Substation and Load Centre Induction

May 2024

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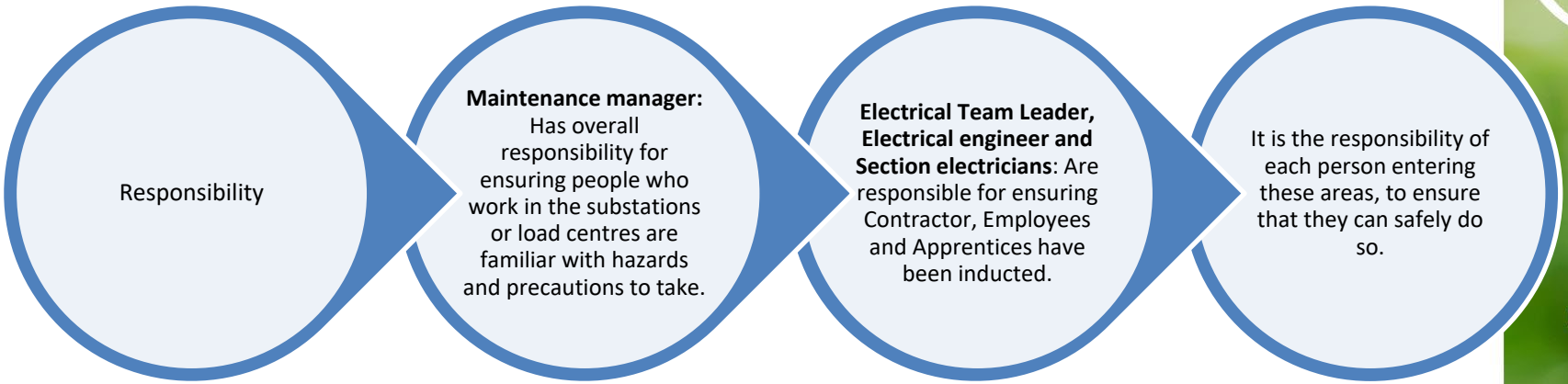
Contents :

Purpose, Scope and Responsibility

Purpose : This workshop induction is intended for any person working or accessing the Substations and load centres on GB sites.

Scope : It is intended for Employees, Contractors, new Employees and Apprentices

Duration: Retraining in substation and load centre safety should be completed every two years online, any questions please consult the Electrical Team Leader or authorised trainers.



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Definitions

For the sake of this document

- Work is defined as any task requiring the use of tools, specialised equipment or maintenance purposes of equipment.
- Substation (SS) Is a building containing a step-down transformer (normally 3.3kV to 400V) an MCC, and PLC.
- Load Centre (LC) is a building containing a MCC and PLC.
- MCC (Motor Control Centre)is an Electrical panel, containing equipment starters and isolators.
- PLC is a programmable logic controller.
- PDC is a power distribution centre.
- Control switches wording varies from PLC-OFF-MOTOR or REMOTE-OFF-LOCAL.
- When the switch is in the PLC or REMOTE position it is being controlled by the PLC, when it is in the MOTOR or LOCAL position it is under the control of the local control panel.

Substation & Loadcentre

Evacuation Point

In case of evacuation, all contractor personnel must evacuate to an assigned safe area, located in the parking lot outside the GBC main gatehouse.

Substations and Load Centres

Emergency Procedures

If an accident happens

Advise your Golden Bay host/job coordinator/Team leader Immediately

The Golden Bay host/job coordinator/ Team leader is responsible for calling emergency services.

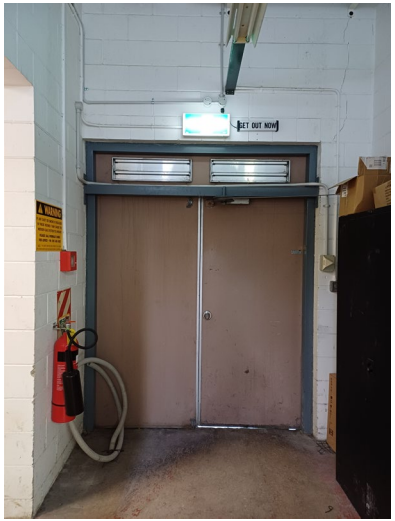
If the fire alarm sounds

Go to the evacuation point, located on the carpark outside of the gate.

If you are trained, and there is a fire, use the required fire extinguisher.

Substation and Load Centres

Emergency exits



All emergency exits are marked inside the buildings and rooms.
Keep all emergency exits clear.

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PPE Requirements

- Anyone undertaking work, in any MCC must wear Arc flash protection clothing with a min CAL rating of 8.
- Any person undertaking any electrical work anywhere on site must wear minimum CAL rating of 8.

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Access into Electrical Cabinets

- Only Registered Electrical Personal holding a “Current Practicing License” may open an electrical cabinet where live terminals or conductors are exposed.

Unregistered Personnel

Work that can be completed inside all Substations and Load centres

- Non-registered people may enter substations, load centres and MCC's on site, for the purpose of operating control switches, resetting overloads or locking out when no lockout facility is provided near the motor only. Provided that this training has been completed.
- If electricians are working in any MCC located on site care must be taken not to distract them, as they may be working near live equipment.

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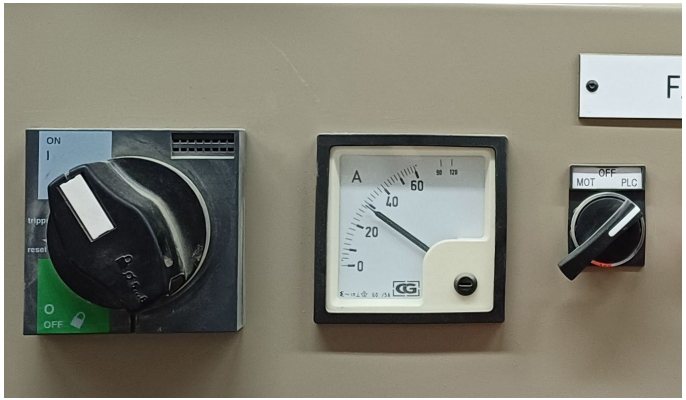
Unregistered Personnel



The work unregistered people may do in this restricted area is limited to:

- The resetting of overloads, where the overload is able to be reset without opening the cabinet, is permitted with the prior permission from the Shift Electrician. The shift Electrician must be contacted to investigate if third reset is required.
- “Local and Remote” or “MOT and PLC” control switching.

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Main MCC

Electrical Conditions in Rooms

Rooms 1 to 8

- The incoming and outgoing transformers are located around the North and East perimeter of the building (Bays 1-8 as per below drawing). The main supply comes in at 33kV via two transformers, and then is transformed down to 11kV, 3.3kV, and 400 volts.

Room 9

- The Northern room 9, contains the switch gear supplying the three Cement Mills and the Slendour switch gear, with 11kV and 3.3kV present.

Room 10

- The 11kV and 3.3kV Circuit Breakers are housed in room 10 and can be controlled from either the breaker itself, or from (the preferred location in) the long room on the West side of the building, room 12. The 11kV supplies go out from these breakers to the large motors and transformers and feeds the Quarry.

Rooms 11

- The Motor Control Centre (MCC) is the room at the Southern end of the building room 11, this is where most of the motors are fed from.

Room 12

- General room

Room 13

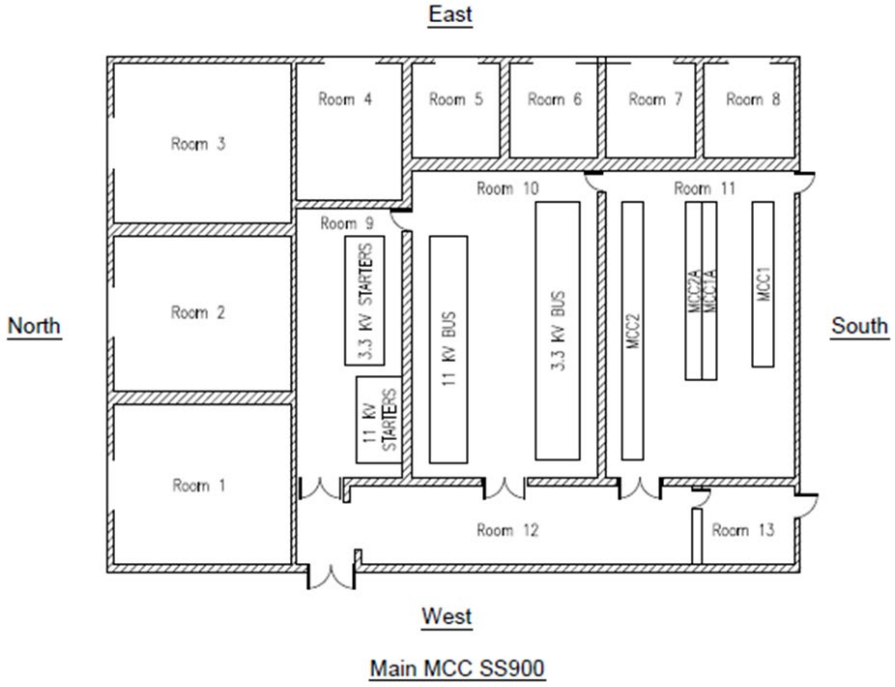
- .
- The battery room is in the Southwest corner of the building room 13, the tripping and closing supplies for the breakers are fed from here along with alarm circuits.

Main MCC

PPE Requirements in Rooms

Rooms 1 to 8	Room 9	Room 10
•Transformer Bays, external bays to main MCC, restricted access to Electrical and Air Conditioning personnel. •CAL Rated PPE required.	•HV Starters, restricted access to Electrical and Wormald staff •CAL Rated PPE required for access	•HV Equipment, restricted access to Electrical and Wormald staff •CAL Rated PPE required for access

Rooms 11	Room 12	Room 13
•MCC1 & MCC2 400V Equipment, general access •CAL Rated PPE required when working in cells	•General room	•Battery Room. •CAL Rated PPE required when working in cells



Main MCC SS900

Main MCC

General Information for Main MCC

Fire Suppression System Located in Main MCC

- The fire suppression system is an “Inergen” gas system. The main operating panels are situated outside Main MCC south side of the West entry door.
- Smoking, or sweeping dust, while the alarm is activated is enough to trigger the system.
- Please evacuate the building as soon as you hear the alarm, as the Inergen lowers the Oxygen content of the room.

General Information Room 11

- In the Motor Control Centre, room 11 the main voltage is 400 volts on the four motor control cubicles, with 110 – 400 volts on the Distribution Board.
- PLC Panels are also in this room, which have various voltages ranging from 24 - 230 volts.

Battery Room Room 13

- The battery room 13, has one large bank of batteries at 110 volts DC, plus one smaller bank at 24 volts.
- There is a lot of electrical energy available in these batteries, short circuiting a battery allows excessively high current to flow that could result in a fire and or explosion.

Main MCC Access doors

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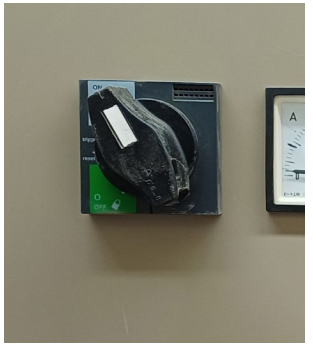
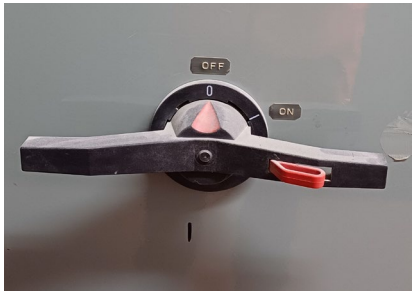
Isolating Switches

Operation of Isolating Switches

Location	Policy	Do	Don't
•The various isolating switches can be locked out in the MCC. •Site preferences is for isolations to be completed in the field.	•When operating isolating switches, adhere to the site lockout Policy, available on the intranet. •Isolation-Systems-Policy-Procedure	•Operate only if trained.	•Never open isolating switches while under load, the load must be disconnected first. •Under special circumstances we may have to switch off under load, this is to be carried out only by a Registered Electrician.



Selection of isolating switches



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Substations and Load centres

Use of Solvents & Chemicals

When using chemicals

- Read SDS before using chemicals (Located on the stores and the intranet)
- Read and check labels before use.
- Wear face/eye protection
- Wear gloves
- Only use chemicals if you are competent
- In case of emergency use the wash down areas
- Supply adequate ventilation.
- Do not leave chemical and paints lying around the substations and load centres.

Fire Extinguishers

- Fire extinguishers are attached to the walls
- Make sure the correct extinguishers is used for electrical equipment.
- If used reported to job coordinator.

Never mix chemicals

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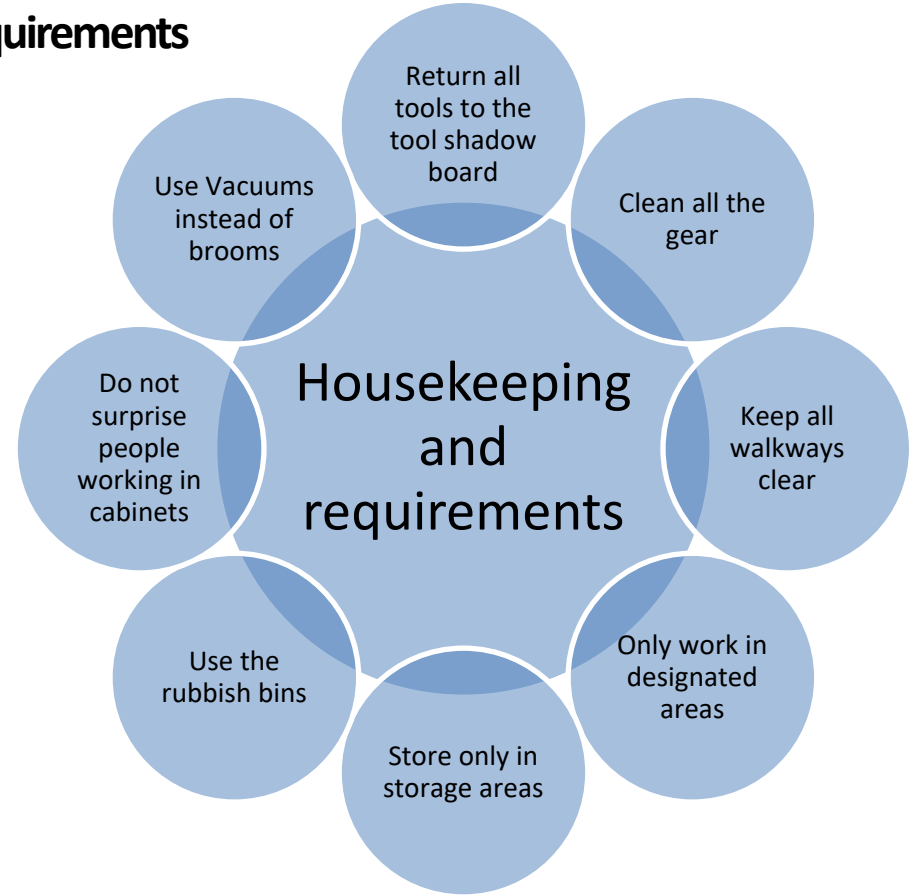
Substations and Load centres

Housekeeping and Requirements



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Substations and Load Centres List

List of On-Site Facilities

PDC1	33kv	SS912	33kv PDC
PDC2	11kv	SS900	HV Switch Room
PDC3	3.3kv	SS900	HV Switch Room
PDC4	11kv	LC8801	Silo 9
PDC5	3.3kv	SS905	TX914 & TX938
PDC5A	0.4kv	SS905	Lab, Café, Stores, F-Shop, Electrical
PDC6	0.4kv	SS902	MCC6 & MCC6A, Compressors etc/.
PDC7	0.4kv	LC521	EPS901
PDC7A	0.4kv	LC521	D & S Switches
PDC8	0.4kv	SS909	LC751
MCC1	0.4kv	SS900	Main Substation
MCC1A	0.4kv	SS900	Main Substation
MCC2	0.4kv	SS900	Main Substation
MCC2A	0.4kv	SS900	Main Substation
MCC3	0.4kv	SS901	Gantry
MCC3A	0.4kv	LC301	West end load centre
MCC4	0.4kv	SS903	Packing Plant
MCC5	0.4kv	LC751	4 + 5 Cement mills

Substations and Load Centres List

MCC5A	0.4kv	LC751	4 + 5 Cement mills
MCC6	0.4kv	LC761	6 Cement mill
MCC6A	0.4kv	LC761	6 Cement mill
MCC6A	0.4kv	LC762	6 Cement mill
MCC7	0.4kv	SS904	Wharf Substation
MCC8	0.4kv	SS910	Bulk Loading
MCC9	0.4kv		Bulk Loading AC801 – AC807
MCC9A	3.3kv		Bulk Loading FK801 – FK803
MCC10	0.4kv	SS907	Coal Firing
MCC11	0.4kv	SS907	EPS Coal Firing
MCC12	0.4kv	SS908	Cooler
MCC13	3.3kv	SS900	Slendaur Panels
MCC14	3.3kv	SS900	Slendaur Panels – 4 & 5 Cement mills
MCC15	0.4kv	LC521	Water Pumps etc/….
MCC16	11kv	SS906	Gas Train
MCC17	0.4kv	SS906	Gas Train
MCC18	0.4kv	SS911	Quarry Substation
MCC19	0.4KV	LC105	Wilsonville quarry
MCC20A	0.4kv	LC8802	Silo 9
MCC20B	0.4kv	LC8802	Silo 9
MCC21	0.4kv		Silo top
MCC22	0.4kv	LC670	Tyre project BU670
MCC23	0.4kv	LC523	Tyre project (preheater tower)

Substations and Load Centres

Declaration

- I understand the risks and hazards of the area.
- I understand the emergency response procedure and equipment response location.
- I will not enter rooms or equipment that I have not been trained to enter and that I am not competent to enter
- I will at all times, adhere to the rules explained in this induction document.

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Remember, safety is the responsibility of all of us. By working together, we can keep this workplace safe for everyone. Thank you for your attention and commitment to safety!

When in Doubt, Shout!!

Thanks!

Link to complete online test HERE

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