

Construction Hazards and Risks Control

**Lecture Title: – Advanced Construction Hazards
& Risk Assessment Techniques**

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**Undergraduate Diploma in
Occupational Health and Safety**

Objectives

- **Design and produce safety procedures to ensure compliance with legal requirements and industry standards.**



Workers and contractor management,

- Induction Courses
- Ask for risk assessments



Designations

- 1- Project supervisor
- 2 - Contractor Health and safety consultant
- 3 – OHSA Officer



Training and Communication

- Workshops
- On-site trainings
- Tool-box talks



Procedures in a construction site

- Incident and accident procedure
- Working at height procedure
- Personal Protective Equipment – LN 121 of 2003
- Risk assessment procedure – LN 36 of 2003
- First Aid Procedure – LN 11 of 2002
- Evacuation Procedure – LN 44 of 2002
- Substance abuse policy
- Use of mobile phone
- Traffic management policy



This plan covers the internal and external alterations of an existing farmhouse.

The works are to consist of –

- Site Set-up including necessary signage
- The provision of welfare facilities
- Identification and marking of services
- Demolition
- Masonry and concrete block work and floor construction
- Roof construction and coverings
- Mechanical and Electrical 1st & 2nd fix
- Plastering
- Decoration
- Floor finishes
- Site Clearance, waste disposal and handover

1.1 SITE LOCATION

The site is situated in urban area, situated in the centre of Msida, just opposite the Workers' Monument, as shown in Figs. 1 & 2.



Fig 1



Fig 2

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Fig 1



Fig 2

1.3 DURATION

Proposed duration: 7 months including finishing works

Proposed date of commencement: August 2022

Proposed completions date: February 2023

1.4 PURPOSE OF THE HEALTH & SAFETY PLAN

This plan is prepared to assist in compliance with the requirement of Work place (Minimum Health & Safety Requirements for Work at Construction Sites) Regulations, 2018. It is intended that this will be achieved by providing information on:

- Health and Safety legislation in the construction industry
- Identified Hazards that may be encountered during the project
- Assessments made to quantify the risk
- Control measures that require being introduced to minimize the risks

The Contractor is reminded that the guidelines throughout this Health and Safety Plan are not exhaustive but as indicative. The Contractor must do his utmost to ensure that Occupational Health and Safety Regulations are always enforced with particular attention towards employees and third parties.



All personnel are expected to comply fully with health and safety law and the associated approved codes of practice. Contractors are, in addition, to be aware of and pay due attention to guidance issued by the OHS(A) as well as that issued by trade bodies and authorities, which constitute industry 'best practice'. Method and policy statements submitted for these works will be reviewed by the Site Manager and Project Supervisor to ensure that these standards are met. On such occasions that they fail to meet the standard they will be returned for amendment action.

All contractors are expected to assess all activities that they are associated with for risks and adopt safe methods of work in keeping with the OHS(A) Act and other relevant regulations (as well as the standards and detail set out in this document).

In some cases, however, this health and safety plan specifically requires the preparation and submission of site-specific Method Statements in advance of work operations. All contractors are to ensure that their employees are aware of these safe working method statements and have been suitably trained and have adequate supervision to ensure that the procedures are followed. Additionally, a signed copy of the controlling documents must be handed to the Site Manager, who will ensure all operatives employed on the task have signed the issued documents. Failure to issue the requested signed documents may result in a delay and subsequent financial implications.



6. SITE RULES AND MONITORING ARRANGEMENTS

6.1 SITE RULES

The following rules are to be observed by all on site. Site induction will include these rules and other considered necessary by Site Management.

- The mandatory site standard for PPE is as follows; Safety footwear to BS EN345, Hi-Visibility vests/jackets to BS EN471 and a Safety helmet (Hard Hats) to BS EN397. Additionally, all other PPE stated within Risk Assessments and Method Statement is to be worn.
- Individuals may only operate and use plant or equipment for which they are trained and authorised and where the Site Manager has received the appropriate training



certificates.

- Plant is always to be turned off when not in use. Plant should be fitted with suitable silencers to reduce the disturbance to the surrounding area.
- Defective or suspect equipment or tools must be removed from the site, tagged and not used until they have been repaired.
- Waste and debris must be cleared as work progresses and placed into the bins provided.
- The burning of waste on site is strictly prohibited. Once the waste has been separated on site into their designated waste streams, the Site Manager will ensure all waste materials are removed from the site and disposed of with due regard for environmental impact. Contractors removing their own waste are to demonstrate compliance to the Site Manager. All involved should follow the waste hierarchy of reduce, reuse and recycle before considering disposal.
- Tools and materials stored only as agreed by the Main Contractor as there is a potential interface with the existing residents.
- Areas below or close to those working at height must, as far as reasonably practical, be kept clear of all tools, equipment, materials, and debris. Operatives are to make provisions to prevent dropping items and that an exclusion zone is created.
- Personnel are to ensure that drains, sewers, culverts, and ducts etc. are kept free from obstruction by rubbish and debris at all times and not used for discharging contaminants.
- Smoking is prohibited inside buildings, in the vicinity of any flammable materials. The designated smoking area provided is to be used.
- It is strictly forbidden to bring or consume alcohol or drugs on site or to be under their influence.
- Horseplay and violent behaviour are not tolerated and will result in permanent exclusion from the site.
- The Main Contractor reserves the right to evict or refuse entry to any person for any reason, which it considers prejudicial to the safety or good conduct.
- Mobile phones are only to be used in designated areas and never whilst operating tools/plant etc. Radios/MP3 players/CD players/headphones/earphones etc are prohibited from use on the site.
- All of those on the site are required to wash before eating. Meals and drinks are only to be consumed in specified welfare areas. Any changes will be briefed accordingly



Safety standards will be monitored by the Main Contractor through:

- Periodically, the Project Supervisor or appointed representative will inspect fire
- equipment, first aid equipment (and replenish if necessary), registers and site
- documentation.
- Inspections will be carried out the by Project Supervisor and a formal report will be provided and be prioritised for remedial action/recommendations
- This will be checked for closed out actions/progress on the next site inspection visit. This inspection regime will include sub-contractors.
- Additionally, contractors are required to audit/inspect their own works and equipment. Copies of such are to be handed to the Project Supervisor for record purposes.

The Project Supervisor is to ensure client and Main Contractor are briefed accordingly on identified issues for discussion. Furthermore, the Project Supervisor is to ensure the following is incorporated into the inspection regime:

- Consideration of likely hazards and the reduction of risk wherever possible at all stages of the project;
- Regular review of procedures and the Health and Safety Plan to ensure the correct execution of the project;
- Ensuring the regular site audits results are communicated to the workforce;
- Action Plans that target specific areas of risk identified by the HSE (e.g. falls from height,
- Induction and monitoring of adherence to the minimum standard requirements



7. ACTIVITIES WITH RISK TO HEALTH AND SAFETY

The following areas have been identified as having potential risks.

7.1 USE OF AND CONTACT WITH POWER TOOLS

The hazards are from contact with electrical conductors, contact with the revolving tools and Hand-arm Vibration Syndrome (HAVS). The operatives should be trained in the proper use of tools. The tools must be visually inspected before first use and receive a periodic service and inspection. Individual risk assessments contain information on exposure limits for vibrating tools such as drills and breakers. It is not anticipated that HAVS will be an issue on this project, however, should any operatives suffer any form of numbness or pain associated with the use of vibrating tools they must take suitable breaks from use and the work activity should be shared.

7.2 WORKING AT HEIGHT

External works will include the blockwork, render, roof construction, installation of windows and rainwater goods etc. These works shall be performed from fixed scaffolding supplied and constructed by the designated contractor. In the event that a fixed scaffold cannot be erected and a suspension platform (*pont*) has to be used, this has to be inspected and certified by a warranted engineer prior use.

When working from non-fixed systems the wind speed should be measured on a regular basis throughout the working day to ensure that systems are not being used outside of the limits set by the manufacturer.

Any platform that you need to work off must be at least 600mm wide, which is 3 scaffold boards wide. Scaffold boards will need supporting by transoms or trestles at a minimum of 1200mm centres.

Tube & Fitting or Modular Scaffolds

Scaffolding shall only be erected and dismantled by competent persons. Scaffolds should be



certified by a warranted engineer.

Internal works at a low level and so shall be performed utilising 'Hop Ups', aluminium towers or podium steps. If ladders or steps are required, they are to be of Class One (Industrial) grade.

Ladders are a means of access and are not for working off. Ladders and Stepladders must be clearly marked as Industrial Grade.

Suitable edge protection is to be placed on open edges to provide adequate protection from falls from heights, similar to the ones shown in Figs 3 & 4 .



Fig 3



Fig 4

7.3 MANUAL HANDLING

Whether the transport of materials to the work areas is undertaken by the operatives under their own Method Statements and Risk Assessments, or under the direction of the Main Contractor, care must be taken to minimise the inherent risks.

Deliveries shall be dropped as close to the working area as is possible and when there is a need to handle items long distance a suitable lifting aid (trolley etc.) should be used.

Where manual handling cannot be avoided, heavy items shall be either broken down into smaller loads or handled as a group lift. All risk assessments and method statements provided by site contractors must identify heavy items used and how they are to be handled.

Heavy items (structural steels) in the project area will be manoeuvred via the aid of genie lifts or similar.

7.4 CHEMICALS



The hazard is harm to body tissue and/or body organs from the use of hazardous chemicals. The use of hazardous materials and substances on this site is not permitted without the Main contractor having had sight of a valid risk assessment for the product as per the requirements of S.L. 424.24.

Each individual contractor is responsible for creating these documents and ensuring their staff are protected and not putting other trades at risk when chemicals are in use.

If any product is needed on-site that does not already have a risk assessment, then it must be brought to the attention of the Project Supervisor so that an assessment can be completed.

Material Safety Data Sheets of chemicals used, are to be kept onsite.

7.5 LIVE SERVICES

Before starting work the position of all existing services shall be ascertained as far as possible. Extreme care will be taken, at all times, not to disturb any existing services.

The Site Manager is to scrutinise all available plans along with the information provided by the Operating Companies responsible for their maintenance. Any and all unidentified cables and pipes are to be treated as live until it is confirmed otherwise. Additionally, the Main contractor is to have access to a cable detector to ascertain services when there is a requirement to demolish/chase walls.

If we are unsure at any time as to the location of any services, an investigation will take place to determine their whereabouts before the work commences using a cable detector. A qualified electrician will isolate and make safe any electrical works before commencing work.

Where Enemalta overhead cables are in close proximity, plant operators to be made aware.

7.6 NOISE, VIBRATION, AND DUST

Noise

Emission greater than 85dB generated as a result of the work shall be done between 0730-1600.

Where a specific issue is raised by local residents/businesses that will require changes to these



working hours it shall be acted upon as soon as is possible.

In all cases, noise will be kept to a minimum with hearing protection used as deemed necessary in compliance with current regulations. Contractors must continually assess the level of noise and vibration that operations are creating and implement measures that keep levels within acceptable limits, not only for workers on site but for others who may be affected by the works.

There will be a noise assessment detailing all tools found to be 85dB (A) and over available in the site health and safety folder.

Vibration

Vibration producing tools will be subject to a Vibration assessment to identify the safe working times.

The occupational exposure limit value and action limit value for hand-arm vibration shall be as follows:

- a) the daily exposure limit value standardised to an eight-hour reference period shall be 5 m/s²;
- b) the daily exposure action value standardised to an eight-hour reference period shall be 2.5 m/s².

The exposure limit value and action limit value for whole-body vibration shall be as follows:

- a) the daily exposure limit value standardised to an eight-hour reference period shall be 1.15 m/s²;
- b) the daily exposure action value standardised to an eight-hour reference period shall be 0.5 m/s²

The main contractor/contractors will ensure that workers operate equipment within the recommended guidelines.

Dust

Dust will be minimised by wetting down or extraction systems as applicable to the type of tool and activity being carried out. Good housekeeping principles will be followed and ensuring that no build up of waste materials/debris is allowed to occur. Appropriate respiratory protection



will be available i.e. FFP2 & FFP3.

7.7 HOT WORKS

Without exception, all works that generate heat or sparks (abrasive cutting, welding, soldering) must be sanctioned by the Site Manager after a Hot Works Permit is raised.

Additionally, a fire extinguisher commensurate with the surrounding materials must be provided by the contractor.

Site Management is to ensure the designated operative knows how the extinguisher works and what its limitations are.

7.8 SPILLS

All on-site water sources shall be regularly checked to ensure that they are not being left running and that they are not leaking. Construction water sources shall be kept away from electrical systems when they are fitted on the site and any spillages shall be cleaned up as soon as they are noted/generated. Spill kits will be made available on-site to deal with any accidental spillage of chemicals.

7.9 EXPOSURE TO UV RADIATION

'Shirt to be worn at all times' will be enforced for the duration of the project.

Workers will be advised of the dangers and health risks of working in the sun at induction and via Tool Box Talks.

Contractors affected by sunscreen exposure to UV radiation (from the sun) will be advised to provide creams/lotions to their workforce with a sun protection factor (SPF) rating of 15 or more.

7.10 HEAT STRESS

Due to effect of climate change, encountering of extreme high temperatures is becoming more frequent. Therefore, workers will be advised of the dangers of heat stress during induction and via Tool Box Talks.



The site manager will be responsible for enforcing the wearing of all necessary PPE.

Head protection:



Hard hats must be worn on site at all times by all persons including visitors, delivery drivers, etc. regardless of apparently low risks.

High-visibility jackets



High Visibility Jackets must be worn by all persons on site at all times.

Protective footwear:



Protective footwear must be worn by all persons on site at all times with the type and level of protection depending on the site conditions and the activities carried out e.g. anti-slip. (steel toe caps and steel sole plates are required as a minimum)

Site visitors are not necessarily required to wear steel toe capped/plated boots, however, sensible footwear must be worn depending on site conditions.

Hearing Protection:



Hearing protection must be worn on site where average noise levels reach 80dB(A). Although the legal requirement to enforce the use of hearing protection is at 85dB(A), it is a policy to enforce their use at 80dB(A) as good practice.

Breathing Protection:



Respiratory protection must be worn on the site where indicated on the risk assessments for the various activities.

FFP3 masks must be worn when cutting, sanding, grinding silica-based products or hardwoods. Additionally, and brushing up activities will require damping down wherever possible. The labourer must wear an FFP3 mask as the content of dust may contain a mixed variety of hazardous dusts.

Lanyards/harnesses:



Must be worn if required by a particular Risk Assessment. Before relying on a harness and lanyard, the following must first be considered and ruled out: Elimination of work at height, collective fall protection (barriers) and collective fall prevention (safety netting). All harnesses must be thoroughly inspected every 3 months by a competent person.

PPE is the last form of defence. All hazards must be controlled by first considering elimination of the hazard, reduction of the severity of the hazard, isolation of the hazard or controlling the hazard.

Spare PPE must be onsite and readily available for employees and visitors to the site.

8.3 STORAGE OF MATERIALS AND WORK EQUIPMENT

Inert materials such as blocks, timber and plasterboard will be stored on-site. Hazardous materials such as chemical cleaners and petrol will be locked away at the end of each working day. Power tools will also be removed from the site at the end of each working day.

Materials will be located on the site and brought to the working area as required. Where practical the construction materials will be delivered directly to the working area to minimize the need for the manual handling of materials. Materials will be stored in such a way that there is adequate working space to safely handle them manually or by machine. The storage of materials will be carefully controlled to ensure minimal risk to the work personnel, visitors and members of the public.

8.4 STORAGE OF WASTE MATERIALS

Waste materials from the construction process will be deposited in waste skips provided by the client, which will be emptied on a regular basis.

A licensed waste handler will manage the waste, and a record of waste transfer notes will be maintained on site.

Any hazardous waste will be marked as such and handled and disposed of in an appropriate manner.

The site manager will not at any time permit the burning of waste materials on site. Every effort shall be made to comply with the Environmental Protection Act, 2010.

8.5 PROVISION AND USE OF TEMPORARY SERVICES

Temporary services will be established in the early stages of the contract. Temporary and permanent Electrical Works will be carried out by an authorized provider as per S.L.545.24. All works to be certified. Power required within the construction area where it is not available from the Client will be generated from portable generators where practicable. The contractors will permit no unauthorised use of the Client's services and any authorised connections will be inspected by the Client prior to use.



8.6 TEMPORARY WORKS

The following Temporary Works Procedure is to demonstrate that an effective and robust arrangement is in place for controlling the risks arising from the use of temporary works.

Temporary Works Procedure:

Temporary Works Coordinator shall be the Site Manager.

Provision of temporary works design to include, where applicable, designers risk assessments and method statements

Control and supervision of erection, safe use, maintenance and dismantling of temporary works will be undertaken by the Site Manager

Provision of removing or dismantling Temporary Works ('permit to dismantle') where applicable, (e. g. removal of falsework) will only be allowed with the approval of the Site Manager.

Temporary works likely to be required on this project will include (delete as applicable):

Site establishment: Fencing, hoarding and signage.

Equipment/Plant: Mechanical hoist installation, crane bases/mats, anchors/ties, WCWP, piling mat

Access: Scaffolding and edge protection, MEWPS, edge protection, walkways.

Structure: Formwork, falsework, shoring, Temp bridges

Earth works: Trenches, excavations, temp slopes, stockpiles

8.7 PERMIT TO WORK SYSTEM

Main Contractor/contractors shall use a permit to work system to control high-risk activities. No work shall be undertaken where a permit-to-work is required unless the permit states the correct date and correct commencement and completion times. Permit to work systems will operate for the following work activities:



1. Work within confined spaces – as defined by the S.I. 424.27
2. Hot work – welding, cutting, grinding, etc.
3. Deep excavation work, e.g. connections into the existing surface water systems.
4. Work in the vicinity of any existing high voltage and medium voltage cable systems
Should any work adjacent to HV cables for which Enemalta has responsibility, then a permit-to-work will be applied for from the supply authority prior to work commencing.

Permits to work will not prevent incidents unless:

- a) Their need and use have been established;
- b) Their requirements are adhered to;
- c) Staff are aware and competent;
- d) Appropriate equipment is available for testing and implementation.

Therefore, the Main contractor/contractors will ensure that where such permit to work systems are required, the above conditions have first been satisfied.

9. EMERGENCY PROCEDURES

In order to be prepared for any emergency event, the main contractor will, when considered necessary, plan for reasonably foreseeable incidents.

The main contractor will, in consultation with workers and their representatives:

- a) carry out a risk assessment to identify foreseeable major incidents for which emergency procedures would be required;
- b) establish procedures to be followed by employees in the event of an emergency situation, including:
 - I. raising the alarm;
 - II. means of escape;
 - III. assembly points and 'safe muster areas';
 - IV. summoning the emergency services;
 - V. evacuation of disabled persons;



Workers are to be encouraged to:

- When possible, avoid working in direct sunlight;
- Wear suitable light clothing;
- Increase cold fluid intake to stay hydrated;
- Take frequent breaks;
- Avoid caffeine

7.11 CONTROL OF LIFTING OPERATIONS

All plant and equipment brought onto site must be accompanied by all relevant certification and retained for the currency of the work operations.

Training certification for all equipment operators must also be produced.

In any work activity, it is essential to select and use the correct equipment that enables the work to be carried out safely. There are various types of equipment that can be used for lifting materials with a crane. The following are to be considered:

- When lifting any load with a crane, it is imperative that those responsible for the operation are competent, follow the manufacturer's instructions and take the necessary measures to minimise the risks as much as possible.
- Amongst other things, one should ensure that the crane is positioned and erected properly, the weight of the load is known and it can be ensured that the crane is capable of lifting the load from the initial lifting point to the point of destination.
- It is the responsibility of the crane operator to ensure that the load is secured and balanced.
- It is imperative that no workers or third parties are present at any time beneath the load while in transit. Alternative pedestrian routes and traffic management should be provided in case the load has to be transported over roads and, or pavements. This information must be included in the lifting plan.
- One should also consult and adhere to the provisions of the Environment Management Construction Site Regulations, S.L. 552.09

In the case of lifting of *franka* slabs, the traditional way of lifting such slabs as seen in Fig 5 is not to be used. A safer way to lift is by positioning the slabs on a pallet and placing them in



an appropriated cage which can be lifted by a crane to the desired location as shown in Figs 6 & 7.



Fig 5

Fig 6

Fig 7

The same can be said for hollow concrete blocks. Where a cage is not being used, slabs and hollow bricks should be placed on pallets. In the case of bricks, the forks of the pallet fork should engage the pallet and not the hollow bricks. Figs. 8 and 9 show the unsafe practice of lifting bricks with the pallet fork inserted into the lower row of brick.



Fig 8

Fig 9

When lifting a pallet of bricks or slabs with crane forks, it is highly recommended that the load is secured with a safety restraint net. This is stated in SM EN 13155:2020 - Cranes. Safety. Non-fixed load lifting attachments which specifies the safety requirements for non-fixed load lifting attachments for cranes, hoists and manually controlled load manipulating devices. This standard includes lifting forks and states that when lifting loose material such as bricks, there shall be a secondary holding device such as a suitably-sized safety net or cage. The use of the safety net is to safeguard against falling material and should be used in accordance with the manufacturer's instructions. Examples of this arrangement are shown in as in Figs. 10 and 11.



Fig 11

Fig 12

B. SAFE WORKING PROCEDURES

B.1 METHOD STATEMENTS AND RISK ASSESSMENTS

Method statements and Risk assessments will be required from the contractor/s prior to them commencing on site.

The Health & Safety file will contain the significant risks assessments and method statements provided by the contractors that are generally applicable to the work being undertaken on this scheme, together with procedures and policies that should be followed.

For routine site operations, these site rules should be observed together with any relevant guidance issued by the OHSA (Malta)

B.2 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

In accordance with S.L. 474.21, risk assessments have been carried out, and, as a result, the following policy will be adopted:

Safety footwear, dust masks, safety goggles, hi-vis vests appropriate gloves and hard hats will be provided and worn as set out by the specific work activities by all site operatives and visitors.

Identified Hazards	Who might be harmed & how?	What we are doing already to control these risks	Further actions required	Who needs to carry out these further actions?	When is the action needed by?	Done	Pictures
Falling of materials from heights during construction	passing pedestrians in the street, who could receive debris on their heads and causing injuries	Use of building railing & scaffolding	N/A	N/A	N/A		
Intruder on the construction site	The intruders, or our workers if the intruders make the construction site not safety	The air door is placed at the entrance to the site, to prevent entry	Air installation of the door, adapted, and lockable	ITP	As soon as possible before the works commence again		
Dust during demolition and chasing	Our workers and other personal working in the building	We will be using vacuums, masks and will also be covering by plastic the entry ways	N/A	N/A	N/A		
Falling of people from the building	Our workers. Falls can be serious or even fatal depending on the height	Use of building railing on the roof and in the windows	N/A	N/A	N/A		
Falling of people in the stairs	Our workers. Falls can be serious or even fatal depending on the height	keep the steps clean, do not clutter the stairs	Use of building railing systems	ITP	As soon as possible before the works commence again		
Loose debris on site	Any one present on site who might trip in loose stones	Clearing the debris or loose materials as frequent as possible	We are also putting any debris in one particular area of the building	N/A	N/A		

Serial	Hazard	Persons At Risk	Likelihood	Severity	Risk Rating	Control Measures	Likelihood	Severity	Risk Rating
1	Drugs, alcohol, medication and medical conditions	The contractor, workers, Client, Architect, STO, Project Supervisor, Authority personnel, passers-by and passing traffic, subcontracted crane/lifting appliance operators, any other personnel.	3	4	12	<p>It is important that all personnel on site are in good health and medically fit to perform duties as required on construction sites.</p> <p>Persons are not to be under the influence of Drugs, alcohol, medication nor medical conditions which may hinder their attention, clarity, mobility, and safety on site.</p> <p>No drugs and alcohol are to be consumed on site.</p> <p>Personnel are to be lucid and well rested prior to reporting on site.</p>	2	3	6
2	Lack of communication	The contractor, workers, Client, Architect, STO, Project Supervisor, Authority personnel, passers-by and passing traffic, subcontracted crane/lifting appliance operators, any other personnel.	3	3	9	<p>The contractor is a Maltese national whilst his worker is a foreign national.</p> <p>Such foreign operative or any other operatives which may be employed by the contractor or subcontractor to render assistance as part of the project are to have a</p>	2	2	4

Serial	Hazard	Persons At Risk	Likelihood	Severity	Risk Rating	Control Measures	Likelihood	Severity	Risk Rating
						<p>strong command of the Maltese/English language. Foreign workers who struggle to communicate with such languages are not to assist the contractor on site.</p> <p>It is vital that even with personnel who speak the same language that clear means of communication and clear communication is always maintained throughout each step of the project.</p>			
3	Weather and Climate Conditions	The contractor, workers, Client, Architect, STO, Project Supervisor, Authority personnel, subcontracted crane/lifting appliance operators.	4	3	12	<p>Workers are to encouraged to utilise sun protection cream offering a Sun Protection Factor of between 50 -100</p> <p>Avoid clothes which prevent the evaporation and perspiration Wear head protection Take cool drinks regularly in order to replace the moisture being lost from the body Keep out of direct sunlight Take frequent breaks Avoid sudden movements Be well rested and lucid Ensure adequate air circulation Not work in high wind conditions nor lightning storms/heavy rain.</p>	3	2	6

Serial	Hazard	Persons At Risk	Likelihood	Severity	Risk Rating	Control Measures	Likelihood	Severity	Risk Rating
4	Falls from height, leading to serious injury or fatality.	The contractor, workers, Client, Architect, STO, Project Supervisor, Authority personnel, passersby and passing traffic, subcontracted crane/lifting appliance operators, any other personnel	4	5	20	<p>Any and all exposed ground openings which are not covered are to be suitably covered by suitable material which may withstand the weight of persons/loads presented to it.</p> <p>No personnel are to work or walk on unstable/hazardous areas.</p> <p>Protective barriers/ edge protection must be fitted on unprotected edges, roofs, openings, and any other areas requiring protection.</p> <p>Guard Rails of sufficient strength which withstand the weight of persons resting on it must be installed in any and all unprotected areas. Guard rails are to be of sound construction and adequate strength at a height of 120 cm with an intermediate rail at 60 cm height with suitable toe boards. Edge protection/ floor opening coverings are to be maintained at all times prior to works commencement and during all stages of the project and checked regularly.</p> <p>Ladders to rest firmly on level ground and at the appropriate angle. Any and all ladders are to be of sound construction and fit for purpose. Ladders are to be suitably secured from the top and bottom and rise to a height of 1 meter above the step off point. Ladders are to be visually inspected prior to use. Suitable non slip safety boots are to be used.</p> <p>Sufficient certified and in date safety harnesses with</p>	2	4	8

Serial	Hazard	Persons At Risk	Likelihood	Severity	Risk Rating	Control Measures	Likelihood	Severity	Risk Rating
						<p>fall arrest lanyards are to be present on site secured to a suitable anchor point when working at height, when rigging/dismantling edge protection, covering floor openings ect. Workers are to be trained on the proper donning and use of safety harnesses and visually inspect before use.</p> <p>No works are to be performed in high wind conditions.</p> <p>All work platforms are to be fit for purpose, sound construction and fitted with guardrails, toe boards and protection from all sides.</p> <p>No personnel are foreseen to be lifted by means of cranes/lifting appliances on site nor the use of man-cages.</p>			
5	Lack of Access Control and Unauthorised Access	Unauthorised individuals may suffer injury/death due to hazards on site.	3	4	12	<p>Site Safety Sign to be affixed prior to commencement of any works on site.</p> <p>No personnel shall be allowed on site except - Selected Contractors appointed by the Client, Architect, STO, Project Supervisor, Authority personnel, and Client if this is deemed safe by the Contractor due to the ongoing work process at the time.</p> <p>No other persons including any young persons are allowed on site.</p>	2	3	6



RISK ANALYSIS MATRIX

Hazard Severity Category	Description	ACTUAL/POTENTIAL CONSEQUENCES			Probability Rating				
		Personal illness/injury	Environmental	Equipment failure; Quality Incident; cost of Loss	1 Highly unlikely	2 Unlikely	3 Possible	4 likely	5 Very likely
1	Negligible		Presents limited harm to the environment and required minor corrective action	< €1k	1	2	3	4	5
2	Slight	Minor injury requiring first aid treatment or headache, nausea, dizziness, mild rashes	Presents limited harm to the environment and requires general expertise or resources for correction.	> €1k	2	4	6	8	10
3	Moderate	Injury leading to a lost time accident or persistent dermatitis or acne	Potentially harms or adversely affects employees and the environment and requires general expertise or resources for correction.	> €5k	3	6	9	12	15
4	High	Serious injury, poisoning, sensitisation or dangerous infection	Potentially harms or adversely affects employees and the environment at our worksite. Requires specialised expertise or resources for correction	> €25k	4	8	12	16	20
5	Very High	Fatality(s). Terminal lung disease or permanent disability	Potentially harms or adversely affects the general public and has the potential for widespread public concern of operations. Can have serious economic liability on the business.	> €100k	5	10	15	20	25
PROBABILITY RATING				RISK PRIORITY CODE (RPC)					
<p>1. VERY UNLIKELY A freak combination of factors would be required for an incident to result</p> <p>2. UNLIKELY A rare combination of factors would be required for an incident to result.</p> <p>3. POSSIBLE Could happen when additional factors are present but otherwise unlikely.</p> <p>4. LIKELY Not certain to happen but an additional factor may result.</p> <p>5. VERY LIKELY Almost inevitable that an incident would result.</p>				<p>1-3 - Acceptable – Ensure controls are maintained.</p> <p>4-7 - Adequate – Try to improve if reasonably practicable.</p> <p>8-14 - Moderate – Introduce adequate controls to reduce the risk.</p> <p>15-25 - Unacceptable – Stop works until the risk has been lowered.</p>					





**Undergraduate Diploma in
Occupational Health and Safety**