



HSE Program Site

CONTRACTOR HSE Requirements

(Contracting Mode 1)

1410 CF4M
Boden ASU

IFQ	02	26.10.2023	M. Frenzel, GCQH	V. Metivier, GCQH	D. Martinez, GCE	Uptade after KOM with OWNER
IFQ	01	17.05.2023	M. Frenzel, GCQH	V. Metivier, GCQH	D. Martinez, GCE	Preliminary Version, open topics described in 0 – open topics
Status	Issue	Date	Prepared	Reviewed	Approved	Remarks

© Linde GmbH – The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited. Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.

Confidential

Form: &AZ-W-PQ 9601.001 (EN) / Issue 01 dated 27.11.2021

Status: Prepared: Métivier, GCH, Reviewed: Pilipenko, LERUS QHSE, Mukherjee, LEA-XCS, Patel, LEI GCIH, Wu, LE APAC PEPH, Approved: Métivier, GCH

Contents

0	Open Topics	7
1	Introduction	8
1.1	Purpose	8
1.2	Scope and Validity	8
1.3	Contracting Mode	8
1.4	Project Site Related Information	8
2	Definitions and Abbreviations	8
3	Leadership and Commitment	9
3.1	“BeSafe”	9
3.2	Incentive Scheme/Program	10
3.3	Recognition and Consequences Management	10
4	Policies and Objectives	10
4.1	Policies	10
4.1.1	HSE Policies	10
4.1.2	Life Saving Rules	10
4.1.3	Illegal Drugs, Alcohol and Firearms Policy	10
4.2	CONTRACTOR HSE Key Performance Indicators	11
5	Project Organisation and HSE Responsibilities	11
5.1	CONTRACTOR	11
5.1.1	CONTRACTOR General responsibilities	11
5.1.2	CONTRACTOR Management	12
5.1.3	CONTRACTOR Construction Manager	12
5.1.4	CONTRACTOR Site HSE Manager	13
5.1.5	CONTRACTOR Safety Officers	13
5.1.6	CONTRACTOR's Supervisor	13
5.1.7	CONTRACTOR's SUB-CONTRACTORS	13
5.2	Employees and Personnel	13
5.3	First Aider	14
5.4	Fire Watch	14
5.5	Readiness to Start	14
5.5.1	CONTRACTOR HSE Plan	14
5.6	HSE Coverage	15
6	HSE Processes Management	15
6.1	HSE Risk Management	15
6.1.1	Method Statements (MS)	15
6.1.2	HSE Risk Assessment	16
6.1.3	Job Safety Analysis (JSA)	16
6.1.4	Risk Assessment of Interfaces and Coordination of Work	17

6.1.5	Risk Assessment of Simultaneous Operations (SIMOPS)	17
6.1.6	Permit to Work System	17
6.1.7	BeSafe Daily (BSD) and Daily Pre-Start Risk Assessment	17
6.1.8	Critical Temporary Systems	17
6.1.9	Environmental Impact Assessment (EIA)	18
6.1.10	Pre-Start-Up Safety Review (PSSR)	18
6.2	Project Specific Hazards & Requirements	18
6.2.1	Risk of Prejudice of 3 rd parties' rights and interests	18
6.3	Personal Safety	18
6.3.1	Working Schedule	18
6.3.2	HSE Training	19
6.3.2.1	General Training Requirements	19
6.3.2.2	Qualifying Training Requirements	19
6.3.2.3	Additional Training Requirements on Site	20
6.3.3	Lone Workers	22
6.3.4	Personal Protective Equipment	23
6.3.5	Personal Gas Detectors	23
6.3.6	Pedestrian Traffic and Prevention of Slips, Trips, Falls	24
6.3.7	Tools, Machinery and Equipment	25
6.3.8	Grinding	25
6.3.9	Piling	26
6.3.10	Electrical Safety	27
6.3.10.1	General	27
6.3.10.2	Usage of electrical equipment with increased electrical risk	27
6.3.11	Chemical Safety	28
6.3.11.1	Operational Supplies for Construction and Commissioning Activities	28
6.3.11.2	Process Chemicals	29
6.3.11.3	Gas Cylinders	29
6.3.11.4	Cryogenic Cylinders, Dewar and Micro-Bulk Cryogenic Containers	29
6.3.11.5	Inert Gas	30
6.3.11.6	Pickling	30
6.3.11.7	Loading / Unloading of Adsorbents	31
6.3.11.8	Work with Potential Exposure to Hazardous Atmosphere (Outside of Confined Space)	31
6.3.12	Control of Hazardous Energies	32
6.3.13	Hot Work	32
6.3.14	Confined Space	33
6.3.15	Scaffolding	33
6.3.16	Working at Height	33
6.3.17	Lifting Operations	33

6.3.18	Material Transportation and Handling.....	33
6.3.19	Non- Destructive Testing	33
6.3.19.1	Radiographic Inspections.....	34
6.3.19.2	Pressure Testing.....	34
6.3.19.2.1	Pneumatic Pressure Test.....	34
6.3.20	Tie-Ins	34
6.3.21	Storage of Goods.....	35
6.3.22	Excavations.....	35
6.3.23	Flushing.....	35
6.3.24	Sand / Grit Blasting and Painting	35
6.3.25	Tagging, Marking & Barricading	35
6.3.26	Mobile Communication Devices (including Hand-free and Bluetooth)	36
6.4	Occupational Health	37
6.4.1	Medical Health Examinations.....	37
6.4.2	Asbestos and Refractory Ceramic Fibres	37
6.4.3	Physical Health Hazards.....	37
6.4.3.1	Noise	37
6.4.3.2	Laser	37
6.4.3.3	Illumination, Lighting	38
6.4.3.4	Thermal stress	38
6.4.4	Biological Health Hazards.....	38
6.4.4.1	Food	38
6.4.4.2	Drinking Water	38
6.4.4.3	Toilet facilities.....	39
6.4.4.4	Sanitation	39
6.4.4.5	Cleaning of Site Facilities.....	39
6.4.5	Infectious Diseases of High-Consequence (IDHC).....	39
6.5	Driving and Traffic Safety	39
6.5.1	Traffic on Public Roads.....	39
6.5.1.1	Driver Safety	40
6.5.1.2	Vehicle Safety	40
6.5.1.3	Vehicle Incident Reporting	41
6.5.2	Traffic on Site.....	41
6.5.2.1	All Vehicles.....	41
6.5.2.2	Road vehicles (incl. trucks, passenger cars, vans, etc.).....	41
6.5.2.3	Mobile construction site equipment (forklift trucks, excavators, rollers etc.):	42
6.5.2.4	Backing up/ Reversing	42
6.6	Security	43
6.6.1	General	43
6.6.2	Access Control	43

6.6.2.1	OWNER Access Control	43
6.6.2.2	Site Access Control	43
6.6.3	Drone Flights	44
6.6.3.1	Drone Pilot's Requirements	44
6.6.3.2	Drone Equipment Requirements	44
6.6.3.3	Flight Plan	44
6.6.3.4	Flying Safety	45
6.7	Environmental Protection	45
6.8	Emergency Preparedness and Response (EPR)	45
6.8.1	Emergencies	45
6.8.2	Potential Crisis Scenarios	46
6.8.3	Emergency Response Teams	46
6.8.3.1	First Aiders	46
6.8.3.2	Site Medical Team	46
6.8.3.3	Hospital	46
6.8.4	Emergency Response Facilities and Equipment	46
6.8.4.1	Emergency facilities	46
6.8.4.2	Emergency and Rescue Equipment	47
6.8.4.3	Firefighting equipment	47
6.8.4.3.1	Type and number of fire extinguishers	47
6.8.4.3.2	Training	48
6.8.4.3.3	Inspections	48
6.8.5	Emergency Exercises	48
6.9	Communication and Reporting	48
6.9.1	HSE Meetings	48
6.9.2	Manpower Report	49
6.9.3	Monthly HSE Report	50
6.9.4	Final Construction and Commissioning Reports	50
6.9.5	Incident Reporting and Investigation	50
6.9.5.1	Guidance on the Recordability of Incidents	50
6.9.5.2	LUCAS	51
6.9.6	Lessons from Incidents	51
6.9.7	HSE Campaigns and Initiatives	51
6.9.8	HSE Booklet	52
6.9.9	Notifications	52
6.9.9.1	Regulatory Notifications	52
6.10	HSE Assurance (Inspections and Verifications)	52
6.10.1	CONTRACTOR HSE Review and Inspection	52
6.10.2	Safety Walks	52
6.10.3	Audits and Reviews	53

6.10.4	Authority Inspection	53
7	Documentation and Records	54
8	Revisions.....	55
9	Distribution	55
	Attachments.....	55
	Attachment 1: Project Site Specific Information	56
	Attachment 2: Project Applicable Policies	72
	Attachment 3: Flowchart of Recognition & Consequence Management.....	76
	Attachment 4: List of Hazardous Works (LS 940-03).....	81
	Attachment 5: Risk Management Concept	82
	Attachment 6: HSE Coordination Plan	83



0 Open Topics

Reference	Topic
6.4.4	Supply of drinking water / Sanitation
6.6.2	Plant / Site Access control
6.8.3	Emergency response Teams (medical team / Hospital)
Attachment 1	Linde Site Organisation / CLIENT Organisation Project Schedule Emergency response plan

1 Introduction

1.1 Purpose

This HSE Program set the applicable HSE requirements that must be adhered to by CONTRACTOR personnel while working at site to transition safely thru all project lifecycle phases.

This document will enable CONTRACTOR and COMPANY to ensure that the project related HSE aspects are thoroughly understood, considered, planned, implemented, and executed in the Project.

This HSE Program will enable to work together with COMPANY to continually improve HSE performance by implementing HSE management controls that are appropriate for the level of HSE risk, the organisational relationship with CONTRACTOR and the capabilities of CONTRACTOR.

1.2 Scope and Validity

This document is applicable to all CONTRACTOR personnel.

CONTRACTOR is responsible for its SUB-CONTRACTORS and must transfer the HSE requirements of this HSE Program Site to its SUB-CONTRACTORS.

This HSE document may set requirements supplemental to applicable law. However, nothing herein is intended to replace, amend, or otherwise depart from any applicable law relating to the subject matter of this HSE document. In the event of any conflict or contradiction between the provisions of this HSE document and applicable law as to the implementation and governance of this HSE document, the provisions of applicable law shall prevail, and CONTRACTOR must inform COMPANY without delay.

These HSE requirements are part of the contract between CONTRACTOR and COMPANY. They are attached to Exhibit E.

This HSE Program can be reviewed and updated as the project transitions all project phases or in case of significant changes or new HSE requirements. It can also be reviewed in order to improve and provide actual site conditions up to the commissioning phase.

1.3 Contracting Mode

The contracting mode determines whose HSE Management System will be used to manage the risks associated with performing the work.

For this Project, CONTRACTOR provides people and tools for the execution of the work under the supervision, instructions and HSE Management System of COMPANY. CONTRACTOR has a Management System to provide assurance that the personnel for whom it is responsible are qualified and fit for the work and that the processes, tools, materials and equipment they provide are properly maintained and suitable for the contract. This mode requires that CONTRACTOR reports HSE performance data, including events and incidents, to COMPANY.

1.4 Project Site Related Information

Refer for details to **Attachment 1: Project Site Specific Information**

2 Definitions and Abbreviations

Abbreviation	Definition
CMM	Commissioning Manager
HSE	Health, Safety and Environment
NDT	Non-destructive Testing
OEM	Original Equipment Manufacturer
PCM	Project Construction Manager
PM	Project Manager
PPE	Personal Protective Equipment

R&CM	Recognition and Consequence Management
SDS	Safety Data Sheet
SM	Site Manager

Terms	Definition
Bump Test	Test to verify the performance of the gas detector and ensure that sensors are responding to their target gas. A bump test does not calibrate the sensors.
Calibration test	A test to evaluate and adjust the reading precision and accuracy of measurement instruments. (It is not a bump/functional test)
COMPANY	Linde Engineering Legal Entity/ Organizational Unit responsible for the project
CONTRACTOR	Non-Linde third party performing work for the Engineering Division on one of its LE Entity Sites or Project Construction Sites. Couriers providing a delivery service (for example DHL, UPS or FedEx) are not regarded as Contractors.
EIFR	Environmental Incident Frequency Rate. EIFR = Serious, Moderate & Minor environmental incidents per 200.000 hours worked.
Exhibit E	Part of the Contract agreement of CONTRACTOR and COMPANY
Large Project	Any project site assigned with a COMPANY Project Criticality between 2 and 4.
Medium Project	Same definition as for Large Project
OWNER	Operator of the plant or area wherein CLIENT's construction site is located.
SUB-CONTRACTOR	Non-Linde third party performing work under a contractual agreement with one of COMPANY CONTRACTOR
TRCR	Total Recordable Case Rate. TRCR = Recordable Injury and Sickness Cases per 200.000 hours worked.
VENDOR	Non-Linde third party delivering a product (as applicable including related services) to the Engineering Division
VISITOR	Any person (including elected and appointed officials and other interested parties) who is not an Employee, Temporary Worker or CONTRACTOR and who is temporarily present on COMPANY premises.

For convenience, project documents reference provided in this document with originator code "&??", refer to COMPANY originator code.

Within this HSE Program Site, the terms "must" (as well as "must not" and "shall not") indicate a mandatory requirement. The term "should" indicates a best practice.

3 Leadership and Commitment

3.1 "BeSafe"

BeSafe is a COMPANY behaviour-based safety program that focuses on workers' behaviour as an important aspect for the prevention of work-related injuries and illnesses. It is based on solid principles about engaging, motivating, assisting, reinforcing, and sustaining safe behaviours. It is a tool that will enhance the effect of already existing practices and will allow for an objective measurement of the CONTRACTOR'S safety performance in the workplace.

COMPANY safe work specification &??-W-SC 9620 "BeSafe Program" must be applied.

3.2 Incentive Scheme/Program

COMPANY HSE Incentive Scheme is a rating system where incentives are adjusted based on CONTRACTOR HSE performance to encourage CONTRACTOR to work safely and measuring their health, safety and environmental performance during their activities at site. It is supportive of a safety awareness increase and a safety culture promotion.

COMPANY safe work specification &??-W-SC 9625 "HSE Incentive Scheme" must be applied.

3.3 Recognition and Consequences Management

COMPANY Recognition and Consequences Management Framework is a tool to be used by COMPANY and CONTRACTOR Managers at all levels to evaluate the actions or behaviours of individuals either above, at or below expectations. The purpose is to guide COMPANY and CONTRACTOR Managers to identify the appropriate recognition or consequence outcomes to be applied.

COMPANY Flowchart of Recognition & Consequence Management (**Attachment 3**) must be applied.

4 Policies and Objectives

4.1 Policies

4.1.1 HSE Policies

COMPANY HSE Policy is the basis for development of COMPANY tools and processes that will help guide thinking and actions. Over time, the policy will influence behaviours, embed the desired HSE culture at Linde and help to remind of Linde personal responsibilities. (Attachment 2: Project Applicable Policies)

4.1.2 Life Saving Rules

COMPANY Life Saving Rules (Attachment 2: Project Applicable Policies) aim to prevent serious injuries and fatalities, and to support the journey towards a Leading HSE performance and culture. They are based on incidents and experiences within Linde and reflect legal requirements that apply in many of the countries in which Linde operates. The Life Saving Rules reinforce those critical areas of our existing management system that present a high risk of serious injury or fatality if not followed. Disregard of the lifesaving rules will be dealt with by the management and HR in the same manners as any other serious misconduct or breach. (Attachment 2: Project Applicable Policies.)

4.1.3 Illegal Drugs, Alcohol and Firearms Policy

- The use, possession, distribution, purchase or sale of any illegal drugs, alcohol, or other controlled substances and the use, possession, transportation or sale of explosives, firearms or other weapons by any person is prohibited while
 - on CLIENT, COMPANY and CONTRACTOR's premises or in areas of operations,
 - engaged in CLIENT, COMPANY and CONTRACTOR's business
 - operating CLIENT, COMPANY and CONTRACTOR's equipment.
- The use of any illegal drug or other controlled substances or alcohol that causes or contributes to unacceptable job performance or unusual behaviour, even if consumed outside working hours, is prohibited.

All Personnel at site must abide by this policy. Any person violating this policy must be removed from CLIENT, COMPANY and CONTRACTOR's premises and will be denied future access to the same premises.

CONTRACTOR will be responsible for ad-hoc drug and alcohol testing of their employees prior and during mobilization of the employees.

4.2 CONTRACTOR HSE Key Performance Indicators

CONTRACTOR HSE performance will be evaluated during the weekly progress meeting. Following key HSE indicators will be considered:

- Recordable Cases > 1 and TRC-Rate* > 0.2
*Recordable Cases per 200.000 hours
- Environmental Incidents > 1 and Environmental Incident-Rate* > 0.2
*Environmental Incidents per 200.000 hours
- FPE Cases* > 3 and FPE Rate** > 0.6
*FPE Case: Unsafe acts or conditions or incidents with the potential for serious injury or fatality
**FPE Cases per 200.000 hours
- Not reporting a recordable or environmental incident to COMPANY
- HSE Interactions* per 1.000 hours < 10
*HSE Interactions: Toolbox Talks, BeSafe Daily Talks, Safety Dialogues and similar
- HSE Audit Compliance < 80% in 2 subsequent audits
- Weekly Management Safety Walk-Through Close-out (in time) < 90% in 4 subsequent weeks
- Incident Investigation Action Close-out (in time) < 100% in 2 incident cases

In case CONTRACTOR HSE performance achieved for any of these HSE key performance indicators is not satisfying, COMPANY may decide to initiate the actions defined below :

- CONTRACTOR must proposed an improvement plan within one week after progress review was completed and it must be approved by Company.
- COMPANY is entitled to provide the site with additional COMPANY supervision personnel in case - due to reasons attributable to CONTRACTOR - CONTRACTOR's performance of the work is not as per any of the defined HSE key performance indicators and CONTRACTOR does not take appropriate actions as deemed necessary and approved by COMPANY.
- CONTRACTOR shall bear the costs for such additional COMPANY supervision, as well as for other appropriate monitoring and control measures with remuneration in this regard being paid based on the usual market hourly rates.
- COMPANY shall also be entitled to request CONTRACTOR to exchange key site personnel of CONTRACTOR (of all levels as deemed necessary by COMPANY).

5 Project Organisation and HSE Responsibilities

5.1 CONTRACTOR

5.1.1 CONTRACTOR General responsibilities

CONTRACTOR is responsible for

- managing Health, Safety and Environment for their own scope of work in accordance with contractual requirements.
- implementing and sustain compliance with project specific HSE Management System as well as applicable HSE requirements of local authorities, CLIENT and COMPANY
- providing assurance that CONTRACTOR personnel and SUB-CONTRACTOR personnel for whom it is responsible are qualified and fit for the work and that the processes, tools, materials and equipment they provide are properly maintained and suitable for the contract.

- pre-qualifying their own SUB-CONTRACTOR and notify COMPANY if the HSE performance does not comply with COMPANY required pre-qualification criteria stated below. COMPANY reserves the rights to reject any SUB-CONTRACTOR if the HSE performance does not comply with the required HSE pre-qualification criteria or to require any mitigation action plan to ensure an adequate HSE performance on the project.

HSE Pre-Qualification Criteria			
(FAT) Fatalities	1	1	0
(LWCs) Lost Workday Cases Case	-	-	1,5
(TRC) Total Recordable Case (including Illness)	-	-	2,5
TRC) Total Recordable Case Rate (including Illness) (basis 200.000 hrs)	6	6	-
(EMR) Experience Modification Rate	-	-	<1

- planning and arranging their work execution in a manner that minimises risks to the maximum extent reasonably practicable.
- demonstrating safety visible leadership during execution of work.

CLIENT and COMPANY reserve the right to increase or modify HSE requirements and procedures as work will progress, but nothing in those given regulations and procedures are to be construed as relieving the CONTRACTOR of its obligations under the contract or of its obligations under any applicable municipal, local or governmental regulations or codes. Those requirements and procedures will assist CONTRACTORS in establishing their own procedures to manage their work. COMPANY and/or CLIENT will handle and coordinate all applications, notifications and contact with the authorities if not otherwise specified in the contract or the HSE Program Site.

CONTRACTORS must not contact authorities (unless required by law) without prior written consent from COMPANY and CLIENT.

CONTRACTOR is obliged to report any incidents and accidents to COMPANY site management in a timely manner. Relevant incidents need to be investigated (see 6.9.5).

Prior start of the activities on site, CONTRACTOR shall provide COMPANY with all necessary documentation described in this Program as well as in the document &AZ-W-LF 9603 "Checklist of HSE Documents to be prepared by Contractor ". COMPANY will give the authorization to start once the documentation has been reviewed and approved according to the document &AZ W-LF 9608 "Contractor Readiness to Start HSE Checklist ".

5.1.2 CONTRACTOR Management

CONTRACTOR Management must be competent and authorized to deal with all matters and decisions to give instructions regarding commencement of the work in an HSE acceptable mode.

CONTRACTOR management team(s) must be personally and directly involved by participating in relevant meetings, HSE audits, HSE inspections and show visible leadership. HSE is a line responsibility, and this principle is vital for the implementation of an effective HSE organisation.

5.1.3 CONTRACTOR Construction Manager

CONTRACTOR Construction Manager is responsible for CONTRACTOR personnel and the implementation of COMPANY and CONTRACTOR's HSE Program and Plan.

5.1.4 CONTRACTOR Site HSE Manager

CONTRACTOR must nominate an authorized Site HSE Manager who is integrated into the project team and must give support to the implementation of all procedures on site.

CONTRACTOR Site HSE Manager must be a competent person trained in HSE and with a minimum working experience of 5 years in the respective field of construction and in the implementation and follow up of HSE requirements with regard to the CONTRACTOR scope of work.

CONTRACTOR Site HSE Manager training certificates and resume must be submitted to COMPANY. CONTRACTOR's Site HSE Manager must be approved by COMPANY Site Manager and Site HSE Manager.

CONTRACTOR's Site HSE Manager must not perform non-HSE related tasks during this time.

For details about required coverage see 5.6

5.1.5 CONTRACTOR Safety Officers

CONTRACTOR Safety Officers may be selected from the worker (not supervisor or management) level and perform their HSE related tasks during their normal duties.

CONTRACTOR Safety Officers will assist CONTRACTOR Site HSE Manager in his duties and tasks by liaising / working directly with field supervisors, craft and workers. They play an active role in daily field monitoring and advice to supervisors, craft and workers on safe practices and recommend on-the-spot corrective actions when needed.

CONTRACTOR Safety Officers must be trained appropriately in HSE and have a minimum working experience of 3 years in the respective field of construction and in the supervision of HSE requirements regarding the CONTRACTOR's scope of work. Newly degreed safety professionals should be enrolled in a safety mentorship program once on site for continuous learning purposes.

CONTRACTOR Safety Officers training certificates and a resume must be submitted to COMPANY. CONTRACTOR Safety Officers must be approved by COMPANY.

For details about required coverage see 5.6

5.1.6 CONTRACTOR's Supervisor

Supervisors must coordinate work of CONTRACTOR's personnel. On the construction site, it is the supervisor who performs or arranges the task related HSE instruction to be performed. The supervisor requests the work permits for CONTRACTORS.

Supervisors must be English speaking.

For details about required coverage see 5.6

5.1.7 CONTRACTOR's SUB-CONTRACTORS

SUB-CONTRACTOR organisation and HSE responsibilities must follow those from CONTRACTOR.

5.2 Employees and Personnel

All personnel of COMPANY and CONTRACTOR shall perform their work according to the project HSE requirements. Personnel must report immediately to their supervisor any observed HSE incidents with low hazard potential (e.g. unsafe acts or conditions, near miss) or higher hazard potential (e.g. Lost Time Injury, Medical treatment case, incident with potential for a severe injury or fatality, environmental incidents etc). Personnel must be familiar with the HSE relevant aspects related to their workplace and project activities.

Additionally, site foremen must be English speaking.

5.3 First Aider

A First Aider is a person who provides first aid in case of an accident. First Aider must be trained appropriately (e.g. according to local regulations or if not existing any recognised standard). The minimum requirement of available First Aiders at the construction site at all times work is ongoing is as follows:

A list of all project First Aiders must be established, maintained up-to-date and visibly displayed at the construction sites.

For details about required coverage see 5.6

5.4 Fire Watch

The Fire Watch is a trained person who ensures that according to the hot work permit proper firefighting equipment is readily available; He/she carries out gas measurements, records the measurement results and signs off the hot work permits. He/she stays permanently at the workplace.

In case of fire he/she must extinguish fire only within his/her capabilities and without self-endangerment. The Fire Watch stays on watch as long as defined in the work permit after hot work has been completed or after fire has been extinguished.

The necessity of a Fire Watch is defined in the work permit. For hot work with low fire hazard, the person carrying out work can be appointed as Fire Watch.

5.5 Readiness to Start

5.5.1 CONTRACTOR HSE Plan

CONTRACTOR must provide their own CONTRACTOR HSE Plan valid for their scope of work. CONTRACTOR HSE Plan must comply with COMPANY HSE Program Site requirements and as a minimum include following:

- HSE policy showing commitment to Health, Safety and Environmental Protection
- Organisation chart showing HSE responsibilities and HSE organisation at site
- Training and individual qualification including records of regularly conducted safety training and evidence of special qualifications for personnel performing specialised tasks
- HSE requirements for SUB-CONTRACTORS
- Detailed work instructions for CONTRACTOR's scope of work
- Project specific emergency response plans
- Fire safety plan
- Risk Assessment / Job Safety Analysis for CONTRACTOR's scope of work
- Safe handling procedures for hazardous materials used on site and related up to date safety data sheets (SDS)
- Description of First aid Organisation including a list of First Aiders / CPR
- List of tools & equipment (incl. critical temporary system) including relevant inspection records
- Definition of required medical health examinations Fitness to work test
- HSE Documents as required in "Checklist of HSE Documents to be prepared by Contractor " (&AZ-W-LF 9603)

CONTRACTOR HSE Plan must be approved by COMPANY Site HSE Manager before work start.

CONTRACTOR must update their CONTRACTOR HSE Plan in case of significant changes in CLIENT, COMPANY or local HSE legislation requirements and submit the revision for approval to the COMPANY Site HSE Manager re-approved by COMPANY afterwards.

CONTRACTOR must document how they familiarise or train their personnel to the approved HSE plan requirements and provide evidence to COMPANY upon request.

CONTRACTOR must take responsibility of implementation of these requirements also for SUB-CONTRACTORS.

5.6 HSE Coverage

Minimum HSE Coverage requirements at site:

Onsite CONTRACTOR employees (incl. Sub-contractors)	HSE Coverage Required			
	1-50	>50 - 100	>100 -200	>200
CONTRACTOR Site HSE Manager	Full time / part time (upon LG & LE PM & Site HSE Man decision)		Full time	

Onsite CONTRACTOR employees (incl. Sub-contractors)	HSE Coverage Required				
	>5	>25 - 90	>90 - 150	>150 -210	>210
CONTRACTOR Site Safety Officers	1 full time	1 full time / 25 pers			

COMPANY reserves the right to instruct CONTRACTOR to increase the number of CONTRACTOR Site HSE Managers and CONTRACTOR Safety Officers or to exchange the assigned personnel in case of continuous disregards of the regulations stated in this HSE Program Site or if the HSE performance of CONTRACTOR puts the achievement of the project objectives at risk. This will be at no additional cost to COMPANY.

Minimum First Aid presence requirements at site:

Onsite CONTRACTOR & COMPANY employees (incl. Sub-contractors)	HSE Coverage Required	
	2 – 29	>29
First Aiders	1	5 % (at least 2)

6 HSE Processes Management

6.1 HSE Risk Management

Hazardous Works are defined and listed in Linde Standard LS 940-03 and managed as per Risk Management Concept in **Attachment 5: Risk Management Concept**.

6.1.1 Method Statements (MS)

CONTRACTOR must prepare Method Statements

- for activities defined as high-risk activities by local applicable legislation, contractual specifications / exhibits
- for activities involving hazardous work as listed in Linde standard LS 940-03 "List of hazardous work", and
- upon request of COMPANY Site Manager or Site HSE Manager.

CONTRACTOR must submit method statements, at least 2 weeks ahead of a scheduled project work activity for review and approval by COMPANY.

Method Statements help to clarify the execution of given activities by identifying and listing the basis structure of all tasks necessary for the execution so that supervisors, workers and any other persons at the workplace understand the requirements that have been established to carry out the works or tasks safely.

Method Statements must include, at least, following:

1. Short description of work to be carried out
2. information about the location where the work shall be carried out

3. information about the equipment to be used
4. information about the manpower required (trade, approx. number)
5. Detailed description of the main activities (incl. short description of side activities) according to logical sequence break down
6. Indication on structural or environmental limitations

Each activity that requires a Method Statement must be covered in CONTRACTOR HSE Risk Assessment (see 6.1.2)

CONTRACTOR can use their Method Statements form

6.1.2 HSE Risk Assessment

CONTRACTOR must carry out HSE Risk Assessments for own routine and standard activities to identify the hazards and control measures considering the requirements specified by CLIENT or project specific HSE studies

CONTRACTOR must regularly update the HSE Risk Assessments as project transitioned thru every construction and (pre-) commissioning activity (e.g. scaffolding, excavating, crane operation, forklift truck operation, pressure testing, etc.) or in case of significant change.

CONTRACTOR Risk Assessment must be approved by COMPANY Site HSE Manager prio work start.

CONTRACTOR HSE Risk Assessment must include, at least, following steps:

- 1) Definition and description of the activity (task, personnel, equipment, process or work steps, workplace, environment, surrounding, etc.).
This must include a description of side tasks directly related to the activity such as assembly, mounting, preparing, maintaining (e.g. regular flushing, cleaning), inspecting and any abnormal operations that can potentially become necessary due to unplanned events (e.g. removing blockages, dealing with disfunctions etc.)
- 2) Identification of HSE hazards related to the activity
- 3) Evaluation and assessment of risks
- 4) Identification and evaluation of necessary control measures

CONTRACTOR must identify control measures that follow the hierarchy provided below:

- eliminating the hazards,
- substituting the sources of hazards
- engineering controls to isolate hazards (e.g. collective protective equipment)
- providing administrative controls (e.g. procedure changes, employee training, and installation of signs and warning labels
- providing Personal Protective Equipment (e.g. PPE, training, labeling etc.)

CONTRACTOR can use their own HSE Risk Assessment form or COMPANY standard form (&?? W-QR 9602 'Risk Assessment – General').

6.1.3 Job Safety Analysis (JSA)

CONTRACTOR must carry out Job Safety Analysis (JSA) when planning hazardous works or tasks with high risks (see **Attachment 4: List of Hazardous Works (LS 940-03)** or as required when issuing a work permit (see 6.1.6) or preparing Method Statements (see 6.1.1).

Job Safety Analysis (JSA) are tasks specific, at a specified point of time, with a specified team of workers and detailing step by step how a task is to be carried out safely,

CONTRACTOR JSA must include at least following:

1. Definition of the job or task to be analysed (e.g. *confined space entry of LIN tank*)
2. Break down of the task into a sequence of steps
3. Identification of potential hazards related to each step
4. List of preventive measures to overcome identified hazards.

CONTRACTOR can use their own JSA form or COMPANY standard form (&??-W-QR 9604 'Job Safety Analysis').

6.1.4 Risk Assessment of Interfaces and Coordination of Work

When COMPANY, CLIENT and CONTRACTOR are working simultaneously at site, CONTRACTOR must support COMPANY Site HSE Manager to prepare or update an HSE Coordination Plan

CONTRACTOR conducting radiographic testing/NDT activities must display an NDT Coordination Plan that is regularly updated by CONTRACTOR, in addition to the HSE Coordination Plan prepared by COMPANY.

CONTRACTOR must support the coordination of works with participation to:

- Implementation of a Permit to Work System (refer to 6.1.6)
- Regular meetings for HSE, coordination etc. (refer to 0)
- Risk Assessment of Simultaneous Operations SIMOPS (refer to 6.1.5)
- HSE Coordination meeting (as soon as two or more contractors work in the same area)

6.1.5 Risk Assessment of Simultaneous Operations (SIMOPS)

When required by COMPANY Construction Manager and Commissioning Manager, CONTRACTOR must attend or conduct SIMOPS meetings to address at an early stage the significant interfaces and interferences resulting from simultaneous works/operations planned to be executed by different teams (construction, commissioning and/or operations).

6.1.6 Permit to Work System

COMPANY safe work specification &??-W-SC 9601 "Permit to Work System" must be applied.

CONTRACTOR will require a Photography Permit

CONTRACTOR must apply for permit(s) at least 24 hours in advance.

6.1.7 BeSafe Daily (BSD) and Daily Pre-Start Risk Assessment

CONTRACTOR Supervisor must prepare daily a BeSafe Daily (BSD) or Daily Pre-Start Risk Assessment & Safety Talk and discuss them with their respective teams before start of work.

The purpose of BeSafe Daily is to collect the relevant information based on established permits to work, risk assessments etc. under consideration of all actual circumstances having a potential impact on the safe task execution and raise the workers' awareness of tasks to be completed, involved challenges, hazards and risks as well as required controls.

BeSafe Daily Card and Daily Pre-Start Risk Assessment & Safety Talk can either be according to COMPANY standard form (see &??-W-QR 9607 "BeSafe Daily") or CONTRACTOR's standard.

6.1.8 Critical Temporary Systems

A critical temporary system is any potential high-hazard/energy-containing installation or device that is not part of the final design; it is used during construction, check-out or commissioning and it is removed once the intended purpose for installing them has been completed.

COMPANY Safe work specification &??-W-SC 9626 "Critical Temporary System" must be applied.

CONTRACTORs shall maintain a critical temporary system log according to "Critical Temporary System" (&??-W-SC 9626).

6.1.9 Environmental Impact Assessment (EIA)

CONTRACTOR must report to COMPANY Site HSE Manager any significant potential changes to the Environment, whether adverse or beneficial, wholly or partially that can result from the project construction activities or elements interacting with the Environment.

6.1.10 Pre-Start-Up Safety Review (PSSR)

Pre-Start-up Safety Review will be performed by CLIENT with COMPANY after the mechanical completion and shortly before hydrocarbons or other hazardous media are introduced or shortly before a plant or a part of the plant is put into sustainable operation.

CONTRACTOR must participate to the PSSR review If required by COMPANY.

When during PSSR review (or during any inspections conducted during project construction, pre-/commissioning and start-up incl. shutdown, emergency operations, and maintenance) deficiencies related to Human Factor Engineering (HFE) are observed in layout or design of work systems, CONTRACTOR must

- report these HFE's deficiencies to COMPANY to prevent any incident with severe consequences to personnel, environment or material,
- identify, demarcate or barricade areas with HFE deficiencies as appropriate,
- ensure that during the carry out of pre-start inspection of work area, hazards related to HFE such as deficiencies in layout and design of work areas are considered.

Reporting of Human Factor Engineering (HFE) issues must follow COMPANY specification &??-W-SC 9624.

Human Factor Engineering (HFE) refers to the integration of human characteristics into the design of work system to optimise performance. This can be related to equipment design or fabrication, workstation / console, workplace layout, maintenance access and ease of access, screen design, working environment such as floor elevation, ladder rungs, climate, lighting, noise, etc.

6.2 Project Specific Hazards & Requirements

Refer for details to **Attachment 1: Project Site Specific Information**

6.2.1 Risk of Prejudice of 3rd parties' rights and interests

CONTRACTOR must immediately notify COMPANY if it has reason(s) to believe that rights of neighbouring plants or other 3rd parties are prejudiced by the execution of the work at project's site in such a way that there may be a need for measures that are not provided for in the contract.

CONTRACTOR must submit a Variation Order Request (VOR) for executing these measures and show their impact on the contract value and schedule.

6.3 Personal Safety

6.3.1 Working Schedule

CONTRACTOR working hours must comply with local legislation and COMPANY requirements as given below.

Any modification of CONTRACTOR working hours must be approved by COMPANY Project Manager and Site Manager.

Refer for details to **Attachment 1: Project Site Specific Information**

6.3.2 HSE Training

6.3.2.1 General Training Requirements

CONTRACTOR must only hire workers who can attest and document they have completed a training program that satisfies the requirements specific for the work they carry out.

CONTRACTOR must ensure that personnel in charge of providing trainings satisfy with relevant qualification or certification requirements

CONTRACTOR must provide training adapted to needs, qualification and awareness of personnel at project site.

Before start of work operations CONTRACTOR must ensure that CONTRACTOR personnel are trained or instructed about project site HSE requirements, hazards, risks and defined control measures related to job.

CONTRACTOR must ensure that trainings are provided for following activities and /or personnel (non-exhaustive list) and that last training dates are no older than 12 months:

- Emergency Response
- Environmental Emergency Response (incl. use of spill kits)
- Fire Watches
- Banksmen / flagmen / signallers
- Use of Personal Protective Equipment
- Use of Fire Extinguishers
- Use of Hazardous Substances
- Sand/Grit Blasting
- Hot Work
- Lifting, Rigging
- Piling
- Radiographic Inspections
- Use of specific tools and equipment, e.g. grinders, drill, bending/cutting machines, winches, hoist, (mobile) fuel filling stations, etc.
- Scaffolding
- Work at height (incl. ladders, scaffolds, use of PPE, rescue team members, MEWPs)
- Heat Stress, Cold Stress (if applicable)

CONTRACTOR must submit attendance records upon request of COMPANY.

6.3.2.2 Qualifying Training Requirements

CONTRACTOR must ensure that specific trainings are provided to CONTRACTOR personnel requiring either for certification, qualification, authorisation or legal purposes to ensure they can perform their activities.

CONTRACTOR must ensure that specific trainings are provided for following activities and /or personnel (non-exhaustive list):

- Hot work
- Work at height
- Work in confined space
- Handling hazardous chemicals
- Performing LOTO
- Blasting
- Working in ATEX zone
- First aiders
- Operators of
 - Mobile or tower cranes
 - Forklift trucks
 - Mobile elevated work platforms (MEWPs)
 - Mobile construction site equipment (e.g. excavators)
- Supervisors for
 - Scaffolding work
 - Excavation work
 - Lifting operations
- Electricians

- Inspectors of tools and equipment (incl. PPE)
- Radiographic Supervisors/Radiation Safety Officer
- Drivers when driving on public roads for site purposes (e.g. to/from pre-fab yards) and for mass transportation (e.g. buses) (Refer to 6.5)

CONTRACTOR must submit attendance records attest of competencies (Certification, Authorisation or Qualification) upon request of COMPANY.

Additionally, CONTRACTOR must ensure that CONTRACTOR drivers of mobile construction site equipment have received a written authorization for the vehicle or type of vehicle(s) they use.

6.3.2.3 Additional Training Requirements on Site

CONTRACTOR must ensure that following additional trainings are provided to CONTRACTOR personnel In addition, the following trainings are required:

TRAINING	TRAINER	FREQUENCY	PARTICIPANTS	CONTENT / REF.
Site Safety Induction	OWNER	once before access to site is permitted	all personnel carrying out work retraining required, after absence >6 weeks	Must be requested in advance. Training everyday Mo-Fr- at 7 AM
HSE Site Induction	COMPANY Site HSE Manager	once after arrival at site when returning to the same project site after demobilization	COMPANY personnel, CONTRACTOR's workers, VENDOR's personnel, CLIENT's personnel involved in commissioning VISITORS	Presentation & Comprehension Check
BeSafe - Worker Participation Program ('TellMe')	COMPANY Site HSE Manager	once after arrival at site	CONTRACTOR's workers	BeSafe Program Incentives & Awards
BeSafe / Safety Leadership Development Training <i>requirement to be agreed with PCM (usually when >10 Linde staff)</i>	COMPANY certified coach	once, after mobilisation of most/all key personnel	COMPANY site management team (selected team members) CONTRACTOR's management team (selected team members) – <i>requirement to be agreed with PCM</i>	Demonstration of visible leadership with safety coaching (2days)
Pre-Commissioning / Commissioning Hazards Training	COMPANY Site HSE Manager	once before start of pre- / commissioning	CONTRACTOR's workers, VENDOR's personnel, CLIENT's personnel involved in commissioning	Presentation
Crane Driver Awareness Training	COMPANY Site HSE Manager	once before start of crane operations	CONTRACTOR's Crane Operators	Presentation
Permit to Work Training	COMPANY Site HSE Manager	once before being authorized to issue or receive work permits	COMPANY's, CONTRACTOR's, VENDOR's Permit to Work Issuers, Endorsers, Coordinators, Holders	Presentation
Confined Space Entry Training	COMPANY Site HSE Manager	once before entering confined spaces	COMPANY CONTRACTOR's VENDOR's Permit Issuers, Endorsers, Reviewers, Holders, Entrants, Supervisors, Manhole Watches, Gas Testers, Rescue team members.	Presentation

Lockout /Tagout Training	COMPANY Site HSE Manager	once before energisation of first system	COMPANY's, CONTRACTOR's, VENDOR's authorised and affected Persons, Supervisors and Permit to Work Issuers, Endorsers, Reviewers, Holders	Presentation
Construction Oxygen / GMP Awareness Training	COMPANY QA/QC Manager	once before mechanical installation	COMPANY's, CONTRACTOR's and CLIENT's Site Manager, site supervisors, and site personnel performing pre-fabrication and assembly work on process piping systems (pipes, valves, fittings, etc.) and flat bottom tanks (erected on site) with oxygen enriched media.	Presentation

Attendance to training (6.3.2) of CLIENT, COMPANY, CONTRACTOR or VENDOR must be recorded (e.g. by use of &AZ-W-RX 9602 "HSE Training Record").

Attendance records must include at least:

- date of the training,
- name of the trainer,
- topic of the training,
- participants' names and signatures.

CONTRACTOR attendance records must be submitted to COMPANY upon request.

CONTRACTOR attendance records must be kept by CONTRACTOR until the end of project site activities.

6.3.3 Lone Workers

CONTRACTOR lone workers are those who work by themselves without close or direct supervision. This includes e.g. a person who works alone on the construction site or works separately from others ("unaccompanied worker").

Working alone:

- is not permitted when no one else is present on site (e.g. at construction site)
- is not permitted when an unaccompanied worker is performing "Hazardous Work" as defined in LS 940-03. At least 2 persons must be present at the job location.
- Is possible **only** when an unaccompanied worker is performing **Non-Hazardous Work** (e.g. working in pre-fab workshop, remote area on site etc) for which a separate and specific HSE risk assessment has been carried out and where appropriate and specific controls have been defined for emergency situations and emergency reporting devices.

Emergency reporting device must be selected with consideration given to the emergency response time and to the capability of the injured person (IP) to help themselves to contact emergency services without delay and direct them to the incident location.

The table below indicates the recommended emergency reporting device versus the potential injury severity:

Recommended Emergency Reporting Devices	Potential injury severity		
	Light <i>IP is able to help themselves</i>	Moderate <i>IP has limited capability to act</i>	Severe <i>IP is not able to act</i>
Landline phone Stationary call system	x		
Mobile phone Walkie-talkie Timed control calls	x	x	
Dead man's switch Constant camera surveillance Personal alarm signal system	x	x	x

6.3.4 Personal Protective Equipment

COMPANY safe work specification &??-W-SC 9603 "Personal Protective Equipment on Construction Sites" must be applied.

6.3.5 Personal Gas Detectors

Project requirements for gas detectors:

- Following CONTRACTOR Personal Gas detectors are required after transition to Commissioning period and introducing Hazardous Substances to the plant:
 - O2 Gas detectors

Prior use of personal gas detector:

- A **calibration test** must have been performed by manufacturer or supplier as per manufacturer's recommendations and frequency and related calibration indication (e.g. sticker / marking, etc.) must be available.
- Gas detector's alarm and action levels** must be set-up by a competent person as per manufacturer's instructions and applicable Occupational Exposure Limits (OELs).
[Note: If pre-set alarm and action levels are different from applicable OELs, the Lead HSE must be informed in due time as the correction of the alarm and action levels might take up to one week]
- A **bump test** must be performed as per manufacturer's instructions, by a trained person. This test quickly confirms that the gas sensors are functioning. The bump test must be documented. Test gas and accessories required to perform the bump test must be organised and supplied in due time (Note that manufacturer / supplier's lead time can reach up to 4 weeks.)
The device must pass the bump test, if it fails the test, a calibration test must be performed before using the device.
- A **visual inspection** (incl. display check and fresh air balance) must be performed daily or prior each working shift by each user. The visual inspection must follow internal and/or supplier's or manufacturer's brief instructions and be documented.

Use:

- Prior first use at each project site, personnel using gas detectors must be trained by a qualified person or by a person trained based on the applicable operating instruction on "Use of gas detectors".
- Applicable operating instruction "Use of gas detectors" must be complied with.
- Passing on to third ones own assigned gas detector(s) is not permitted. Borrowing of gas detector(s) from someone else is not permitted.
- When alarm sounds, the affected working area must be left immediately.
- Devices with defects or improper display shall no longer be used and must be handed over to internal competent person or supplier or manufacturer for maintenance or replacement.

- A visual inspection must be performed again and documented as soon as:
 - the device received a shock or fell down from a height >1m, or
 - moisture entered the device or
 - Ex-sensor from gas detector (e.g. MSA Altair 4X) is exposed to high concentrations of lead containing compounds or hydrogen sulphide (H₂S) concentration over 200ppm or over 50 ppm for 1 minute, or organic silicones (contained in cleaning agents) or silicates. The high concentrations will desensitize or damage the Ex-sensor and seriously compromise the functionality and reliability of the device.
- IMPORTANT: For the same reason as mentioned above, personal gas detectors shall not be used as H₂S leak detectors.

After Use:

- When not in use, gas detectors must only be stored in chargers located in a safe, dry place between 18°C and 30°C. Gas detectors with Ex-Sensor (e.g. MSA Altair 4X) must only be charged and opened in a non-hazardous area and it is not permitted to be used in explosive atmosphere classified Zone 0 when the Ex sensor is installed.
- The exterior of the gas detectors must be cleaned regularly using only a damp cloth and cleaning agent must be avoided as many contain organic silicones which can damage the Ex-sensor.
- Users must report immediately any alarm that occurred to COMPANY Site HSE Manager, so a reading of concentration exposure data stored in gas detectors (provided they have a recording function) can be arranged. Required material to read data (e.g. USB IR reader, software and required admin rights to install it on computer, etc.) must be arranged in advance.
- A file copy of downloaded data must be addressed to COMPANY Lead Construction & Commissioning HSE for analysis and further actions as deemed necessary (e.g. replacement of gas detectors, additional medical health surveillance, etc.).

6.3.6 Pedestrian Traffic and Prevention of Slips, Trips, Falls

CONTRACTOR personnel must manage work so that any personnel at site can move around safely. CONTRACTOR must ensure that site is maintained in clean and tidy conditions to minimize any slips, trips and falls hazards.

CONTRACTOR must ensure that :

Safe walkways are provided:

- walkways must be in good and safe conditions and provided with adequate lighting (as and when required).
- uneven, wet and/or slippery surfaces must be prevented as far as reasonably practicable
- slippery surfaces must be treated with stone (mud) or grit (for ice), covered temporarily and/or be signposted
- depending on the risks due to traffic, excavations, uneven surfaces, stored material etc., walkways must be clearly designated by means of fences, barricades and/or signposts.
- holes and openings must be closed or have covers or railings and be signposted or barricaded. If holes or openings must be left temporarily unguarded, they must be attended until covered again.
- Obstacles must be prevented:
 - everyone must keep their work and storage areas tidy and perform regular housekeeping
 - areas for waste collection must be designated, providing skips and bins where needed and making clear the responsibilities for waste removal.
 - material and equipment must be stored safely (e.g. boxes or other containers) and outside of pedestrian traffic areas.
- Risks caused by hoses and cables must be mitigated:

- cordless tools should be preferred when available and practicable.
- cables and hoses must be protected against damage and secured overhead or laid in such a manner that passage and traffic ways are not obstructed.
- Changes in level must be prevented:
 - where small changes in level cannot be avoided, such as in doorways, installation of ramps must be considered and if not possible, signs, marks or labels must be used to warn workers to look out for the change in level.
- Behavioural requirements:
 - when using stairs, handrails must be used
 - suitable footwear with a good grip must be worn
 - mechanical lifting aids should be used rather than carrying unwieldy or large loads that block the view ahead

6.3.7 Tools, Machinery and Equipment

CONTRACTOR must ensure that tools, machinery, and equipment certifications have been conducted or are carried out by authorized bodies as required.

CONTRACTOR must ensure that tools, machinery, and equipment (including critical temporary systems) used at site are regularly inspected by a competent person on a quarterly basis and before first use on site.

CONTRACTOR must follow the standard color code program (see table below).

Period	Standard color Code
Jan-Mar	Red
Apr-Jun	Green
Jul-Sept	Blue
Oct-Dec	Yellow

CONTRACTOR must submit records of inspections and certificates to COMPANY upon request.

CONTRACTOR must ensure each equipment are labelled or marked clearly and in a way that it can be recognised that the necessary checks have been conducted.

Each CONTRACTOR worker must check before commencing of work

- the availability of the mark or labelling.
- any visible damage or hazard tool, machinery and equipment is noticed

CONTRACTOR must tag any damaged tool, machinery and equipment and must remove them from service and put in a designated place away from orderly equipment.

6.3.8 Grinding

- Grinders (except air driven grinder) used by CONTRACTOR must be equipped with:
 - A technical function that stops the rotation of the disc immediately when getting stuck or kicked back (anti-kickback technology).
 - No fixed on/off switch but continues push button switch, so if user stops pressing the power switch, the grinder is turned off and the disc stops (Deadman's switch).
 - The rotating disc will come to a complete stop in 2 seconds or less (Disc brake).

If any of those requirements cannot be met (e.g. technical function not available for selected and used tools), CONTRACTOR must complete and review a Job Safety Analyse with COMPANY site HSE manager before any task with that grinder is started.

Additionally, even if the above-mentioned safety functions are available and upon decision of COMPANY HSE site manager, a job safety analyse can still be required if deemed necessary.

CONTRACTOR must ensure that

- Grinders must be used with all guards on place.
- Grinders shall not be used with cutting discs since not meant to be subjected to any lateral pressure.
- Accessories used with grinders must respect, at least, the maximum grinding-disc diameter and diameter of the central hole in the grinding disc must fit the inner flange without any play. Adapters or reducers shall not be used.
- Grinders must be inspected before each use to ensure cutting edges are sharp, the on and off switch works, the clamp nut is in place and secure, ventilation openings are clear, thread in the disc is long enough for the spindle, the disc is not contaminated or has been subject to impact, alignment, moving parts are not in a binding situation.
- CONTRACTORS using grinders must be trained (section 6.3.2).

6.3.9 Piling

CONTRACTOR must give consideration to the appropriate method of piling and the effect that the operation of bored or driven piles will have on the safety of adjacent structures both buried and standing.

Whatever the method of piling retained, no work shall be undertaken until the CONTRACTOR has submitted to COMPANY a method statement (section 6.1.1) and a risk assessment (section 6.1.2) with the job specific conditions and circumstances as well as the following minimum requirements:

- All underground services must be located and made safe. A careful investigation must be undertaken to ensure there are no cellars, underground water courses, or ground conditions, which could lead to hazardous situations.
- Minimum clearance from underground, overhead lines and structures must be maintained.
- Placement of augering or drilling equipment on stable ground and proper anchoring must be ensured.
- All workers on the operation must be trained in the specific method statement to be used.
- Signs and barricades must be set up to demarcate the hazardous area and to prevent unauthorised access.
- All cranes, lifting appliances and lifting gear must have appropriate test certificates proving periodic statutory examination and must be adequate for the job in hand.
- Such equipment must be placed on a firm level base and /or crane mats used.
- Consideration must be given to the risk of damage to lifting gear from sharp edges.
- Noise and vibration are particular hazards and all persons associated with the operation must wear the appropriate protective clothing and equipment such as hard hats, eye and hearing protection (section 6.3.4).
- Where it is necessary to raise or lower workers by crane such cranes must be fitted with a dead man's handle and all lowering must be done under power. The workers must be carried in properly constructed cages which cannot spin or tip.
- Wire ropes must be duly checked during erection and maintained on a weekly basis.
- Workers climbing the rig for maintenance, sling removal or concrete pouring must use personal fall protection.

- Before moving the rig sufficient wooden logs in good condition must be placed and ground must be levelled.
- Hazards and necessary actions related to maintenance, repair and dealing with unplanned events (e.g. clearing a clogged augers) must be considered.

6.3.10 Electrical Safety

6.3.10.1 General

If CONTRACTOR must conduct work on electrical services, COMPANY safe work procedures 'Electrical Energy Control Procedure' (&AA W-SC 3304) and 'Control of Hazardous Energies' (&?? W-SC 9609) must be applied.

CONTRACTOR must ensure that

- An emergency shut-off switch for electrical supply must be available at all times.
- All temporary electrical installations carried out on the site must be in accordance with the local requirements and specifications.
- The installations must be inspected regularly by a competent person (e.g. electrician) to ensure that they are in safe condition and working properly.
- Each operation of electrical equipment must be under protection of a Residual Current Protective Device (RCD) / Ground Fault Circuit Interrupter device (GFCI) that must be as close as possible to the power source. RCD/GFCIs should not have a leakage current trip level higher than 30 mA. They must be checked at least once per week (or as per manufacture's recommendation, if more restrictive) by pressing the test button.
- Additionally, hand-held power tools used on site must have protective insulation ("double insulation").
- All electrical machines, tools and appliances must be inspected regularly by a competent person (e.g. electrician) to ensure that it is in a safe condition and working properly. To confirm that the inspection was conducted the equipment must be labelled or marked clearly and registered. The documentation must be submitted to COMPANY upon request.
- All wiring for electric light and power must be raised at least 2m / 7ft above ground or laid protected against mechanical impact out of the walkways and must be kept as far as possible from telephone wires, signal wires, and wires used for firing blasts.
- Extension cords used must be of a 3-wire type and must be suitable for requirements covering construction sites.
- All flexible cords and cables must be protected from damage and sharp corners and projections shall be avoided.
- Only authorised persons may enter the sub stations, motor rooms, switch rooms, control rooms or cable ducts. Should the CONTRACTOR need to enter such areas, it needs to obtain a work permit from COMPANY or CLIENT (See 6.1.6).

6.3.10.2 Usage of electrical equipment with increased electrical risk

CONTRACTOR must ensure that when using electrical equipment in an environment with electrical conductivity (e.g. in confined spaces like containers, towers, furnaces or in similar metallic surroundings) the voltage used may at maximum be 50 Volt AC fed from a safety low voltage transformer or electrical power must be supplied by an isolating transformer (passing of an electric current through human body is not possible).

6.3.11 Chemical Safety

6.3.11.1 Operational Supplies for Construction and Commissioning Activities

CONTRACTOR must ensure that any hazardous substance, preparation or article containing them present at site are compliant with the requirements of the EU chemical legislation REACH (Regulation (EC) No. 1907/2006, OJ L 396, 30.12.2006, p. 1) – hereafter referred to as "REACH". COMPANY shall not be obliged in any way to carry out the (pre)registration of any hazardous substance, preparation or article containing. CONTRACTOR is aware that the hazardous substance, preparation or article containing cannot be used if the requirements of REACH are not completely and properly complied with.

CONTRACTOR must ensure that any hazardous materials delivered to site is appropriately labelled based on their classification with labelling and packaging information and supplementary provision(s) as defined locally. For each hazardous material delivered to site, a Safety Data Sheet (SDS) must be available. SDS's should not be older than 3 Years.

CONTRACTOR must hand over a list of all hazardous substances according to the form &??-W-LH 9601 'List of Hazardous Materials - Construction' and the SDS in good time prior to start of work to COMPANY. This list must cover at list the following information:

- Substance / material (ingredients, characterization)
- Storage area / work area
- Quantity (maximum on site)
- SDS availability
- Instruction to workers carried out
- Operating instructions / work procedures available
- Duration of use

For commissioning activities CONTRACTOR and COMPANY Site HSE Manager must adapt the standard & 'List of Hazardous Materials - Pre-/ Commissioning' AZ-W-LH 9602. They must ensure that corresponding safe handling procedures and Safety Data sheets already indicated in the list of hazardous materials are made available at site.

Any activities (e.g. use, storage transfer or transport) involving, generating or releasing hazardous materials must be considered in the Risk Assessment, JSA, Method Statement, etc.. The implementation of control measures must be documented.

CONTRACTOR must ensure that safe work operating instructions for hazardous substances present or used at site are prepared according to local legislation when relevant. CONTRACTOR safe work operating instructions for hazardous substances must at least include:

- Hazardous substance characteristics
- Hazards of the substances
- Storage of substances
- Working with and handling of substances
- Protective measures
- Disposal of waste (packages, containers, residue)
- Actions required in case of an incident

CONTRACTOR must verify conditions of use of the hazardous materials towards any locally applicable restriction(s) and prohibition(s) pertaining to use as well as any notification / permit requirements.

CONTRACTOR must train personnel working with hazardous substances according to local law and to the risk assessment performed for these chemicals, handling of them and the proper use of the respective Personal Protective Equipment (PPE).

CONTRACTOR must verify conditions of storage of hazardous materials towards any storage compatibility requirements as specified locally or in the SDS. CONTRACTOR must ensure that access to hazardous materials storage areas is restricted to authorised personnel and hazardous materials storage areas are posted with hazard identification labels complying with local law

Storage areas for hazardous materials must be released by COMPANY and be subject of COMPANY and CONTRACTOR's inspections on a regular basis.

CONTRACTOR must ensure that all containers of oil or other hydrocarbons greater than 100L/ 60gallons are stored in appropriately contained facilities or in accordance with local requirements on flammable and combustible liquids standards.

At the physical work location hazardous substances must be stored in quantity no greater than the quantity required for daily use and must be contained in approved portable containers.

CONTRACTOR must ensure that conditions of transfer and transport of hazardous materials are verified towards any locally applicable or CLIENT requirements.

For conditions of disposal of hazardous materials refer to 6.3.11.

6.3.11.2 Process Chemicals

CONTRACTOR must ensure that before starting work on existing/operating plant systems containing hazardous materials, a cleaning procedure according to CLIENT's requirements is followed. The number of personnel working in this area must be minimized. Personnel working in the plant during times when hazardous materials are present, or cleaning procedures are carried out must be specially trained in the risks and measures to take in the event of contact with the hazardous process chemicals.

Special protective measures will be subject to the work permit (See 6.1.6).

6.3.11.3 Gas Cylinders

CONTRACTOR must ensure that handling of gas cylinders complies with local requirements and COMPANY requirements as per particulars given below:

- Gas cylinders must be stored protected from excessive heat, fire, dangerous corrosion, mechanical damage or access by unauthorized persons.
- Gas cylinders shall not be stored together with flammable materials.
- Gas cylinders must be secured to prevent them from falling over. Special precautions are not necessary if the gas cylinders are sufficiently secured as a result of their construction (e.g. 11 kg / 20 lbs propane cylinders), the type of storage (e.g. in closed pallets) or placement in large groups that can be secured together.
- Gas cylinders containing liquid gas (e.g. propane, butane) must be operated upright.
- Gas stores must not be set up in critical areas such as stairways, corridors, emergency routes, garages or passages for persons or vehicles.

6.3.11.4 Cryogenic Cylinders, Dewar and Micro-Bulk Cryogenic Containers

If cryogenic cylinders, Dewar or micro-bulk containers are used, CONTRACTOR must

- have a working procedure for the Safe Handling or DEWAR that includes, at least:
 - Requirements to follow Manufacturer's instructions for safe handling, storage and use of cryogenic cylinders. Dewar or micro-bulk containers
 - Requirements for cryogenic cylinders. Dewar or micro-bulk containers to be
 - inspected for physical damages, leakage, indication of surface frosting, missing gauges, missing pressure safety device, etc. always before use.
 - properly secured while lifting.
 - properly grounded and grounding conditions are checked before placing the containers in use or storage.

- stored away from roadways and barricades and signs are used to prevent collision when applicable.
- stored with enough ventilation and not in any confined area.
- with ancillaries and material rated according to the maximum pressure the system can be exposed to.
- Requirements for proper PPE to be used to prevent hazardous exposure due to potential release of pressurized cold gas or liquid.
- Requirements for maintenance of cryogenic containers to be carried out outside COMPANY site

6.3.11.5 Inert Gas

For operations with inert gas, CONTRACTOR must ensure that, at least, following control measures are implemented:

- Identification and assessment of the hazards related to the use of inert gas during construction or commissioning activities (e.g. Risk Assessment, Job Safety Analysis, etc.). These can include, but not limited to, asphyxiation, cryogenic burn and over pressurization.
- Implementation of relevant HSE requirements stated in COMPANY Safe work specifications for:
 - "Permit to Work" (&??-W-SC 9601)
 - "Control of Hazardous Energy" (&??-W-SC 9609) (incl. LOTO)
 - "Critical Temporary System" (&??-W-SC 9626)
 - "Confined Space Entry" (&??-W-SC 9612)
 - "Personal Protective Equipment" (&??-W-SC 9603)
- Implementation of Tagging, Marking and Barricading (see 6.3.25)
- Provision of HSE Training and awareness training

For use of inert gases for Pre-Commissioning activities, CONTRACTOR must ensure that, at least, control measures stated in relevant COMPANY Working Procedure are complied with

- &AZ W PC 0850 - Construction Procedure – Preservation & Storage
- &AZ W-PE 2403.012 Guideline for Determination of Pressure Test Fluid

For use of inert gases for Commissioning activities, CONTRACTOR must ensure that, at least, control measures stated in relevant COMPANY Working Procedure are complied with:

- &AZ P PE 2570 Drying of Low Temperature Sections
- &AZ P PE 2610 Leak testing
- &AZ P PE 2620 Purge with Inert Gas
- &AZ P PE 2630 Instrumentation Functional testing

6.3.11.6 Pickling

Pickling is a frequently used surface treatment of metal (e.g. stainless steel) to recover its corrosion resistance after operations such as welding, annealing, bending etc. It is usually done with a strong acidic solution that can be dangerous to both people and the environment. Chemical reactions can take place during the pickling that release dangerous vapours. The pickling process results in waste in the form of rinsing water and exhausted pickling solutions.

Therefore, to reduce the risk of hazardous situations arising or accidents occurring with pickling CONTRACTOR must comply with COMPANY work procedures and a work permit (see 6.1.6) must be required to define required PPEs and implement special control measures.

CONTRACTOR must ensure that pickling waste are treated as hazardous waste.

6.3.11.7 Loading / Unloading of Adsorbents

For the loading or unloading of adsorbent (e.g. in Pressure Swing Adsorption (PSA) units), COMPANY and CONTRACTOR must follow the HSE control measures defined in the COMPANY "Adsorbent Filling Procedure" &AK W-PE 7123 as well as in the Risk Assessment (Adsorbent) (&AK W-QR 9602).

6.3.11.8 Work with Potential Exposure to Hazardous Atmosphere (Outside of Confined Space)

CONTRACTOR will be considered following conditions, when met outside of confined spaces, as Hazardous Atmospheres

- Atmospheric oxygen concentration below 19.5% or above 23%,
- Flammable gas, vapour or mist in excess of 10% of Lower Explosive Limit (LEL) or Lower Flammable Limit (LFL),
- Combustible dust at a concentration that meets or exceeds its Lower Explosive Limit (LEL), Lower Flammable Limit (LFL) or Minimum Explosible Concentration (MEC),
- Atmospheric concentration in excess of any substance's Permissible Exposure Limit (PEL) as defined in local or international regulations and recognised standard, which is capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects,
- Any other atmospheric condition that is immediately dangerous to life or health.

Typical working activities or locations with (potential) risk of exposure to hazardous atmosphere, outside of confined spaces, to be considered by CONTRACTOR include (NOT exhaustive):

- Breaking open an equipment, pipeline containing Hazardous gas or substance
- Entering or working inside a building or enclosure (e.g. Analyzer building) that contains equipment, piping containing hazardous gases
- Opening a panel cover, equipment manhole or hatch that may allow internal hazardous atmosphere to affect workers in proximity
- Excavated pits (that does not classify as a confined space) with underground pipeline or decomposing organic material
- Gasoline or Propane powered IC engine or Space Heaters inside a building or temporary tent with inadequate ventilation that may lead to accumulation of Carbon Monoxide, O₂ depleted or flammable atmosphere
- Use of Compressed Gas Cylinder or Cryogenic Cylinder e.g. (N₂, Ar, C₂H₂ etc.) inside building or an enclosed area with poor ventilation
- Elevated work near a vent or PSV that may release a hazardous gas.

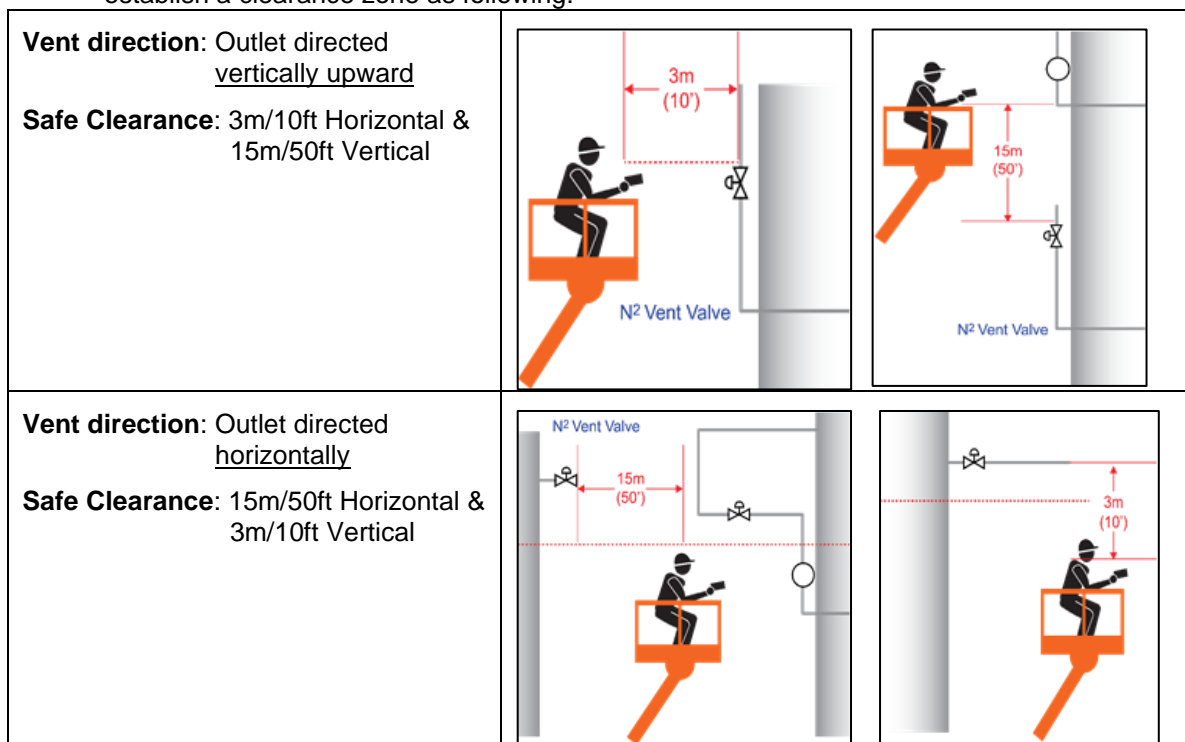
When CONTRACTOR is carrying out activities or is at locations with (potential) risk of exposure to hazardous atmosphere, outside of confined spaces, they must ensure

- Risk management is implemented incl. Risk assessment, Job Safety Analysis and Permit to Work, (see 6.1)
- Lone work is avoided (see 6.3.3)
- Hazardous Energy Isolation is implemented (see 6.3.12)
- Hazardous Atmosphere monitoring (personal and/or stationary) is in place
- Emergency response plan is in place
- Proper PPEs and training have been provided to personal

Any significant change in the initial working conditions must result in a temporary stoppage of the working activities and a review of the Risk assessment, Job Safety Analysis and Permit to Work.

In addition, for elevated work near a vent or PSV, CONTRACTOR must

- obtain Site Manager approval to carry work
- establish a clearance zone as following:



6.3.12 Control of Hazardous Energies

Control of hazardous energies refers to specific practices and procedures to safeguard workers from the unexpected energization or start-up of machinery and equipment, or the release of hazardous energy during operation activities (Lockout/tagout) as well as to a process to safely liven up equipment.

CONTRACTOR working on energy-carrying machinery and equipment must apply for a work permit by CLIENT or COMPANY (see 6.1.6) and CONTRACTOR must ensure that work can only be done by authorised personnel who have been appropriately trained.

CONTRACTOR must ensure that a "Lock-out/Tag-out" and "Livening Up" process according to &?? W-SC 9609 "Control of hazardous energies" and &AA W-SC 3304 "Electrical Energy Control Procedure" are in place and agreed between COMPANY and CONTRACTOR before energizing the first process system (incl. temporary power supply).

6.3.13 Hot Work

CONTRACTOR executing hot work operations must ensure that there is appropriate fire protection on site. The following safety precautions must be implemented:

- Any hot work (welding, cutting or grinding) must only be performed by individuals trained to do so.
- All oxy-acetylene welding/cutting equipment must be fitted with flash-back arrestors.
- Firefighting equipment (blankets, extinguishers, hoses) will be placed near all hot work.
- If hot work is being conducted at an elevated level appropriate precautions must be taken to protect those working below from sparks, slag etc.

The description of further protective measures and necessity of a fire watch is indicated in the hot work permit (see 6.1.6).

If a fire watch is required in the hot work permit, CONTRACTOR must ensure that the location is inspected up to 30 minutes after the hot work has been finished on site.

6.3.14 Confined Space

COMPANY safe work specification &??-W-SC 9612 "Confined Space Entry" must be applied.

6.3.15 Scaffolding

COMPANY safe work specification &??-W-SC 9610 "Scaffolding" must be applied.

6.3.16 Working at Height

COMPANY safe work specification &??-W-SC 9606 "Working at Height" must be applied.

6.3.17 Lifting Operations

COMPANY safe work specification &??-W-SC 9607 "Lifting Operations" must be applied.

6.3.18 Material Transportation and Handling

CONTRACTOR must ensure that transportation and handling are carried out according to the applicable local and CLIENT and COMPANY requirements.

CONTRACTOR must ensure that there is no risk of personal injury attributable to the method of packing, transporting or loading of the material. If there are any risks or special transport or handling requirements relating to lifting, stacking, unloading, unpacking, or storage that may affect the safety, CONTRACTOR must provide in due time a written notification to CONTRACTOR's Site Manager or COMPANY, if unloading is not performed by CONTRACTOR's site team.

CONTRACTOR must ensure proper cargo securement so that:

- the load is safely stacked, especially for pipes or any cylindrical loads
- the load is secured and cannot fall or slip off the vehicle during loading, unloading and transport by use of appropriate load securing system (e.g. wedges, lashing chains or belts, ratchets etc). When securing cylindrical items, practical consideration should be given to how the load is to be unloaded in a safe and controlled manner.(e.g. sufficient space in-between pipes to place or modify slings, etc.)
- the centre of gravity of the load is as low as possible;
- the load does not protrude from the front or sides of the vehicle;
- the load has a clearly visible sign if it protrudes more than 1m/3ft behind the vehicle;
- the vehicle is not overloaded and is stable.

CONTRACTOR must exercise full caution in the movement of heavy or bulky equipment on the construction site.

- Banksman / Spotter must be provided by CONTRACTOR in front of and behind heavy moving loads to ensure safe movement of this equipment, the safety of other plant traffic, protection of plant power lines, pipe lines, supports and other operating equipment along the roadways.
- In situations where vehicles or mobile equipment will operate in close proximity to stationary installations like Electrical Panels, Fire Hydrant, Generator etc. or buildings like an Office Trailer, Porta-toilets, adequate protection must be in place e.g. bollards or fence or equivalent safety measure to prevent collision.

6.3.19 Non- Destructive Testing

Purpose of Non- Destructive Testing is the detection of internal defects and flaws of the checked plant component without damaging it.

6.3.19.1 Radiographic Inspections

COMPANY safe work specification &??-W-SC 9604 " Radiographic Inspection Safety" must be applied.

Special protective measures will be subject to work permit (See 6.1.6).

6.3.19.2 Pressure Testing

COMPANY standard LS 133-02 "Pressure Testing – Piping and equipment at construction sites" must be applied.

CONTRACT must only performed pressure testing after completion of all operations on the pressure-retaining wall and after inspection and release by the inspection agency. Approved documentation must be available.

6.3.19.2.1 Pneumatic Pressure Test

CONTRACTOR shall only perform Pneumatic Pressure Test at site, when COMPANY Site Manager received the written confirmation from COMPANY Project Construction Manager with COMPANY Project Manager that

- hydrostatic pressure test is detrimental to the piping system or is not practical, and
- restrictions, if any, from OWNER/OPERATOR/CLIENT or local authority for the planning and performance of pneumatic pressure tests at site have been clarified and communicated,

CONTRACTOR must

- if possible, not carried out Pneumatic pressure testing during normal construction working hours,
- evacuate the area(s) where pneumatic testing will be performed until the test is completed and the pressure relieved.
- give detailed instructions to CONTRACTOR employees performing the actual work,
- provide to all impacted employees proper safety instructions (e.g. in Toolbox Meetings). on the hazards of pressure testing in their area.
- Ensure all equipment, gauges and relief devices are certified as specified and equipped with operating instructions and safety precautions.
- clearly marked the area(s) where the pressure testing will be performed with signs stating, "Pressure Testing in Progress."
- cordon-off the tested system area for pneumatic pressure tests as per required safety distances indicated in LS 133-02 'Pressure Testing – Piping and equipment at construction sites'
- work permit and related special protective measures are in place (see 6.1.6).

6.3.20 Tie-Ins

Tie-Ins (mechanical connections to existing piping system) require special precautions and coordination; therefore, CONTRACTOR must only execute Tie-ins in close cooperation with COMPANY and CLIENT. CONTRACTOR must apply for a work permit by COMPANY and CLIENT (see 6.1.6).

Conducting hot tap (connection into an existing pipe or vessel which is still under pressure or live) may damage the tool, cause catastrophic rupture of the piping, and cause injury or death to the operator or other personnel in the vicinity). Therefore, whenever possible CONTRACTOR should avoid hot-Tapping.

6.3.21 Storage of Goods

CONTRACTOR must ensure

- storage of goods is only allowed in the defined storage and lay down areas.
- storage buildings, storerooms, and storage equipment like storage racks, drip trays etc. comply with local requirements.
- access is only given to authorized personnel.

CONTRACTOR storage areas must be released by CONTRACTOR Site HSE Manager / Safety Officer and by COMPANY Site HSE Manager.

6.3.22 Excavations

CONTRACTOR must ensure that excavations comply with local legislation and COMPANY safe work specification 'Excavation' &??-W-SC 9613 must be applied.

CONTRACTOR must consider that special protective measures will be subject to the work permit (section 7.1.6).

6.3.23 Flushing

CONTRACTOR must comply with COMPANY work procedure when carrying out flushing and purging and CONTRACTOR must ensure that, at least, following control measures are implemented:

- Evacuation and cordoning off of affected areas
- Wearing of safety glasses (and dust mask if necessary) against particles and dust
- Wearing of hearing protection against noise
- Installation of shields to protect sensitive parts and equipment of plant
- Fixation of lines to be blown or flushed out
- Monitor working areas by O2 meter (if inert gas e.g. Nitrogen is used)

For control measures specific to the use of inert gas (e.g. nitrogen) refer to "inert Gas" (6.3.11.5).

6.3.24 Sand / Grit Blasting and Painting

CONTRACTOR must ensure that the plant and equipment used by the operators during spray painting and sand / grit blasting operations comply with local laws and COMPANY requirements as shown below:

- Operators must be properly trained, and records must be submitted upon COMPANY request.
- Compressors providing air to airline respirators must be constructed in accordance with the local requirements.
- Hoses must have whip preventers installed at all joints to prevent injuries from lines that could whip around under pressure. Compressors must have filters in the delivery hose to continually remove moisture, oil and particulate. The filters must be renewed periodically, and the date of the renewal will be identified on the outside of the filter. It must have a Carbon Monoxide (CO) monitor and alarm between the oil lubricated compressor and the respirator air intake.

6.3.25 Tagging, Marking & Barricading

CONTRACTOR must support during pre-commissioning and commissioning activities COMPANY Site HSE Manager, COMPANY Site Manager or Commissioning Manager to ensure that

- 1) For hazardous areas geographically distinct and that can be delimited and are reasonably accessible:
 - coloured barricades are in place

- warning signs are in place depending on the level of risk they constitute.

Risk Level	Barricading distance/limit	Example
Low	none	<ul style="list-style-type: none"> • Areas along lines that are tagged/marked
Medium	Minimum 5' (1.5m) Exclusion Zones	<ul style="list-style-type: none"> • Aqua Milling water hose route
High	Minimum 10' (3m) Exclusion Zones	<ul style="list-style-type: none"> • Water flush drain exit point (<60°C, 140 F) • Aqua Milling equipment and water exit point • Bulk Material Loading access and egress point
Extreme	Minimum 20' (6m) Exclusion Zones	<ul style="list-style-type: none"> • Air blowing exit points • Water flush drain exit point (>60°C, 140 F) • Aqua Milling pipe entry location • Hazardous Bulk Material Loading access and egress point • Steam blowing muffler exhaust location • Rupture disc blowing exit point

2) For systems handed over that can neither be geographically delimited nor barricaded:

- Handed over systems are demarked and signposted / labelled, at reasonably accessible locations and depending on the level of risk they constitute (see table below)
- Safety critical instrumentation needed during pre-commissioning activities are marked with colored labels (e.g. level, pressure or temperature high switches).
- Local hand switches on rotating equipment, which is used during pre-commissioning are marked with colored labels (e.g. for flushing, blowing or test run).

Risk Level	Tagging/markings	Example	Systems with following mediums in service
Low	Valves must be tagged with coloured stickers	<ul style="list-style-type: none"> • Lines under air blowing, water flushing, aqua milling, rupture disc blowing, cooling water lines • Non-insulated lines (<10 bar, 145 psi) 	Potable water, plant air, instrument air, service water, demin water, raw water, fire water
Medium	Signboards "Live Line" or similar; for process lines: coloured labels (max. 10m, 30 ft. distance), Distribution panel (powered up): mark with coloured label;	<ul style="list-style-type: none"> • Energized electrical cables, instrument air line • Insulated steam lines (<10 bar, 145 psi) 	Lube oil, chemicals, LP-steam and condensate
High	Coloured marking and tagging of valves, vents and drains (if accessible)	<ul style="list-style-type: none"> • Lines under pressure >10 bar or 145 psi (e.g. pressurized upstream systems during air blows) • Non-insulated steam lines (<10 bar, 145 psi) 	Boiler feed water, VHP-, HP-, MP-steam and condensate
Extreme	100% colored ribbon (if accessible)	<ul style="list-style-type: none"> • Hydrocarbon, nitrogen service and inertization • Hazardous chemical service 	Fuel gas (if applicable), nitrogen, acid, caustic

6.3.26 Mobile Communication Devices (including Hand-free and Bluetooth)

CONTRACTOR shall not make or receive calls while:

- Operating any type of vehicle or equipment
- Involves in hazardous work related activities (see attachment 3 - LS 940-03) unless authorized by COMPANY Site Manager or Site HSE Manager
- Located in an area designated as "high risk area"

CONTRACTOR making or receiving a call shall

- comply with the site-specific mobile phone control process when established
- ensure they are in a safe location or area (e.g. temporary facilities, lunch tent, etc.)
- operate "no walking while texting" policy (e.g. no crossing roads, no walking up/down stairs while texting or using phone).

CONTRACTOR with medical hearing aids with built-in Bluetooth device can be worn on site with the Bluetooth connection not in use.

6.4 Occupational Health

6.4.1 Medical Health Examinations

CONTRACTOR employees who will perform work on site and may be exposed to any hazards to their health shall undergo medical health examinations as far as reasonably practicable under local legislation to prove the worker's fitness to work. CONTRACTOR is responsible for checking its employee's fitness for work and performing the necessary medical pre-examinations according to legal standards and CLIENT requirements.

CONTRACTOR must provide evidence of fitness to work and medical health examinations upon COMPANY request.

For additional and project specific Medical Health examination, see **Attachment 1: Project Site Specific Information**

6.4.2 Asbestos and Refractory Ceramic Fibres

Asbestos or Asbestos Containing Material (ACM) are prohibited at site.

Refractory Ceramic Fibres shall be used only upon beforehand written notice to COMPANY and written approval from CLIENT.

In the case of locating Asbestos or other hazardous mineral fibres unexpectedly, CONTRACTOR handling these substances must comply with local or COMPANY requirements regarding safety requirements for demolition, reconstruction or maintenance work with the presence of Asbestos or hazardous mineral fibres.

6.4.3 Physical Health Hazards

6.4.3.1 Noise

CONTRACTOR must ensure that all CONTRACTOR personnel is provided with hearing protection when working in areas where the noise exposure level of 80 dB(A) over an 8-hour Time Weighted Average or the peak level of 135 dB(C) is exceeded.

CONTRACTOR must inform all CONTRACTOR personnel they must wear hearing protection continuously when working in area indicated with 'high noise areas' warning sign (area where the exposure level of 85 dB(A) or the peak level of 137 dB(C) is exceeded).

Typically, exposure level above 85 dB(A) occurs in areas with activities such as sand blasting, metalwork, grinding, welding and cutting, or where compressors, diesel power generators etc. are in operation.

6.4.3.2 Laser

When CONTRACTOR personnel are carrying out survey and scanning activities with laser, COMPANY Site HSE Manager must ensure that

- all CONTRACTOR personnel are provided with appropriate PPE
- only Lasers of class 1-3 A and Lasers of class 3 B under defined technical characteristics are allowed at site. Class 3B Laser must have a wavelength of 400-700nm as a maximum while not exceeding power of 5mW. Lasers must be adjusted and secured in such a way as to cause no harm to the eyesare.
- Areas where survey work is carried out is clearly marked with warning signs and if necessary cordoned off. This warning sign must display 'Caution Laser!', who performs the work (name/ telephone number/date) and how long work will last.
- a hot work permit is requested (See 6.1.6) when survey work in areas with an increased risk of fire and/or explosion is carried out since laser can be an effective ignition source.

6.4.3.3 Illumination, Lighting

CONTRACTOR must provide, at its own expense, artificial light to access safely the workplaces and to carry out work efficiently, satisfactorily, and safely, and permit thorough inspection when work is performed in darkness or in areas where daylight is obscured

The access to the place of work must also be clearly illuminated.

6.4.3.4 Thermal stress

Cold Climate:

COMPANY safe work specification &??-W-SC 9614 "Cold Stress" must be applied.

CONTRACTORs must set up facilities to warm-up and getting hot drinks. CONTRACTORs must implement the protective measures defined in the 'Cold Index' table below. (Note: the 'Cold Index' combines *air temperature* and *wind speed* to calculate a human-perceived equivalent temperature.)

combines air temperature and wind speed to calculate a human perceived temperature.)

Cold Index	Risk Level	Protective Measures		
		Maximum continuous Cold Exposure (CE) time	Rest time (R) in %CE	<ul style="list-style-type: none">• Pace work activities and rest time as per cold exposure time to warm-up. (open fires are not allowed at site)• Use appropriate shelter for breaks• Carry appropriate clothes to protect against cold• Drink warming drinks before, during and after work• Eat well-balanced meals• Check for frostbite symptoms
Greater than -24°C (-11°F)	Low / Caution	CE90min	R20%	
-25 to -34°C (-13 to -29°F)	Moderate	CE90min	R30%	
-35 to -59°C (-31 to -74°F)	High	CE60min	R100%	
Less than -60°C (-76°F)	Very High / Extreme			

6.4.4 Biological Health Hazards

6.4.4.1 Food

Nutrition must consider weather, local and working related conditions.

6.4.4.2 Drinking Water

Industrial and drinking water will be provided by CLIENT.

Portable containers for drinking water must be tightly closed and equipped with a tap. Water must not be dipped from containers. Drinking water containers must be clearly labelled as to the nature of its contents and must not be used for any other purpose.

Drinking water containers must not be opened in the field by anyone other than employees designated to service and maintaining the containers. Non-potable water outlets must be clearly labelled as being unsafe for drinking or washing purposes.

Portable water containers must be cleaned weekly, using appropriate disinfecting agent e. g. bleach wash and baking soda rinse. Single use drinking pots/cups must be provided at each water container. Adequate trash containers must be provided to dump the single use drinking pots/cups. The shared use of a drinking cup will not be permitted. Personnel are not permitted to drink directly from the container.

6.4.4.3 Toilet facilities

Toilet facilities must be provided for employees to the ratio of one toilet per 20 employees. All job site toilet facilities must be serviced and cleaned on a regular basis and not less than once per day. Portable toilets on the project must be strategically located so as to provide adequate coverage for all active work areas.

6.4.4.4 Sanitation

Sanitation is provided by CLIENT. Wastewater quality must comply with the local drainage requirements.

6.4.4.5 Cleaning of Site Facilities

Site Facilities must be cleaned frequently in a proper manner, so that a high hygienic level is maintained.

6.4.5 Infectious Diseases of High-Consequence (IDHC)

COMPANY construction specification &??-W-SC 9623 " Infectious Diseases of High-Consequence (IDHC) Management Plan" must be applied.

IDHCs constitute serious human health threats. Persons with such diseases typically develop severe symptoms and require a high level of care and the case-fatality rates can be high. Several IDHC are (contact or airborne) transmissible from person to person and therefore require healthcare employees to take precautions to prevent transmission. Examples of high-consequence infectious diseases include:

Airborne IDHC: Middle East respiratory syndrome (MERS), Severe acute respiratory syndrome (SARS), Avian influenza (H1N1), coronavirus disease (COVID-19), etc.

Contact IDHC: Ebola virus disease (EVD), etc.

CONTRACTOR must immediately report the information to COMPANY and an IDHC management plan must be established and implemented in case project site is located in an area identified or confirmed by the authorities as an area where an ongoing transmission from person to person can be suspected.

6.5 Driving and Traffic Safety

6.5.1 Traffic on Public Roads

Following requirements apply to CONTRACTOR's, VENDOR's and COMPANY personnel when driving on public roads for project business purposes (e.g. driving to/from pre-fabrication workshops, equipment suppliers etc.) as well as mass transportation of CONTRACTOR workers to/from site with buses or similar.

These requirements do not apply for services provided by CONTRACTORS for the transport of products and goods to site, for public transport and commuting to/from site (except for mass transportation in buses – see above).

Vehicle requirements apply when being used for a.m. purposes. Vehicles include passenger cars and light vehicles (cars, pick-ups and small service engineer type vans), motorcycles, motor trikes, trucks and buses. These do not apply to forklift trucks, cranes and similar lifting mobile equipment when being operated on public roads.

6.5.1.1 Driver Safety

CONTRACTOR's driver must

- have a current driving license that is valid for the location, type of vehicle and, where applicable, the cargo.
- have a driving license checked by CONTRACTOR before being permitted to drive a COMPANY or CONTRACTOR's vehicle or a personal or hired vehicle or a pool car on business.
- be physically and mentally capable of operating the vehicle and rested and alert to maintain attention throughout the trip.
- have received a "General Driving Safety Training" at least once a year, or after involvement in a vehicle related incident
- have attended a Defensive Driving Training course (DDT) at least every 4 years.
- comply with all relevant local, country or state driving regulations
- daily visually inspect the vehicle for roadworthiness, including tires and windscreen (windshield)
- make a rest after every 4 hours (as a minimum).
- stop the vehicle and take a rest break if attention is lost
- not operate a vehicle while under the influence of alcohol, drugs, narcotics, or medication that could impair driving ability.
- wear a helmet when using a motorcycle (driver and all passengers).
- not use head/ear phones whilst driving
- not make a call or answer a mobile phone or pager, send or read a text message, or use a hands-free mobile phone device while driving a vehicle.
- retain at least one hand on the wheel at all times and not handle or consume any food or drink that can cause a loss of control
- not allow unauthorized passengers in the vehicle, not offer a lift to hitchhikers
- wear the seat belt and require passengers to use seat belt at all times

6.5.1.2 Vehicle Safety

CONTRACTORS' vehicles must be

- suitable for the type of transport, i.e. transportation of personnel only in suitable vehicles with seats for the driver and each passenger
- equipped with:
 - three-point seat belts (two-point seat belts in buses) and head restraints for all seating positions
 - anti-lock braking systems (ABS) on all new purchased vehicles,
 - tyres with min. tread depth of 2mm (0.078") (Europe) / 2/32" (1.6 mm) (US) and adapted to weather conditions (e.g. winter tyres when outdoor temperature is below 7°C).
- maintained and serviced in accordance with manufacturers' guidelines, with OEM or OEM approved equivalent parts used.

The required additional PPE and safety equipment according to national law of the respective country must be retained in the vehicle. Where such equipment is required, drivers shall ensure it is located and maintained correctly.

All vehicles and construction machines used in the project shall be documented in a list. All fuels and hydraulic oils, used by machines or vehicles, shall be listed. Regular maintenance shall be carried out. If the CONTRACTOR wishes to use vehicles that are not compatible with the requirements below, OWNER must be consulted and approve of any exception beforehand. Vehicles shall only be used for its intended purpose, i.e., for the intended cargo/load and weight.

6.5.1.3 Vehicle Incident Reporting

All CONTRACTOR drivers and passengers involved in a road traffic incident shall report all incidents to COMPANY, at the earliest opportunity, in addition to the local legislation governing the reporting of motor vehicle incidents.

6.5.2 Traffic on Site

CONTRACTOR must organise traffic on site to minimize hazards to personnel and equipment. Traffic must take place only in designated areas. Traffic requirements from CLIENT and COMPANY and listed hereafter must be strictly obeyed.

6.5.2.1 All Vehicles

All CONTRACTOR and SUB-CONTRACTOR vehicles including road vehicles (trucks, passenger cars, vans etc.) and mobile construction site equipment (forklift trucks, excavators, rollers etc.) must:

- be fit for purpose and meet the required specification for the task to be performed.
- have appropriate seating available for all occupants.
- transport passengers when seating in passenger seats only and co passengers shall be transported on any vehicle or equipment-
- have a daily visual inspection before use.
- be secured against unauthorised use. Keys shall not be left in parked vehicles.
- be adequately ventilated when used for transporting cylinders.
- be used according to and not exceeding the vehicles or equipment load design capacity and/or legal requirements.

The access road must

- not be used for storage of materials and equipment.
- not be used for loading or unloading operations without written approval by COMPANY.
- not be obstructed by broken down vehicles or equipment without written approval by COMPANY.

Drivers of all vehicles being used for COMPANY or CONTRACTOR's business, and COMPANY or CONTRACTOR's vehicles being driven on non-work related activities, must

- not use any in-vehicle communication device (e.g. mobile phone, CB radio, two-way device) unless the vehicle is legally and safely parked.
- In an emergency situation, stop and park before making the call. However, it is the driver's judgement to make the right decision at that time.
- observe the posted speed limits

6.5.2.2 Road vehicles (incl. trucks, passenger cars, vans, etc.)

- Three-point seatbelt from the Original Equipment Manufacturer (OEM or OEM approved) must be available for all occupants and in good working order.

- Three-point seatbelts must be worn by the driver and all occupants at all times, with the exception of when the vehicle is safely parked.
- The number of occupants in the vehicle must not exceed the manufacturer's design and specification, number of seats and/or available three-point seatbelts.
- All tires must have a minimum tread depth of 1.6mm / 2/32" (or greater if required to meet local legislation).
- Only new tires must be fitted to steering axle as replacements. Any retread must be from OEM-approved sources.
- Braking and steering systems on heavy trucks (all commercial vehicles over 3.5T unladen weight / 10,000 pounds GVWR for US must be tested for efficiency at least once every year by an experienced/qualified vehicle mechanic.
- All vehicles must undergo local required inspections, carried out by a certified authority or workshop.
- All drivers must have the appropriate licence for the class of vehicle being driven on the road, appropriate certification for product being carried and the correct level of training and competency to operate the vehicle and the associated equipment.
- CONTRACTOR drivers must not transport any unauthorized personnel in project vehicles.
- Driving licence must be checked by COMPANY/CONTRACTOR before a driver is permitted to drive a COMPANY or CONTRACTOR's vehicle or a personal or hired vehicle or a pool car on COMPANY or CONTRACTOR's business.

6.5.2.3 Mobile construction site equipment (forklift trucks, excavators, rollers etc.):

- All CONTRACTOR drivers for mobile construction site equipment must have passed orientation training (including main item points from the 'Traffic on site' section) and a specific assignment for the type of equipment intended to be used (see also 6.3.2).

6.5.2.4 Backing up/ Reversing

- CONTRACTOR must consider during the planning of travel routes, the scheduling of deliveries and the allocation of work and storage areas that reversing vehicles or mobile construction site equipment can only be an exception.
- CONTRACTOR shall only back up a vehicle or mobile construction site equipment with the presence of a banksman / spotter, monitoring the risk area, and if the driver's or operator's view of the risk area is not obstructed by the load or parts of the vehicle or the equipment.
- All CONTRACTOR and SUB-CONTRACTOR trucks and mobile construction site equipment must be equipped with an audible reversing alarm.
- CONTRACTOR must have a system in place to ensure that no vehicle or mobile construction site equipment can reverse without having a banksman / spotter positioned behind the truck/vehicle including:
 - having a procedure in place to systematically ensure that a banksman / spotter is promptly available whenever a vehicle or mobile construction site equipment must reverse, e. g. by assigning a dedicated banksman / spotter to each vehicle or mobile construction site equipment upon arrival at the site gate or by holding available a sufficient number of banksman / spotter on site that can guide a reversing vehicle or mobile construction site equipment upon request.

NOTE: Relying only on the driver or operator and his duty to look out for a banksman / spotter before reversing a truck is not sufficient. Also, the availability of audible and/or visual reverse alarms can only be regarded as an additional precaution. An additional banksman / spotter is mandatory in every case.
 - having ensured that all drivers and operators are informed about the safety procedures upon arrival especially that it is not allowed to reverse a truck without a banksman / spotter being present

- having ensured that all banksman / spotter are trained in their duties (incl. correct signals and positioning)
- having ensured that all banksman / spotter wear a high-visibility vest of a different colour to other site workers, to help distinguish them
- having ensured that all site personnel receive a training or toolbox talk regarding the respective safety measures and their duty to take action and report to their supervisor in case of non-compliance
- taking disciplinary action in case of a truck driver not adhering to the respective regulations

6.6 Security

6.6.1 General

CONTRACTOR will be responsible for the Security of their own facilities including material, equipment, tools and any other belongings.

VISITORS to Site must have a clear purpose for their visit and must have made arrangements for their visit with a contact person on Site prior their arrival. VISITOR's contact person must be available during the visit and must guide the VISITOR. VISITOR's contact person is responsible that the VISITOR complies with all HSE and Security rules while on Site.

Parking is only allowed in designated areas. Traffic near the Site is very restricted. Parking in the street or in the construction area will not be tolerated except industrial vehicles while operating, installation work like material transport, lifting activities, etc.

It is not permitted to take film or photo equipment inside the Site, existing process plant or any prefabrication shops without written permission from COMPANY.

Smoking, lighting a fire or doing anything else which could ignite a fire on site is prohibited.

6.6.2 Access Control

6.6.2.1 OWNER Access Control

The following agreements with OWNER's security must be made:

- Information of COMPANY site manager in case of CONTRACTOR, visitors, etc. requesting access to the construction site after normal working hours
- Information of COMPANY site manager in case of any observations, identifications or findings related to of CONTRACTOR, visitors, etc. requesting access to the construction site which are relevant for workplace health and safety, such as blood alcohol concentration, violence, injuries etc.

CONTRACTOR must register their company and all personnel on ID06 identification service, and all CONTRACTOR personnel must present the ID06 card to OWNER security before entering the site. The ID must be always carried on the person, when on site.

The OWNER security gates are open every day 5:30 AM – 20:00 PM

6.6.2.2 Site Access Control

CONTRACTOR at Construction site will use for easy identification of personnel who are authorized to access the site an access card system as per project specific concept for "Site Temporary Access" prepared by COMPANY.

At all times CONTRACTOR entry badge must be visibly displayed on the clothing on site and while passing the gates or restricted areas. It is forbidden to use someone else's entry badge for any reason. Entry badges issued to the employees must be returned when demobilizing.

In addition, a control system that controls the in- and outgoing vehicles, material movement, equipment and tools will be put in place. **Vehicles carrying tools and equipment must have an equipment list ready to show to the OWNER security, when entering or leaving the site.**

Only personnel (COMPANY and CONTRACTOR) who have obtained prior approval will be given access to Site. The same is applicable for VISITORS and transportation to Site. Only the designated gates and routes must be used for entrance and exit.

All preparations in this respect must be finalised by CONTRACTOR management in due time before start of work.

6.6.3 Drone Flights

Any CONTRACTOR drones or unmanned aircraft's operations (e.g. progress photography and mapping, 3D modelling, surveying, etc.) must be construction or commissioning activities related and comply at least with following requirements:

6.6.3.1 Drone Pilot's Requirements

- CONTRACTOR must obtain approval from COMPANY Site Manager to pilot drone at site by providing confirmation that
 - Local and legal applicable requirements are complied with
 - employee piloting drone have proven experience within operating drones in industrial facilities
 - all site inductions & safety briefings have been received, see chapter 6.3.2 on training
 - escort if needed during the flight operation has been designated with COMPANY, CLIENT or OWNER.
- CONTRACTOR must have a current certificate of liability insurance on file before any flight can be performed indicating clearly if CONTRACTOR drone equipments are covered by CONTRACTOR Insurance for 3rd party damages.
- CONTRACTOR Pilots must informed themselves about CONTRACTOR insurance limitations
 - when using, storing private drone equipment at site for operations not related to construction or commissioning activities, .
 - in case of damages/injuries resulting from private drone equipment operated at site for activities not related to construction or commissioning
 - violation during drone operations of any applicable site and legal requirements stated in the chapter "Flying Safety", see 6.6.3.4.

6.6.3.2 Drone Equipment Requirements

CONTRACTOR employees piloting equipment must provide confirmation to COMPANY Site Manager or COMPANY Site HSE Manager that drone equipment satisfies following requirements:

- Drones flying at site must weigh between minimum 0,25kg/0.55lbs and maximum 25kg/55lbs
- Drone equipment must be labelled with a secured fireproof plate including name and address of owner. For flights with drones heavier than 5kg, a permission from the locally competent air traffic control authority must be obtained

6.6.3.3 Flight Plan

- CONTRACTOR pilot must prepare and submit a flight plan to be approved by COMPANY Site Manager that includes at least:
 - A site plot plan showing 'No Fly Zones' and marked up flight path and areas with potential hazards (e.g. flares, process vents, power lines, etc.) identified and agreed between COMPANY and CONTRACTOR
 - A simple description of potential hazards and mitigation measures (e.g. hazard analysis).
 - Identification of explosive atmosphere classified zones 1 & 2
 - A written permission obtained from any fence line neighbours that could be captured (video, pictures)
 - Verification with local law enforcement to ensure compliance with local authorities, must be discussed with the COMPANY and CLIENT project site team before starting the flights.
- Prior start of flight, CONTRACTOR pilot must obtain express consent / special permit from COMPANY Site Manager and CLIENT.

6.6.3.4 Flying Safety

- CONTRACTOR Pilot must inspect the drone prior each operation to ensure the functionality, maintenance and calibration, by following the manufacturer's instructions and all applicable, local rules and regulations.
- CONTRACTOR pilot must notify personnel (via e-mail, whatsapp...) on site prior to launching a drone to ensure the safety and cooperation of individuals that may be affected by the drone flight path,
- CONTRACTOR Pilot must comply with the drone operational limitations:
 - Only fly one drone at a time and maintain the visual line-of-sight with naked eyes (not using binoculars or watching a video screen).
 - Drone must yield right of way to manned aircraft.
 - Drone may not operate over any persons; unless they are under a covered structure or inside a stationary vehicle that can provide reasonable protection from a falling drone.
- CONTRACTOR Pilot must ensure that flights occur under good weather conditions, only during the day (between sunrise until sunset), with minimum visibility of 3miles/4,8km from the control station. No flight is allowed under fog, cloud, heavy rain or high wind conditions.
- CONTRACTOR Pilot must ensure that maximum flight altitude stay within 400ft/120m
- CONTRACTOR Pilot must ensure that
 - No live video streaming to the internet during flight is allowed.
 - All recorded pictures data must be treated confidentially and for COMPANY internal use only.
 - No focused recording of persons, all persons recorded shall not be identifiable
- CONTRACTOR pilot must report any incident to COMPANY Site HSE Manager

6.7 Environmental Protection

COMPANY safe work specification &??-W-SC 9622 "Environmental Management Plan" must be applied.

6.8 Emergency Preparedness and Response (EPR)

6.8.1 Emergencies

An emergency is defined as a real or developing situation that poses, or potentially poses, an immediate risk to health, life, property, environment, or reputation. Emergencies require urgent evaluation and appropriate intervention to prevent a worsening of the situation, and to protect people, the environment, property, and reputation.

Emergencies, which have the potential to occur during the course of the project, are as follows:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Fire and Explosion (ISBL /OSBL) • Medical Emergencies • Environmental Emergencies • Severe Weather • Contact with High Voltage Equipment | <ul style="list-style-type: none"> • Damage to Underground Services • Rescue from Height • Rescue from Confined Space • Offsite or Neighbouring Emergency • Site Lock Down • Terrorist attack (see Attachment 1: Project Site Specific Information) |
|--|---|

Emergency preparedness and responses during the construction and commissioning phase will be managed by COMPANY as per

- a) Emergency Preparedness and Response (EPR) Plans (**Attachment 1: Project Site Specific Information**) and
- b) Emergency Evacuation Plan (**Attachment 1: Project Site Specific Information**)

CONTRACTORS must prepare Emergency Preparedness & Response Plans for at least those potential emergencies listed above and if necessary, for special activities at site not addressed by COMPANY. The EPR plans must be reviewed / updated and agreed with COMPANY.

6.8.2 Potential Crisis Scenarios

For any of the following emergencies, CONTRACTOR employees must **immediately** inform COMPANY Site Manager or Site HSE Manager who will notify CLIENT, OWNER and COMPANY Crisis Management Team as per the "Emergencies Escalation Communication Matrix" (Attachment 1: Project Site Specific Information)

- Pandemic or absence of >40% of workers
- Terrorist attack (direct targeting)
- Bomb Threat
- Network Outage
- Natural Disaster - Earthquake - Tsunami
- Kidnapping
- Large Scale Traffic Accident
- Cyber Attack
- Loss of IT-Network (long-standing)
- Negative Media attention
- Accident resulting in (multiple) fatality
- Political Unrest
- Significant Stop of Work
- Fraud against / by COMPANY

6.8.3 Emergency Response Teams

6.8.3.1 First Aiders

Description of personnel for First Aid is given in section 5.3.

CONTRACTOR Site Manager or Site HSE Manager must establish with COMPANY and maintain up-to-date a list of all First Aiders (**Attachment 1: Project Site Specific Information**) and make it available for all staff on site. This list shall also indicate craft personnel specially trained in CPR/AED, that will be assigned to and respond within specific areas to aid and assist with any emergency.

Any first aid case must be recorded (see 6.9.5).

6.8.3.2 Site Medical Team

CONTRACTOR must ensure, that there are Medical assistance services available nearby Site to assist in case of Emergency.

6.8.3.3 Hospital

CONTRACTOR must know about the nearest appropriately equipped and staffed hospital (incl. oxygen chamber treatment in case of asphyxiation accidents) is Sunderby hospital, Sjukhusvägen 10, 954 42 Södra Sunderbyn, Schweden.

6.8.4 Emergency Response Facilities and Equipment

6.8.4.1 Emergency facilities

Emergency facilities must be organised by each party if not otherwise specified.

Special facilities such as eye showers and emergency showers must be available if required by risk assessment or job safety analyses (e.g. handling of hazardous chemicals). These emergency facilities must be ready for use at any time.

CONTRACTOR who provides eyewash bottles of mineral water must ensure these are placed in close proximity to locations with hazardous chemicals (e.g. stationary transfer locations). Eyewash plastic bottles of mineral water must remain sealed until used and they must be routinely inspected and replaced if damaged or used.

First-Aid kits must be easily accessible on site and in non-stationary site facilities. First aid kits must be arranged by CONTRACTOR and COMPANY if necessary. In the case of hazardous works with significant or high risk are carried out where no emergency kit is close-by an additional first aid kit must be present.

6.8.4.2 Emergency and Rescue Equipment

If local emergency responders are not available, every CONTRACTOR must keep ready rescue and emergency equipment readily available to rescue its own employees.

Necessary equipment should include:

- Rescue lifting devices
- Rescue harnesses
- Rescue loops
- Descender devices
- Stretcher
- An automated external defibrillator (AED) will be provided by COMPANY.

To be ready when required, rescue and emergency equipment must be tested, inspected regularly and stored properly, especially AEDs must be stored in location where temperatures do not prevent the batteries to operate. Personnel intended to use Rescue and emergency must be trained properly. The records of training must be submitted to COMPANY upon request.

6.8.4.3 Firefighting equipment

CONTRACTOR shall equip temporary site facilities with fire extinguishers. The same applies if CONTRACTOR uses existing structures / buildings.

Type, number, use, inspection and location of fire extinguishers shall comply with the requirements of the local legislation. If respective requirements are not specified, the following minimum requirements apply.

6.8.4.3.1 Type and number of fire extinguishers

The type of the extinguishers (e. g. dry chemical powder, water, foam, CO2) shall be selected based on the type of combustible material present in the respective areas, i.e. solid materials, flammable or combustible liquids, flammable gases, electrical equipment or combustible metals. Only fire extinguishers suitable for the respective material shall be used (e. g. water extinguishers for solid materials, dry chemical extinguishers for flammable liquids).

The following number of fire extinguishers is required:

	Fire Extinguisher (type depending on combustible material)		
	Dry Chemical Powder		Water / Foam
Floor space	12 kg Dry Chemical (Powder)	6 kg Dry Chemical (Powder)	10 l Water / Foam
Offices, Warehouses, Pre-Fabrication Facilities or similar areas with medium risk of fire			
up to 50 m2	1		3
up to 100 m2	1	1	5
Every additional 200 m2	1		3
Chemical Storages with highly flammable liquids or similar areas with high risk of fire			
up to 50 m2	1	1	5
up to 100 m2	2	1	7
Every additional 200 m2	1	1	5

The fire extinguishers have to be located at a central point near to the fire load. The extinguishers have to be protected against damage and inclement weather conditions. They have to be easy to reach by every worker. The locations shall be marked with appropriate signs as well as in the emergency evacuation plan.

Pre-Fabrication type installations like tents must be erected with flame retardant or non-flammable materials. Prefab type areas > 200 m² must be equipped with an emergency exit, if possible in opposite direction to the main entrance. Escape routes must not be longer than 35m.

6.8.4.3.2 Training

An appropriate number of CONTRACTOR personnel must be trained in the use of fire extinguishers. (see 6.3.2)

6.8.4.3.3 Inspections

CONTRACTOR shall ensure that

- fire extinguishers are inspected after every use and annually by a competent person
- fire extinguishers are visually inspected monthly by assigned personnel.
- Inspection records are maintained

6.8.5 Emergency Exercises

CONTRACTORS must, at least, participate to following emergency exercises scheduled and conducted by COMPANY or CLIENT / OWNER. COMPANY reserves the right to extend this list of emergency exercises as needed:

Emergency Exercise Types	Description	Frequency
Site Evacuation - Partial	Area specific headcount evacuation, or Contractor specific drills, testing of alarms (ISBL/OSBL) , emergency numbers, evacuation routes, etc. Annual complete project site evacuation drills should be considered	Every 6 months
Hazardous spill / leak / release		Every 6 months
Rescue from height / confined space rescue	Assigned rescue team shall practice making height/confined space rescues by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from height/confined spaces.	Soon after start of respective works and at least once every 12 months

6.9 Communication and Reporting

6.9.1 HSE Meetings

CONTRACTOR must attend or organize following meetings where HSE must be first topic on the agenda:

Meeting	Frequency	Participant	Agenda	Documentation
---------	-----------	-------------	--------	---------------

Kick Off Meeting (per CONTRACTOR)	once before the start of work	<ul style="list-style-type: none"> COMPANY Site Manager COMPANY Construction Manager COMPANY Site HSE Manager COMPANY Disc. Site Superintendent CONTRACTOR's Construction Manager and Supervisors CONTRACTOR's HSE Manager, CLIENT's Project Manager* CLIENT's HSE Manager* CLIENT's Site HSE Coordinator* Further personnel on demand 	HSE (amongst others)	According to checklist &AZ-W-LF 9601 Presentation &??-W-WM 9603
Coordination Meeting	daily (before start of work)	<ul style="list-style-type: none"> COMPANY Site Manager COMPANY Construction Manager COMPANY Site HSE Manager COMPANY Disc. Site Superintendent CONTRACTOR's Construction Manager/ Supervisor Further personnel on demand 	Coordination of work for the day: <ul style="list-style-type: none"> information on the basis of the Co-ordination Plan HSE measures work permits 	-
Contractor HSE Meetings (per CONTRACTOR)	weekly	<ul style="list-style-type: none"> COMPANY Disc. Site Superintendent COMPANY Site HSE Manager CONTRACTOR's Construction Manager/ Supervisor CONTRACTOR's HSE Manager 	HSE, HSE-Findings (can also be part of regular meetings with contractors)	MoM
Toolbox-Meetings (per CONTRACTOR)	- Daily before starting work, - for routing jobs based on Safe work procedures - for any non-routine jobs after a risk ass. or JSA was hold	<ul style="list-style-type: none"> CONTRACTOR's Construction Manager/ Supervisor CONTRACTOR's HSE Manager/Safety Officer CONTRACTOR's personnel 	HSE, HSE-Findings	Record according to &AZ-W-RX 9603
HSE Team Meeting	weekly	<ul style="list-style-type: none"> COMPANY Site HSE manager CONTRACTOR's HSE Manager/Safety Officer CLIENT's HSE Manager* CLIENT's Site HSE Coordinator* Further personnel on demand 	HSE-Findings, Measures, Specials, Incidents	MoM
HSE Committee Meeting	monthly	<ul style="list-style-type: none"> COMPANY Site Manager COMPANY Construction Manager COMPANY Construction Manager COMPANY Commissioning Manager COMPANY Site HSE Manager CONTRACTOR's Construction Manager/ Supervisor CONTRACTOR's Site HSE Manager Further personnel on demand 	HSE-Findings, Measures, Specials, Incidents	MoM
BeSafe Daily	Refer to 6.1.7			

*) participation optional

6.9.2 Manpower Report

CONTRACTOR must report on a daily basis prior to each work shift a list of workers present at site to COMPANY Site Manager.

6.9.3 Monthly HSE Report

CONTRACTOR must report by the end of the first working day of the next month, direct and indirect construction manhours, including management/supervision (but excluding standard engineering hours) and offsite fabrication, construction and installation work (in case COMPANY defines this as part of the project scope) to COMPANY Site Manager or Site HSE Manager who prepare the Monthly HSE Report. CONTRACTOR must include If requested additional information (e.g. HSE activities, type and number of incidents).

6.9.4 Final Construction and Commissioning Reports

CONTRACTOR must report within 15 working days for the completion of project information required by COMPANY Site Manager and Site HSE Manager for the Final Construction Report.

6.9.5 Incident Reporting and Investigation

CONTRACTOR must consider all categories of incidents defined in COMPANY "Detailed Definitions - HSE Reporting and Incident Management "&AX-Q-PR 1050.520.011").

These include Unsafe Working Conditions or Practices, Near Misses, First Aid Cases, Medical Treatment Cases, Restricted Work Cases, Lost Workday Cases, Fatalities, Sickness Cases, Commuting Incidents, Environmental Incidents, Damages to Property, Process Safety Events, Commercial and Non-commercial Vehicle Incidents, Fatality Potential Events and Major Events.

CONTRACTOR must report immediately all incidents to COMPANY Site HSE Manager or Site Manager with the form "Internal Notice of Incident" (&AX-Q-PR 1050.520.012) or similar.

CONTRACTOR must address immediately unsafe act or conditions. If the unsafe situation remains after being addressed, the deficiencies must be documented with forms (e.g. safety observation reports, LUCAS reports) or any equivalent.

CONTRACTORS must participate in the incidents investigation led by COMPANY for

- incidents and illnesses with severity level SV-L1 to SV-L3
- All other incident type with severity level SV-L1 to SV-L3
- All incident classified as FPE or with SV-L4

(see 'Incident Severity Level Matrix' &AX-Q-PR 1050.520.033)

6.9.5.1 Guidance on the Recordability of Incidents

CONTRACTOR with COMPANY must ensure that an injured worker is accompanied to the physician or other licensed health care professional or hospital, etc. by a COMPANY or CONTRACTOR's assigned and "knowledgeable" person.

CONTRACTOR first aiders and supervisors who accompany injured workers should *legally and ethically* support medical providers to minimize their impact on COMPANY recordable rate by paying careful attention to the subtle nuances between *recordable* and *non-recordable* injuries.

At a minimum following guidance on "recordability" principles must be adhered to:

- First Aid shall not be over treated when less treatment will provide proper care. However, if the first physician or other licensed health care professional writes a prescription, the case is considered recordable once the prescription is issued. An authoritative provider or physician cannot override prescriptions, even if they are never filled or taken. It is important that the first physician does not over treat.

Examples: Over the counter (OTC) medication instead of prescriptions, butterfly bandage instead of dermal adhesive / suture, support device instead of immobilization.

- CONTRACTOR's medical staff should receive training/information on the treatments that constitute a recordable case.

- Regarding lost workdays, CONTRACTOR's injured worker taken off by a physician or other licensed health care professional should be seen by a second provider selected by COMPANY or CONTRACTOR for a second opinion if deemed appropriate (e.g. this can be another local physician, when available). COMPANY and CONTRACTOR's employer may determine which recommendation is the most authoritative and record on that basis.

Example: If CONTRACTOR's worker was removed from work by a personal doctor, COMPANY or CONTRACTOR's occupational physician or another selected physician may send the injured worker back to work but advise a work on restricted duties. This is no Lost Workday Case.

- If CONTRACTOR's workers feel safe reporting off-the-job injuries, these can be compiled as evidence that will help avoiding potential aggravation of these conditions.

Example: A worker injures his back during a softball tournament. If this personal injury is unreported, the worker may work at full duty and may aggravate the injury. At that point, the injury will likely become recordable. If the worker had reported the injury, one could have modified his duty to allow healing time, thus avoiding the potential aggravation.

- Workers must be instructed to report immediately any work-related injuries while at work, so the COMPANY or CONTRACTOR's occupational medicine provider or selected physician may offer conservative, medically appropriate treatment that may not be recordable.
- An injured worker should be able to use the day of the injury to allow to recover or be sent home for rest or be provided with light duty for the remainder of the shift. This time may be enough to allow the worker to return to normal duties, avoiding a potential recordable. As long as the worker can return to routine duties the next calendar day, at least no Lost Workday Case is rendered.
- The physician's opinion should be documented. Recordability is based on the physician's opinion, not the worker's actions. If a medical provider states that a worker can work, but the worker chooses to stay home anyway, the case is not recordable.

6.9.5.2 LUCAS

CONTRACTOR must record and report identified Unsafe Act and Conditions (UAC) to COMPANY Site HSE Manager. CONTRACTOR can use their own reporting tool or system or can use COMPANY 'LUCAS' reports ('Linde's Unsafe Condition & Act System', &AZ-W-RF 9602)

CONTRACTOR receiving from COMPANY personnel LUCAS report are required to implement defined corrective actions and inform COMPANY personnel in charge of its completion.

6.9.6 Lessons from Incidents

CONTRACTOR must ensure that all Lesson from Incident (LFI) received from COMPANY Site Manager or Site HSE Manager are communicated (e.g. toolbox talks, Besafe Daily, etc) or if required all recommended actions are implemented.

CONTRACTOR must confirm in written to COMPANY Site HSE Manager or Site Manager the implementation of the LFI specific recommended actions.

6.9.7 HSE Campaigns and Initiatives

CONTRACTOR must regularly participate to HSE awareness raising campaigns or initiatives organised by COMPANY to develop and maintain a positive safety culture around site's activities.

CONTRACTOR can also organise their own HSE awareness raising campaigns or initiatives. It is recommended to use high-impact topics aligned with actual site activities and conditions (e.g. emphasize "heat stress prevention" before and during extreme heat periods; "LOTO" before and during the energizing of systems, etc.).

In addition to work-related topics, HSE information that CONTRACTOR employees can benefit from away from work should also be communicated (e.g. driving safety, fire protection, sun protection, home and leisure accidents, etc.). with a recommended ratio of max. 1/3 of information related to outside the job and the rest to field impact issues.

6.9.8 HSE Booklet

CONTRACTOR must ensure that COMPANY 'HSE Booklet' (&AZ W-MS 9601) that is a universal communication support about appropriate HSE practices to be observed at site is distributed to all CONTRACTOR personnel on site.

6.9.9 Notifications

6.9.9.1 Regulatory Notifications

CONTRACTORS must inform and involve COMPANY for any notification of various regulatory bodies following an emergency event or incident occurring on site. COMPANY will inform CLIENT / OWNER as required.

CONTRACTORS are responsible for ensuring that following an emergency event or incident occurring the necessary information is prepared for regulatory bodies within the required timeframes and with sufficient detail as requested by the regulator.

6.10 HSE Assurance (Inspections and Verifications)

6.10.1 CONTRACTOR HSE Review and Inspection

CONTRACTOR must ensure reviews or inspections are regular conducted on site and appropriately documented to assure the implementation of the CONTRACTOR HSE Plan requirements by their personnel and their SUB-CONTRACTOR.

As a minimum the reviews and inspections must cover following:

- HSE performance of their personnel and activities
- implementation of the Work Permit System applied at site
- timely completion and quality of JSA / Method Statement / Risk Assessments
- compliance with the relevant applicable laws and regulations
- carry-out of safety walkthrough and inspection
- participation to HSE inspections arranged by COMPANY and/or CLIENT's Site management
- conducted HSE training and Tool-box meetings (see 6.3.2)
- participation to safety coordination and construction meetings
- Means and efficiency of communication of HSE information to all concerned parties
- Reporting of HSE incident
- Timely completion of incident investigation

CONTRACTOR must provide access to the records of these reviews or inspection to COMPANY upon request.

6.10.2 Safety Walks

CONTRACTOR must conduct or participate to regular Safety walks on site as follows:

Inspection	Frequency	Participants	Focus on	Documentation
Safety walk (per CONTRACTOR)	daily	CONTRACTOR's HSE Manager/Safety Officer	inspection of construction site safety measures work permits	&AZ-W-RF 9601 Safety Walk-Through Record
Management Safety walk (followed by a wrap-up meeting)	weekly	COMPANY Site Manager, COMPANY Construction Manager, COMPANY Site HSE Manager, CONTRACTOR's Construction Manager	inspection of construction site	&AZ-W-RF 9601 Safety Walk-Through Record

		CLIENT's Project Manager*, CLIENT's Site HSE Coordinator* further personnel on demand		
--	--	---	--	--

*) optional participation

All Safety Walks must be documented appropriately. If necessary, reports of Safety Walks will be handed over from COMPANY to CONTRACTOR.

The documentation and reporting system must include:

- Responsible persons (supervisors, superintendents, construction managers etc.) must be involved in this process.
- Clear definition of responsibilities and timing for measures to be taken
- Well-defined workflow:
- Identify discrepancy and notify responsible persons (supervisors, superintendents, construction managers etc.)
- Responsible person takes action
- Close issue
- Sign-off of each of the above-mentioned steps as a confirmation of their implementation.

6.10.3 Audits and Reviews

CONTRACTOR HSE Audits will be carried out by COMPANY or CLIENT after sufficient notice has been given (at least 2 weeks ahead) to check the proper implementation of HSE specifications and requirements.

6.10.4 Authority Inspection

CONTRACTOR must notify COMPANY Site Manager and Site HSE Manager immediately in case of any (governmental/external) authority requested inspections or visit. A COMPANY and CLIENT HSE department member will accompany the Inspection team.

Any violation or fines incurred by CONTRACTOR will be CONTRACTOR's responsibility to correct.

7 Documentation and Records

This document and relevant records shall be controlled as defined in "Preparation of Internal Documents" (&AZ-Q-PP 1050.060.010 (EN)), "Distribution of Documents" (&AZ-Q-PP 1050.063.010 (EN)) and "Archiving of Documents" (&AZ-Q-PP 1050.066.010 (EN)).

For convenience, project documents references provided in this document with originator code "&??", correspond to COMPANY originator code &AA.

Standard Documentation

No.	Title (English)
&AA Q-PD 0015	Use of gas detectors
&AA W-RX 9604	Test Report for Gas Detectors
&AA W-SC 3304	Electrical Energy Control Procedure
&AK W-PE 7123	Adsorbent Filling Procedure
&AK W-QR 9602	Risk Assessment (Adsorbent)
&AX Q-PR 1050.520.011	Detailed Definitions - HSE Reporting and Incident Management
&AX Q-PR 1050.520.012	Internal Notice of Incident
&AX Q-PR 1050.520.033	Incident Severity Level Matrix
&AZ W-LF 9603	Checklist of HSE Documents to be prepared by Contractor
&AZ W-LF 9608	Contractor Readiness to Start HSE Checklist
&AZ W-MS 9601	HSE Booklet
&AZ W-RF 9601	Safety Walk-Through Record
&AZ W-RF 9602	'Linde's Unsafe Condition & Act System' (LUCAS)
&AZ W-WM 9604	Permit to Work Training
&AZ W-WM 9605	Crane Operator Safety Awareness Training
LS 133-02	Pressure Testing – Piping and equipment at construction sites
LS 940-03	List of hazardous work (attachment 4)

Project Specific Documentation

No.	Title (English)
&?? W QR 9607	BeSafe Daily (BSD) & Daily Pre-Task Risk Assessment
&?? W-LH 9601	List of Hazardous Materials – Construction
&?? W-LH 9602	List of Hazardous Materials - Pre-/ Commissioning
&?? W-QR 9602	Risk Assessment (General)
&?? W-QR 9604	Job Safety Analysis
&?? W-RX 9603	Toolbox Meeting Record
&?? W-SC 9601	Permit to Work System
&?? W-SC 9601.001	General Work Permit
&?? W-SC 9601.002	Hot Work Permit
&?? W-SC 9601.003	Confined Space Entry Permit
&?? W-SC 9601.004	Lifting Permit
&?? W-SC 9601.005	Work At Height Permit
&?? W-SC 9601.006	Energy Control Permit
&?? W-SC 9601.007	Pressure Testing Permit
&?? W-SC 9601.008	Hazardous Substances Permit
&?? W-SC 9601.009	Excavation Permit
&?? W-SC 9601.010	Radiography Permit
&?? W-SC 9601.011	Specific Hazard Work Permit
&?? W-SC 9601.012	Photography Permit
&?? W-SC 9601.013	Entry Logbook
&?? W-SC 9601.014	Atmospheric Testing Record
&?? W-SC 9601.015	Permit Logbook
&?? W-SC 9603	Personal Protective Equipment on Construction Sites
&?? W-SC 9604	Radiographic Inspection Safety

&?? W-SC 9606	Working at Height
&?? W-SC 9607	Lifting Operations
&?? W-SC 9609	Control of Hazardous Energies
&?? W-SC 9610	Scaffolding
&?? W-SC 9612	Confined Space Entry
&?? W-SC 9613	Excavation
&?? W-SC 9614	Cold Stress
&?? W-SC 9620	BeSafe Program Construction
&?? W-SC 9622	Environmental Management Plan (EMP)
&?? W-SC 9623	Infectious Diseases of High-Consequence (IDHC) Management Plan
&?? W-SC 9624	Human Factor Engineering (HFE)
&?? W-SC 9625	HSE Incentive Scheme
&?? W-SC 9626	Critical Temporary System

8 Revisions

Proposals for revisions of this document should be forwarded in writing to the Global Construction functional unit 'Construction and Commissioning HSE'.

9 Distribution

This document will be administered and distributed by the Global Construction department 'Construction and Commissioning HSE'.

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited. Offenders will be held liable for the payment of damages.

All rights reserved in the event of the grant of a patent, utility model or design.

Attachments

Attachment 1: Project Site Specific Information

Attachment 2: Project Applicable Policies

Attachment 3: Flowchart of Recognition & Consequence Management

Attachment 4: List of Hazardous Works (LS 940-03)

Attachment 5: Risk Management Concept

Attachment 6: HSE Coordination Plan

Attachment 1: Project Site Specific Information

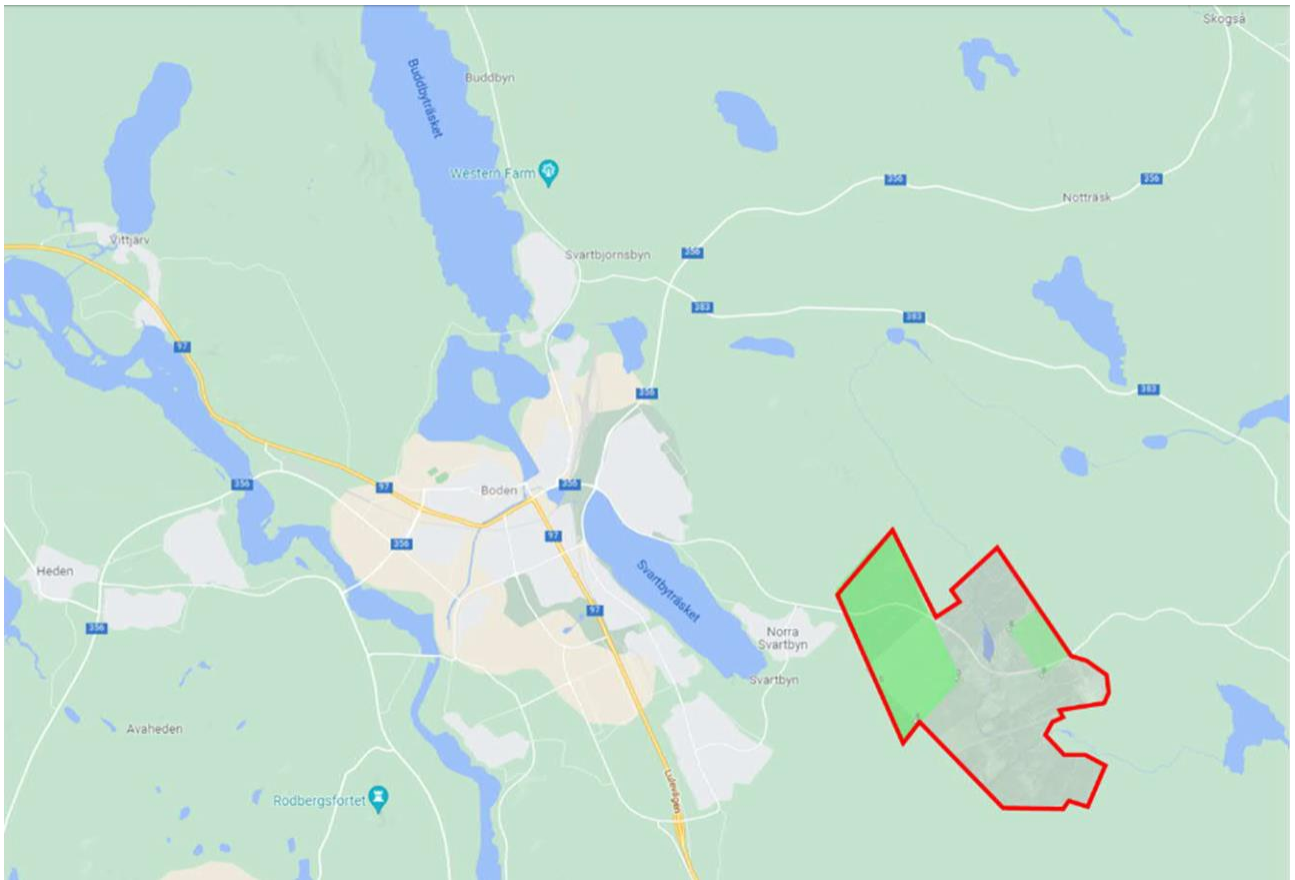
1. GENERAL INFORMATION	
Project Code	Boden ASU
Project Number	1410 CF4M
Project Criticality	3
Project Construction Complexity	Medium
Client Name	Linde Gas Sweden
Plant Owner	H2 green steel
Linde Engineering Organizational Unit	LEHQ
City and Country where Site is located	Boden, Sweden
Site <u>estimated</u> beginning date	January 2024
Site <u>estimated</u> end date	February 2026

Picture 1: Location of City

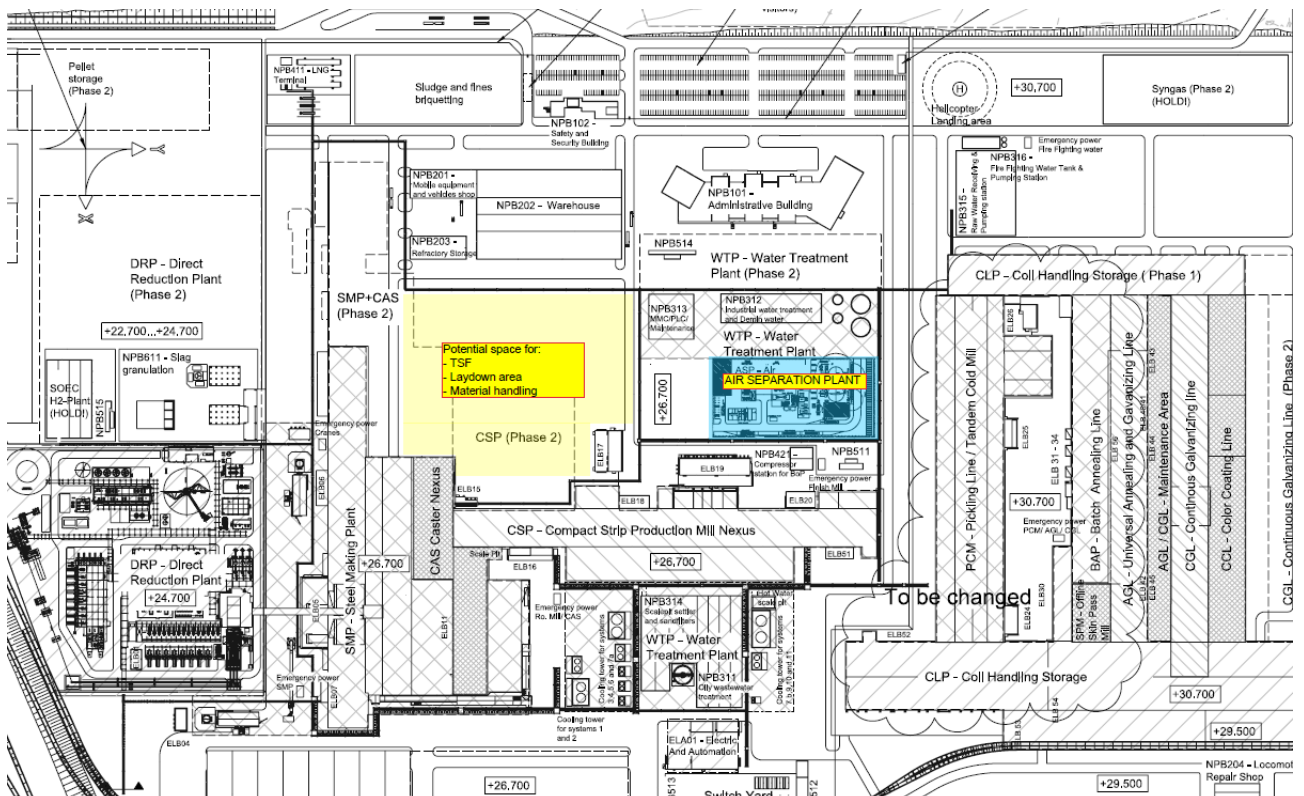


Figure 2-1: Location of the H2GS Plant

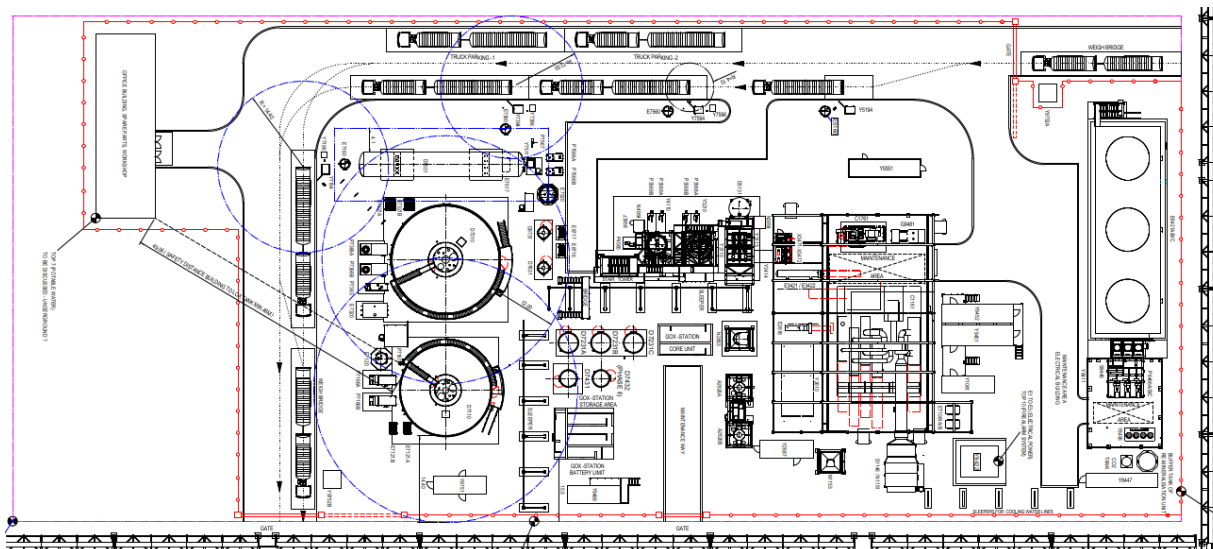
Picture 2: Location of plant



Picture 3: Location of Construction Site within Plant



Picture 4: Construction Site



2. LEGAL HSE REQUIREMENTS	
COUNTRY / ORG	SOURCES FOR HSE LEGISLATIONS OR KEY HSE REQUIREMENTS (NON-EXHAUSTIVE LIST)
Sweden	<ul style="list-style-type: none"> Swedish Agency for Work Environment Expertise: https://sawee.se/ Work Environment Act (1977:1160) Link.

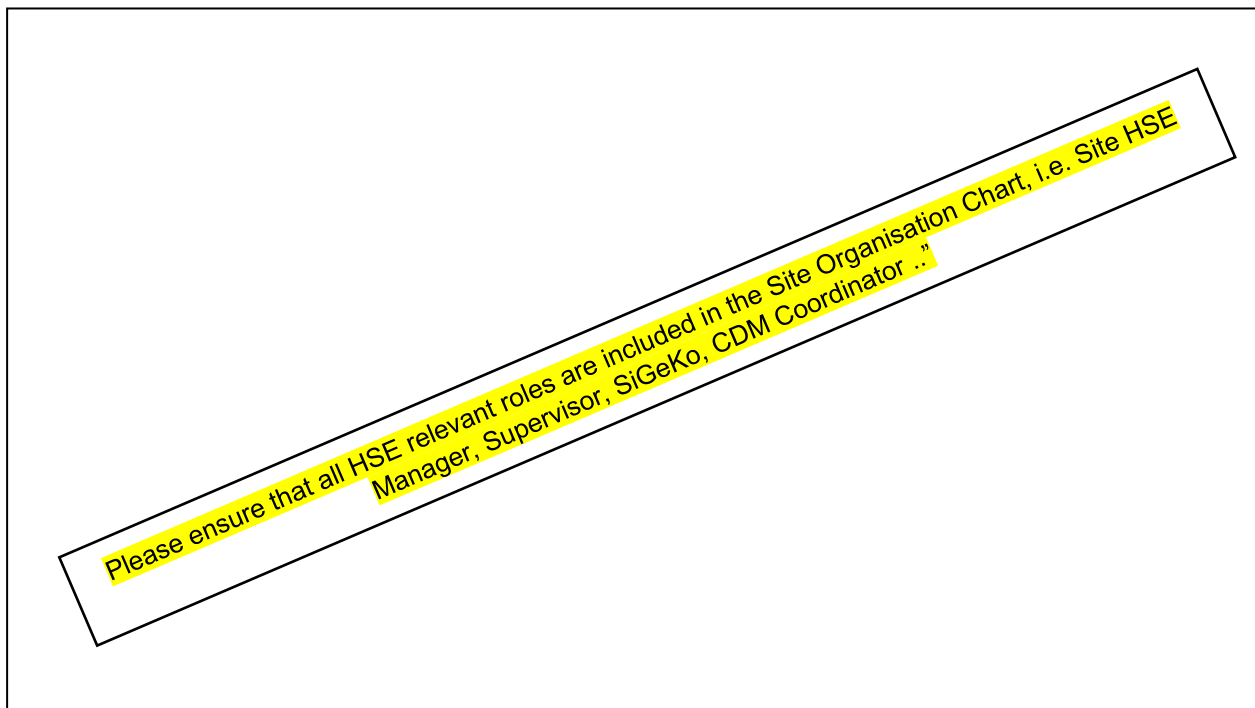
3. CLIENT / OWNER HSE REQUIREMENTS	
REFERENCE	TITLE
BOD-WID-OVE-HSE-STDGE-00001	<ul style="list-style-type: none"> HSE management of construction site
BOD-WID-OVE-HSE-PLNGE-00004	<ul style="list-style-type: none"> Construction Environmental Management Plan
BOD-WID-OVE-HSE-COMIN-00002	<ul style="list-style-type: none"> Safety and product compliance requirements

4. CONTRACTUAL DELIVERABLES	
REFERENCE	TITLE
	<ul style="list-style-type: none"> CONTRACTOR HSE Plan
&AZ-W-LF 9603	<ul style="list-style-type: none"> Checklist of HSE Documents to be prepared by Contractor

5. OVERVIEW OF NON-LE STANDARD HSE SPECIFICATIONS	
REFERENCE	non-LE standard HSE specifications that can impact CONTRACTOR execution and costs, from CLIENT HSE Requirements mentioned above
5.6	Ratio of Safety Officers 1:25
5.1.6	Contractor Supervisors must be English speaking
5.2	Foremen must be English speaking
&AA W-SC 9601	Excavations deeper than 20cm need a special permit, Special permit needs to be issued by Civil Department
6.5.1.2	Vehicles list
6.6.2.1	ID06 identification cards must be obtained
6.6.2.2	Vehicle equipment list

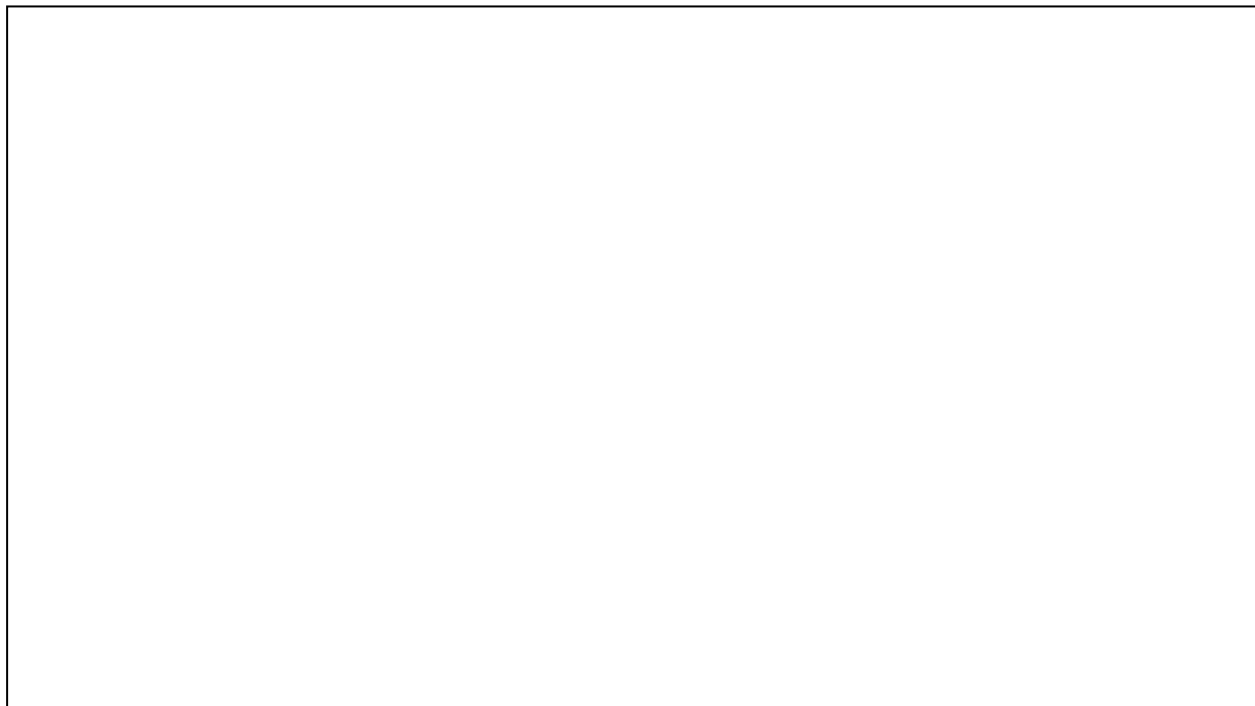
6. LINDE SITE ORGANIZATION CHART

If not yet available, (Refer to project specific "Site Standard Organization Chart (Based on Complexity)" &AZ-W-PM 1001 (EN))





7. CLIENT SITE ORGANIZATION CHART





8. HAZARDS FROM SURROUNDINGS AND NEIGHBORING PLANT / FACILITIES / OPERATIONS		DETAILS OF RISK MITIGATIONS / CONTROLS <i>(E.g. mitigating actions included in Risk Assessments, Job Safety Analysis, Method statements, Emergency Response & Evacuation Plans, etc....)</i>
Venting/Operations from other plants (e.g. air separation plants, steam reformers (HyCO), CO2 plants, gas filling stations, refineries, chemical plants, liquid or gas storage tanks	<input type="checkbox"/>	n/a
Product truck loading/unloading racks or stations	<input type="checkbox"/>	n/a
Underground pipelines	<input type="checkbox"/>	n/a
High voltage overhead lines	<input type="checkbox"/>	n/a
Pipelines on pipe racks (adjacent pipes on same rack)	<input type="checkbox"/>	n/a
Piles of coal / coke or other material	<input type="checkbox"/>	n/a

9. HAZARDS DURING CONSTRUCTION SITE ACTIVITIES		DETAILS OF RISK MITIGATIONS / CONTROLS
hot work in operating plants	<input type="checkbox"/>	
Crane lifting activities over live plant equipment	<input type="checkbox"/>	
Climate (e.g. Typhoon, Monsoon, Hurricanes..)	<input checked="" type="checkbox"/>	Cold Weather, see 6.4.3.4
Security related risks (e.g. earthquake, political or social unrest, etc.)	<input type="checkbox"/>	

10. PROJECT SPECIFIC MEDICAL HEALTH EXAMINATIONS,

In addition to the standard Medical Health Examinations specified in this document, following project specific health examinations are also required by CLIENT/CONTRACTOR at project site for COMPANY Personnel:

- none

11. PROJECT SPECIFIC PERSONAL PROTECTIVE EQUIPMENT,

Following project specific PPE are not yet specified in COMPANY Safe Work Procedure Personal Protective Equipment on Construction Sites" &??-W-SC 9603 and are required by CLIENT/CONTRACTOR at project site for COMPANY Personnel

Type of PPE	Description	Required Specifications
Helmet	EN 397, equipped with chin strap Must follow color coding system	<ul style="list-style-type: none"> • helmet (EN 397 with chin strap or equivalent standard approved by H2GS) Helmets shall follow the following color coding: <ul style="list-style-type: none"> ○ White: For engineers, Supervisors, managers, and foremen. ○ Red: For fire fighters ○ Blue: For electricians, carpenters, and other technical operators ○ Yellow: for general laborer and earth moving operators ○ Brown: for welders and workers with high heat application ○ Green: for safety officers ○ Gray: for site visitors ○ Orange: for plant and equipment operators

12. PROJECT SITE WORKING SCHEDULE – TO BE DEFINED		
	PROJECT SCHEDULE	STATUTORY REQUIREMENTS
Working Time (Daily)	Enter project schedule	8 hours
Night Working Time	Enter project schedule Additional protective measures will be subject to the work permit (see 6.1.6).	Work between 00:00 and 05:00 is generally banned, exemptions can be agreed with the Swedish Work Environment Authority
Overtime	Enter project schedule	Maximum weekly working time: 48 hours
	Note: when overtime is needed and expected during pre/commissioning, start-up and troubleshooting, Site Manager must plan this overtime <u>in due time</u> with CLIENT/OWNER to ensure a sound working schedule respecting local requirements and prevent any risks related to lack of rest or fatigue management.	
Working on Sundays and Public Holidays	Enter project schedule	No special requirements
Rest breaks	Worked hours 6-9 hrs: 30 minutes Worked hours > 9 hrs: 45 minutes not allowed to work more than six hours without a break, Break times shall not be split into parts smaller than 15 minutes	Take a break after maximum of 5 hours work 36 hours uninterrupted rest for each 7 day period
Minimum Rest Period	Enter project schedule	No special requirements
Targeted Groups of Workers	Enter project schedule	Not planned



13. EMERGENCY PHONE LIST



XXX

EMERGENCY

Phone numbers



NAME	COMPANY	PHONE NUMBER

Please ensure that posters for emergency response are translated in local language
Check for available translations at [Emergency Response & evacuation plans library](#)

LOCATION: AID ROOM	
NEXT ACCIDENT DOCTOR	
NEXT DOCTOR	
EMERGENCY SERVICE:	
NEXT HOSPITAL	

14. FIRE AND EXPLOSION PREVENTION PLAN



Site Address to be included

Client logo or empty

In Case of Fire - Expt



Non-smoking
Prevent fire
Nonsmoking
(as)! on site



Please ensure that posters for emergency response are translated in local language
Check for available translations at [Emergency Response & evacuation plans library](#)

In case of fire

Keep calm



Report the fire

Fire brigade call ☎ **Telephone number or radio!**

Content of announcement:

- Who is reporting?
- What happened?
- Where it happened?
- How many people are affected / injured?
- **Wait for questions!**



Evacuation

- Take persons in danger with you
- Help persons in need of assistance
- Shut the doors
- Follow the indicated escape routes
- Follow orders of fire wardens or fire fighters
- **Go to assembly point**



Attempt to put out the flames

- Use fire extinguishers, ensure your own safety
- If possible, use several hand fire extinguishers at a time

15. MEDICAL EMERGENCY RESPONSE PLAN



Site Address to be included

Client logo or empty

In Case of Medical Emergency

Keep calm



Report the injury incident

Medical Station 

Content of

- When
- What happened?

How many people are affected / injured?

Wait for questions!





First Aid

- Secure the incident location / area
- Provide first aid to injured persons
- Follow orders of medical staff

Other Instructions

- Call an ambulance or the emergency services
- Keep curious onlookers away.

Nearest Hospital with

- Oxygen Treatment Chamber  Telephone number.
- Other specific treatment types  Telephone number.

Please ensure that posters for emergency response are translated in local language
Check for available translations at [Emergency Response & evacuation plans library](#)

16. ENVIRONMENTAL RESPONSE PLAN



Site Address to be included

Client logo or empty

In Case of Environmental Incident



Prevent Spill or Leakage
(in the specified areas)!



Behaviour in case of Spill or Leak



Report the Spill or Leakage

Emergency Response Team ☎ **Test radio!**

Content of announcement

- Who is calling?
- What happened?
- What is the source?

Please ensure that posters for emergency response are translated in local language
Check for available translations at [Emergency Response & evacuation plans library](#)
For questions!

Alert people located in the immediate area

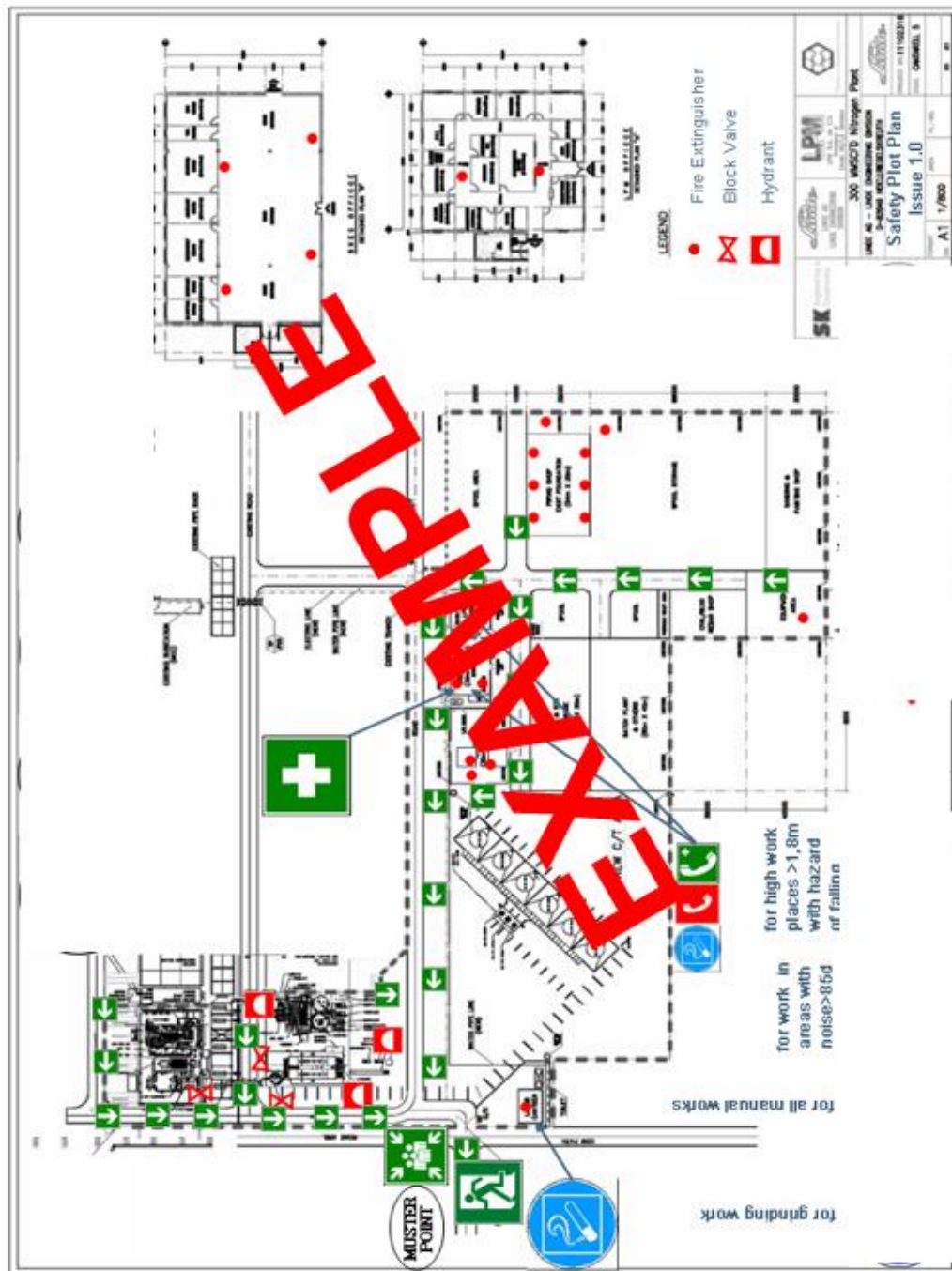










Emergency spill kit

Response Steps

- **Evaluate** the type of material spilled and identify the source
- Move away from area and put on PPE provided. *(If the source or the material are not identifiable, assume the worst)*
- **Contain:** Seek to contain flow or spread by valve closure or use of absorbent material available (spill kit). Content chemical spill from entering storm water drains using available absorbent material.
- **Stop the source:** Close valves, rotate puncture drums and plug leaks where it is possible and safe to do so.
- Begin **Clean-up** using emergency spill kit sorbents.
- **Dispose used absorbents** and spill liquids in accordance with local waste requirements.
- **Clean** all tool and reusable materials properly before reuse.
- **Restock** Emergency spill kit material.

17. SITE EVACUATION PLAN



	First Aid		Emergency phone		Muster Point		Emergency Exit
	Fire extinguisher		Fire Alarm phone		Fire Alarm		Firefighting Equipment

18. REACTING IN THE EVENT OF A TERRORIST ATTACK

REACTING IN THE EVENT OF A TERRORIST ATTACK

THE FOLLOWING ACTIONS COULD SAVE YOU BEFORE THE ARRIVAL OF THE SECURITY FORCES

1/ ESCAPE
If this is not possible
2/ HIDE



Locate the danger in order to move away from it



1 Lock yourself in and barricade the entrance



Help others to escape if possible



Do not expose yourself



2 Turn off the lights and mute the sound on your devices



3 Move away from windows, lower yourself to the ground



Alert the people around you and discourage people from entering the danger zone



4 Or, hide behind a solid obstacle (wall, pillar, etc.)



5 In any case, turn off your phone's ringtones and vibrate mode

3/ ALERT

AND OBEY THE ORDERS OF THE SECURITY FORCES



As soon as you are safe, **TEL**

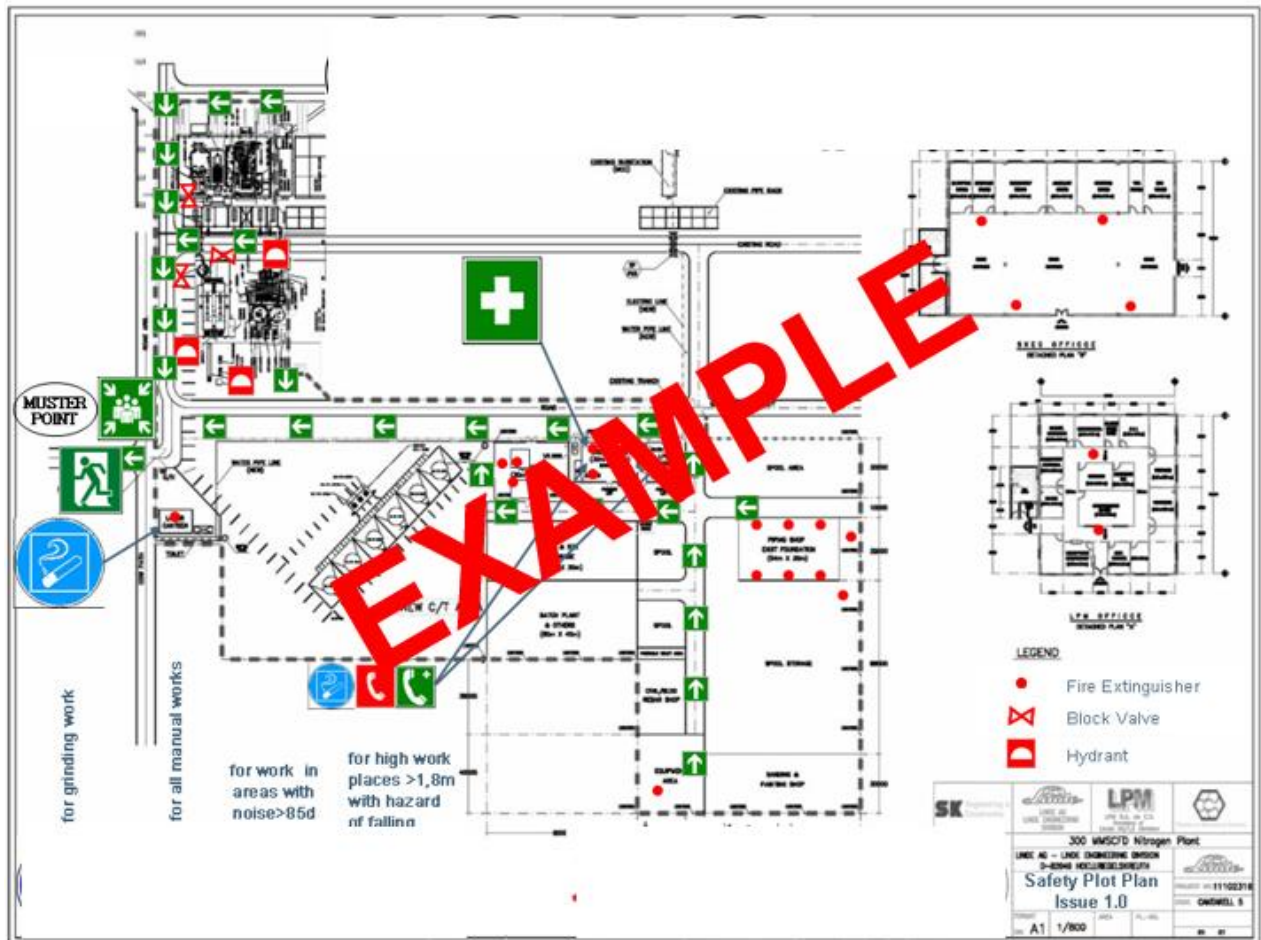


Do not run towards the security forces and do not make any sudden movements



Keep your hands up and open

19. CLIENT EMERGENCY PREPAREDNESS AND RESPONSE (EPR) PLANS





20. COMPANY FIRST AIDERS LIST

Updated on DD/MM/YYYY by Name – Company

Name	Company	Area / Location	CPR / AED trained	Phone Number

Attachment 2: Project Applicable Policies

Making our world more productive



Health, Safety and Environment (HSE) Policy.

Our Goal

At Linde we are driven to ensure no harm comes from our actions to people, the environment or the communities in which we operate.

Our Values & Commitments

- Health, safety and environmental responsibility are core values at Linde and integral in all that we do.
- Compliance with applicable laws, regulations, and Linde policies is a license to operate for our employees, contractors, suppliers and partners.
- HSE ownership through visible, demonstrated leadership across the organization.
- Collaboration with our employees, the industry and other professional associations to continuously improve HSE performance.

Our HSE Principles

At Linde we believe that:

1. All incidents and injuries are preventable.
2. HSE is a line management accountability.
3. We are responsible for our own safety and that of others around us.
4. Our employees and contractors are obliged to stop a job or refuse to perform it, if it cannot be performed safely.
5. All HSE incidents must be reported, and learnings taken from them.
6. Our commitment to and efforts in HSE will yield results.
7. Acting safely is a condition of our employment and supplier contracts.

We expect our employees, contractors and partners to embrace these principles and reflect them in every aspect of work they perform.

This policy is integral to Linde's business strategy. Executive leadership is committed to the full implementation of this HSE policy.

Safety Principles

1



All incidents and injuries are preventable.

2



HSE is a line management accountability.

3



We are responsible for our own safety and that of others around us.

4



Our employees and contractors are obliged to stop a job, or refuse to perform it, if it cannot be performed safely.

5



All HSE incidents must be reported and learnings taken from them.

6



Our commitment to and efforts in safety will yield results.

7



Acting safely is a condition of our employment and supplier contracts.

Life-Saving Rules

Making our world more productive



1. Driving and Vehicles

We will operate our vehicles safely and responsibly at all times and use the safety equipment provided.



2. Permit to Work

We will use the Permit to Work / Hazardous Work Permit System where necessary to ensure hazards and risks are understood and controlled.



3. Lock-Out/Tag-Out (LOTO)

We will use LOTO to verify energy/equipment isolation when servicing or maintaining equipment.



4. Hazardous Atmospheres

We will be aware of the potential for hazardous atmospheres and take the appropriate actions to detect, mitigate and eliminate atmospheric hazards at all times.



5. Elevated Work Activities

We will work at height only when the required safety measures to prevent falls are in place and we will ensure lifting operations are carried out safely.



6. Contractor Management

We will select and monitor our contractors to ensure they meet Linde safety requirements.



7. Management of Change (MoC)

We will implement changes to plant/equipment and work processes only when a MoC process addressing the safety risks has been completed.



8. Personal Protective Equipment (PPE)

We will wear properly selected, maintained and task/hazard specific PPE at all times when required.



9. Safety Equipment and Devices

We will maintain the integrity of safety equipment and devices and never modify, impair or override them unless properly reviewed and authorized through MoC or Permit to Work.

Making our world more productive



Cyber Security Principles

Securing digital identity, data, and devices



Report all security incidents

- Promptly report unusual or suspicious activities as security incidents.
- These could include hardware damage, loss, or theft; misuse or loss of data; abuse of access rights; compromised login details; or any suspicious system, e-mail, website, or behavior.



Protect your digital identity

- Keep your passwords, login IDs, smart cards, and tokens secure and do not share them with anyone.
- Use different passwords for different accounts, choose strong passwords, and change them regularly.
- Lock your computer screen when you leave your desk/office.



Protect data

- Prevent loss or theft of data and unauthorized access; ensure important data is backed up/encrypted.
- Delete data if no longer needed, e.g. if you dispose of a device.
- Classify your data based on the data classification policy and treat it accordingly.
- Promptly remove printouts, clean your desk and lock confidential documents when leaving, and shred sensitive information.
- Do not upload or otherwise disclose information to online services unless approved by Linde.



Protect equipment

- Laptops, mobile devices, tablets, USB drives, etc. can be an easy target for thieves. Keep yours with you or lock them away when not in use.



Use approved software and mobile apps

- Do not install unapproved software or allow updates from untrusted sources.
- If you need additional software or mobile apps to perform your job, contact your service desk.



Avoid becoming a victim – think before you act

- Be suspicious of unexpected e-mails and check before opening links or attachments.
- Do not use unknown USB drives.
- Be aware that even websites that appear genuine may contain malicious content.
- Before revealing confidential information, verify the identity and validity of the recipient.
- Be aware of "social engineering" attempts, i.e. people trying to trick you into revealing information they may be able to use fraudulently.



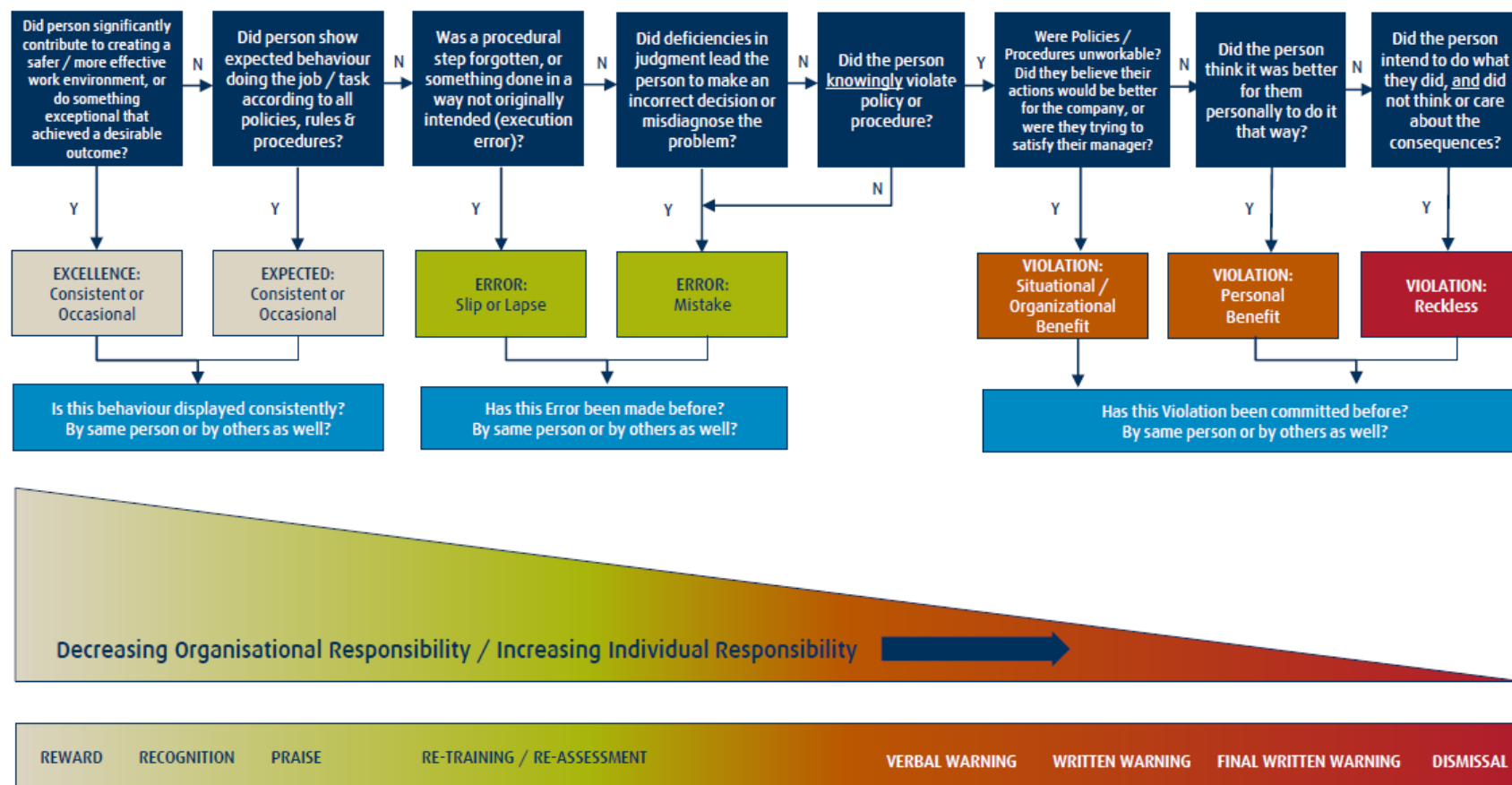
Respect laws and behave ethically

- Respect copyright. Do not violate intellectual property laws.
- Comply with data protection laws and regulations.
- Do not store, download, or distribute data that may be inappropriate or illegal, e.g. insulting, harassing, racist, abusive, sexist, or obscene.

If in doubt or if you learn about a mistake, please report any issue for mitigation or avoidance of risks and lessons learned.
Encourage your family members to follow safe and secure IT behavior.

Data Classification – Internal

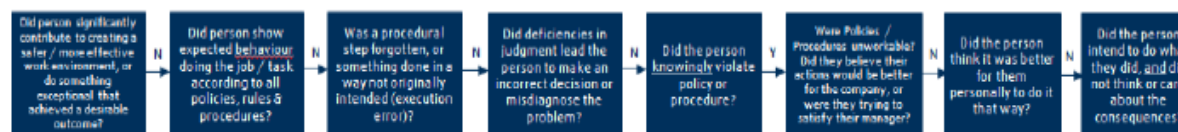
Attachment 3: Flowchart of Recognition & Consequence Management



Consult HR / SHEQ / Comms for support with reward / recognition, coaching, retraining, communicating good practices & positive examples, etc.

Consult HR in ALL cases requiring disciplinary action. Consult other functions dependent on type of case (safety, legal compliance etc.).

Preliminary Behavioural Categorisation:



Question	Further Explanation
Did person significantly contribute to creating a safer / more effective work environment, or do something exceptional that achieved a desirable outcome?	<u>Yes</u> – if the person exhibited excellence in risk identification, planning and management of a task or activity. Making a significant contribution to creating a more effective or safer work environment, or effective sharing of experience / learning, giving genuine benefit to others.
Did person show expected behaviour doing the job / task according to all policies, rules & procedures?	<u>Yes</u> – if the person demonstrated behaviour normally expected / required for the specific task or job role. Could also include expected actions or interventions (e.g. intervening in a potentially problematic or unsafe situation) and being receptive to, or acting on, others' ideas / instructions / interventions etc.
Was a procedural step forgotten or was something done in a way not originally intended?	<u>Yes</u> - if there was a defined plan of action, the <u>intent</u> was to follow procedure, but something was executed incorrectly, forgotten or done out of order. There was no deliberate mal intent.
Did deficiencies in judgment lead the person to make an incorrect decision or misdiagnose the problem?	<u>Yes</u> - if the plan of action was incorrect due to a misdiagnosis or misunderstanding of the actual situation. This can be caused by a misdiagnosis, calculation interpretation other perception or judgement error.
Did the person <u>knowingly</u> violate policy or procedure?	<u>Yes</u> - if the person was fully aware of the rule, policy or procedure (implicitly or explicitly) and still made a conscious choice (intention) to take action that violated the accepted/expected behavior.
Were Policies & Procedures un-workable? Did the person believe their actions would be better for the company, or were they trying to satisfy their manager?	<u>Yes</u> – either: i) If the job/task could not have been done properly/safely if they had followed procedure, or if they had not been provided the tools, training, means and necessary resources to effectively carry out the procedure as expected. ii) if the person thought that their actions were in the best interest of the company (cost, efficiency, productivity etc.) or if they chose their actions to satisfy their manager / supervisor.
Did the person think it was better for them personally to do it that way?	<u>Yes</u> - if the actions were chosen for personal advantage or shortcut which compromised the organization (i.e. quicker, easier, less stress, advance their position or gain reward / recognition etc.)
Did the person intend to do what they did, and did not think or care about the consequences?	<u>Yes</u> - if this was an act of gross negligence, willful or destructive behavior, an impulsive act, violence, revenge, etc. without consideration of the consequences (actual or potential).



Qualification Check:

Is this behaviour displayed consistently?
By same person or by others as well?

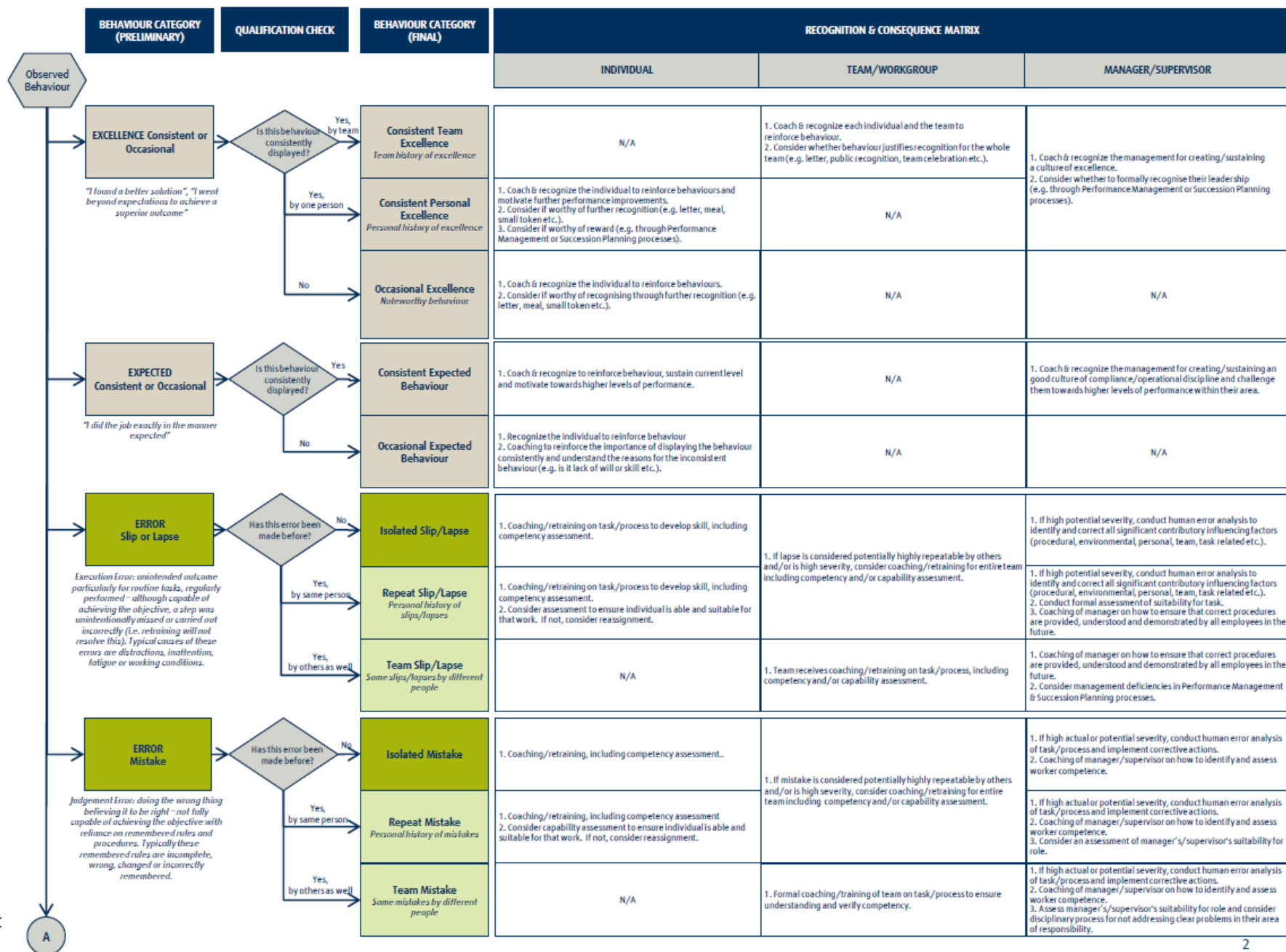
Has this Error been made before?
By same person or by others as well?

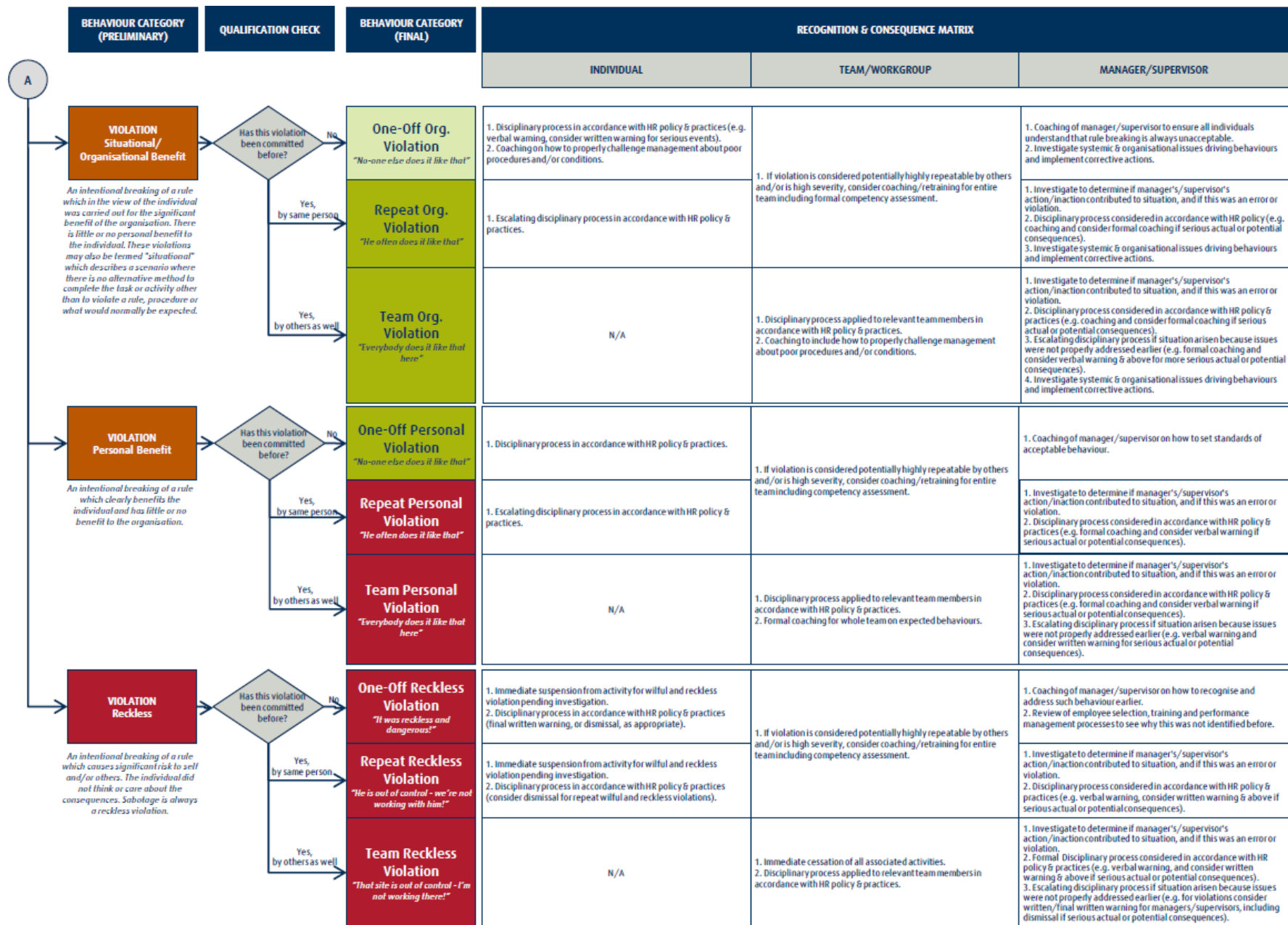
Has this Violation been committed before?
By same person or by others as well?

After initial analysis is complete and the Behavior type is identified for the specific situation, further analysis is required to determine if the behavior is of a Routine or Repeat nature and / or by the individual only or the team. This further analysis will determine the exact nature of the consequences, in terms of severity and target.

- If the answer to systemic questions is "No", apply appropriate consequences related to incident specific findings.
- If the answer to systemic questions is "Yes", apply appropriate consequences related to Routine/Repeat findings.

Question	Further Explanation
Is this behaviour displayed consistently? By same person or by others as well?	<ul style="list-style-type: none">• "Yes, by one person": if this person consistently demonstrates excellent behaviour exceeding expectations / personal history of achieving exceptional / desirable outcomes.• "Yes, by team": if one or more members of the team / workgroup display same consistent behaviour above expectations. <p><u>Note:</u> Expected Behaviour really only relates to individual behaviour, not team.</p>
Has this Error been made before? By same person or by others as well?	<ul style="list-style-type: none">• "Yes, by the same person": if this is a repeat error made by this individual and <u>others have not made the same error</u>.• "Yes, and by others as well": if this is a common error made by people other than the person involved.
Has this Violation been committed before? By same person or by others as well?	<ul style="list-style-type: none">• "Yes, by the same person": if the individual has a history of violation and disregard for policy and procedure and <u>others have not committed the same violation</u>.• "Yes, and by others as well": if this is a common violation made by people other than the person involved. <p><u>Note:</u> For Situation a/Organizational Benefit Violations consider if other people with similar training and experience have/would have done it in the same way.</p>






Attachment 4: List of Hazardous Works (LS 940-03)

<ul style="list-style-type: none"> ▪ Hot work with an increased risk of fire and/or explosion ▪ Working in confined spaces ▪ Working with a falling height of >2 m (or >0 m above water or any surfaces with the hazard of sinking) Typical work with high risk of falling are for example: <ul style="list-style-type: none"> ▪ erecting steel structures ▪ installing and removing gratings ▪ working in suspended work baskets or platforms ▪ working on a roof ▪ working on ladders >2 m above ground <p>Following work is to be seen as exception and is not categorised as high risk activity. This is as they are usually covered by standard regulations and operational instructions and therefore do not require the definition or implementation of specific or individual measures against falling:</p> <ul style="list-style-type: none"> ▪ erecting, modifying and dismantling scaffolds (only in special cases, e. g. extreme height, erecting near live equipment etc., scaffolding should be considered as a high risk activity) ▪ working on released working scaffolds, mobile scaffolds or working platforms (i.e. those constructed and with access in accordance with agreed procedures) ▪ working on elevating mobile work platforms ▪ Excavating and working in excavation pits deeper than 1.2 m ▪ Underground excavations and tunnelling 	<ul style="list-style-type: none"> ▪ Pneumatic pressure testing on pressure equipment (including piping) ▪ Hydraulic pressure testing on pressure equipment (including piping) ($V > 100 \text{ m}^3$) ▪ Working on systems that are or have been live: <ul style="list-style-type: none"> ▪ pressurised systems (e.g. pneumatic, hydraulic) ▪ systems containing fluids with a low ($< 0^\circ\text{C}$) or high temperature ($> 45^\circ\text{C}$) ▪ systems with hazardous, stored mechanical energy ▪ work on energised/de-energised electrical equipment ▪ Lifting work with mobile and tower cranes if: <ul style="list-style-type: none"> ▪ the lifts are complex (e.g. more than one crane, over live equipment or over active work areas such as office buildings or over public access ways) ▪ the lifts exceed 15 tonnes ▪ the lifts exceed 85 % of the crane capacity (by load chart) ▪ Working in a distance of less than 5 m to uninsulated overhead power lines ▪ Working with corrosive, explosive, highly flammable, carcinogenic (Category 1/2), mutagenic, toxic for reproduction, very poisonous or biological (Category 3/4) substances¹ ▪ Working with inert gases (unless being applied as shielding gas for welding operations) ▪ Work with ionising radiation, which requires the definition of controlled and monitored areas ▪ Working in areas of railtracks during railway operation ▪ Blasting operations ▪ Felling of trees ▪ Working with laser (Class 3/4)
---	---


¹ according to "EU Directive 90/679/EWG" of 26 Nov. 1990 on the protection of the employee against hazards through biological working materials at work (ABl. EH Nr. L 374 S. 1)

Attachment 5: Risk Management Concept

Risk Management Concept (1/2)



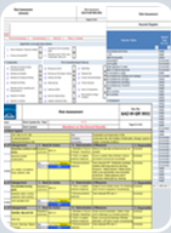
HSE hazards and environmental impacts are systematically identified and evaluated through all project phases via:



Method Statement (MS)

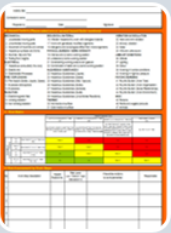
If required

MS helps to clarify the execution of given activities by identifying and listing the basis structure of all tasks necessary for the execution




Risk Assessment (RA Gnl)

RA identifies the significant hazards and control measures required to prevent injury, ill health or environmental impacts whilst carrying out the routine work and standard activities




Job Safety Analysis (JSA)

JSA identifies the risks and control measures from hazardous works or high risk activities




Permit to Work (PtW)

PtW applies for general activities and special PtW apply to High Risk Activities



BeSafe Daily (BSD)


BSD must be prepared daily before start of work to compile all relevant info from existing permit to works, risk assessments, JSAs, etc. to raise the safety awareness of workers.




HSE Competency & Awareness

Technical HSE Trainings and 'BeSafe' a behaviour-based safety program focusing on workers' behaviour help preventing work-related injuries and illnesses.


Risk Management Concept (2/2)





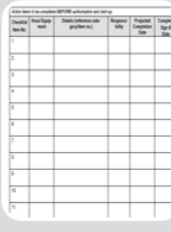
HSE Coordination Plan

It identifies the risks related to the interfaces and interferences between COMPANY and/or all CONTRACTORS present and working at site.




Risk Assessment of Simultaneous Operations (SIMOPS)

It identifies the risks related to the activities conducted in parallel and simultaneously at site.




Pre-Start-up Safety Review (PSSR)

PSSR ensure that introduction of hazardous media can be performed safely and/or the plant or parts of it can be put into sustainable operation safely.



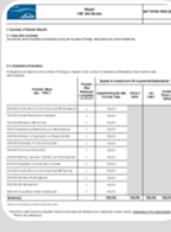
Environmental Impact Analysis (EIA)

EIA provides an overview of potential changes to the Environment that can result from the project construction activities or elements interacting with the Environment.



Site Security Assessment

It identifies the risks and control measures related to the security of the activities carried out at site.



HSE Monitoring

Workplace inspections, reviews and audits help checking the effective implementation of control measures defined for the identified risks related to the activities carried out at site.

Attachment 6: HSE Coordination Plan

EXAMPLE - Plot Plan:

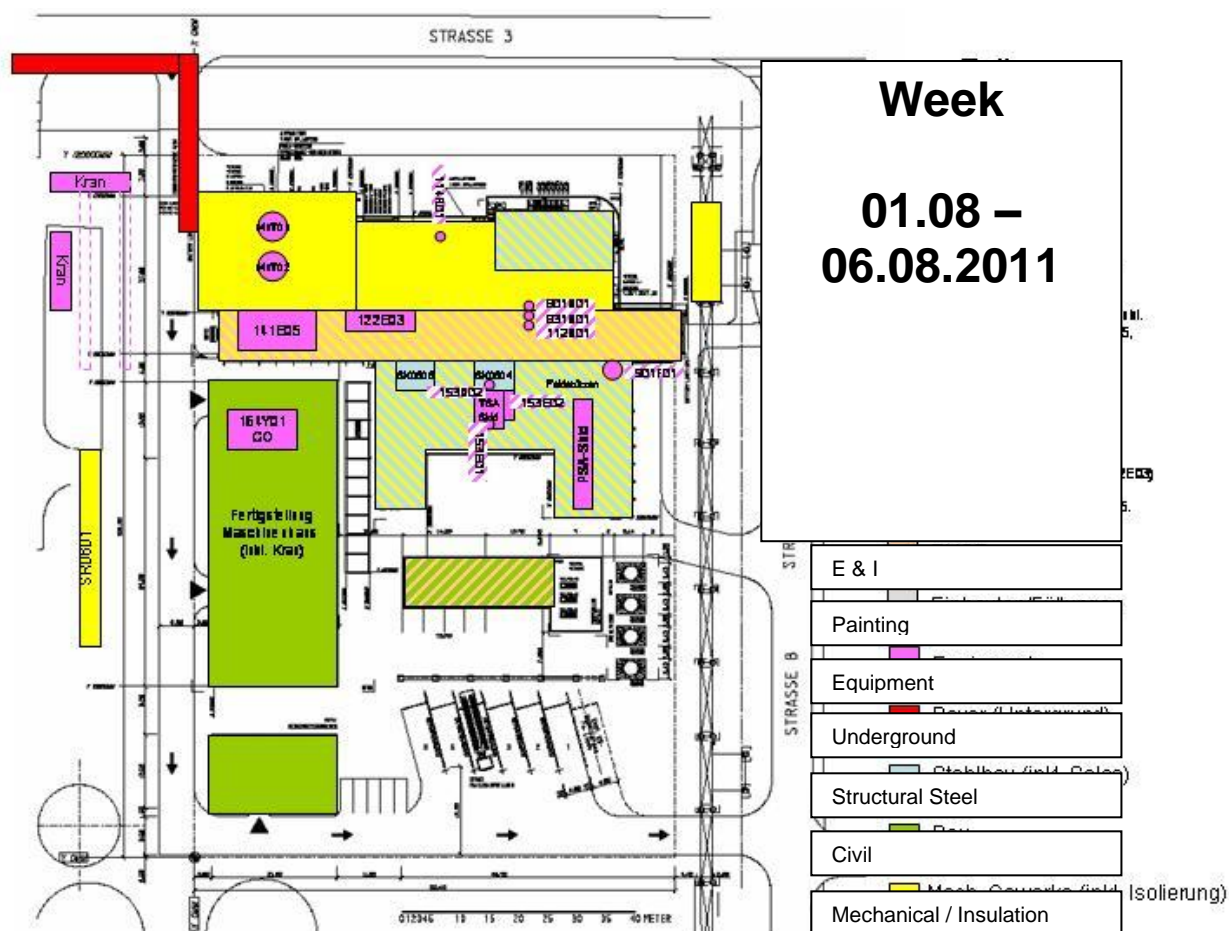


Table:

Week	Interface (short description)	Hazards	Action to be taken	Responsibility
17	Contr.1 with Contr.2	Radiation	Work only in lunch and evening time	Contr.1
			Barricading	
			Signboards	
			Permit System	
			Coordination Meetings	
	Contr.3 with Contr.4	Scaffolding	Scaffolding only after backfilling and compaction	Contr.3
			Coordination Meetings	
18	...			