Project Ref:	**P048**									**Title:**				**Mechanical and Electrical**
Date:	**19/04/2023**													**Design Risk Assessment**
Rev:	**P1**									**Project Name:**				**Apex Hub, Calmount**

Hazard (Identify the hazard which occurs.)	**Effect / Cause**	**Risk**			**Persons Affected**			**Design Mitigation**	**Control measures (during construction)**	**Remaining Risk**			**Notes**
		L	M	H	Public	Contractors	Others			L	M	H	
Existing site services	Unintentional contact with existing underground services to site.		✓			✓		Existing site services checked on site. All services coordinated with site facilities managers	Contractor is to complete a full survey of existing utilities services prior to the commencement of any works on site.	✓			
Overhead Electricity Lines	Electrocution of personnel using machinery in the vicinity of overhead power lines.		✓			✓		Never undertake any construction activity within 10 metres of an overhead electricity wire prior to contacting ESB. Do not dump soil, rubble or topsoil under an overhead electricity wire: to do so would reduce the safe line to ground clearance. Keep away from fallen or low hanging wires as they can be very dangerous.	Any works carried out near overhead electricity wires, the contractor must contact the ESB before works commence to ensure the necessary safety precautions can be put in place to prevent injury.	✓			
Electrocution	Electrocution of personnel working on or near electrical services.		✓			✓	✓	All electrical equipment designed to have a local means of electrical isolation complete with facility for pad locking isolator in the off position.	Contractor is to ensure that a permit to work system is put in place which includes a Lock out tag out system and that this is required for all works on and around all live electrical equipment.	✓			
Accessibility	Construction and maintenance access to plant areas/equipment.		✓			✓	✓	All plant and equipment layouts designed to ensure adequate access.	The contractor is to ensure that adequate working space is maintained during construction and also to ensure safe access and egress is provided.	✓			
Manual handling	Installation of heavy plant and equipment.		✓			✓		Plant areas located in accessible locations. Adequate access provided to plant compound.	The contractor is to ensure that safe method of lifting and transport is provided prior to construction. The contractor is to develop method statements for lifting of all heavy plant, including the air conditioning plant in place. A safe plan of action is to be developed by the contractor for the safe carriage of the air conditioning units from ground floor to second floor using the lifts when possible.	✓			
Falling from a height	Works carried out above the ground. (Max working height 16 metre) Fire Alarm, Lighting Emergency Lighting, containment, ducting, sprinkler pipework, radiant panels, water services pipework and Air conditioning systems.			✓		✓	✓	Contractor to provided appropriate signage / hoarding / netting. Mobile Elevated Work Platform (MEWP) or scaffolding to be used where practicable.	Contractor to development method statement. Contractor is to ensure that all work zones are barrriered off and ensure all work zones are clean and clear of clutter. Contractor to ensure that appropriate level of protection is provided during the installation of high level services.	✓			
Installation of containment systems	Falling from height / manual handling / working with power tools / cutting.			✓		✓		Modular components used throughout design. Fabrication to take place on the ground to avoid the risk of working at heights.	The contractor to is to develop a method statement prior to working at heights.	✓			
Working on Electrical Boards and Equipment	No unauthorised access to L.V. switchboards. Danger of electrocution/flashback for personnel working on switchgear.		✓			✓	✓	Locks to be provided on L.V. distribution boards. Appropriate signage to be provided. 1.2 meters throw back distance in front of LV switchgear provided in accordance with good practice and electrical regulations.	Contractor to implement a lock out/ tag out system. Contractor to ensure that a permit to work system is in place of accessing live boards. Provide signs on the distribution boards clearly indicating they are "LIVE". Advise all staff working on the site that the boards are LIVE. Co ordinate access to the boards.	✓			
Construction (temporary) electrical connections.	Mobile DBs, loose LV cables and temporary connections and cable feeds.		✓			✓		All temporary electrical connections to be carried out and checked/ signed off by an accredited electrician. All electrical equipment designed to have a local means of electrical isolation. All cable feeds to be allocated in a designated path and properly protected with visible warning and signage labelling.	Contractor is to ensure regular checks are carried out with all temporary electrical DBs and LV cable feeds. Signage and warning labels to be ensured are correctly allocated and identified.	✓			
Mechanical equipment with moving parts	Contact with belts and fan motors.		✓			✓	✓	Plant provided with lockable doors, electrical isolators, protective shrouds, covers/guards and where appropriate local emergency lock stop.	Contractor to ensure that a permit to work system is in place for working on live equipment. Contractor to develop and issue a method statement prior to working on existing plant	✓			
Lifting of plant by use of Crane	Unloading and finial positioning of heavy plant items.		✓			✓		Plant located in accessible locations	Contractor to confirm weights and dimensions of all equipment.	✓			
Future Maintenance.	Works carried above the ground. (Max working height 16 meters)			✓		✓	✓	Designated pedestrian zone available for the purpose of safe ingress, egress, installation, cleaning and future maintenance.	Client should provide a MEWP for the maintenance of equipment at high level. Client shall engage the services of a competent person to maintain all electrical and mechanical systems.	✓			
Installation of Pipework and Ductwork	Risk of Falling from height. Manual Handling. Working with power tools / cutting / Welding			✓		✓	✓	Modular components used throughout design. Fabrication to take place on the ground to avoid the risk of working at heights.	The contractor to is to develop a method statement prior to completing these works. Contractor is to ensure that a permit is put in place for all hot works	✓			
Low Level pipework and ductwork	Injury due to trip hazard associated with low level pipework /duct work.	✓				✓	✓	Pipe/duct work routed at high level in general above head height to limit risk of collision. Low level pipe work limited to in direct perimeter to plant only and away from access routes to prevent risk of tripping. Any pipe work or plant at lower levels or in areas where risk of personnel colliding will have perimeter insulation and warning signs.	Designated services zones concentrated at high level in low traffic zones. Water services main distribution runs distributed below electrical services were practical.	✓			
Public accessing the site	Injury to a member of the public accessing the construction site unintentionally		✓		✓			Space to be provided for hoarding, security controls and signage around the perimeter of the site. Space to be provided for a sign in / out log book for the site.	Contractor is to ensure that hoarding is placed around the site with signage clearly identifying that a construction is present and no access is permitted by the general public. This shall also include a method to controlling people who access the site.	✓			
Future Maintenance	Ergonomics/ Loading and Lifting	✓				✓	✓	Equipment designed to be easily removed and replaced. Designated pedestrian zone available for the purpose of safe ingress, egress, installation, cleaning and future maintenance. Dedicated personnel access to be provided to larger items of plant that are to be located at high level	Client should provided a MEWP for the maintenance of equipment at high level. Client shall engage the services of a competent person to maintain all mechanical systems.	✓			
Storage of materials	Stored materials falling and trip hazards.	✓				✓	✓	The design is completed to minimise the requirement for storage.	The contractor is to minimise the requirement for storage of materials on site. The contractor is to ensure that all materials onsite are stored in a designated area, clearly identified onsite. All materials are to be stored in a secure manner in accordance with manufacturer's recommendations. The contractor is also to maintain good house keeping storage areas. Safe access and egress to the storage area is to be maintained by the contractor.	✓			
Risk of Falling from height.	Manual Handling. Components falling during installation. Working with power tools.		✓			✓		Manufacturer's support system to be used	Contractor to develop method statement for the work. Mechanical lifting aids to be used to locate the component in place and hold during fixing. Working platforms with safe access and egress to be provided during installation. Area in which installation is occurring to be cordoned off with barriers.	✓			
Services Penetrate Fire Compartments	Services passing through existing and new fire compartments. Risk of fire compartments being compromised.		✓			✓		Main Contractor to be aware of this risk and ensure that fire stopping is installed at points where services penetrate fire compartments.	Sub-contractors to issue method statements prior to installing services through fire compartments. Sub-contractors to record and advise Main Contractor of locations where services pass through fire compartments.	✓			
Stripping out & safe removal of existing mechanical & electrical service	Injury/harm caused during the refurbishment and strip out works.	✓				✓		The extent of the refurbishment and strip out works is to checked on site. All works to be carried out are to be coordinated with main contractor.	A complete survey is to be undertaken of services and equipment to be stripped out prior to the commencement of any works on site. Contractor to develop a method statement for the works and implement safe isolation and lock-out procedures prior to strip out of existing equipment and services.	✓			