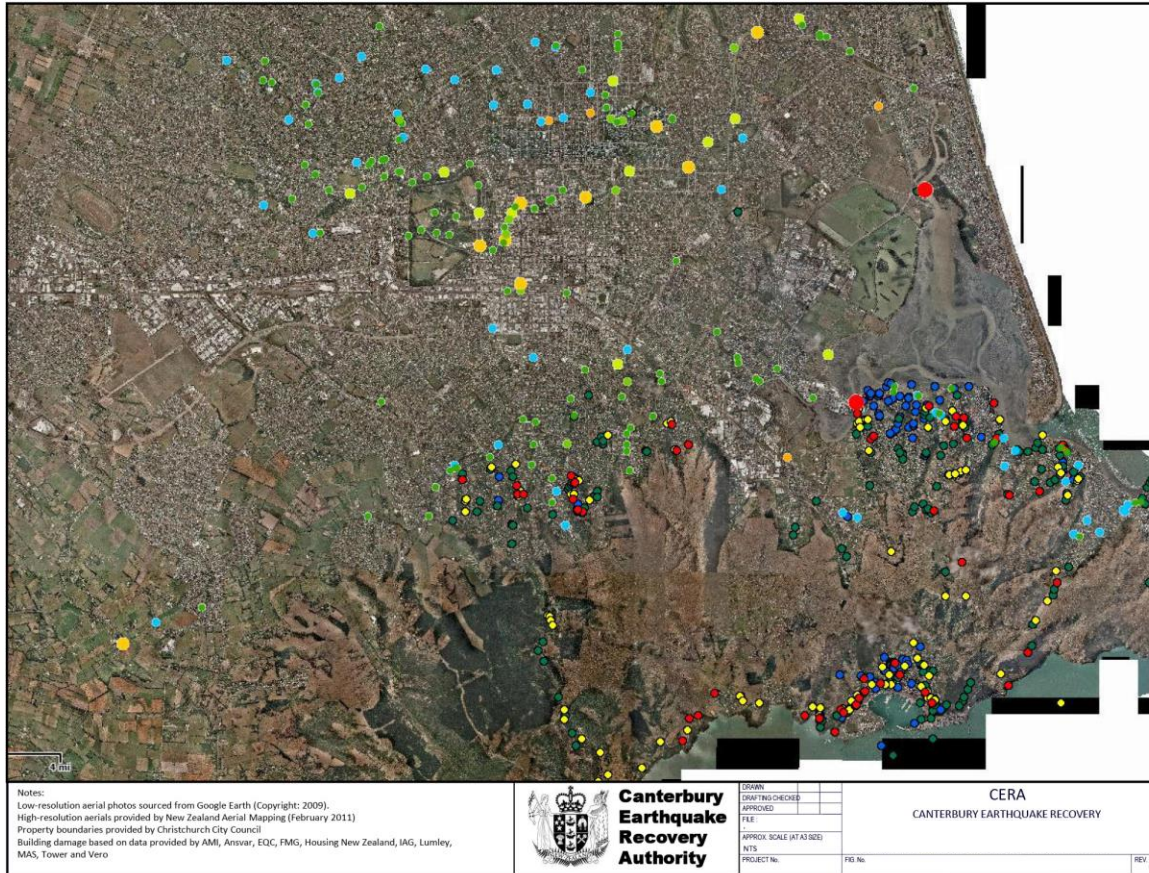
Wastewater & Stormwater Damage – 2011



Pavement Damage – 2011



Structures Damage – 2011



What We're Here for:

“Creating resilient infrastructure that gives people security and confidence in the future of Christchurch”



SCIRT Structure

- Virtual organisation based on an alliance
- Christchurch City Council and New Zealand Government
- Five leading contractors

Alliance Objectives

Demonstrate
environmental
responsibility

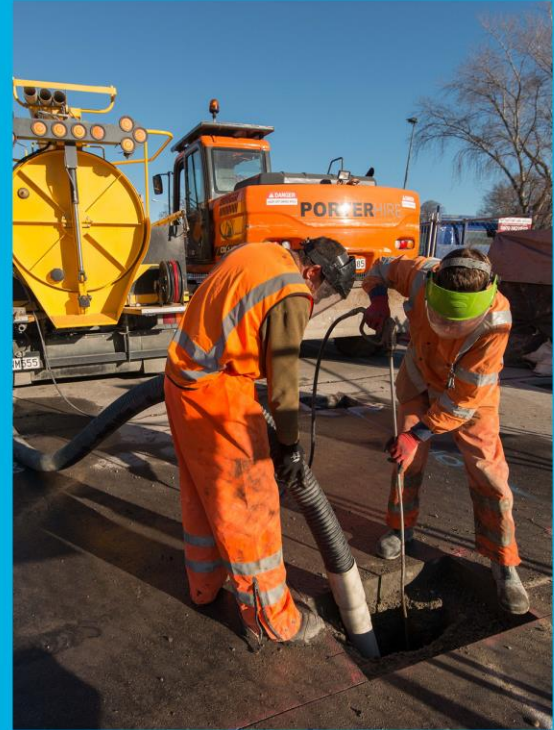


Challenges to a United Approach

- Scale and urgency
- Consistency
- Subcontractors
- Emergency response mindset

Unprecedented Opportunity

- 2.2 billion dollars of repair work
- 700+ projects
- 5 year programme





Global Consent Approach

- 1000 pages of regulatory information
- 20+ global consents and 4 global Archaeological Authorities

Global Consent Approach and Solution

- Private Land archaeological authorities
- Project Specific Consents
- Risk-based approach – Environmental Management Plans



Environment Leadership Group

- Sharing Ideas, Experience and Innovation
- Early contractor involvement of delivery team representatives inform on methodologies and risks

Minimum standards for key environmental risks



Trees

- All tree removals require an Arborist Report and notification to the Community Board one month in advance of works commencing.
- All projects with potential tree conflicts are to have a pre-start site walkover with the SCIRT Arborist to identify tree conflicts and to agree and minute reasonably practicable controls. Controls being:
 - Excluding trees from the work site
 - Redesign and re-alignment of works to avoid conflicts
 - Identifying pruning requirements
 - Identifying tree protection requirements (e.g. tree mats, fencing)
 - Identifying times for supervisor arborists to be on site.
- The Corridor Access Request application must be submitted to CCC with a GIS image or plan, annotated with locations of work within the tree setback, and agreed pruning, fencing, and standover arborist requirements.
- No stockpiling of materials under drip zone of trees (unless on existing hard stand).



Archaeology and Heritage

- All crews are to be aware of the Accidental Discovery Protocol.
- All crews working in high or medium risk areas must attend an archaeological site briefing.
- Pre-start notifications for work in high or medium risk areas to be submitted to the Archaeologist, Rūnanga and CCC Heritage Advisors 10 days prior to works commencing. The Project Manager or Site Engineer is to have a pre-start discussion with the archaeologist to identify site specific requirements.
- Contact details must be available on site for the site Archaeologist and CCC Heritage Advisor (where working near heritage buildings, places or objects).
- Archaeological Authority, Heritage Consent and Temporary Protection Plan to be on site during construction works.



Spills

- A spill response plan with correct contact details for Site Engineer, Pollution Hotline and Environmental Advisor must be displayed on site.
- All site crew must have attended spill kit training within the last 12 months.
- A 200L spill kit is required on all work sites. Smaller sized kits are permitted with approval from the Environmental Advisor depending on the nature of the work site.
- If working within 50m of a waterway a 200L marine spill kit (or 200L oil only spill kit plus floating booms) and deployment plan is required. The Site engineer and crew are to work out the best place for deployment of a floating boom before starting works, mark this location on a map and have that map on display in the site office/container.
- Spill kits to be located on the work site and safely accessible within 3 minutes.
- All site work vehicles/utes to have 40L spill kits.
- All sites within 20m of a waterway or open excavation must utilise a drip tray to intercept any spills from fuelling/decanting activities.
- All chemical storage areas are to be bunded.

Minimum standards for key environmental risks



Wastewater Overflows

- Plan the project to avoid Wastewater Overpumping whenever possible; if not possible then conduct as per the SCIRT Wastewater Overpumping Best Practice Guide.
- Obtain a CCC Permit to Work and complete pump set-up information sheet and plan; keep copies of all on-site.
- Assess the risks of overflow on each site and install appropriate controls as per the Wastewater Overpumping Flowchart. The Environmental Advisor shall review and approve the risk assessment and controls.
- Plan for the possibility of overpumping failure or overflow. Refer to Wastewater Overflow Response Plan.
- Isolate overpumping set-ups, by fencing with panels securely attached together and the entrance padlocked. The overpumping set up is to be wholly contained within the fenced area if possible, and car ramps over pipes are to be used if needed beyond the fenced area.
- Record monitoring and security checks of overpumping, and have float and/or flow alarms installed in accordance with the Wastewater Overpumping Flowchart.



Sediment Discharge

- Pre-start notifications to Environment Canterbury are to take place before dewatering activities commence.
- All dewatering requires at least one sediment control system. An oil water separator is required to be installed if dewatering in a high or medium risk dewatering zone.
- No dewatering discharge is to cause erosion or scouring.
- No dewatering discharge to HAIL sites and no dewatering discharge from HAIL sites to land is to occur. All dewatering to land discharges require landowner and Environmental Advisor approval prior to discharge.
- All dewatering activities to have 2hr recorded visual checks for signs of contamination, odour and discolouration/sediment load.
- No discharge of dirty water (TSS >150g/m3) is to occur to stormwater or water bodies. Dirty water being defined by the use of a Total Suspended Solid Meter, sample jars/visual clarity jars/fingertip test, or use of scale ruler. Consult with your Environmental Advisor for more information on these methods.
- Do not discharge trench pumping water to the stormwater network, unless there is good sediment treatment (TSS <150g/m3) and frequent monitoring (< 30 minute intervals).
- Protecting all stormwater sumps that may receive runoff from your site before starting work. Check daily and maintain as required.
- Keep stockpiles to a minimum on site.
- Keep stockpiles away from kerb and channel or install kerb drainage.
- If heavy rain is forecast bund or cover stockpiles and remove sump protection to reduce the risk of flooding.
- Isolate stockpiles from dewatering water and stormwater. Use a bund or pull them back from the water flow.
- Have an erosion and sediment control plan in place and establish controls around disturbed areas where sediment has the potential to enter waterways or drains.
- Check all sediment and erosion controls weekly and after heavy rain and maintain as required.



Learning as We Go

Training and lessons shared and competitive structure creates learning environment which improves skills



Culture and Knowledge

- SCIRT assigned environmental responsibility to site engineers
- Supported good behavior and conversations



The Raising of Environmental Standards

- KPIs driven by environmental awareness and performance
- Leading measures – points awarded to teams for good performance

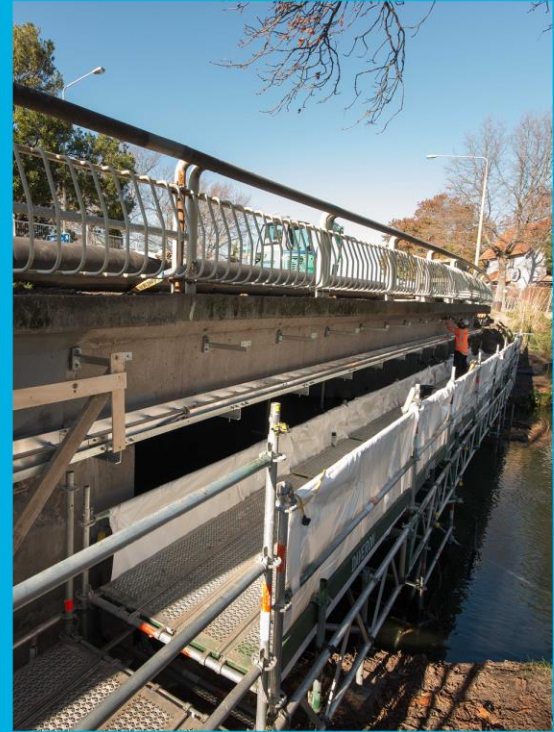


Environmental Auditing

- Sites are audited by delivery teams then scored on compliance
- Results are presented to SCIRT board monthly

Operating Environment

- Separate delivery teams operate within an environment of competitive tension
- Work allocation process based on performance scoring
- Collaborative and competitive



Lessons Learnt

- Environmental awareness training material is created by Delivery Teams and circulated
- Sharing lessons learned is incentivised through KPIs

Case Study



Environmental Toolbox

No 2

DEWATERING

WHAT?

- Excavations often require dewatering of the ground and/or the pumping out of any rainwater or groundwater collected in them. Both processes require the disposal of this water, either to the stormwater system (to kerb and channel or to a stream) or, if contaminated, to the wastewater system.

WHY?

- Avoid harm to the environment:** Water pumped from excavations can be silty. High levels of sediments suspended in water can suffocate fish by blocking their gills, can remove essential oxygen from the water and can kill plants, animals and insects living the water by stopping sunlight reaching them.
- Avoid harm to the environment:** Other contaminants, such as oils and chemicals, bind to silt particles and potentially cause greater problems than silt alone.
- Avoid harm to people & the environment:** Trench water may be contaminated with sewage, especially if laterals are still operational. High levels of wastewater can have devastating effect on wildlife and is unsanitary for recreational users of the rivers.
- Avoid prosecution:** We hold a resource consent which authorises the discharge of dewatering water to the stormwater system provided the water is clean. If the resource consent is breached we are liable for prosecution from Environment Canterbury.



DO

- ✓ Treat the water using a baffled settlement tank to ensure total suspended sediments (TSS) are below 150g/m³.
- ✓ Circulate first flush through adjacent trench or discharge to land until the discharge quality meets the TSS limit.
- ✓ Where flows are low consider discharging to land (with landowner permission).
- ✓ Install erosion protection if the discharge is not via an existing outfall.
- ✓ Install an oil water separator if works are located in a high risk contamination zone.
- ✓ Visually monitor the discharge every two hours while on site for sediment levels, contamination and flooding.
- ✓ Contact your Section Engineer immediately if any contaminants are encountered in the discharge eg oily sheen, discolouration or unusual odour.

DON'T

- ✗ DON'T discharge to stormwater if wastewater contamination is suspected. Switch to wastewater and contact your Section Engineer
- ✗ DON'T cause flooding of the street or properties.
- ✗ DON'T allow clean groundwater to flow through a dirty site as this may increase the sediment load of the discharge. Pipe flows if a clean path cannot be maintained through the site.

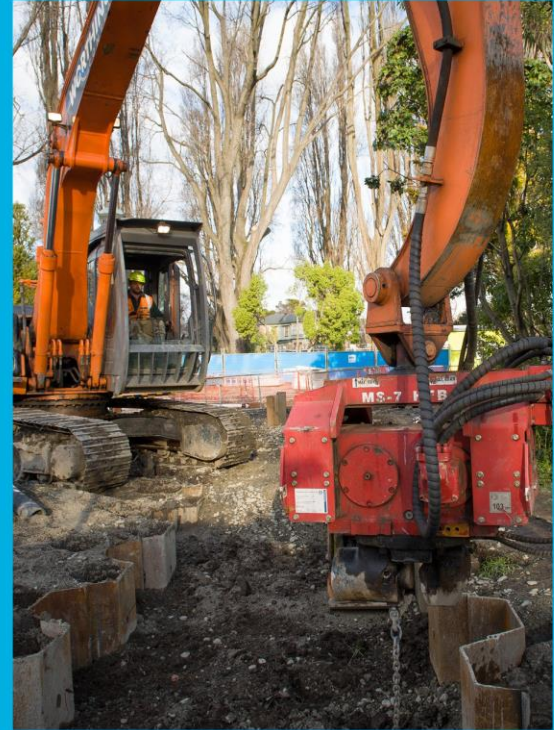


Use of Cloud Devices

- Meeting consent conditions
- Uploading and sharing training and information material

Civil Construction Environmental Guide

Communicates good practice
environmental controls that can
practically be carried out within
a construction site



SCIRT Legacy

- Circulation of information –
over 100 items
- Able to be replicated
- Improved Resilience

Questions?



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