SCIRT Rebuilding Infrastructure

LEARNING LEGACY

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

SCIRT Critical Risks Overview Tool

Story: Health and Safety

Theme: Programme Management

A tool which outlines the eight critical risks applicable to the SCIRT programme, and sets out minimum standards for addressing these risks.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz

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SCIRT Critical Risks Overview Tool

Background

In January 2014, the SCIRT Board identified these eight critical risks as the top Safety Critical Risks for SCIRT employees. The Safety Leadership Group (SLG) agreed and discussed the requirements below as being the minimum standard for addressing this Risk on SCIRT projects. The following requirements have been approved by the SCIRT Tactical Leadership Group (TLG).

The Minimum Standards are set out in the following chapters:

General	Service strikes	Mobile plant and people interface	TM and Public Interface	Lifting operations	Trenches & excavations	Confined spaces	Powered plant & tools	Height & Depth
1. Scope and application **A. Set the minimum standard for managing the risks from ZZZ on SCIRT projects.** **B. For clarity, the following requirements apply to: XXXX** **C. The following is outside the scope of this document: YYY**	A. Set the minimum standard for managing the risks from working around live services on SCIRT projects. B. For clarity, the following requirements apply to: (a) A service = any non-redundant pipe, duct, cable, used to convey a utility or commodity needed or required by the public (such as water, waste water, storm water, electricity, gas, telecom, etc..) (b) Services located	A. Set the minimum standard for managing the risks from interface between mobile plant and employees on SCIRT projects. B. For clarity, the following requirements apply to: (a) Self-propelled mobile plant and equipment that is used for transport, operation and maintenance on SCIRT projects. Examples include: cranes, light vehicles, diggers,	A. Set the minimum standard for managing the risks from interface between SCIRT work sites and employees with Traffic and the general public. B. For clarity, the following requirements apply to: (a) Traffic comprising all modes of transport (e.g.: cars, buses, bicycles, wheel chairs, pedestrians...) (b) The general public being people not involved in SCIRT	A. Set the minimum standard for managing the risks from lifting, operations on SCIRT projects. B. For clarity, the following requirements apply to: (a) Lifting and rigging operations for the purpose of moving and placing loads on SCIRT projects	A. Set the minimum standard for managing the risks from working in trenches and open excavations on SCIRT projects. B. For clarity, the following requirements apply to: (a) Trench excavations are those where the horizontal width at ground level is less than the vertical depth of the deeper side (c) Open excavations are wider than trenches and include foundations,	A. Set the minimum standard for managing the risks from working in confined spaces on SCIRT projects. B. For clarity, the following requirements apply to: (a) An enclosed or partially enclosed space that is not intended or designed primarily for human occupancy, within which there is a risk of one or more of the following: (b) An oxygen concentration	A. Set the minimum standard for managing the risks from working with powered plant and tools on SCIRT projects. B. For clarity, the following requirements apply to: (a) Powered plant or tools are actuated by an additional power source and mechanism other than the solely manual labour used with hand tools. The most common types of power tools use electric motors.	A. Set the minimum standard for managing the risks from working at heights or above depth on SCIRT projects. B. For clarity, the following requirements apply to: (a) Work at height means working in a place where a person could be injured if they fell from one level to another. This can be above or below ground level. Examples are: access to machinery or

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
	underground and above ground (c) Includes services public and residential property	cranes, forklifts, drill rigs, trucks, hydro excavation trucks, roading works plant, water trucks, etc…. (d) Operation of Mobile plant within the area bounded by the Traffic Management Plan (TMP) and the interface with the work site employees C. The following is outside the scope of this document: (a) Operation of mobile plant outside the area bounded by the TMP and interface with the public. (Ref: CR#3)	related work C. The following is outside the scope of this document: (a) Transport of SCIRT employees to and from work sites		building sites and the like C. The following is outside the scope of this document: (a) Work in Confined Spaces (Ref: CR#7) (b) access to and working around trenches and excavations (Ref: CR#8") (c) Work with Mobile Plant (Ref: CR#2") (d) Work around services (Ref: CR#1")	outside the safe oxygen range. (c) A concentration of airborne contaminant that may cause impairment, loss of consciousness or asphyxiation. (d) A concentration of flammable airborne contaminant that may cause injury from fire or explosion. (e) Engulfment in a stored free-flowing solid or a rising level of liquid that may cause suffocation or drowning. (f) If there is uncertainty, than the operation will be treated as a Confined Space. Examples of confined space situations on SCIRT projects: manholes, pipes, C. The following is outside the scope of this document: (a) Work in trenches and open excavations (Ref: CR#5)	Internal combustion engines and compressed air are also commonly used.. Examples include: concrete saws, air compressors, generators, compactors, ramset guns, grinders, pipe bursting plant, etc. C. The following is outside the scope of this document: (a) Work with mobile plant (Ref: CR#2)	facilities, work on structures like bridges or Pump Stations, working above a trench. C. The following is outside the scope of this document: (a) Work within a trench, open excavations, confined spaces mobile plant (Ref: CR#5 and CR#7)
2. Hazards involved **A. Hazards and injury description**	A. The following Hazards can result in serious harm injuries: (a) Underground services when excavating (b) Overhead services when moving, operating, placing	A. The following Hazards can result in serious harm injuries: (a) Being crushed by mobile plant (reversing, pinned against…) (b) Sustaining fractures from falls while	A. The following Hazards can result in serious harm injuries: (a) Employees being crushed by Traffic (b) Members of the public exposed to work site hazards (mobile plant, falls,	A. The following Hazards can result in serious harm injuries: (a) Crushing and being pinned by a load (b) Crushing by tipping of lifting plant or equipment (c) Strike to overhead	A. The following Hazards can result in serious harm injuries: (a) Entrapment during Trench collapse (b) Contaminated ground and toxic gases and fumes (c) Exposed live	A. The following Hazards can result in serious harm injuries: (a) Engulfment of a person by solid or liquid that is stored within the confined space (b) Explosions or	A. The following Hazards can result in serious harm injuries: (a) Lacerations, crushing and burns from moving parts (b) Burns from electric shock (c) Death from	A. The following Hazards can result in serious harm injuries: (a) Falls when climbing on top of plant and facilities for access or maintenance (b) Falls from working on elevated

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	mobile plant B. This can result in fatality through electrocution or explosions, and traumatic body injuries including burns, fractures, paralysis.	accessing, operating or maintaining plant (c) Fractures when hit by moving pieces of plant (swing zone, pinned against…)	etc.) and being injured	services	services (d) Difficult access and egress in emergency situations (e) Falling equipment and debris into excavation	impairment due to atmospheric hazards (high or low oxygen levels, contaminants in the atmosphere) (c) Difficult access and egress and emergency situations	electrocution (d) Injury from stored energy (compressed air, hydraulic, pneumatic.) (e) Radiation burns (f) Toxic gases (g) Explosive charges	structures (bridges, walls etc.) (c) Falls into to trenches and excavations (d) Falls when access and egress to trenches, excavations and structures
3. Concept design **A. Involves the Design Team and DT ECI representative** **B. Define the Critical Risks on the project** **C. Risk identified and evaluated** **D. Risk assessment recorded in the Project Risk Register** **E. Consider early options to eliminate and substitute the risks, or remove the interface with employees**	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations involving work around live services; C. Identify and evaluate the risks relating to work around live services, including the fragility, age and type of existing infrastructure; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate or substitute working around services, (ie: replace open excavation work by trenchless methods), or remove the interface with employees.	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations involving work with Mobile Plant; C. Identify and evaluate the risks relating to wok around Mobile Plant; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate or substitute Mobile Plant from the work site, or remove Mobile Plant and employee interface	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations involving work around Traffic and the Public; C. Identify and evaluate the Risks relating to Traffic Management and Public interface, for employees and the general public; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate or substitute work around traffic and the public, or remove the interface with employees. F. The DT ECI representative identifies course (road routes) expectations around Traffic Management	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations involving lifting and slinging; C. Identify and evaluate the risks relating to Lifting Operations – and interaction with site employees; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate or substitute lifting operations or remove the interface with employees.	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations involving work in trenches and excavations; C. Identify and evaluate the Risks relating to Work in Trenches and Excavations; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to replace open excavation work by trenchless methods, or remove the interface with employees	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations of confined space; C. Identify and evaluate the risks relating to work in confined spaces; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate work in confined spaces.	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations of confined space; C. Identify and evaluate the risks relating to Work with powered plant and tools; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate or substitute the need for powered plant and tools. F. Consider procurement of materials to reduce work on site (eg: bevelling on pipes sourced already done)	A. Together, the Delivery Team ECI Representative and the Design Team : B. Define possible situations of confined space; C. Identify and evaluate the risks relating to working at Heights and Depth; D. document the Risk Assessment in the Project Risk Register; E. Consider early options to eliminate work from heights or above open excavations (eg: trenchless methods)

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4. Detailed design and TOC stage **A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control** **B. Emergency Response procedures are considered** **C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter.** **D. Management of change process to align the Risk Assessment with the final scope of work and TOC** **E. Provision for temporary protection measures and controls, described in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.** **F. Specific deliverables where applicable**	A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control. In particular: (a) Where the probability of services are identified by the Design Team, then in conjunction with the utility location providers, locations must be confirmed to positively identify the type of utility and provide specific locations accurate to a minimum of Level B (see appendix). (b) Utility location providers to provide information on any potentially relevant features or unidentified services (c) Engage directly with affected Utility(s) companies and gain agreement on the design requirements and construction methodology required to protect or relocate the affected utility, The utility's agreement to this protection	A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control. In particular: (a) The selection of plant considers and minimises the interaction between people and plant (b) The work methodology considers and minimises the interaction between people and plant (i.e.: ergonomics) B. Emergency Response procedures are considered C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection	A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control. B. Emergency Response procedures are considered F. The Delivery Team ECI Representative produces the Traffic Staging Schedule (TSS) (ECI deliverable) which links the works programme into stages and assigns a traffic impact at each stage. The TSS informs the Works Methodology. C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection measures and controls, described	A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control. In particular: (a) The Delivery Team ECI Representative identifies the loads that will be lifted on the project. This informs the methodology as well as the equipment needed and adequate machinery. B. Emergency Response procedures are considered C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection measures and controls, described in the Work	A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control B. Emergency Response procedures are considered C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection measures and controls, described in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.	A. Delivery Team ECI Representative builds the Work methodology and reduces the risk to the lowest practicable level using the hierarchy of control B. Emergency Response procedures are considered C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection measures and controls, described in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.	A. Delivery Team ECI Representative builds the Work methodology to eliminate where possible the need for powered plant and tools. Where the Risk is not eliminated, it is reduced to the lowest practicable level using the hierarchy of control B. Emergency Response procedures are considered C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection measures and controls, described in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.	A. Delivery Team ECI Representative builds the Work methodology to eliminate where possible the risks from Working at Heights and Depths. Where the Risk is not eliminated, it is reduced to the lowest practicable level using the hierarchy of control B. Emergency Response procedures are considered C. The Project Risk Register is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC E. Provision for temporary protection measures and controls, described in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.

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	or relocation must be detailed on the UDA form in Project Centre. (d) If a utility chooses to extend or upgrade their network as part of a SCIRT project then a commercial agreement for this work must be negotiated and agreed by the IST Utility Coordinator, who is accountable for ensuring a Management of Change Process is undertaken, and changes to risks formally reflected in the risk assessment. B. Emergency Response procedures are considered C. The Project Risk Register is reviewed in consultation with a person knowledgeable in Risk Assessment and the subject matter. D. Management of change process to align the Risk Assessment with the final scope of work and TOC	measures and controls, described in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.	in the Work Methodology, included in the Total Outturn Cost (TOC) for the relevant Project.	Methodology, included in the Total Outturn Cost (TOC) for the relevant				

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	E. The costs for temporary protection measures and controls, described in the Methodology, are budgeted and included in the TOC (Total Outturn Cost) for the relevant Project.							
5. Pre-construction/ mobilisation stage **A. The construction crews are involved in the formulation of the Risk Assessment (Eg: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start** **B. The Risk Assessment is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter.** **C. Specific plans are formulated (PMP, TMP etc.)** **D. Risk Assessment and Plans are communicated to those involved in the operation, and authorised by the accountable person**	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. C. To ensure best practice and to provide a focus for reducing strikes on utility networks, the following service location and protection procedures should be applied by all Delivery Teams and subcontractors: (a) Delivery Team Project Engineer to contact affected utilities and confirm their	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. C. Specific plans and processes are formulated : (a) A Plant Movement Plan (PMP) considers exclusions zones, physical restrictions and people within the site (ie: define zones to load and unload, driver safety, movement of other plant, traffic arrival and departure, storage materials, lifting,	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. C. Specific plans and processes are formulated : (a) A Traffic Management Plan (TMP), aligned with Code of Practice for Temporary Traffic Management (CoPTTM) and the Road Controlling Authorities (RCA's) and Local Operating Procedures (LOP), is completed and approved.	A. The construction crews are involved in the formulation of the Risk Assessment (Eg: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. C. Specific plans and processes are formulated : (a) Lifting operations within the scope of existing DT procedures and will proceed accordingly. (b) For lifting operations outside the scope of existing DT procedures, a Lift Plan is issued and includes the	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed and authorised by a person knowledgeable in Risk Assessment and the subject matter. C. None D. Risk Assessment and Plans are communicated to those involved in the operation, and authorised by the accountable person	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed by a person knowledgeable in Risk Assessment and the subject matter. C. None D. Risk Assessment and Plans are shared and signed by all involved in the operation	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed by a person knowledgeable in Risk Assessment and the subject matter C. None D. Risk Assessment and Plans are shared and signed by all involved in the operation	A. The construction crews are involved in the formulation of the Risk Assessment (E.g.: SWMS, JSEA, etc.). Controls and responsibilities are documented prior to work start B. The Risk Assessment is reviewed by a person knowledgeable in Risk Assessment and the subject matter C. None D. Risk Assessment and Plans are shared and signed by all involved in the operation

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
	approval of detailed design (b) Delivery Team Project Engineer must obtain "as built" service plans from each utility using the contact details below (c) Do not use "as-built" that were issued by the utility more than 30 days ago. (d) Delivery Team to complete Permit to Excavate, and include the signature of the accountable person in the formal record in permit register (e) Locations to be marked out to SCIRT approved standards (refer to SCIRT Best Practice Guide for Subsurface Utility Location – 1001-CN-GE-MO-0001) D. The Risk Assessment and Permits are communicated to those involved in the operation, and authorised by the accountable person	overhead lines) (b) A process for delivery is clearly defined. The load and unload area and methodology id defined to eliminate mobile plant and people interface. define delivery waiting zone D. Risk Assessment and Plans are communicated to those involved in the operation, and authorised by the accountable person	D. Risk Assessment and Plans are communicated to those involved in the operation, and authorised by the accountable person	signature of the authorised accountable person for the operation D. Risk Assessment and Plans are communicated to those involved in the operation, and authorised by the accountable person				
<u>6. Training and competency</u> **A. Employees on site have a clear understanding of responsibilities, expectations, and**	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task	A. Employees on site have a clear understanding of responsibilities, expectations, and Safety Risks relating to their role or task

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Safety Risks relating to their role or task **B. Licenses and endorsements** **C. Evidence of minimum level of training as (a) Unit Standards or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the use/ operation/ maintenance of the plant/ equipment in accordance with the Operators and Manufacturer's Instructions, and Industry best practice** **D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site.** **E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines**	B. None C. Evidence of minimum level of training for Project Managers, site engineers, supervisors, operators, foremen and spotters: (a) Unit Standards (E.g.: SCIRT on-site training in reading service plans and locating services,) or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the operation and maintenance of the equipment used in accordance with the Manufacturer's Instructions, and Industry best practice (c) As a minimum, employees are trained to the standard for work within the Minimum Approach Distance (MAD) for overhead power lines, where applicable D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site.	B. Endorsements and licenses (WTR..) for authorised operation of plant C. Evidence of minimum level of training for operators of Mobile Plant as: (a) Unit Standards or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the operation and maintenance of the machine operated in accordance with the Operators and Manufacturer's Instructions, and Industry best practice (c) A logbook will be maintained by the operator D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines	B. None C. Evidence of minimum level of training for all employees involved in the Traffic Management operation: (a) Unit Standards and Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the operation and maintenance of the equipment used in accordance with the Manufacturer's Instructions, and Industry best practice D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines	B. None C. Evidence of minimum level of training for all employees involved in the lifting activities on site: (a) Unit Standards (E.g.: SCIRT training lifting and slinging) or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the operation and maintenance of the equipment used in accordance with the Manufacturer's Instructions, and Industry best practice D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines	B. None C. Evidence of minimum level of training for work in trenches and excavations: (a) Unit Standards or a National Certificate to support and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the operation and maintenance of the equipment used in accordance with the Manufacturer's Instructions, and Industry best practice D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines	B. None C. Evidence of minimum level of training for employees involved in the Confined Space operation: (a) Unit Standards or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for the operation and maintenance of the equipment used in accordance with the Manufacturer's Instructions, and Industry best practice D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the current Australian Standard for Confined Spaces	B. None C. Evidence of minimum level of training for operators of powered plant and tools: (a) Unit Standards or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for operation and maintenance of the plant and tools used in accordance with the Manufacturer's Instructions, and Industry best practice D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines	B. None C. Evidence of minimum level of employees using fall arrest and restraint equipment: to: (a) Unit Standards or a National Certificate and/ or Company training that illustrates a history of Company procedures, and (b) detailed Instruction for operation and maintenance of equipment used in accordance with the Manufacturer's Instructions, and Industry best practice D. As a minimum, a training record is maintained on site. As Best Practice, a competency register is maintained on site. E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines

	E. Supervision on site can demonstrate skills and expertise for the task performed on site, and a knowledge of the ACOP or Best Practice Guidelines, and OEM guidelines							
7. Fitness for use plant, equipment and tools **A. Equipment/ tools are appropriate for the assigned task** **B. equipment approved, inspected and installed as per current ACOP and manufacturer's requirements** **C. As Best Practice, a register for equipment is updated and available on site** **D. Risk assessment / plant inductions**	A. The construction crew, led by the project engineer shall ensure the appropriate tools and methodology for locating services are applied on their project. B. Use engineered standard support and protection solutions for services which are exposed, particularly those that span across trenches. This includes the replacement requirements for AC pipes C. N/A D. N/A	A. Mobile Plant used is appropriate for the assigned task (e.g.: 20T excavator not used for minor excavations) B. Mobile Plant is approved, inspected and maintained as per current ACOP and manufacturer's requirements C. As Best Practice, a register for Mobile Plant is updated and available on site D. Risk assessment / plant inductions : (a) As a minimum, a documented inspection ensures Mobile Plant meets the SCIRT minimum requirements (Ref: SCIRT NOR Mobile Equipment Minimum Requirement) prior to use on site, (b) As Best Practice, the documented inspection includes a Risk assessment of the Plant and People interaction	A. TM Equipment/ tools are appropriate for the assigned task B. TM equipment is approved, inspected and installed as per current ACOP and manufacturer's requirements C. N/A D. N/A	A. Lifting Equipment/ tools are appropriate for the assigned task and must comply to minimum Standard for SCIRT plant (Ref: SCIRT NOR Mobile Equipment Minimum Requirement) B. Lifting equipment and lifting points are : (a) approved and inspected and installed as per the current ACOP for Load – lifting Rigging, and manufacturer's requirements (b) All lifting devices must have a mechanism that ensures the sling does not come off the hook when not under load C. As Best Practice, a register for lifting equipment and lifting points is updated and available on site D. N/A	A. Equipment/ tools are appropriate for the assigned task (e.g.: shoring vs. trench support) B. Temporary works: (a) are approved by an authorised accountable person (b) Shield and shoring equipment is approved, inspected and installed as per the current ACOP (ACOP for Safety in Excavations and Shafts for foundations) and manufacturer's requirements C. As Best Practice , a register for shields and shoring equipment and safe trench access is updated and available on site D. N/A	A. Equipment/ tools are appropriate for the Confined Space entry operation B. Confined space entry and rescue equipment is approved, inspected and installed as per the current Australian Standard for Confined Spaces and manufacturer's requirements C. As Best Practice, a register for equipment is updated and available on site D. N/A	A. Equipment/ tools are appropriate for the assigned task B. Powered plant and tools are approved, inspected and installed as per current ACOP and manufacturer's requirements C. As Best Practice, a register for equipment is updated and available on site D. As a minimum, a documented Risk assessment covers powered plant / people interaction	A. Equipment/ tools are appropriate for the assigned task B. Equipment for fall arrest, fall restraint and fall isolation is approved, inspected and installed as per current ACOP and manufacturer's requirements C. As Best Practice, a register for equipment is updated and available on site D. N/A

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
<u>8. Management of change</u> **A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation,** **(a) in consultation with the construction crew and** **(b) includes the signature of an authorised accountable person for the operation**	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation B. Proactive communication is required between the STMS of the layout and the Site Manager must ensure the former has a solid understanding of existing and forward work. C. The Risk Assessment is reviewed every time the TMP is amended as the work progresses D. The STMS shall maintain safe pedestrian access with consideration for impaired or disabled people. (Footpath closures, signage, etc.) By regular discussions with the Site Manager and their Crew.	A. A process is in place to ensure that the lifting methodology is reviewed when there is a change in the planned loads and lifting situation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation	A. A process is in place to ensure that the methodology is reviewed when there is a change in the work site environment or machinery involved in the operation, (a) in consultation with the construction crew and (b) includes the signature of an authorised accountable person for the operation

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
9. Safe operation **A. Equipment is checked and maintained within certification where applicable** **B. Appropriate signage used where required** **C. Agreed, documented and effective means of communication are in place** **D. Risk assessment completed and available, and determines need for a Permit / Management Plan** **E. Permit / Plans used where required**	A. N/A B. Appropriate signage used where required C. Agreed, documented and effective means of communication are in place D. The Risk assessment completed and available, and determines need for a Permit to excavate E. Permit to Excavate: (a) A Permit to Excavate is in place to allow machinery or hand digging within 1.5 metres of a service that is indicated on a drawing and/ or marked out. (b) GPR or RF Cable and Pipe Tracers* are to be used to locate the service indicated. (c) Hydro or vacuum excavation is the default method for positively identifying services on all SCIRT sites. (Ref: SCIRT Best Practice Guidelines for Hydro Excavation and Subsurface Utility Location). Where this method is not practicable, the	A. Mobile Plant is checked and maintained (a) within certification where applicable (b) Documented daily prestart checks on all mobile plant (c) A "tag-out" procedure is in place to identify defective plant B. Appropriate signage used where required C. Agreed, documented and effective means of communication are in place D. The Risk assessment completed and available, and determines need for a Plant Movement Plan E. The Plant Movement Plan (PMP) is in place under the responsibility of the work site manager: (a) Site access for Mobile Plant is defined with the project STMS. The STMS controls access to and from site of Mobile Plant (b) A delivery process identifies loading and unloading zones, signage and	A. Equipment is checked and maintained within certification where applicable B. Appropriate signage used where required C. Respective responsibilities and communication between the TM contractor and Work Site contractor are clearly defined: (a) Traffic Management Contractor is responsible for managing the safe and efficient movement of road users adjacent to the worksite in addition to managing the movement of site related mobile plant on and off site. (b) Work Site Manager is responsible for managing the safe activities within the inside of the worksite. (i.e.. behind the 1.8 metre fencing) (c) Communication between the STMS and the Work Site Manager is regular, documented and effective D. The Risk assessment completed and available, and	A. All lifting equipment is checked and maintained within certification where applicable B. Appropriate signage used where required C. All employees involved in the lifting operation have agreed and documented the communication mode prior to work start D. The Risk assessment completed and available, and determines need for a Lift Plan E. Lifting Operations: (a) A dogman must be assigned to control the movement of the load (b) A Spotter must be assigned to control the area of the load (c) No one is to enter the Drop Zone, which is clearly defined and communicated to everyone on site. (d) Authorised employees only to enter the Exclusion Zones, which are clearly defined and communicated to everyone on site. (e) A tag-line is used if	A. Shield and shoring equipment is checked and maintained within certification where applicable B. Appropriate signage used where required C. Agreed, documented and effective means of communication are in place D. Assessment and definition of the excavation: (a) There may be situations where excavations can be considered as confined spaces, as determined by a Risk Assessment (b) The "Permit to Excavate" contains the criteria to define Confined Space (also Ref: CR#6) (c) A risk assessment is in place to cover the risk of falling debris as per the ACOP (e.g.: remove objects from edge) (d) A risk assessment is in place to cover the risk from exposure to exposed services, and exposed services will be supported and protected (Ref : CR#1) (e) a Risk assessment	A. All confined space operation equipment is checked and maintained within certification where applicable B. Appropriate signage used where required C. Agreed, documented and effective means of communication are in place D. Risk assessment completed and available, and determines need for a Confined Space Entry Permit E. The "Permit to Excavate" contains the criteria to define Confined Space (also Ref: CR#5) F. Confined Space Permit: (a) Confined Space permits issued and all requirements followed (b) As Best Practice, Consider two means of egress are in place	A. All powered plant an tools are checked for : (a) Safety features are operational (b) Pre operational checks are performed (doesn't need to be recorded) (c) Correct operating procedures available for use of powered plant and tools (d) A "tag-out" procedure is in place to identify defective plant B. Appropriate signage used where required C. Agreed, documented and effective means of communication are in place D. Risk assessment completed and available, and determines need for a Permit (e.g.: concrete saw operation) E. Permit / Plans used where required (e.g.: concrete saw operation) F. Pressure airlines fitted with whip hose restraint as a security in the event of a coupling failure	A. N/A B. Appropriate signage used where required C. Agreed, documented and effective means of communication are in place D. Assessment and definition of the Risk of Fall : (a) completed and available, (b) considers exposure of employees and the public/ traffic (c) considers means access and egress to height and depth (d) defines the appropriate controls (e) determines the need for a Permit (E.g.: Working at Height Permit) E. Permit / Plans used where required F. Access and egress. Ladders are setup and secured as per the BPG for working at heights (Ref: WorkSafe-Best Practice Guidelines for working-height) G. The "SCIRT NOR Public Safety fencing and Edge protection" defines the requirements for preventing the

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
	reasons are documented in the risk assessment by the Project Engineer (d) The service must be positively identified and its attributes recorded before excavation as specified in the pre dig documentation is commenced within 1.5 metre of that service. (e) The minimum number of potholes/slot trenches required each day must be specified by the Site Engineer and recorded on the daily Pre Dig documentation. When deciding on where to slot trench or pothole and the frequency of slot trenches or potholes, consideration must be given to local conditions and the potential for crossovers and deviations from standard alignments. (f) Employees signing permits have accountability for the safety of the task and must have formal approval to sign permits. (g) Site pre start meetings must include a daily process for working	responsibilities (c) Mobile Plant interface O/H's and above ground services are managed (d) Exclusion Zones/ No Go Zones are clearly defined and communicated (e) Reversing : drive through preferred and spotters mandatory (f) Controlled and uncontrolled movements in relation to people and plant have been considered	determines need for a Traffic Management Plan E. The Traffic Management Plan (TMP): (a) A Site Traffic Management Supervisor (STMS) with the minimum level of training required for the type of road where works are being carried out, is designated for deployment, amendments and monitoring of the TMP (Ref: CoPTTM). (b) The STMS has the level of autonomy required to accommodate any minor amendments required to the TMP. Significant reviews to the TMP are discussed and approved by the SCIRT IST Traffic Management Team before submission to the RCA. (c) The site is monitored as per minimum requirements defined in CoPTTM or the Local Operating Procedures. (d) The Delivery Teams Traffic Manager, in conjunction with	the load needs to be positioned (f) Remove the bucket prior to lifting (g) A Test lift is to establish the balance and stability of the load	completed and available, and determines the controls necessary for safe work in the trench or excavation E. Safe Work in Excavations and trenches: (a) Ground condition will dictate the need for shoring (b) Good robust access and egress will be provided for expedient evacuation (c) Where contamination in trenches is known, a suitable process for managing the risk (e.g.: atmosphere testing, monitoring...)			public and work force from falling into Trench excavations

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
	around services. E. Work around Overheads: (a) A "Close approach consent " from the asset owner is required for work near electric overhead lines (b) Use of "goalposts" , Orion approved measuring poles, or cone sleeves to visually alert operators from coming into contact with overhead lines. F. SCIRT approved spotter mandatory for all operations around services, both underground and overhead.		the STMS, will manage the interface with neighbouring TMP's (e) The STMS for onsite Traffic Management will ensure safe access is provided for all modes of transport (f) In the absence of the primary STMS, a formalised handover of the TMP takes place with the pre designated STMS or Traffic Controller (TC) (g) The STMS designates the site access for Plant and Vehicles accessing the work site in coherence with the Work Site's Plant Movement Plan (PMP). (h) The STMS or TC inducts all employees and visitors in respect to the TMP					
<u>10. Emergency management</u> **A. Emergency and evacuation procedures for relevant emergency situations are communicated**	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills	A. Emergency and evacuation procedures for relevant emergency situations are communicated B. As Best Practice, Emergency drills

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
B. As Best Practice, Emergency drills are carried out and recorded every 6 months	are carried out and recorded every 6 months C. Awareness of employees on appropriate response in the event of striking live electric strikes	are carried out and recorded every 6 months	are carried out and recorded every 6 months	are carried out and recorded every 6 months	are carried out and recorded every 6 months C. The site Emergency Procedure considers evacuation from a trench	are carried out and recorded every 6 months C. The site Emergency Procedure considers evacuation from a confined space	are carried out and recorded every 6 months	are carried out and recorded every 6 months C. Emergency procedure will provide for recovery of someone suspended on fall arrest.
<u>11. Incident management, reporting and investigation</u> **A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated.** **B. A process is in place to report and investigate incidents and Near Misses** **C. A process is in place to close off corrective and preventive actions**	A. The Return to Work Process following a Recordable Service Strike or a Reportable Service Incident, must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses. C. A process is in place to close off corrective and preventive actions. D. Post incident D&A testing as required	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses. (a) Incidents and Non-conformances involving Traffic and the Public are reported through the Delivery Team's Traffic Manager (b) An incident resulting in a crash involving a road	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy	A. The Return to Work Process following a significant incident must include the Project Manager or his representative authorising return to work when satisfied that remedial action has been taken and investigation has been initiated. B. A process is in place to report and investigate incidents and Near Misses C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
D. Post incident D&A testing as required by the current SCIRT D&A policy **E. All employees involved in the operation are held accountable to Delivery Team processes**	by the current SCIRT D&A policy of Delivery Team and Sub-Contractor employees involved in the immediate event if a service was hit or compromised... E. All employees involved in the operation are held accountable to Delivery Team processes	E. All employees involved in the operation are held accountable to Delivery Team processes	user, or damage to any installed Traffic Management Device (TMD), vehicles, plant or injury to a person must be reported within 24 hours (Ref: CoPTTM) to the SCIRT IST traffic manager. C. A process is in place to close off corrective and preventive actions D. Post incident D&A testing as required by the current SCIRT D&A policy E. All employees involved in the operation are held accountable to Delivery Team processes	E. All employees involved in the operation are held accountable to Delivery Team processes	E. All employees involved in the operation are held accountable to Delivery Team processes	E. All employees involved in the operation are held accountable to Delivery Team processes	E. All employees involved in the operation are held accountable to Delivery Team processes	E. All employees involved in the operation are held accountable to Delivery Team processes
<u>12. Useful documents</u> **A. Approved Codes Of Practice** **B. Best Practice Guidelines** **C. WorkSafe website** **D. Regulations**	A. Guide for Safety with underground services (OSH – latest version) B. WorkSafe factsheet : Safe digging practices – underground services	A. Accepted Codes of Practice: (a) Australian COP for Mobile Plant (b) ACOP Operator Protective Structures on self-propelled mobile mechanical plant (OSH-latest version) B. Best Practice Guidelines (a) Guidelines for working around mobile plant (NZTA – draft) (b) Best practice guidelines for demolition in New Zealand (WorkSafe – latest version) (c)	A. XXXX B. Best Practice Guidelines (a) CoPTTM (NZTA – latest version) C. Local operating procedures (CTOC– latest version)	A. Accepted Codes of Practice: (a) ACOP for Cranes (WorkSafe-latest version) (b) ACOP for Load – lifting Rigging (WorkSafe-latest version) B.	A. Accepted Codes of Practice: (a) ACOP for Safety in Excavations and Shafts for foundations (WorkSafe-latest version) B. WorkSafe factsheet : Preventing Trench collapses – excavations	A. Australian Standard for Confined Spaces (AS 2865 – latest version) B.	A. Accepted Codes of Practice: (a) ACOP power actuated hand held fastening tools (WorkSafe-latest version) (b) ACOP Pressure equipment (WorkSafe-latest version)	A. Accepted Codes of Practice: (a) ACOP Power operated Elevating Work Platforms (WorkSafe – latest version) B. Best Practice Guidelines (a) Best Practice Guidelines for working-height (WorkSafe-latest version) (b) Best practice guideline for scaffolding in New Zealand (WorkSafe – latest version)

	Service Strikes	Mobile plant and people	TM and Public	Lifting	Trenches	Confined Space	Powered Plant	Heights
13. SCIRT resources	A. Design Guideline 05 "Utilities coordination & subsurface utilities information". B. NOR 23 "Utilities coordination & sub surface utilities information" C. Utility marking standards requirement	A. SCIRT minimum requirements for plant B. Plant Risk Assessment Matrix				A. Confined Space Identification Worksheet (in progress)		A. SCIRT NOR Public Safety fencing and Edge protection

14. Acronyms and definitions

Term	Acronym	Definition	Source
Approved Code Of Practice	ACOP	Approved Codes of Practice are documents that offer an approved method of achieving compliance with regulatory requirements. A code of practice will tell you how to meet the regulation requirements and controls in a way that is legally defensible. They are not mandatory and other ways of meeting the requirements can be adopted instead.	Department of Labour, NZ. http://www.dol.govt.nz/workplace/knowledgebase/item/1469 Environmental Protection Agency, NZ http://www.epa.govt.nz/publications-resources/publications/codes-of-practice/pages/default.aspx
Authorised Accountable person		Employee trained and given the means and delegated authority to assume accountability for a task.	SCIRT internal
Christchurch Traffic Operations Centre	CTOC	CTOC is the Road Controlling Authority (RCA) in charge of administering Temporary Traffic Management for the Christchurch City and Banks Peninsula area.	SCIRT internal
Close approach consent		A Consent issued by the Electricity Asset Owner which will set out the minimum safe approach distances and any other safety measures for working near overhead lines.	Orion. http://www.oriongroup.co.nz/your-network/safety/close-approach-consents.aspx
Code of Practice for Temporary Traffic Management	CoPTTM	The NZ Transport Agency (NZTA) Traffic control devices manual Part 8 Code of practice for temporary traffic management describes best practice for the safe and efficient management and operation of temporary traffic management (TTM) on all roads in New Zealand.	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Competent person		Means a person who has acquired, through a combination of training and qualification or experience, the knowledge and skills to perform the task required	WorkSafe NZ
Construction crew		Crew of employees working for a contractor to construct SCIRT work	SCIRT internal
Confined space		An enclosed or partially enclosed space that is not intended or designed primarily for human occupancy, within which there is a risk of one or more of the following: (a) An oxygen concentration outside the safe oxygen range. (b) A concentration of airborne contaminant that may cause impairment, loss of consciousness or asphyxiation. (c) A concentration of flammable airborne contaminant that may cause injury from fire or explosion. (d) Engulfment in a stored free-flowing solid or a rising level of liquid that may cause suffocation or drowning.	AS 2865-2009 (Australian Standard Confined Space)
Critical Risk (Safety)		Circumstances under our control that may be Immediately Dangerous to Life or Health (IDLH) for our staff, contractors or the public. If not managed, these circumstances could cause traumatic injuries or death. The term immediately dangerous excludes circumstances from critical risk that are chronic or cumulatively harmful in nature. These non-critical risks are not immediately Dangerous to Life or Health and therefore managed through our normal risk management and mitigation processes.	SCIRT internal
Delivery Team ECI representative		Generally a Project Engineer, Project Manager or ECI coordinator knowledgeable in the subject matter and involved in the ECI process on behalf of his/ her delivery team	SCIRT internal
Design Team		SCIRT Team in charge of producing the design for projects	SCIRT internal
Dogman		Trained according to Unite standard for lifting	SCIRT internal

Drop Zone		Restricted access area directly underneath the load	SCIRT internal
Drug and Alcohol	D&A		
Employees		Personnel conducting work on or for SCIRT projects, as opposed to the general public. Includes Delivery Team and subcontractor staff.	SCIRT internal
Early Contractor Involvement	ECI	SCIRT process by which Delivery Teams get involved and contribute to the design and constructability of a Project.	SCIRT internal
Exclusion Zone		An Exclusion Zone is a restricted access area around mobile plant and vehicular traffic (or may even be defined as the entire Worksite). Persons on foot can only enter an exclusion zone if authorised to do so and if the necessary safety controls are in place. Exclusion zones around operating mobile plant must have a minimum separation distance (eg. three meters) which would be increased in accordance with the speed and size of the mobile plant/vehicles and any attachments used or loads carried	SCIRT internal
Job Safety and Environmental Analysis	JSEA	Job Safety Analysis (JSA) simply means looking at the work task and considering what is the safest way to complete it. It is a way of becoming aware of the hazards involved in doing the job and taking action to prevent an injury. The JSA process is suitable for different trades do different tasks, and need not require enormous amounts of time or use endless pieces of paper.	Work Safe Victoria http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/job-safety-analysis
Local Operating Procedures	LOP	Outlines the Christchurch Traffic Operations Centre (CTOC)'s view on Temporary Traffic Management (TTM) applications within the area administered by CTOC (Christchurch City and Banks Peninsula). The NZTA Code of Practice for Temporary Traffic Management (CoPTTM) is the primary reference standard, and LOP document explain variations to CoPTTM that CCC and NZTA consider to be acceptable in our area.	CTOC. More info : http://tmpforchch.co.nz/downloads/ctoc-local-operating-procedures-lops/
Logbook (Operator's)		A record kept by an operator of the hours worked on each type of plant (model, make, etc.) operated by him/ her.	SCIRT internal
Minimum Approach Distance	MAD	Means the minimum distances when approaching live conductors that shall apply to any person who is not a competent live line line-worker, and include conductive material carried by them, vehicles, and mobile plant.	New Zealand Electrical Code of Practice for High voltage live line work http://www.med.govt.nz/energysafety/documents/legislation-policy/electricity-act-regulations-codes/standards-and-codes-of-practice/
Mobile Plant		Self-propelled mobile plant and equipment that is used for transport, operation and maintenance.	SCIRT internal
No Go Zone	NGZ	The No Go Zone (NGZ) is a defined prohibited area. There is no authorisation attainable to enter a No Go Zone. All mobile plant / equipment and vehicles must STOP / cease operation immediately if a person on foot enters a NGZ.	SCIRT internal
Original Equipment Manufacturer	OEM	Makes equipment or components that are then marketed by its client, another manufacturer or a reseller, usually under that reseller's own name.	SCIRT internal
Open excavations		Open excavations are wider than trenches and include foundations, building sites and the like	ACOP (code of practice) for Safety in Excavations and Shafts for Foundations
Operator		Employee whose role is to operate mobile plant, machinery, vehicles, powered plant.	SCIRT internal
Permit to Work	PTW	Where proposed work is identified as having a high risk, strict controls are required. The permit-to-work is a documented procedure that authorises certain people to carry out specific work within a specified time frame. It sets out the precautions required to complete the work safely, based on a risk assessment. It describes what work will be done and how it will be done; the latter can be detailed in a 'method statement'. Note: The Christchurch City Council has introduced the Permit to Work (PtW) system for works on the water supply and wastewater networks. See more information : http://www.ccc.govt.nz/business/constructiondevelopment/permittowork.aspx	HSE UK http://www.hse.gov.uk/coshh/basics/permits.htm
Plant Movement Plan	PMP	Document produced at the planning stage of a Project. It is used to organise the Work Site and includes: the movement of Mobile Plant in relation to employees, loading and unloading zones, sites access and egress, site offices, storage and stockpile areas, etc.	SCIRT internal
Project Engineer		Employee whose role is Project Engineer. Generally in SCIR, this involves the planning and management of a Project from ECI to construction	SCIRT internal
Reportable Service Near Miss		I didn't make contact, but under slightly different circumstances I could easily have done so.	SCIRT internal
Reportable Service Incident		I made contact with the service sheath but on inspection I had not penetrated the sheath or compromised the service.	SCIRT internal
Recordable Service Strike		The service sheath was penetrated and/ or compromised	SCIRT internal

Road Controlling Authority	RCA	In relation to a road: means the authority, body or person having control of the road; and includes a person acting under and within the terms of a delegation or authorisation given by the controlling authority. The RCA for the Christchurch City and Banks Peninsula area is CTOC.	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Safety Leadership Group	SLG	Internal SCIRT operational group comprising IST and Delivery Teams H&S Advisors.	SCIRT internal
Safety in Design		Safety in Design is a process that integrates hazard identification and risk assessment methods early in the design process, to eliminate, isolate or minimise the risks of injury to those who will construct, operate, maintain, decommission and demolish the asset.	"SCIRT Safety in Design Strategy" document. (Project Centre)
Safe Work Method Statement	SWMS	A Safe Work Method Statement (SWMS) is a document that: (a) lists the types of high risk construction work being done (b) states the health and safety hazards and risks arising from that work (c) describes how the risks will be controlled, and (d) Describes how the risk control measures will be put in place.	Work Safe Victoria http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/safe-work-method-statements/what-is-a-safe-work-method-statement
Service		Any non-redundant pipe, duct, cable, used to convey a utility or commodity needed or required by the public (such as water, waste water, storm water, electricity, gas, telecom, etc..).	SCIRT internal
Site Traffic Management Supervisor	STMS	An NZTA qualified person who has specific responsibility for documentation and management of temporary traffic management (TTM).	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Spotter		(also loosely termed "Observer", "Dogman", "Banks man") Employee given the task to assist the operator of Mobile Plant in the safe operation of machinery. For example: reversing, working near overheads, digging near underground services, etc.	SCIRT internal
Tactical Leadership Group	TLG	Internal SCIRT operational group comprising IST Delivery Managers and Delivery Team Leaders.	SCIRT internal
Traffic		All means of transport within the road corridor (vehicles, cyclists, pedestrians, etc.)	SCIRT internal
Traffic management Device	TMD	A device used on a road for the purpose of traffic control; and includes a: 1.sign, signal or notice; or 2. traffic calming device; or 3.marking or road surface treatment.	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Temporary Traffic Management	TTM	The process of managing road users through or past a work site, in a safe manner, with minimal delay and inconvenience.	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Traffic Staging Schedule	TSS	Internal SCIRT ECI deliverable which links the works programme into stages and assigns a traffic impact at each stage	SCIRT internal
Traffic Controller	TC	An NZTA qualified person who has specific responsibility to manage a worksite on a level 1 road.	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Traffic Management Plan	TMP	A document describing the design, implementation, maintenance and removal of TTM while the associated activity is being carried out within the road reserve or adjacent to and affecting the road reserve.	NZTA http://www.nzta.govt.nz/resources/traffic-control-devices-manual/definitions.html#r
Total Outturn Cost	TOC	The budget allocated to a SCIRT Project at the end of the ECI phase	SCIRT internal
Trench excavations		Trench excavations are those where the horizontal width at ground level is less than the vertical depth of the deeper side	ACOP for Safety in Excavations and Shafts for Foundations
Unmarked service		"Failure" to mark (GPR + C&G). Not notated on the ground.	SCIRT internal
Unknown service		Not on service drawings, as built, or construction drawings.	SCIRT internal
Unidentified service		Failed to be identified although on a drawing or above ground indication.	SCIRT internal
Utilities Design Approval	UDA	SCIRT internal document used to record discussions between Design Teams and Utility(s) companies regarding agreement on the design requirements and construction methodology required to protect or relocate the affected utility.	SCIRT internal
Work site manager		Employee trained and given the means and responsibility to manage a work site. The Work Site Manager is responsible for managing the safe activities within the inside of the worksite. (i.e.. behind the 1.8 metre fencing), as opposed to the Traffic Management Contractor who is responsible for managing the safe and efficient movement of road users adjacent to the worksite in addition to managing the movement of site related mobile plant on and off site.	SCIRT internal