



CORPORATE PROCEDURE FOR
IDENTIFYING AND LOCATING SERVICES
CS-OHS-35

Responsible Officer: Health and Safety Manager

Approved : General Manager Operations

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Issue Date	Nature of Changes
01/11/2005	Original issue
28/08/2010	DCLARKE & BWELLS – added asbestos provisions to ensure control of asbestos exposure

1.0 Purpose

This procedure is designed to ensure that workers at CS Energy sites, understand the:

- Process to be used when identifying and locating services

- Control methods and work practices to be used during excavation, digging, drilling work to prevent damage to services
- Outline the hazards arising from work in proximity to underground and concealed services.
- Identify and eliminate the exposure to asbestos fibres

2.0 Scope

This procedure applies to any work in buildings, works near electrical installations or underground cables or other services, that involves risk of contact with exposed live parts, pressurised water, gas services, sewage services, IT data, communications cables or asbestos.

Examples of such work include:

- *removing a sheet of plasterboard from a stud wall and thus creating a risk of contact with exposed live parts eg an electrical item such as a general-purpose outlet.*
- *cutting a water pipe in a building where there could be an electrical cable next to the water pipe.*
- *Excavating or trenching the ground in proximity to underground services*
- *digging holes where an electrical cable, gas line, water pipe, communication cable or sewage line could be buried.*
- *Drilling, cutting or removal of materials that contain asbestos fibres.*

The procedure is applicable to work at all CS Energy sites. It is also to be used in the areas bounded and owned/managed by CS Energy (eg. rail lines, coal yards, etc.)

3.0 Responsibilities

3.1 OIC - Work Party

- Ensuring the areas where the work is to be performed is clearly marked;
- Completing all sections of the Service Location Checklist;
- Providing the relevant information to the Service Locator or Site Asbestos Officer prior to carrying out the work;
- Allocating an Safety Observer - General for the works,
- Following the instructions on the Service Location Checklist; and
- Obtaining a Permit to Work.

3.2 Operations, Mechanical, IT/Communications and Electrical Service Officers

- Ensure that all services are marked as per Section 5.3;
- Ensure that instructions for carrying out the work are highlighted on the Service Location Checklist;
- Explain any areas of concern to the OIC and Work Party; and
- Accurately identify the location of services that are underground or in walls.

3.3 Health and Safety Adviser

- To provide advice as required on planned work;
- To review work method statements or JSEAs to check they comply with the requirements of the Advisory Standard for Excavation, Code of Practice – Electrical Work and the requirements of the local authority/service providers or owners.

3.4 Site Asbestos Officer

- To review the task and the asbestos register with the OIC
- To review work method statements or JSEAs to check they comply with the requirements of the CS-OHS-43 Asbestos Management Plan Procedure.

4.0 Service identification and hazards

Services underground and concealed in buildings or plant are widespread and it should be assumed that they are present until it is proved otherwise.

Set out below are the procedures for work near services – they are relevant to all types of work whether it is performed by open excavation, tunnelling, boring, building, repair, demolition or drilling etc.

4.1 Electrical Cables

Live cables create a hazard when excavation, demolition, repair or drilling occurs around them. Injury may occur if:

- ❑ The sheath of a cable and the conductor insulation are penetrated by a sharp object; or
- ❑ A cable is crushed or bent severely enough to cause internal contact between the conductors or the sheathing and one or more of the conductors.

Injuries resulting from damage to live electricity cables are usually caused by the explosive effects of arcing current, and by any associated fire or flames.

4.2 Gas Pipes

Damage to gas pipes can cause escapes which may lead to fires or explosions. There are two types of damage:

- ❑ An immediate escape – in this situation the risk is to persons carrying out the work and others in the immediate area.
- ❑ An escape at some time later – the damage may occur at the time the work is carried out by damaging the pipe covering which may eventually lead to corrosion or later on through poor reinstatement or by and undermining support soils which may leave a pipe inadequately supported or subjected to excessive stress.

4.3 Liquid petroleum, gas, oil or other pipelines

Damage to these services may be similar to that for gas pipelines. However, care should be taken to ensure correct identification of the product within the pipeline so that appropriate measures can be taken to avoid risk of injury.

4.4 Asbestos

Damage or penetration of any material containing asbestos creates a major health risk to anyone in the area and to ensure this is identified before work starts the site asbestos officer shall be consulted and the site asbestos register reviewed to ensure that there is no asbestos material in the area or that the correct procedures are adhered to if asbestos material is identified.

Appropriate controls are to be implemented as per CS-PTW-43 Asbestos Management Plan Procedure if the job requires the disturbance or penetration of ACM (Asbestos containing material).

4.5 Water pipes and sewers

Damage to water pipes can cause injury, as water may be pumped under high pressure. A break in the pipeline can release an extremely powerful jet of water that can propel debris from the pipe or surrounding materials. Some water pipes are made from asbestos cement.

Damaged water pipes have the potential to affect other services and structures, either directly or by washing away and eroding their support. This has significant implications for areas where shared trenches or wall cavities contain a combination of services.

The main danger from damage to a sewer is the possibility of contamination, damage to the environment or disease from exposure to sewerage. Some sewer lines are also pumped under pressure and will present similar hazards to water pipelines.

Toxic and explosive gases may also be present in both sewer lines and stormwater drains.

4.6 IT and Telecommunication cables

Cables contained optical fibres carry light signals generated by Class 3B lasers, which means that exposure to the beam may be harmful to the body, particularly the eyes and skin. A five second exposure of the eyes at a distance of 110mm or less can cause damage to the eyes of skin. These lasers operate in the infrared region and the light they give out is not visible to the naked eye.

The power station site may be isolated if IT or Telecommunication cables are damaged or severed.

4.7 Records

Records are required to be maintained of all services.

When planning the work or the installation of a new service, a complete record search must be undertaken. It is at this stage that risks associated with working near existing services can minimise.

Once the records are obtained, they should be kept in the work area and be accessible to all persons.

When carrying out emergency work, every effort should be made to obtain records as soon as possible. If work must commence prior to the records being obtained, it should be carried out on the basis that live services are present.

4.8 Validation of records

Records of services should be produced at the time of installation. Some services may have been installed years ago and it is likely that changes to the surface of the land or interiors of buildings have changed in that time. For example, road widening and regrading of surfaces are common causes for inaccuracies in records. Pipe and cable locating devices should be used when working from old records and any inaccuracies in records should be notified immediately to the supervisor at the site.

A critical part of planning work is the validation of records. This is to be done by:

- A visual inspection of valves, roadway covers, reinstatement of trenches etc.
- An inspection behind, below, above and on the other side of walls, columns, floors, slabs, ducts, shafts, cladding and ceilings
- Use of pipe and cable locating instruments for walls, and
- Manual work techniques (i.e. digging with shovels).

4.9 Service Location Checklist

The Service Location Flowchart is to be read in conjunction with this section. The Checklist will assist with the identification of the location of live services and can be referred to as part of the JSEA prepared for the work.

The checklist requires sign-off by qualified persons who are able to locate services, including telecommunications, electricity and gas. The qualified person will advise if there are services in the location, and conduct searches of records and other information to ensure that the area is safe for work to commence.

It is also a part of the Permit to Work (PTW) process; therefore the checklist must be completed to ensure compliance with the PTW system.

A Service Location Checklist must be attached to the PTW prior to any work being started.

The work party is to supply details about:

- The approximate location of the work and type of work being performed;
- The work method to be used;
- The width of the excavation for in ground services
- The depth of the excavation for in ground services
- The location of the work in relation to walls, columns, floors, ceilings, cladding, plant and cable trays that support or conceal services
- The need for Safety Observers to be present

The Service Location Checklist must be given to the operational, mechanical and electrical Issuing Officers. The Service Locator is to obtain any drawings photos, and other information from the Electrical/Mechanical/IT Communications Officers required for identifying the services and noting the details on the checklist. The Service Locator will locate cables, pipes and other services by using a suitable, calibrated service locating equipment.

The work party is to mark out on the ground or wall the location of the services. This is to be done using marking paint (as per the table in Section 5.3). Only trained and competent personnel are to perform the testing for underground services.

The Service Location Checklist with work instructions is to be issued to the work party as part of the Permit to Work process. Any safe work methods, service protection or temporary support requirements are to be provided by the relevant Operations, Site Asbestos Officer, Mechanical, Electrical, IT/Communications Officer and are to be included in the JSEA.

5.0 Controls to prevent injury to persons or damage to services

5.1 Isolation of services

Where there is a risk persons, tools, equipment or machinery (earthmoving plant) coming into contact with underground or concealed services the preferred control is to eliminate the hazard by isolation and proving the energies have been removed (i.e. testing to prove de-energised on electrical cables, double block and bleeding pipelines). Where possible the hierarchy of control measures is to be adopted – eliminating the hazard, substituting, redesign of equipment or processes used, isolate the hazard, using administrative control and the use of appropriate personal protective equipment.

5.2 Excavation, refurbishment, demolition, repair or removal work

Care must be taken when performing the above works as trench collapses, or structural collapse can occur. Services may need to be temporarily supported, tagged and the area barricaded.

When digging near a natural gas pipeline care must be taken. Digging within 1.5 metres of a gas pipeline must be done with hand tools in such a manner to avoid accidental damage.

Note: If mechanical equipment (earthmoving plant, jackhammers, power drills etc.) are required for works within 1.5 metres of a gas pipe line a risk assessment is to be performed, suitable control measures put in place and documented in a JSEA for the task.

If a service is dug up, or damaged work party members are to notify their immediate Supervisor/OIC, Contract Administrator or Project supervisor. Consideration should also be given to using the site Emergency Phone for notification to the ERT, Gas/Electrical/Mechanical Engineering or Health and Safety Adviser as required. This will ensure that all necessary action is taken to:

- make sure the workers, work area and equipment is safe,
- ensure the service is isolated, and
- any damage is assessed and repairs made accordingly.

Where repair or demolition work is undertaken, services in the adjacent walls, ceilings and floors are to be located using service locating instruments or drawings (where practicable). Services in or behind walls, columns and beams are to be checked by site inspection of the area prior to the work commencing. Any services adjacent to the work area that may be affected by the work are to be isolated and a safety observer provided for work in proximity of energised electrical cables.

5.3 Colour markings

The following is a list of colours to be used when marking for services work.

Service	Colour
Pipes (excluding gas) – sewerage, water, fuel, etc.	Green
Power and communication cables	Red
Gas line	Yellow
Where digging is to occur	White

5.4 Review of working conditions

The digging or other works associated within proximity of the service are to be assessed prior to or as circumstances change.

6.0 Definitions

Electrical Officer – the person qualified to locate electrical services, advise on how to prevent damage and completes the relevant sections on the Service Location Checklist

Site Asbestos Officer – the person qualified to locate asbestos material on site and complete the relevant sections on the Service Location Checklist

Mechanical Officer – the person qualified to locate mechanical/water/sewage/gas services and advise on how to prevent damage and completes the relevant sections of the Service Location Checklist.

IT Communications Officer – the person who is qualified to locate IT and Communications services and completes the relevant sections on the Service Location Checklist

Qualified – a competent and trained person who has technical knowledge and experience

Service Locator – a competent and trained person capable of using service locating equipment to identify and confirm the location and depth of underground or in-wall services.

7.0 Reference Documentation

Code of Practice – Electrical Work – Electrical Safety Act 2002

Code of Practice – Working Near Exposed Live Parts – Electrical Safety Act 2002.

Code of Practice for the Management and Control of Asbestos in Workplaces–
NOHSC:2018(2005)

CS Energy Permit to Excavate/Dig

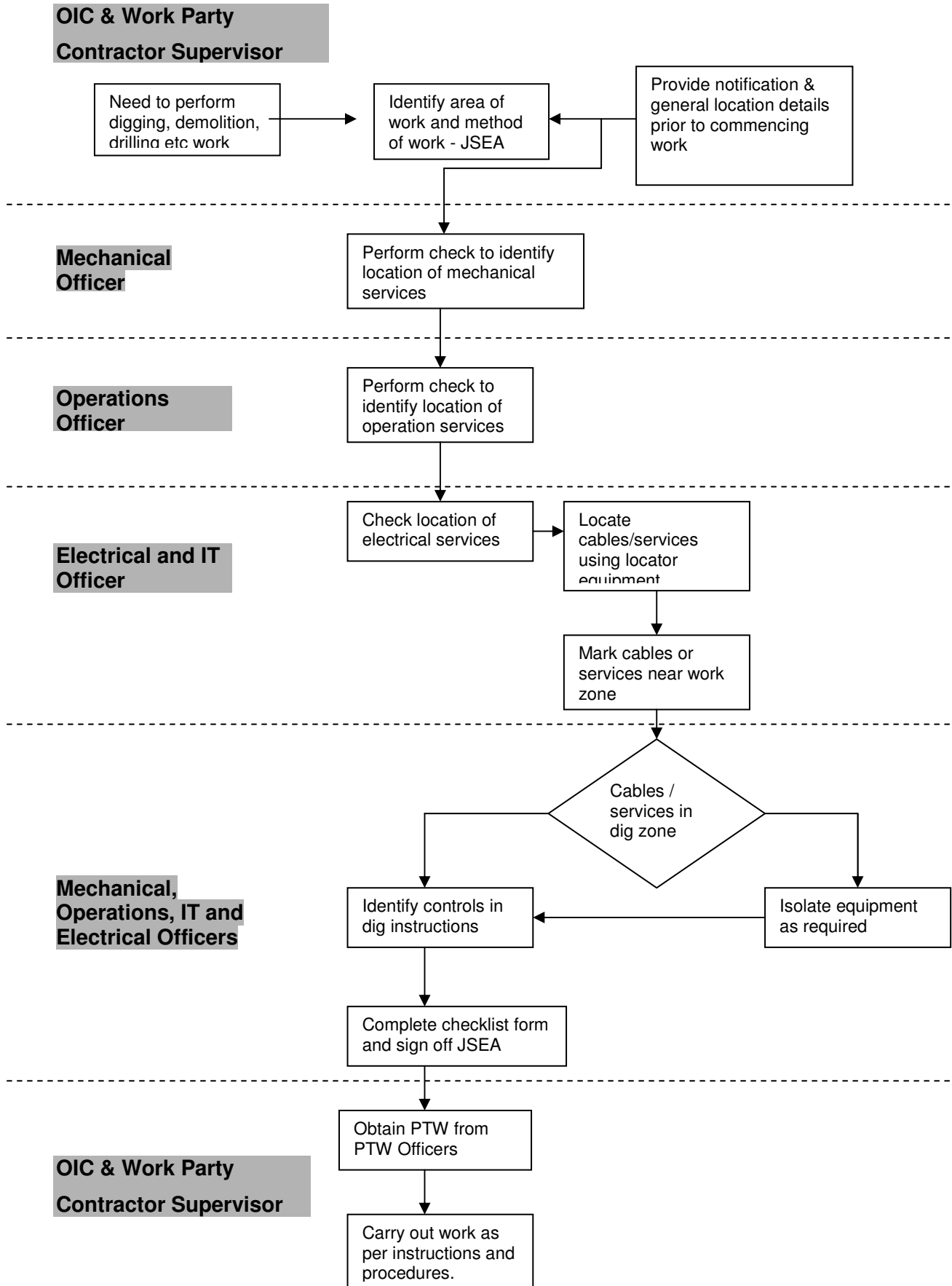
CS Energy PTW Manual

8.0 Attachments

Attachment 1 – Service Location Flowchart

Attachment 2 – Service Location Checklist

Attachment 1 - Service Location Flowchart



Attachment 2 - Service Location Checklist

SERVICE LOCATION CHECKLIST	Date: / /
Scope Of Work To Be Performed: <hr/> <hr/> <hr/> <hr/>	

W O R K T Y P E	Excavation:	<input type="checkbox"/> Trench <input type="checkbox"/> Ground Ripping <input type="checkbox"/> Drilling <input type="checkbox"/> Foundation <input type="checkbox"/> Post Holes <input type="checkbox"/> Other.....	Building work:	<input type="checkbox"/> Drilling into walls, ceilings, floors <input type="checkbox"/> Demolishing <input type="checkbox"/> Sawing
	Driving of:			
	<input type="checkbox"/> Picket <input type="checkbox"/> Electrode <input type="checkbox"/> Pin <input type="checkbox"/> Spike <input type="checkbox"/> Pipe <input type="checkbox"/> Nail			
	Location:		<i>All authorisations must be signed before the work commences and a Permit to Work must be obtained and made available at the work site during work</i>	
Originator:				
Work Party Contractor:				

Q U A L I F I E D S E R V I C E	Authorisation	
	Operations Service Locator	Gas, Air, Tailings, Slurry, Process Water Lines <input type="checkbox"/> Area Clear or <input type="checkbox"/> Conditions apply
	Asbestos Management Officer	Asbestos contained within materials <input type="checkbox"/> Area Clear or <input type="checkbox"/> Conditions apply
	Mechanical Service Locator	Water, Sewerage, Storm Water <input type="checkbox"/> Area Clear or <input type="checkbox"/> Conditions apply
	Electrical Service Locator	HV, MV, LV, Electrical Cables; O/H Aerials; <input type="checkbox"/> Area Clear or <input type="checkbox"/> Conditions apply
	IT Service Locator	Telephone/Fibre Optic Cables <input type="checkbox"/> Area Clear or <input type="checkbox"/> Conditions apply
<input type="checkbox"/> Condition 1		Comments

