JAN DE NUL

QHSSE PROJECT IMPLEMENTATION PLAN GBL7A EWP1 - BESGRE24.227

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00	24-Dec-2024	Carolien Symkens	Mike Van Geert	Niek Van Boxstael
01	09-Jan-2025	Carolien Symkens	Mike Van Geert	Niek Van Boxstael

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1 Scope

This document is a level II document and has been drawn up by Jan De Nul's project manager and the QHSSE department. This **Project Execution Plan** is the document that forms the bridge between Jan De Nul's corporate management system on the one hand and the requirements set by the project (legislation, contract, specifications, etc.) on the other. It analyses the gaps between both, shows Jan De Nul's willingness to comply with the requirements imposed by the Client and provides a documented structure for the Project-Specific Management System.

The plan also aims to serve as a guideline for the Project Management Team during the preparation and execution phase and when closing the project. By following the various steps in this document, the Project Management Team ensures compliance with the requirements set by the Client, with the latest ISO 9001, ISO 14001 and ISO 45001 standards and with common industry practices. As a result, the Project Management System can be audited against the different standards.

This plan aims to create a common understanding among all project employees of their tasks and responsibilities within this project and ensures a certain level of standardisation, also in terms of the management of documents and data for all projects executed by Jan De Nul. If a chapter or part of it does not contain any text, this means that there are no project-specific deviations from the text in the project management manual.

This version of the document was developed based our basic documentation on QHSSE project implementation but tailored to the specific project, the Client and the received tender documents. The knowledge gained from the already ongoing scope was maximally incorporated into this document.

2 References

2.1 Instructions, standards and guidelines

The documents referred to below are absolutely essential for the application of this document:

1. ISO 9001:2015 standard
2. ISO 14001:2015 standard
3. ISO 45001:2018 standard
4. VCA**

2.2 Jan De Nul Group Documents

1.	Policy statement (QHSSE)	*JDN.QF.01.01*
2.	Mission, Vision & Values (CSR policy statement)	*JDN.QF.01.42*
3.	Leadership Matrix Civil Works – Envisan	*JDN.SF.01.08.a*
4.	Project management manual	*JDN.PQM.01.01*
5.	Risks and opportunities	*JDN.QF.03.32*
6.	Hazard control	*JDN.SP.08.01*
7.	System of work permits	*JDN.SP.08.19*
8.	Management of Findings	*JDN.QP.13.01*
9.	Internal Audits	*JDN.QP.17.01*
10.	Overview of KPIs and objectives	*JDN.SF.01.10*
11.	Code of Conduct	*JDN.GF.01.40*
12.	Document management	*JDN.QP.05.01*
13.	Waste Management	*JDN.SP.08.49*
14.	Emergency & Crisis Management	*JDN.SP.09.02*

2.3 Specific Project Documents

1.	Inspection and test plan	*JDN.QF.10.03.*
2.	Risk inventory, risk assessment and preventative measures	*JDN.SF.08.10*
3.	Checklist environmental permit – notification	*JDN.SF.08.13.A/B/C*

3 Terms and definitions

3.1 Abbreviations

Abbreviation	Meaning
BOTG	Boots On the Ground
CLS	Central Logistic System
COSHH	Control of substances hazardous to health
CSR	Corporate Social Responsibility, see CSR
DAB	Daily Activity Briefings
EHS	Environment, Health & Safety
FPS WASO TWW	Federal Public Service Employment, Labour and Social Consultation – General Directorate Supervision on Occupational Well-being
FRT	Field Risk Talk
HAZID	Hazard identification
HRA	High-Risk Activities
ISO	International Standardisation Organisation
ITA	Imagine Think Act
ITP	Inspection and Test Plan
JDN	Jan De Nul Group
JHA	Job Hazard Analysis
KPI	Key Performance Indicator
LMRA	Last Minute Risk Analysis
PESTLE	Politics, Economy, Social, Technology, Law & Environment
PM	Project Manager (or in some cases Project Director)
PMC	Project Management Consultant
PMT	Project Management Team
PPE	Personal Protective Equipment
QA / QC	Quality Assurance / Quality Control
QHSSE	Quality, Health & Safety, Security and Environment

RAMS	Risk Assessment and Method Statement
Rev.	Revision
SLT	Safety Leadership Team
SM	Site Manager
SPC	Specialty Package Contractor
SRL	Société à Responsabilité Limitée
SWP	Safe Work Practice
TNA	Training Needs Analysis
TRA	Task Risk Analysis. Listing and assessing task-specific risks
UXO	Unexploded Ordnance

3.2 Relevant definitions

Definition	Meaning
Contractor	The entity contracted by the Client to provide a service or execute a project, e.g. Jan de Nul NV.
Direct Superior	Executive staff that is responsible for the day-to-day performances of a team, e.g. Head of Department, Project Manager, Site Manager, Foreman, etc.
Interested Party/Stakeholder	Person or organisation who/that may have an impact on a decision or activity or who/that may be impacted by a decision or activity or experiences it that way.
Issue	An important topic or problem that is the object of debate or discussion, can be positive or negative.
Person in Charge	The lead person within a department, on a ship or within a project who is responsible and accountable for the conduct of business, e.g. Captain, Chief Engineer, Project Manager and/or Head of Department.
Client	Client or Employer with which Jan De Nul has some form of agreement to provide a service or execute a project.
Product	'The result of a process'. *NOTE:* There are four general product categories, in particular: 1. *Services (e.g. transport)* 2. *Software (e.g. computer programme)* 3. *Hardware (e.g. mechanical part of engine, completed structure)* 4. *Processed materials (e.g. lubricant)*
Project	A project is a temporary effort with a defined start and end (usually limited in time and often limited by financing or results to be delivered), [a] executed to achieve unique targets and objectives, [b] usually to achieve a change for the good or create added value. *NOTE: The temporary nature of projects contrasts with the day-to-day activities, [c] which include repetitive, permanent or semi-permanent functional activities to produce products or services.*
Project Management Team	All members of staff of Jan De Nul with a management position in the project organisation as defined in the "Organisation Chart".

Legal Requirement	Mandatory requirement specified by a government body.
Requirement	‘The need or expectation that is mentioned, usually implied or mandatory’. ***EXPLANATION 1****:* "Usually implied" means that it is customary or common practice for the organisation, its customers and other stakeholders, that the expectation in question is thus implied. ***EXPLANATION 2****:* A qualification can be used to identify a specific type of requirement, e.g. product requirement, requirement according to quality management, customer requirement... ***EXPLANATION 3:*** A specified requirement is a requirement that is explicitly indicated, for example in a document. ***EXPLANATION 4****:* Requirements may come from different stakeholders.

4 Context of the organisation

4.1 The organisation and its context/stakeholders

4.1.1 Project-specific Organisation Chart

A Project-specific Organisation Chart is being drawn up. A version of this is posted at the office. We refer in this regard to the template for a project-specific organisation chart JDN.QF.01.04, which has been added as annex and needs to be established in preparation phase of execution. Key personnel of the Project Management Team:

- Project Manager Nicolas Maton
- Works Manager Niek Van Boxstael
- Site Supervisor Faustin Kamania
- Works prepared by Charlie Roland
- TINDE Kris De Backer
- Pointeur Nathalie Arnoud
- Surveyor Brent Reynaert / Laurens Hofman
- HSE Manager Mike Van Geert
- HSE Supervisor Michiel Derlyn

In addition, so-called ‘black hats’ are allocated. For each activity, non-productive personnel are provided in addition to the operational workforce. Their task is to be able to make small HSE-interventions quickly and ad hoc or to assist HSE-personnel on site with targeted verification and control of prevention measures and to take immediate action where required.

5 Needs and expectations of stakeholders

5.1 Stakeholders (project-specific stakeholders)

The construction management or contractor entrusted with the execution of the works, regardless of whether or not being responsible for the coordination of the works, has a general obligation, prior to the start of the works, to inform the relevant public authority or organisation (NSSO, FPS WASO, Constructive) about the construction works through the unique site notification form. This notification form has been included as annex.

Stakeholder	Name / competence
Client: Client/Employer	Crystal Computing
Main contractor	Jan De Nul NV
Architect	N/A
H&S Coordinator Design	PM Group
H&S Coordinator Execution	PM Group
Subcontractor(s) / Lead Supplier(s):	N/A
Security company	Securitas
FPS WASO TWW Department Hainaut	Contrôle du bien-être au travail Direction du Hainaut
External occupational health service JDN	Mensura – Dr. Geertrui Dumoulin
JDN Insurance against Occupational Accidents	Federale Verzekering, branch office Gent

5.2 Requirements related to the Management System (specific rules & regulations)

The (Sr.) QHSSE advisor or designated person / third party verifies the project-specific rules & regulations related to the Management System. In the event of any deviations/additions, a project-specific register of legal and other requirements will be drawn up.

6 Scope of Project Execution Plan

This plan applies to all activities regarding the realisation of the project according to the Contract.

Scope GBL7A EWP1	
Contract name and number	*GBL7A EWP1 - BESGRE24.227*
Specifications number	3659
Works to be executed	**GBL7 Early Enabling works (EWP1)** • ***Site Clearance and Deforestation*** *of GBL7* • ***Stockpile Transport****: From Envisan (Sol&Val) to GBL7* • ***Site Installation*** - *Preparation of a temporary construction parking area and waste management zone* - *Installation of temporary fencing, walkways, and site communication systems* • ***Haul Road Construction*** - *Compacted gravel roads from the entrance to the basecamp* - *Lime-stabilized soil roads around the stockpile location*
Execution period	Start December 2024

7 Leadership

7.1 Policy (& charters)

A signed version of the QHSSE policy statement is posted at the office and in site sheds. The QHSSE policy statement is also enclosed as annex. If this proves to be useful or if it is imposed, the Project Manager will also define project specific QHSSE expectations in a project charter and monitor their observance.

7.2 Roles, responsibilities and competences within the organisation

A specific Project Organisation Chart has been created for this project to identify the hierarchy of responsibilities and communication lines. We refer in this regard to § 4.1.1. The responsibilities and competences for the actual implementation of manuals, procedures and instructions are defined in the relevant documents. The responsibilities and competences are solely indicated for jobs, not for names.

An overview of the main tasks and responsibilities related to safety leadership during project execution can be found in the Leadership Matrix Project Execution (check JDN.SF.01.08).

7.3 Participation and consultation

The participation and consultation for this project are organised by:

1. Giving project-specific welcoming instructions to all employees
2. On-site awareness raising courses (toolbox meetings)
3. Emphasising the importance of all employees' input for identifying hazards
4. Encouraging open discussions during meetings prior to the start of works
5. Safety Focus Days
6. Regular QHSSE rounds by the site team
7. Client specific meetings – title 7.3.4 External communication - Communication with the Client

8 Planning for the Project Management System

1. **Risk Management**
   The process of identifying, assessing, and controlling risks throughout the project.
2. **Key Performance Indicators (KPIs)**
   Specific metrics used to monitor and evaluate the project's progress and performance.

8.1 Actions for taking on risks and opportunities

8.1.1 Risk identification and risk assessment during the Tender phase

We refer in this regard to the ‘Tender study’, including the ‘Risk analysis in connection with the tender’. After contract awarding, the ‘Tender Study’, including the ‘Risk assessment in connection with the tender’, will be handed over to the Project Manager. Also, prior to the start of the actual execution of the works, a kick-off meeting at management level will be organised in Jan De Nul’s offices. The minutes of the kick-off meeting are available on MESO.

8.1.2 Risk identification and risk assessment prior to the start of the works

Prior to the start of the works, a risk assessment workshop will be organised. The output of such a risk assessment workshop is a project-specific risk and impact register. A preliminary risk and impact register is made up in this tender phase but will be updated during preparation phase of the execution works. See annex JDN.BESGRE24.227 – Risk and impact Register.

NOTE: For this scope special attention was made on the project specific adjustments and additions in the Risk and Impact register.

8.1.3 Risk identification and risk assessment during the execution of the works (RAMS)

During the execution of the works, additional risk assessment workshops will be set up or job risk analyses will be conducted to assess already identified risks and to identify and assess new risks.

Prior to the commencement of specific tasks, the execution team will identify significant hazards and prepare a Risk Assessment and Method Statement (RAMS) for each work activity. These RAMS are described by the execution team in close contact with HSE. After internal check and verification by the project team these documents will be submitted in a template to the Client at least two weeks prior to the agreed start date of the work activity. After following the approval flow, the RAMS including the different risks, agreed methods, precautions and implemented preventative measures are briefed to the relevant workforce.

8.2 Objectives and planning to achieve them (KPI's)

8.2.1 KPIs for JAN DE NUL's national project activities

We refer in this regard to JDN.QF.01.04, which lists an overview of KPIs and objectives.

8.2.2 Additional objectives or KPIs for this project

Additional objectives or KPIs defined by the Project Management Team and/or the Client:

1. Full attendance at different meetings (e.g. DABS, Housekeeping walks, SLT, weekly EHS meeting)
2. Submitting a weekly update of the RAMS schedule
3. Completing and submitting EHS documentation every week.
4. Boots On the Ground program as Contractor

9 Support

9.1 Resources

9.1.1 General information

The mobilisation of resources is checked during internal project coordination meetings.

Only equipment that is in perfect condition may be used on the construction site. All lifting equipment as well as all equipment for hitching on loads must have a valid inspection report issued by an external technical inspection body. These inspection reports are available through the article catalogue so that they can always be consulted by the competent authorities and by the coordinator for the execution. The inspection reports of the subcontractors' work equipment that is subject to inspection are kept in an on-site HSE file. Machine maintenance works must be executed by properly trained and skilled personnel. A responsible person is designated to verify the proper functioning of the equipment team and adjust their functioning whenever needed. All machines must be operated by authorised personnel.

9.1.2 People

For this purpose, we refer to the Project Organization Chart. The required skills and competencies of employees must meet prevailing legislation, and the experience of the site personnel will comply with the Client's requirements. The performance of hired personnel (security guards, safety experts, etc.) will be evaluated.

9.1.3 Operational readiness

All employees on the project site must have had the necessary training and have the professional skills and physical readiness to perform the tasks assigned to them (including the responsibilities associated with a safety-related job).

Other factors to consider during the project include climate (e.g. additional strain due to extreme heat or cold), fatigue management and other local conditions, if any.

9.1.3.1 Fatigue Management

Working hours are normally from 07h00 till 15h30. If needed overtime is provided, but this will always be discussed beforehand with all parties involved (Staff and workers). All overtime is recorded and can be recuperated on a later date.

9.1.3.2 Extreme heat or cold

In case of extreme heat or cold, adapted clothing and other material will be provided to all employees. Extra breaks will be allowed to take. For more details, we kindly refer to the Winter Plan specifically prepared for this project. It outlines the various risks and management measures, such as adjusted PPE and materials.

9.1.4 Infrastructure (assets and equipment)

The PMT ensures that all processes are carried out under controlled conditions. To this end, the PMT has established and made available the assets & equipment necessary to ensure compliance with the product requirements and he will also keep them in a good state.

9.1.5 Equipment for working on land (plant & machinery)

A non-exhaustive selection of possible deployed types of machinery for this project scope:

- Gyrocutter
- Excavator (35t) (with mulching heads)
- Tractor
- Compactor
- Bulldozer
- Crane truck
- Telehandler
- Hand tools

We will ensure that everyone stays clear of machinery operating in their vicinity and avoids the crane swing area. Only personnel who have received the proper training will be allowed to operate machinery or equipment. Our safety advisor will provide guidance on the necessary training requirements. All defects should be reported to the supervisor. Reversing will only be allowed with a banksman, except for vehicle parking. Additionally, all machinery will be equipped with CCTV reversing cameras and audible reversing alarms, where possible. This information will be communicated during the project introduction and through toolbox talks.

9.1.6 Personal Protective Equipment

All personal protective equipment (PPE) complies with client requirements and local regulations:

1. **Clothing**
   Clothing must conform to local requirements. The body must always be covered. Clothing must fit properly, and sweatpants are not considered suitable work attire. Arms must also be covered by long sleeves when required by the risk assessment. At a minimum, workers must wear shirts with 4-inch sleeves and safety-toed footwear. Long pants are obliged to wear during working hours.

2. **Safety Helmet**
   The safety helmet must have a suitable 4-point chin strap that is fastened at all times. It must comply with applicable safety standards. No hats or hoodies are allowed to be worn underneath the helmet.

3. **Fluorescent Jacket or Equivalent**
   Minimum Class 2. Class 3 when required.

4. **Safety Footwear (S3)**
   These must have toe and midsole protection with ankle support. Footwear must always be fully laced. Safety shoes or rigger boots are not allowed on-site.

5. **Hand Protection (Gloves)**
   All persons within the construction activity area must wear gloves to prevent incidents (unless contrary to local regulations). Gloves must meet at least ANSI A2 or EN 388 Level B standards. The contractor will use Job Hazard Analysis (JHA), risk assessments, and Personal Protective Training Plans (PTP) to determine proper glove selection and usage for work scopes, ensuring adequate protection for workers when ANSI A2 or EN 388 Level B gloves are not applicable. Anti-cut safety gloves are the minimum requirement (4X43D).

Gloves must be maintained according to the manufacturer's specifications and local requirements. If records of testing/certification (e.g., electrical PPE) are required, records of conformance must be maintained and available upon request.

Task-specific personal protective equipment (PPE) on the project site:

- Specific type of gloves
- Hearing protection
- Dust mask
- Specific type of face shield
- Etc.

9.1.7 Safety Equipment

- First aid equipment (industrial first aid kit, stretcher, AED, etc.)
- Communication devices (walkie-talkies)
- Safety signs and plans
- Fire extinguishers (e.g. fire extinguishers, fire blankets, etc.)
- Oil control material (absorption cloths, pads, absorption granules, etc.)
- Torches
- Etc.

9.1.8 Environment for executing processes

The specific positioning of the site containers (office + lunch container) for personnel within this scope is determined in consultation with the Client at the assigned location(s) based on the execution plan and phasing. The following facilities will be provided close to the office containers:

- Changing rooms
- Sanitary shed
- Personnel shed
- Equipment and materials shed

9.1.8.1 Housekeeping

On this project, including the site office, storage zones, and construction area, measures will be implemented to ensure the cleanliness of the surrounding. A plan will be developed for the management, storage, transport of materials, and general order and cleanliness on the project.

This plan will establish clear guidelines for safe storage, proper handling, and a tidy work environment.

The general cleanliness of the site (site tracks, access roads, etc.) is the responsibility of everyone present on this project. We will ensure that order and cleanliness on the construction site are always a key focus during inspection tours. Regarding equipment storage, we will make areas safe by storing tools and equipment securely when not in use. This will extend the lifespan of the materials and improve performance. We will install barriers and signage to clearly demarcate storage and laydown areas. Additionally, a wheel wash will be provided on-site, and its use will be mandatory. All vehicles must pass through the wheel wash before leaving the site to prevent dirt and debris from being transferred onto public roads.

This topic will be addressed during toolbox meetings, so everyone is aware of the expectations and responsibilities regarding cleanliness and proper equipment storage.

We use the designated storage facilities, such as trolleys, cabinets, and racks, as soon as they are available. Materials are stacked safely and organized in a way that ensures stability, safety, and no obstruction to access or exit routes. We ensure that waste is cleaned up immediately as it is generated. After the work is completed, we always check to ensure that all tools and materials have been properly removed.

9.1.8.2 Barricades, Signage and Flagging

Where possible and in accordance with the Client's requirements, we will install site barricades without compromising the operational activities of the site. Signage will be placed in line with the client's specifications (every 50 meters). All communication and signage will be provided in English and other relevant languages.

We will ensure that lighting is adequate to prevent slips, trips, and falls, and to allow work to take place safely, with a minimum of 54 lux, as verified by periodic illumination studies. Lighting within electrical and mechanical rooms will be maintained at a minimum of 108 lux.

9.1.9 Resources and equipment for monitoring and measuring

We refer in this regard to JDN.QP.11.02 Calibration of Measuring Tools for Exact Positioning National and JDN.PR.011 Calibration.

9.2 Competence

9.2.1 General information

All personnel working on the site has been trained and assessed for the tasks to be performed before the works are started. The project team will develop/establish the required training(s), qualifications, and competencies for the respective work activities carried out on-site and for emergency response. As part of the training requirements, the project team ensures that all on-site employees are aware of the hazards associated with their work and of the project-related HSE rules. This is organised through, amongst others, project introductions, safety tours, toolbox meetings, and discussions of job risk analyses.

9.2.2 Training and Safety Briefing for Site Access

The Project Team will ensure that all individuals granted access to the construction site meet the required training criteria and complete the site safety briefing. This safety briefing will include an overview of the safety policies, programs, and rules established by the Project Team, which must be provided before the initial work assignment of each employee based on their specific roles and responsibilities. Additionally, safety training will be conducted for all employees regarding potential high-risk or hazardous tasks identified by the Project Team's health and safety program.

The briefing will also cover work preparation procedures and the applicable permit-to-work system. Verification of the completion and understanding of the briefing will be carried out. Furthermore, refresher training will be provided whenever changes are made to the Construction Environmental Health and Safety Plan.

Access and egress will only be allowed via approved points, with badges being swiped at the Access Control system, which also informs the Belgian authorities. The badge must be worn visibly at all times; if lost or forgotten, this must be reported to security, who will issue a temporary badge after ID verification. It is forbidden to swipe in for someone else, and anyone caught doing so will be removed from the site.

The following training courses/exercises have been identified as required for this project:

1. Project introduction
2. Toolbox meetings
3. Awareness-raising campaign (Code Zero - ITA)
4. Task-specific training courses
5. Emergency exercises (evacuation, ...)
6. Etc.

9.2.2.1 Project introduction

There is a site induction drawn up and verified by the Client. On top of this induction, the general HSE-expectations of Jan De Nul on civil sites are summarised in a short video. This general video must be followed by any person coming to work on our scope of the construction site for the first time and is followed by an introduction movie or slides with the site-specific expectations and locations. See title 7.3.3.2 Internal communication ‘Project introduction’.

9.2.2.2 Toolbox meetings

Within the company, a minimum of one toolbox meeting per month (12 per year) per supervisor must be organised in such a way that as many operational staff/employees as possible are involved. This minimal expectation has been established in the Leadership Matrix Project Execution (check JDN.SF.01.08).

To comply with the requirements of the Client every operational or Health and Safety Manager is required to provide a weekly ‘Safety & Environmental Toolbox Talk’ to their workforce. The topic should be associated with the current or planned imminent works and/or recent

observations on the construction site. The attendance of the Toolbox Talk is registered on a form and filed according to the JDN and Client requirements.

9.2.2.3 Awareness raising

Jan De Nul recognizes that effective preparation and operational control are essential for a successful, safe project, improved procedures, and satisfied personnel. We achieve this through the use of ITA.

1. **IMAGINE**
   We always keep in mind what we wish to achieve: our final goal, the perfect result. At the same time, we never lose sight of potential risks and opportunities.
2. **TH!NK**
   Based on this, we discuss and draw up a detailed plan, about which we communicate clearly and comprehensively with all parties involved.
3. **ACT**
   Only then, we start with the execution of the project, making sure that we never lose sight of our final goal. If we notice that something is not going as it should or that some procedures can be improved, we are not afraid to interrupt the works. We consult once again and adjust our plan.

The Jan De Nul Code Zero corporate programme shows how seriously we take our social responsibility. Our ambitions are clear:

- **Zero emissions**
  We actively reduce our carbon footprint.
- **Zero accidents**
  We continuously improve workplace safety.
- **Zero breaches**
  We don’t tolerate ethical or social infringements.
- **Zero waste**
  We look for circular solutions and ways to reduce our waste.

Imagine Think Act defines how we work. Code Zero defines our ambitions.

9.2.2.4 Maintaining Training Records

A training register or similar mechanism that tracks the training, qualifications, and competencies of the workforce on-site will be made available to the Google Project Team. The register shall specify any validity period and refresher requirements. Additionally, the program will describe how training needs are identified, how training content is updated, how training is delivered and documented, and how training progress is monitored and reported. The competence of the employees will be assessed and monitored during the execution of the works. At the start of the activities, the training certificates of the subcontractors, such as those for crane operators, will be requested and verified.

9.3 Communication

9.3.1 Languages used on the project site

- **Jan De Nul Group**

  The language of communication on the site is Dutch/French/English within the own project team, but English **for official communication** with the Client. The site management has basic knowledge of Dutch, French and English. This basic knowledge is sufficient to communicate with non-native speakers on the site should this be necessary.

- **Subcontractors**

  Mother tongue of employees of subcontractors can be variable. For the main activities JDN- personnel can be employed, other specific activities will be carried out by subcontractors.

  The so-called degree of subordination for subcontractors will be limited as much as possible. Degree 3 of subcontracting remains limited in this respect and can only be considered in exceptional or specific circumstances. Argumentation, consultation and approval by the Client is a crucial factor on this project.

  Jan De Nul's site management communicates primarily with the foremen of the listed subcontractors. These foremen act as central contact persons and as interpreters to ensure that all information is passed on to their employees. This communication can be in Dutch, French or English.

- **Written and verbal communication with the Client**

  All communication with the client takes place in English.

9.3.2 Communication on the site

Subject matter	Measures
General information	Instructions and prohibitions are communicated using icons (on-site signs, instructions posted in site shed, etc.).
QHSSE file	Drawn up in English and submitted to the Client.
Project introduction	Welcome brochure or introduction movie/slides drawn up in Dutch, French, English and other translations depending on the most common language of main subcontractors on the project. Project introduction meetings are conducted in the respective languages and provide information to the foremen of the relevant subcontractors. It is the job of the foremen to relay the information to their respective employees in their respective mother tongue. See title 7.3.3 Internal communication 'Project introduction'.
Toolbox meetings	Toolbox meetings are conducted in the respective languages and provide information to the foremen of the relevant subcontractors. It is the job of the foremen to relay the information to their respective employees in their respective mother tongue. If available, the documents of toolbox meetings are made available in the mother tongue of the employees.
Job risk analysis	Drawn up in Dutch/French/English and translated. RAMS drawn and approved by Client are formalised in English.
Emergency procedure	This is included in the welcome brochure (see above), the emergency data sheet with the relevant emergency phone numbers is posted in the personnel shed.
QHSSE tour	Reports are drawn up in English. If necessary, identified opportunities for improvement are communicated in the respective language of communication to the person in charge of the relevant subcontractor.
Critical activities	For the execution of critical activities (activities that pose a potential risk of serious accidents), all persons involved must be able to communicate clearly with each other. Prior to carrying out these activities, appropriate arrangements must be made in consultation with Jan De Nul's site management.

9.3.3 Internal communication

9.3.3.1 Kick-off meetings for projects

Prior to the actual start of the works, the Project Management Team organises an internal kick-off meeting within our company.

Participants: Manager National Division, Head of Department, Head of Execution Department, Project Manager, Site Supervisor, (Sr.) QHSSE Advisor, member of staff of Procurement Department, member of staff of department responsible for preparing tenders

Topics according to JDN.QF.03.06.

- Description of the works
- Site organisation and administration
- Planning, design, ...
- Specific risks and control measures
- Etc.

9.3.3.2 Project introduction

Every employee starting on the project is informed about the applicable rules and regulations through a project introduction. This project introduction is a standardized procedure organized by the QHSSE Advisor or Site Manager.

Registration procedure

First, an induction request must be submitted to the Client at least 2 working days prior to arrival, including information such as the name of the company, date of arrival, language of induction, and personal email address. Subsequently, all site personnel will participate remotely in the Client's HSE induction, which will be sent to their personal email address. To access the construction site, the employee must successfully complete the HSE induction with a minimum score of 80%.

Additionally, evidence must be provided that the involved person is entitled to work in Belgium by presenting a passport or ID card. For Belgian nationals, the Belgian national number (NISS) and DIMONA are required, while non-Belgians must provide an A1 document demonstrating their contribution to Belgian taxes and LIMOSA. If the employee comes from outside the EU, a copy of the work visa is also required.

Furthermore, proof of completed training and competence must be submitted, such as VCA or basic safety training. Lastly, everyone must read, sign, and adhere to a Non-Disclosure Agreement before entering the construction site.

Visitors should notice their arrival 24 hours before arrival via a standard request form of the Client. All visitors are required to be escorted by a fully inducted member of the site team. The name of this person should be communicated via the request form. Visitors are not permitted to undertake any physical labour onsite. Visitors must wear the required PPE at all times as advised prior to their site visit.

The JDN requirements related to safety inductions on top of the expectations of the Client are:

1. General movie with HSE-rules for JDN Construction sites.
2. Specific HSE-induction for the site (movie, slides and/or specific welcome brochure).
3. Taking a test to verify understanding of the content of the induction.

Summarize

1. Names of arriving persons should be passed on at least 48 hours in advance to allow time to validate and check documents.
2. Registration of the company to be check in the list of Declared (sub)contractors to the Client.
3. Verification of all necessary PPE (general + specific for type of work)
4. Check documents including ID, safety training (e.g. VCA), LIMOSA/DIMONA, authorisation, ...
5. Non-Disclosure Agreement to be signed.
6. Induction test
7. Signature of the RAMS on which he/she will be working.
8. Signature of the JDN-safety induction

9.3.3.3 Monthly project-specific QHSSE inspection

The site supervision team will at regular intervals (and at least once a month) organise a QHSSE inspection tour on the construction site. This can take the form of a joint tour with the client, safety coordinator and/or QHSSE advisor. This minimal expectation has been established in the Leadership Matrix Project Execution (check JDN.SF.01.08). On the project there are specific meetings, inspection rounds and visits. These client specific expectations are summarized in 7.3.4 External communication - Communication with the Client.

9.3.3.4 Toolbox meetings

Cf. §7.2.2.2

9.3.3.5 Safety Focus Days

A Safety Focus Day is organised on a three-monthly basis on civil and environmental works sites of Jan De Nul. During this Focus Day, management, together with a QHSSE staff member, visits various sites to discuss the safety performances and opportunities for improvement with employees.

9.3.3.6 Monthly progress report

The monthly progress report is prepared by the project manager or site supervisor.

9.3.3.7 End-of-work report (close-out meeting)

At the end of the works, the Project Management Team organises a close-out meeting.

Topics according to JDN.QF.03.06.

1. Client satisfaction
2. Incidents and accidents
3. Performances of subcontractors
4. Etc.

Participants: same as for kick-off meeting

9.3.3.8 Project-specific QHSSE notices / ITA messages relevant to the site

As and when certain QHSSE topics are disseminated through a QHSSE notice, this information is also discussed on the project site.

9.3.4 External communication

9.3.4.1 Communication with the Client

The communication with the Client is organised in different project meetings and reports as described in the EHS-documentation of the tender phase. Depending on the type, the frequency can vary:

Daily

1. **Daily Activity Briefings (DAB's)**
   The daily activity briefing at 7:30am to document and communicate the same day's work activities and High-Risk Activities (HRA's).
2. **Daily Coordination**
   Review of activities and coordination for the coming day/night/weekend.
3. **Lifting Coordination**
   Review of all upcoming lifts on site
4. **Last Minute Risk Assessment (LMRA)**
   LMRA to be undertaken daily before works commence. To communicate requirements regarding high-risk activities impacting on planned activities and any key issues / lessons learnt from previous shifts. Further communicating co-trades activities and High-Risk Activities (HRA's).

Weekly

1. **Boots On the Ground- program**
   As a Contractor in this scope, the BOTG program will be used by the staff members.
2. **Weekly Project Progress Meeting**
   Progress meetings to review EHS performance and targets.
3. **Project EHS Meeting**
   Reviewing performance and work collaboratively to ensure common standards are implemented effectively. Additionally, a EHS tour takes place.
4. **Design Safety Team Meetings**
   Coordinate design, resolve design issues, monitor information release, if applicable to the relevant contractor.
5. **EHS Review Meetings**
   Informing the Owner of actions and issue on EHS.
6. **Housekeeping Walks**
   Have a closed status of storage and housekeeping condition on site.
7. **Trade Contractor Progress Meeting**
   Review progress against programme and resolve coordination issues.
8. **Trade Contractor Health and Safety Meetings**
   Carry out a site inspection prior to the meeting to review all aspects of Health and Safety on site with all Trade Contractors supervisors.

Fortnightly

1. **Owner Project Meetings**
   Gives the Owner an overall picture of the project, including EHS.

Monthly

1. **Project Safety Leadership Team (SLT) Meeting**
   Review the project EHS and Environmental performance, and strategy for improvement.
2. **Worker's Forum**
   Formal meeting and EHS inspection with employee representatives of each of the trades on the project.
3. **Supervisor site Tour**
   The meeting will include a tour of the workplace and a formal meeting to review the findings and strategy to improve workforce engagement.
4. **Trade Contractor Directors Meeting**
   Carry out a safety inspection or audit prior to attending the meeting to review project Health and Safety, Progress, and Financial Issues with the Trade Contractors Directors.
5. **Four Weekly Health and Safety Review Meetings**
   Internal review of the Health and Safety performance and issues over the past month.

6. **Safety Leadership Meeting**
   Monthly walk and meeting to assess the safety performance of the trades by entire leadership.

9.3.4.2 Meetings with third parties

Depending on specific conditions and its necessity, consultation with third parties will be organised. During these consultation moments, the criteria included in JDN.QF.01.42 – CSR Policy are considered.

9.3.5 Media & Public Relations

The GBL7A - project is subject to strict confidentiality agreements. Specifically, on this project all matters relating to Media and Public Relations are to be dealt with by the Client directly. PMC, SPCs and their supply chain and the Contractors are not permitted to speak about the project outside of those involved in the project. All matters relating to Press, Media and other public networks are to be immediately referred to the Client.

9.3.5.1 Photo Policy

According to the client's expectations, no photographs are to be taken without an official permit. If a permit is required, a request must be submitted to Security and approval must be awaited. The permit must always be attached to the camera, which is provided by each contractor. Under no circumstances are photographs to be taken with a mobile phone camera. The permit must be displayed at all times.

10 Execution

10.1 Operational planning and control

10.1.1 Quality Management

Quality as a separate focus point is not assessed at this stage of the tender and specific scope. This scope concerns only the provision of temporary facilities, and therefore the Client expressed a separate document, or system is not a substantial area of concern. Consequently, below only the general organisation regarding quality is described.

10.1.2 Execution plans

On a progressing basis, execution plans are prepared, submitted and verified with the Client. After confirmation of the tender, a specific time schedule will be prepared to meet expectations and timelines of the Client and internal departments.

10.1.3 Inspection and Test Plan

We refer in this regard to the template for an inspection and test plan enclosed as annex. The inspection and test plan can be drawn up according to form JDN.QF.10.03 or equivalent and includes the minimum quality controls as specified in the specifications. Inspections carried out in the contract documents will be carried out according to the procedures laid down in the contract documents. The reports (copies) are kept in the site file. All certificates such as BENOR, COPRO and others, if requested by the Client, are retrieved from the respective suppliers. A copy of those certificates and/or attestations is kept separately in the site file by the site supervisor.

10.1.4 Approval of materials

Approval of materials to be used and/or subcontractors to be engaged, if so, required in the specifications, must be obtained from the Client using the form JDN.QF.10.01. All approvals are kept in the site file. If the Client wishes to use its own form, the JDN form JDN.QF.10.01 can be replaced.

10.1.5 Health and Safety Management

10.1.5.1 Power Tools

To ensure workplace safety, we will ensure that all necessary precautions regarding the use of power tools and equipment are followed. We will check that the on/off switch of each power tool is working correctly and inspect the tool for any signs of damage. We will ensure that there are no loose parts or missing screws, guards, handles, etc., and that live parts are properly guarded to prevent accidental contact. Personal protective equipment (PPE), as indicated in the manual or risk assessment, must be worn. We will ensure that the equipment is

disconnected when not in use. Training for the use of power tools will be provided through toolbox talks, as required.

10.1.5.2 Permit-to-Work

All specialist high-risk operations on this project require specific control measures using an HRA permit to work, in accordance with the Client's HRA Permit System Procedure. Before the start of the project, the project team will liaise with the PMC Team Site Management regarding the specific operational control measures to be implemented. The Client's Smartsheet platform will be used for project permits, from submission through to approval by the PMC.

Additionally, **the contractor shall implement a permit-to-work program for high-risk scopes**, including but not limited to working at heights, energy isolation, confined spaces, and crane activities. All relevant personnel shall be trained on this program prior to the commencement of physical work.

We refer in this regard to procedure JDN.SP.08.01 'Hazard control'. Jan De Nul has established standard HSE rules for its employees, the Client and/or subcontractors, visitors and/or third parties working on or visiting the site. We refer to the form JDN.SF.04.05.C Instructions for subcontractors in connection with QHSSE – Civil works Benelux sites, enclosed as annex.

The standard activities where a work permit system should be applied following the Jan De Nul system is made more specific to the list of activities requiring a work permit system on this project, where applicable:

1. Working at height
2. Energy Isolation
3. Confined space
4. Crane activities
5. Excavation
6. Hot Works
7. Out of Hours
8. Electrical & Mechanical
9. Working on ladder
10. Special Conditions
11. Control Of Substances Hazardous to Health (COSHH)
12. OPE Permit
13. Lift Permit

To conclude, before any work is carried out, the necessary preparations and formalities should be verified, including following tasks:

1. Specific RAMS up to date and validated, specific risk analysis carried out.
2. Lifting plan if necessary
3. Work permit issued 24 to 48 hours in advance (standard JDN or Client permits for hot works, excavation, lifting, use of ladders, etc.)
4. Validated use of specific chemical products by the Client

All documents are gathered in a Permit to Work pack available next to the work environment, reflecting the currently developed safe work system. The information to be provided in the work pack should include at least, but is not limited to:

1. RAMS, including workforce RAMS briefing sheet
2. Daily Task Briefing Sheet/LMRA/SPA
3. Lift Plan
4. Relevant Permits as per HRA Permit System Procedure according to the specific works

10.1.6 Working at height

We will develop and maintain a comprehensive fall protection plan that covers all scopes of work. High-angle rescue plans will be in place for working at heights and high-risk activities. Anchor points for fall protection will be inspected by an accredited body or a competent person and will meet the appropriate load ratings.

10.1.6.1 Working on a ladder

We will implement a 'Ladders Last Program' to ensure that the usage of ladders is limited and considered a last option in the construction area. The program will cover, but not be limited to, utilizing the hierarchy of controls through a documented process (Job Hazard Analysis/Risk Assessment/Permit to Work) to determine when and where a ladder can be used. It will also include pre-use inspections, the removal of damaged ladders, training for personnel, and the provision of appropriate personal protective equipment (PPE).

10.1.7 Hot works

We will develop and maintain a project-wide fire protection and prevention plan that applies site-wide and covers all scopes of work. The plan will comply with the client's operational procedures and expectations.

10.1.8 Crane activities

All cranes on site will have assembly, disassembly, and inspection plans. We will ensure that licensed and certified professionals operate the cranes, and documentation of the licensing and certification will be retained on site. All service, maintenance, and inspection records will be current and maintained on site. The crane swing radius will be appropriately barricaded. A lift plan will be required for all activities, and lifts will not occur overhead of field workers. No crane lift will exceed 80% of the crane's rated capacity.

1. **Non-Critical lifting activities**
   Non-critical lifts are defined as those lifts that are performed at less than 75% of the crane's rated capacity. These lifts do not involve lifting personnel, are limited to the use of a single crane, utilize only a single line or block, and do not include the lifting of hazardous materials.
2. **Critical lifting activities**
   Critical lifts are defined as those that involve lifting 75% or more of a crane's rated capacity, or any of the following conditions: handling hazardous materials, hoisting

personnel, using multiple pieces of hoisting equipment, lifting over occupied areas, or working near overhead energized power lines (§ 8.1.5.1).

10.1.8.1 Managing Overhead Risks

Prior to the start of construction, we will identify and clearly mark all overhead power, data, and other objects that have the possibility of being struck with proper signage and physical barriers, including clearance heights. If it is difficult to visually assess safe clearance, we will designate a person to observe the clearance and provide immediate warning of any approaching hazards. Safe routes of travel will be designated and marked with physical barriers installed to limit access and indicate minimum approach distances. We will also avoid storing materials below power lines and evaluate static conduction if materials need to be stored in these areas. When it is necessary to work around overhead power lines, we will de-energize and ground them or take other protective measures such as guarding or insulating the lines or installing drag chains on vehicles to ensure grounding.

10.1.9 Hoisting and rigging

We will verify the qualifications and applicable certifications of personnel involved in these activities. We will establish procedures to ensure that equipment is rated for loads, conduct pre-use inspections, inspect after each lift, perform inspections for severe use, and comply with manufacturer-required inspections, as well as remove any defective equipment. Our procedures will cover pre-planning, access control of the area, use of taglines or equivalent tools, and communication between operators and signallers.

10.1.10 Excavation

Excavations will take place, and consequently, the following applies:

We will establish an excavation program with a permit system to perform work activities safely and reliably to prevent striking or damaging a utility line. We will verify the area to be excavated using the proper means (piping and instrumentation diagrams, relevant plans, CT scans) to ensure that no known or unknown services are present in the excavation area. Where necessary, we will provide adequate shoring to prevent the collapse of the excavation or any structures adjoining or over the areas to be excavated. Hydro-excavation or hand digging will be used when we are within 5 feet/1.5 meters of a known utility.

10.1.11 Working in confined space

All persons entering confined spaces will be trained and certified by an accredited body before work commences. Emergency response provisions will be made available before work commencement. Plans for entering confined spaces will be documented with the proper risk and hazard controls in place. We will comply with site Operational procedure expectations and processes.

10.1.12 Environmental Management

Jan De Nul ensures that all applicable local and, if applicable, federal environmental permits are obtained in a timely manner to ensure legal compliance. All documents, including approval information and any waiver conditions, are made available to the Client as soon as possible. Jan De Nul confirms the site waste management arrangements and the applicable site operating permit conditions with Client. Additionally, Jan De Nul ensures that all documents, records, reports, updates, and logs of inspections or permit conditions are maintained and shared with the Client, and that all relevant documents are handed over upon substantial completion.

Notifications required by environmental legislation are always submitted using form JDN.SF.08.13. For the three Belgian regions (Flemish, Walloon, and Brussels Capital Region), a specific checklist has been established according to the prevailing regional legislation. The application for the environmental permit/notification for the site is made using the completed "checklist environmental permit/notification" form. This checklist template is attached but has not yet been filled in at this stage of the tender.

During the preparation phase, Jan De Nul lists various activities with (potential) environmental impacts and verifies them with the Client to check whether these activities are already included in the Client's ongoing permits. Notifications regarding regional environmental legislation are based, among other things, on the site layout plan. Any potential permit requests are submitted according to the Client's expectations and procedures. A copy of the notification and the confirmation from the competent public authority, if applicable, is made available at the construction site.

10.1.12.1 Waste management

As a general principle, waste generation on-site should be avoided as much as possible. If a waste flow is unavoidable, efforts are made to minimize it. During project execution, waste management will be organized as follows:

1. The installation and follow-up of the necessary waste containers is included in the scope of the GBL7A contractor for the following waste fractions: Household waste (PMD and residual waste), paper & cardboard, metal, wood, mixed construction waste, chemical and hazardous waste. Other specific waste containers to be determined if applicable.
2. A contractual arrangement for the collection and disposal of waste by subcontractors.
3. A licensed specialized company is used for waste collection and processing. It is the responsibility of this company to submit the corresponding certificates to Jan De Nul.
4. A waste substances register is kept on the project site. The administrative file of the specialized company responsible for waste collection and processing can be used for this.

Waste Reduction Principles

1. We must all endeavour to reduce waste during our day-to-day activities.
2. Eliminate waste at source.
3. Waste must be segregated into separate skips/receptacles according to waste type, with no mixing of waste streams or littering on site.
4. No burning of building materials on-site. Everyone is responsible for keeping their own work areas tidy.
5. Reduce waste during our activities.
6. Reuse materials and products where they are valued.
7. Favor the use of materials that have recycled content.
8. Use waste management companies that recover energy from waste as a last resort before disposal.

10.1.12.2 Limitation of waste

On this site, the following measures can be applied to limit the production of waste:

Management strategy	Definition	Waste type	Waste reduction plan
Waste avoidance	Avoiding unnecessary consumption	Paper cups and disposable tableware	Tableware in earthenware
		Water bottles	Reusable drinking bottles and water fountains
Waste reduction	Reducing the amount of waste	Paper waste	Double-sided printing
		Paper waste	Electronic document management
Re-use of waste substances	Re-using waste substances without additional production	Ink cartridges	Refillable ink cartridges
		Pallet wood	Maximum return to supplier
		Residual concrete	Using it for the production of building blocks or temporary walkways, etc.
		Residual material	Donating it to local technical schools
Waste recycling	Recycling of waste substances in new products	PMD, paper and cardboard, wood	Recycling by authorised processor
Waste disposal	Removing or incinerating waste is only allowed if no other alternative is possible.		

Furthermore, the one or more of the following project-specific actions can be implemented to minimise and manage waste correctly:

1. Pursuing a paperless office.
2. Printing of documents will be restricted to a minimum.
3. Printed paper will be reused if possible.
4. Reuse of stone rubble for the construction of site tracks.
5. Litter collection campaigns in cooperation with the CSR department

10.1.12.3 Water waste

We will ensure that no discharge occurs into waterways, soil, or ditches. Discharges to surface water or foul drains are only allowed if authorized by the PMC. If applicable, dewatering operations will be performed via a specified drain and must be approved and discussed in advance with the PMC team. Pumps, compressors, and generators will be checked daily for fuel and oil leaks before being used in the morning. If any issues are detected, the supervisor will be informed immediately. Concrete mixers will only be washed in the designated area.

10.1.12.4 Waste of PCM-materials

Before any activities on existing buildings, we will evaluate the potential for generating PCB-laden materials or waste. We will comply with the requirements and directives for handling, storage, transportation, and disposal of PCB waste materials and PCBs still in use.

10.1.12.5 Management of demolition activities

Alle demolition will be evacuated to therefore placed storage units or being placed inside Jan De Nul's valorisationcentra.

10.1.12.6 Control of hazardous products (fuel & oil)

The Safety Data Sheets (SDS) of hazardous products provided by Jan De Nul are available through the internal article catalogue. Subcontractors are responsible themselves for making available the SDS of the hazardous products that they use on site. All chemicals shall be segregated appropriately, labeled, stored in the proper manner and inspected as required.

At the start of work involving hazardous materials, the site team will provide an explanation using a toolbox on the proper handling of these products and what to do in case of a spill. Spill kits will be available, containing the appropriate absorbent materials on every COSSH unit.

10.1.12.7 Noise and vibrations

Noise from sources, unless exempt pursuant to standard/directive, will not exceed the noise limits set forth in their zoning areas indicated during the attendant time of day. The maximum permissible noise shall be that associated with the zoning classification of the property that receives the noise.

Any noise measurements/monitoring/surveys made to determine compliance with the local standards shall be taken at the required distance from the noise source(s).

Hearing protection will be provided and must be worn when the noise level exceeds 85 dB.

10.1.12.8 Air quality

We will adhere to the requirements/directives in accordance with the Operating Facilities air emission permits before construction scope activities start. We will meet with the Client to discuss air emission permit conditions that the construction activities may impact and identify a staff resource to collect the needed permit condition data and coordinate back to the Client.

In general, our company focusses on Energy and Emission via different standards and labels like the Science Based Targets-initiative (SBTi), CO_2 Performance Ladder, ISO 14001, etc. In general, when investing in machinery, real estate or energy contracts efforts are made to phase out fossil fuel and invest in green energy.

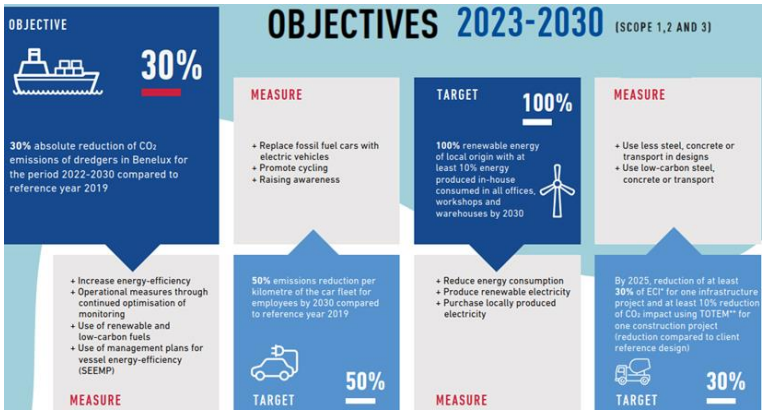
Company targets of general CO2e- emission reduction

Jan De Nul joined the Science Based Targets initiative (SBTi), through which we defined our climate ambitions and actions and have them validated. Jan De Nul has aligned its climate mitigation targets with the Paris Agreements and to what is necessary according to science. To reach this objective, we have set interim Science Based Targets across all scopes and in line with the criteria of the Science Based Targets initiative (SBTi). SBTi brings together a team of experts to provide companies such as Jan De Nul with independent assessment and validation of targets.

Jan De Nul commits to reduce greenhouse gas emissions across Scopes 1, 2 by 40 % by 2035, compared to the 2019 base year. This absolute target is company-wide and covers 100% of both our scope 1 and 2. Jan De Nul also commits to reduce absolute scope 3 greenhouse emissions from purchased goods and services, fuel and energy related activities 20% within the same timeframe. We have included biogenic emissions within the target boundaries, as we use renewable and low carbon fuels such as biodiesel and (bio)methanol to reduce our greenhouse gas emissions.

CO²-Performance Ladder

For our activities in the Benelux, we have set additional targets on top of our group targets to sharpen our ambition and score as high as possible within the CO_2-performance ladder framework. Since 2020 we achieved the highest level (level 5) on the CO_2-performance ladder, for which we yearly audit our carbon footprint according to internationally recognized standards such as the Greenhouse Gas Protocol and ISO 14064 by a third party.



Pollution targets

For pollutants other than GHG emissions, such as NO_x and PM, we want to deploy at least 75% ULEm machines in the Benelux by 2030. This means that 75% of our heavy equipment should be suitable to operate under the strictest emission standards (Stage IV & V). Annex 7 (Technical Specifications Heavy Equipment) provides an inventory of the heavy equipment fleet within Jan De Nul and separately indicates the number of machines in the fleet that are ULEm.

Emission monitoring & calculation

To track our progress, we closely monitor our carbon footprint and have it verified in accordance with ISO14064 on a yearly basis. Jan De Nul performs a variety of activities, across various divisions:

1. Civil works
2. Dredging works
3. Offshore works
4. Environ
5. mental works
6. Project development

In 2023, almost half of our Benelux emissions resulted from dredging works (46%), followed by civil works (29%), general emissions including the energy supply of the offices and company cars (17%) and environmental works (8%). Within civil works, the emissions are mainly caused by deployment of heavy equipment. The insights that our emission calculation and monitoring delivers, and the frameworks we are committed to, enable us to focus on reducing certain emission sources.

Reduction measures

To achieve our predetermined reduction targets, several measures are taken, including:

1. **ULEm**
   Our heavy equipment fleet is being renewed by low emission machines
2. **Renewable fuel for heavy equipment**
   HVO (hydrotreated vegetable oil), a second-generation biofuel, can be used as a substitute for fossil fuel. Second-generation biofuel is made from oils derived from vegetable waste streams, and therefore not from food crops. This type of fuel is sulphur-free and reduces CO2e emissions by as much as 90% compared to those generated by fossil fuels (TNO 2023, Sustainability and applicability of biodiesel for sea vessels, R10862V2). This sustainable variant also releases significantly less particulate matter into the air, as it burns more efficiently than conventional diesel.
3. **Electrification**
   We invest in electrifying our heavy equipment to maximize emission and pollution reduction. The past years we have been investing in, amongst others, hybrid bulldozers (Caterpillar D6 XE) and a telehandler with electric battery (Sennebogen 653E).
4. **Renewable electricity**

Jan De Nul nv has reached the target to have minimum 100% green electricity provision for all its offices, warehouses and workshops in the Benelux in 2023. Renewable locally produced energy is either purchased from energy providers or generated by solar PV installations owned by Jan De Nul.

10.1.12.9 Discharging of wastewater

The project-specific requirements concerning wastewater - in addition to the local legislation - will be communicated by the Client to the contractor when applicable.

10.1.12.10 Prevention of soil pollution

Jan De Nul acknowledges that oil or fuel spills may have a severe negative environmental impact if not handled carefully. The aim is to avoid causing spills by performing all activities according to international good practice. The basic principles for preventing oil spills consist of 3 components:

1. Prevention of spills
2. Limiting the volume of potential spills
3. Containment of spills (the necessary resources are always available on the site) (spill kits)

10.1.12.11 Environmental monitoring

We refer in this regard to the checklist environmental permit/notification (consult § 8.1.3).

10.1.12.12 Asbestos

No demolition of buildings will be carried out. If asbestos is identified, this will be communicated to the Client, and appropriate measures will be taken.

10.1.12.13 Wildlife

We will ensure that if any wildlife is discovered on-site, it will not be disturbed, as wildlife is protected by law. Additionally, no trees, shrubs, or plants will be destroyed on-site without the Client's approval.

10.1.13 Social Management

10.1.13.1 Relationships with local communities

All communication on the impact to or from external stakeholders and CSR-topics are covered by the Client as described in 7.3.4. External Communication and 7.3.5 Media and Public Relations. Jan De Nul will immediately notify the Client should they receive any complaints or enquiries. This notification will be communicated via the 24-hour emergency contact provided by the Client. If necessary, additional measures are taken in consultation with the Client.

10.1.14 Security Management

Jan De Nul will organise and execute the project in such a way that security risks are minimised and employees, environment, assets, information and corporate reputation are protected. The Project Management Team reserves the right to organise searches or adopt stricter security measures in case of gaps in site security. The need for security personnel (e.g. at the entrance or at fencing around the site) has been examined and is mainly covered by the Client. Police contact details are included in the emergency response instruction cards.

1. Security measures implemented for this site, by the Client or Jan De Nul:
2. Access control
3. Fencing/enclosure
4. Alarm system
5. Lighting to all hoarding elevations
6. Checking and maintenance regime to be implemented
7. 24hr security

The main fencing will not be removed before Securitas and client have confirm that secondary fencing has been placed and approved.

10.1.15 Management of work schedules / planning

The general basic planning is drawn up digitally by the Project Manager in consultation with the Site Supervisor and the Client. This initial planning together with its subsequent history is included in the site file under the responsibility of the Project Manager and forms part of the quality records.

10.2 Design and development of products and services

We refer in this regard to JDN.QP.09.01 Process control: Formwork, and JDN.PR.0015 Project Execution. In this project, Jan De Nul has a design responsibility for the temporary works during execution (e.g. formwork) and can provide design assistance (in the form of design proposals) where described in the design responsibility matrix.

10.3 Control of externally supplied products and services / subcontractors and suppliers

10.3.1 General information

On the construction site, several general measures are required to safeguard the employees' safety to the maximum extent possible and to prevent accidents. It is the task of the site supervisor to pass on the internal HSE rules of the company to his own employees and subcontractors and to make sure these rules are observed by them. In the subcontracting agreement, the responsibilities as to health, safety and environment issues must be clearly described. It is the task of the Project Manager to make sure this is done and to consult to this purpose with Jan De Nul’s legal division.

Prior to the start of the works assigned to a subcontractor, the latter will be informed about the existence of this Project Execution Plan, the applicable construction site regulations, the construction site regulations of the Client (if applicable) and other HSE plans of subcontractors, if any. Apart from and in accordance with this Project Execution Plan, the subcontractor will draw up an HSE file itself for the works assigned to it and submit it to the coordinator for the execution and/or design or, for lack of such person, to the Client. The subcontractor will draw up this HSE file according to the template for the HSE file, i.e. JDN.SF.04.06, or an equivalent document. The subcontractor must submit this file to Jan De Nul prior to the start of its works, which will, if applicable, pass it on to the coordinator for the design and/or execution or, if not applicable, will keep it for preventative measures.

In this file, the subcontractor must establish the following in writing:

1. The persons responsible for the execution of the on-site works, the environment and for on-site safety as well as the contact data of the prevention advisor.
2. The sequence of the activities together with an execution schedule or a timing schedule for drawing up the design, as the case may be.
3. The equipment / techniques used.
4. Potential risks, environmental effects (including legal obligations) connected to its works and for which the subcontractor as expert is best placed to identify and assess them.
5. The protective measures to be taken by the subcontractor against the risks listed by it. For all equipment subject to inspection deployed by the subcontractor on the site, the subcontractor must forthwith submit the inspection certificates to Jan De Nul's site management (see FORM JDN.SF.04.03 – Survey of periodical inspections, enclosed as annex). These are filed by Jan De Nul's site management in an HSE file that is kept on site.

10.3.2 Type and scope of external supplies/subcontractors and suppliers

For this project, the (principal) suppliers/subcontractors must be approved by the Client:

YES ☒ **NO** ☐

Specific attention is given to the follow-up of suppliers on this project. Suppliers should fill in a specific delivery form made available by the Client to inform all suppliers coming to or from the construction site. Subcontractors and suppliers should be verified by the Client after a request and approval flow. Suppliers should give a notice at least 24 hours in advance and provide information on the driver, truck plate number, date, type of transport and goods, method of unloading. Drivers who will leave their truck after entering the construction site should follow the same induction protocol similar to all new employees on the site.

10.3.3 Purchasing

In this context, we refer to JDN.QP.06.04 Purchasing – National Division: Specifications-related products, and JDN.PR.018 Purchasing.

10.4 Emergency response

10.4.1 General information

Regarding the emergency preparedness and response, the system of the Client should be followed as described in the EHS-documentation. All accidents / incidents that occurred on site, including those that occurred to subcontractor or visitors will be recorded. The Client will be informed by sending a notification as soon as possible following the timeframes of the Client (§8.7.2). This will be the case for different kinds of accidents and/or dangerous occurrences like a (potential) lost-time accident, damages, spills, etc. or near-miss safety event, etc. A specific phone number for emergencies will be defined in consultation with the Client. A list of emergency phone numbers is posted in the site shed. During the site introduction session, the emergency response procedure is explained.

10.4.2 Control of injuries

10.4.2.1 Minor accident (first aid or medical treatment)

After having consulted the first aider or site management, the injured person will be either attended to on site or be transferred to a doctor or hospital for further treatment, if needed.

10.4.2.2 Serious accident / Environmental incident

The nearest emergency services of Mons (Saint-Ghislain), the site management, the project manager, the QHSSE Advisor, the Client, Security (Securitas) and the coordinator for the execution are immediately informed.

If needed, site management arranges for someone to wait for the emergency services at the entrance of the construction site. Awaiting the intervention from the emergency services, the place where the injured person is located is made free and accessible. Also, a project-specific emergency data sheet with all addresses and phone numbers of emergency services is drawn up.

10.4.2.3 Reporting of accidents, incidents and near-misses

If a minor accident (first aid or medical treatment) requires treatment to the extent that it must be reported to the insurance company, it is reported in Intelex or through the accident report form. If it concerns first aid at the workplace itself and work is resumed immediately, it is registered in the on-site first aid register.

Other incidents with consequences (insurance claims, environmental damage, loss of production, sickness...) are always reported in Intelex or through the accident report form. This also applies to near misses for which immediate analysis has shown that the consequences (injuries, damage...) could have been very serious. A copy of all accident report forms is kept in the HSE file. Accidents, if any, are also discussed during work meetings.

10.4.2.4 Incident Notifying to the Client

The QHSSE Advisor will notify the Client as soon as possible and within following timeline:

1. Near misses	*Within 4 hours of occurrence*
2. First aid injuries	*Within 4 hours of occurrence*
3. Injury requiring medical treatment beyond first aid	*Within one hour from occurrence*
4. Injury which results in days away from work, or lost time	*Within one hour from occurrence*
5. Environmental releases or incidents	*Within one hour of occurrence*
6. Fatality or multiple hospitalizations	*Immediately upon occurrence*
7. Property damage	*Within one hour of occurrence*
8. Injury or damage to the public properties	*Immediately upon occurrence*

10.4.2.5 Incident registration

All incidents will be registered in the site-specific incident book:

1. Date
2. Type of incident
3. Person involved
4. Damage of incident
5. Hospital visits or not
6. Brief summary

A monthly overview of all incidents is provided to the Client. All incidents can be presented to all relevant parties upon request.

10.4.2.6 Incident investigation

For all injuries requiring more than first aid, a root cause analysis will be made by the local QHSSE Advisor. This will be submitted within two workdays.

10.4.2.7 Other emergency response situations (fire, leaks, injury...)

Each fire, environmental or injury incident must be reported to the project manager and QHSSE Advisor, regardless of its seriousness.

Each start of a fire is reported to the competent fire brigade as indicated in the list of emergency services. For reporting to the QHSSE Advisor, the accident report form (see above) or Intelex may be used as well.

10.4.2.8 Fire and evacuation plans/checklists

In the event of a fire or evacuation, everyone must assemble at the site management shed (assembly point). At this location, the instructions of site management and/or emergency services will be given to the employees.

A general evacuation plan, based on the site layout will be drawn up in consultation with the Client. Specific more detailed evacuation plans for e.g. the temporary sheds or shell construction phase of the buildings under construction to be established when relevant.

11 Evaluation of performances

11.1 Monitoring, measuring, analysing and assessing

11.1.1 Inspections and tests

As described in 8.1.1 Quality Management the template for an inspection and test plan is enclosed as annex.

11.1.2 Workplace inspection

The site management and QHSSE Advisor inspect the construction site on a regular basis. The items that are inspected include:

- Order and neatness
- QHSSE awareness
- Application of project regulations
- Good practice
- Compliance with project requirements
- Etc.

All requirements and frequency are established in the internal Leadership Matrix and the Client's expectation on safety rounds and meetings as described in 7.3.4 External communication.

11.1.3 Management inspection

We refer in this regard to § 7.3.2 Safety Focus Days. Each quarter, The management of Jan De Nul visits the site together with the QHSSE Advisor to discuss a number of pre-determined safety topics and engage in a dialogue regarding these matters.

11.1.4 Inspection of equipment

We refer in this regard to JDN.SF.04.03 Overview of periodic inspections.

Equipment	Frequency	Person responsible
Heavy equipment	Daily	Operator
Electric devices/handheld power tools	Yearly	Electrician – qualified person
Fire extinguishers	Yearly	Third party
Life jackets	Yearly	Third party
Lifting equipment and slinging gear	3-monthly Yearly	Third party Third party

All Powered Industrial Trucks (PIT) and Powered Industrial Vehicles (PIV) will be inspected according to the manufacturer's specifications for safe use before operation, and documentation of the inspections will be recorded and maintained. Operators will be trained and certified before using the vehicles. In highly congested areas, spotters will be utilized.

11.1.5 Client satisfaction

We refer in this regard to JDN.PR.0020 Feedback.

11.2 (Internal) Audits

We refer in this regard to procedure JDN.QP.17.01 Internal Audits, and JDN.PR.0022 Internal Audits. A weekly internal safety audit will be conducted by the local QHSSE Advisor. This will involve a walkthrough during which the safety status on the site will be assessed using a checklist. This includes:

- Personal protective equipment
- Emergency planning
- Condition of machinery
- COSHH (Control of Substances Hazardous to Health)
- Environmental aspects
- Etc.

12 Improvement

12.1 General information

Jan De Nul will capture, collect and analyse the relevant data to demonstrate the suitability and effectiveness of the Project Management System to identify actions to improve the system.

12.2 Deviations and corrective measures

Jan De Nul is committed to continuously improving its quality, safety, health, security and environmental performance by actively addressing opportunities for improvement that emerge from QHSSE system reviews, audits and other sources of internal and external feedback. These opportunities for improvement are systematically assessed so that, if needed, effective measures can be taken to avoid any deviations from the pre-set objectives.

12.2.1 Non-conformity of the system / areas for improvement

We refer in this regard to JDN.QP.13.01 Findings Management and JDN.PR.0024 Improvements.

12.2.2 Management of incidents

For recording and monitoring incidents, the Intelex software of Jan De Nul is used. Every incident, accident and near-miss must be reported. The project manager and the QHSSE Advisor must ensure that every medium- or high-risk incident is investigated, that appropriate measures are taken to avoid recurrence and that the risk and impact register is adjusted if necessary.

Public authority to be notified in the event of a reportable incident is ‘Contrôle du bien-être au travail - Direction du Hainaut’ by sending an e-mail to *cbe.hainaut@emploi.belgique.be*.

12.3 Continuous improvement

A register of lessons learned/good practices will be kept, and this will be discussed during the close-out meeting.

13 Annexes

13.1 Overview

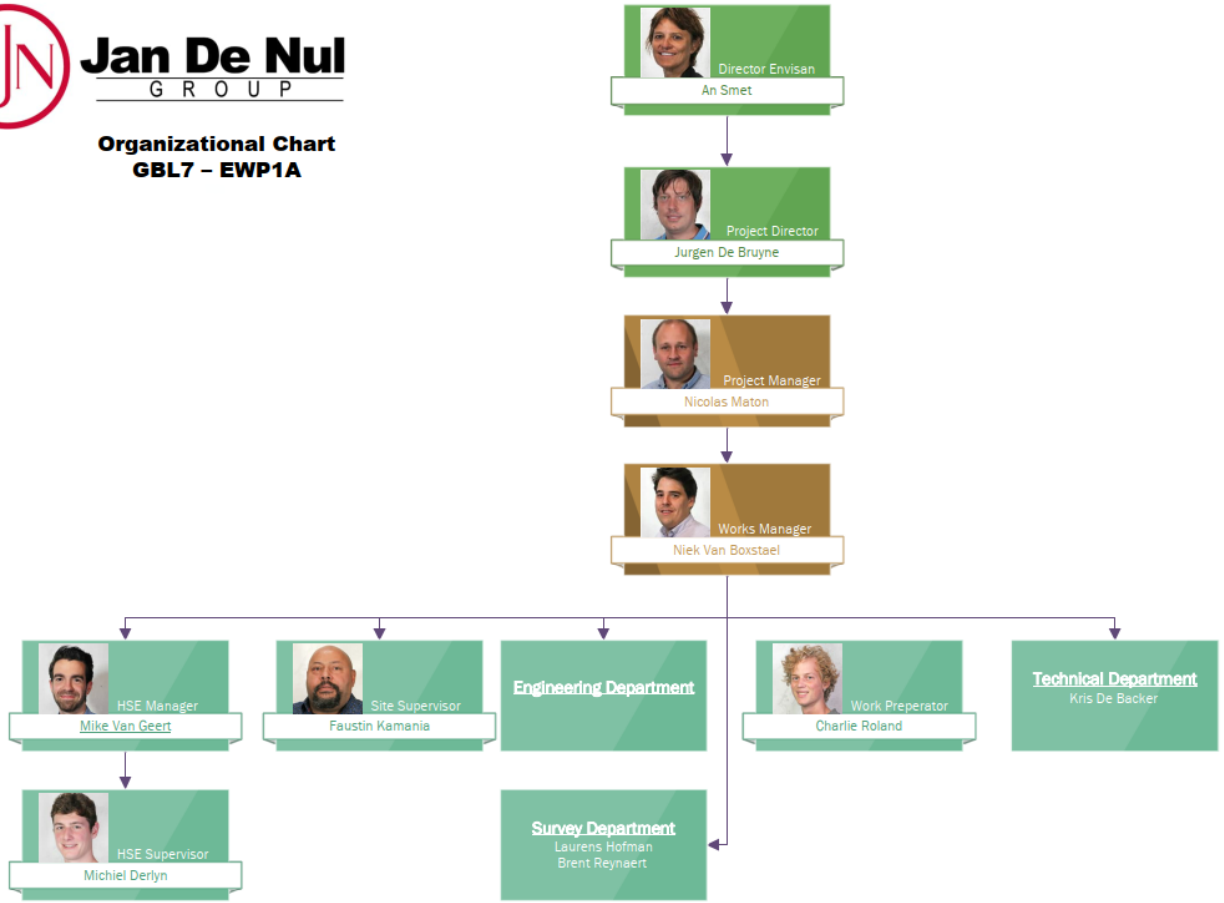
Most recent revision of:

1. Annex A
   JDN.QF.01.04 - Project Organisation Chart BESGRE24.227
2. Annex B
   JDN-LFL-0002-en-00.00 QHSSE Policy
3. Annex C
   JDN.SF.01.08.A. – Leadership Matrix Civil – Envisan
4. Annex D
   JDN. BESGRE24.227 - Risk and impact Register
5. Annex E
   Winter Plan BESGRE24.227
6. Annex F
   Site layout plan - BESGRE24.227 -JDN-CIV-LAY-0001-00.05-Proposal layout
7. Annex G
   JDN.SF.04.05.C - Instructions for subcontractors in connection with QHSSE – Civil Works Benelux
8. Annex H
   JDN.SF.04.03 - Overview of periodic inspections
9. Annex I
   JDN.BESGRE24.227 – List of emergency phone numbers of emergency services & relevant contact persons
10. Annex J
    JDN.QF.10.01 - Approval of materials
11. Annex K
    S-0353.e.00-Order and tidiness on the building site

Annex A: JDN.QF.01.04 - Project Organisation Chart BESGRE24.227

Jan De Nul GROUP

Organizational Chart
GBL7 – EWP1A



Annex B: JDN-LFL-0002-en-00.00 QHSSE Policy

QHSSE POLICY STATEMENT

LEAFLET

Objectives

This policy guides the implementation of our integrated management system. It is the onset for the company processes and objectives, and functions as the foundation of our management system. In line with our vision, mission and values, taking into account the interests of our stakeholders, we focus on the following aspects:

Social: We provide a safe and secure environment for all persons working with or for us or on our behalf. We will implement all necessary measures to prevent work-related injuries and ill health. We care for human rights and wellbeing. We invest strongly in learning and innovation.

Information security: We ensure the security of information related to our datacentres through the implementation and strict adherence to international security standards and practices.

Environment: As a company, we are committed to preventing harm to the environment, avoiding pollution and drastically reducing our impact on the climate, as well as to fostering the circular economy.

Stakeholders: Through advanced capabilities, strong commitment & business ethics, we strive to be the partner of choice for clients and partners. We collaborate with our suppliers, subcontractors and other stakeholders. We expect our suppliers and subcontractors to operate in line with the policies we set ourselves. We assist them to achieve our standards.

Our organisation: We embed the above in our governance and strategy - allowing us to pursue continual improvement and sustainable growth.

Commitments

We **invest in people** to strengthen organisational capability and develop a committed, talented, healthy and environmentally aware workforce. Guided by our ambition, "Safety Always For Everyone", safety is deeply embedded in everything we do, in our technology, management system and culture.

We operate to the principal standards of vigilance, embedding **(information) security** in our daily operations. We ensure cyber-attack preparedness through proactive measures, continuous monitoring, high standards for third parties, employee training, and reducing system vulnerabilities.

We come up with tangible initiatives and solutions to execute our projects in a sustainable manner to **achieve environmental integrity** whilst **limiting our ecological footprint.**

We **meet and endeavour to exceed requirements** imposed by contracts, company and industry standards for high quality workmanship, applicable local, national, international and maritime laws and regulations.

We uphold execution excellence through **proactive and accountable leadership.**

We provide the necessary means, training and a user-friendly **management system** to achieve our vision.

We increase **risk awareness** through a better understanding of risks, placing emphasis on significant risks and ensuring that all strategic and operational risks are properly identified, assessed and mitigated.

We share **lessons learnt** and promote safety as being the result of **operational control** while making sure that project requirements are fully met through excellent **quality control.**

We are constantly contributing to a **safe and sustainable world** through a strategy that is informed by our stakeholders and through data-driven goals and actions which are implemented via our company wide governance and the role of our management bodies.

December 2024
Jan De Nul Group (Sofidra S.A.)
Director,
Ir. JPJ De Nul




JDN I LFL I 0002 I en I 01.00 I QHSSE department

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Annex C: JDN.SF.01.08.A. – Leadership Matrix Civil – Envisan

Focus	Activity	Registration	Target leadership	Site Manager/ Works Manager	QHSSE Advisor (permanently assigned to the site)	QHSSE Advisor (not permanently assigned to the site)	Project Manager	Manager Operations & Production Managers	Department Heads	Division heads
Work preparation / Reception	Kick-off meeting	JDN.QF.03.06	Discuss the scope of the project, pay enough attention to the project-specific risks and preventive measures	Take part	Take part	Take part	Organise, prepare and take part	Take part	Take part	Take part or review report
	Drafting QHSSE plan (incl. project-specific risk inventory and assessment (RIA))	JDN.PQM.01.05	Inventory of project-related risks and establish appropriate preventive measures	Provide input	Drafting QHSSE plan	Drafting QHSSE plan	Provide input			
	Drafting specific method statements / task risk assessments (TRA)	JDN.SF.08.28	Prepare high-risk activities in detail, determine the necessary equipment and measures	Implementation procedure / Draw up TRA	Provide advice for all procedures	Provide advice at the site's request	Establish and monitor needs	Establish and monitor needs		
	Reception of workers on the construction site (project induction)	P-CARD / JDN.SF.03.03	Inform workers arriving on site about guidelines that are applicable on the construction site	Systematic organising for all workers	Systematic organising for all workers	Follow-up	Follow-up			
Project implementation	Safety tour on site*	LetsBuild	Check that works can be performed safely in accordance with agreements made and correct / challenge when necessary	Monthly (1 registration pp)	Monthly	Monthly	Monthly			
	Organising toolbox meeting*	JDN.SF.10.01 / LetsBuild	Discuss a pertinent safety subject and give clear instructions to staff on site about it	Monthly (1 registration pp)	Monthly	Quarterly	Half-yearly			
	QHSSE consultation on site*	LetsBuild	Discuss current and future high-risk activities, establish measures and make agreements on follow-up	Monthly	Monthly	Monthly	Monthly			
	Safety Focus Day (JDN/ENV) / Lightning Action (AOS) on site*	LetsBuild	Discuss a relevant critical operation / subject with managers, assess the situation on site and make further agreements	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
Lessons learnt	Report all incidents in iRep and further monitor the dossier	iRep	Process each incident as an opportunity for learning, investigate the circumstances, take corrective and preventive actions	Report in iRep within 24h, take the lead on green incidents	Assist with and monitor reporting quality, investigate	Assist with and monitor reporting quality, investigate	Assess reports, take the lead on yellow incidents	Assess reports, take the lead on red incidents	Assess reports, follow-up yellow/red incidents	Assess reports, follow-up red incidents
	Share lessons learnt from incidents – Discuss the Incident Bulletins on site during a toolbox meeting	JDN.SF.10.01 / LetsBuild	Openly discuss errors and hazardous situations, focus on how they can be prevented	All	All	Follow-up and support if necessary	Follow-up			
	Close-out meeting	JDN.QF.03.06	Discuss the course of the completed project, make sure to pay enough attention to the lessons learnt, both positive and negative	Take part	Take part	Take part	Organise, prepare and take part	Take part	Take part	Take part or review report

(*): Key Performance Indicator (KPI)

Annex D: JDN. BESGRE24.227 - Risk and impact Register

Risk and Impact Register

Eliminate | Substitute | Design verification | Administrative verification | PPE | Reaction & Recovery

E = Seriousness K= Probability Ma = Equipment
Me = People Re = Reputation R = Risk

No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking E	K	R	Risk-mitigating measures	Residual risk E	K	R	Legislative register	Reference documents
1	General											
1.1	Site layout and preparation											
	General	Tripping and falling	Me	3	D	12	- Sufficient lighting - Keep walkways clear - Tie cables together and remove them from walkways	2	C	6		
	Office shed	Injury caused by incorrect posture	Me	3	D	12	- Ergonomic examination by occupational physician - Bring maximum variety into the job	2	C	6		
		Non-hygienic environment	Me	3	C	9	- Weekly cleaning of shed	2	C	6		
		Risk of diseases	Me	3	C	9	- Ensure good personal hygiene (washing of hands) - Avoid contaminating colleagues by taking the necessary measures in time	2	C	6		
		Poor indoor climate in sheds	Me	3	C	9	- The temperature in the sheds is tailored to the specific destination - Equipped with air conditioning (incl. maintenance) - Possibility of controlling the temperature in the shed	2	C	6		
	Shed for workers	Non-hygienic environment	Me	3	C	9	- Weekly cleaning of shed	2	C	6		
		Risk of diseases	Me	3	C	9	- Ensure good personal hygiene (washing of hands) - Avoid contaminating colleagues by taking the necessary measures in time	2	C	6		
		Poor indoor climate in sheds	Me	3	C	9	- The temperature in the sheds is tailored to the specific destination - Equipped with air conditioning (incl. maintenance) - Possibility of controlling the temperature in the shed	2	C	6		
	Materials container	Tripping and falling due to poor housekeeping	Me	3	C	9	- Good housekeeping - Provide for sufficient storage capacity	2	C	6		
	Sanitary facilities	Non-hygienic environment	Me	3	C	9	- Weekly cleaning of shed	2	A	6		
1.2	Communication											
	Communication	Faults due to lack of good communication	Me	3	D	12	- If unclear, check again whether the message was understood correctly - Provide for sufficient auxiliary tools to communicate quickly and efficiently	1	D	4		
		Lack of clarity due to language barriers	Me	3	D	12	- If unclear, check again whether the message was understood correctly - At least one person of subcontractor must be present on site who can speak English, Dutch or French (contractually agreed) - Universal instruction cards/toolboxes (language-independent) are provided	1	D	4		
1.3	Personal protective equipment											
	PPE obligation	Non-observation of PPE obligation	Me	3	D	12	- Clearly indicate the PPE obligation at the site entrances - Monitor compliance with on-site PPE obligations (safety shoes, helmet, fluorescent jacket, hearing protection...)	2	D	8		- S-0111: Feet protection - S-0196: Use of earplugs
1.4	Traffic/transport											
1.4.1	Public road											
	(Company) vehicle	Traffic accident	Me	5	C	15	- Adapted driving: respect speed limits - Respect the traffic rules - Do not eat or drink while driving - Use hand-free kit for mobile phone - Adjust driving style according to weather conditions, road surface and traffic density - Use seat belts - Never overload vehicles - Have company vehicles periodically checked by the garage - Drivers in regular transport must have a medical clearance (category 2 driving licence)	3	B	6		
		Accident on public road due to intoxication (alcohol, medication, drugs...)	Me	5	C	15	- Ban on alcohol - Mandatory reporting when using medication that affects driving and no driving when under the influence of medication that affects driving - General ban on smoking in company cars	4	C	12		
		Accidents due to transport of material	Me	4	C	12	- Do not transport material in non-dedicated vehicles - Transport large materials using correct means of transport	3	B	6		
		Material or physical damage to employee and/or third parties	Me, Ma	4	C	12	- Use hands-free set for mobile phone conversations - Adjust driving behaviour to weather conditions, road surface and traffic density - Use safety belts - Never overload vehicles - Respect speed limits - Have vehicle periodically checked	2	C	6		
		Damage to (company) vehicle	Me, Ma	4	C	12	- Do not eat or drink while driving - Use hands-free set for phone conversations - Never overload vehicles - Have company vehicles periodically checked by the garage	2	C	6		
	Truck	Loss of cargo on public road (incorrect securing of cargo, damage to products to be transported)	Me	4	C	12	- Driver must hold driving licence C - Professional competence training (35 hours/5 years) - Driver must have completed cargo security training - Use of certified headboard, lashing brackets, tie-down devices, standardised lashing straps...	3	B	6		
		Overloading of truck and/or trailer	Me, Ma	4	C	12	- Never overload truck and/or trailer - Check the axle load (prior to departure) by reading the pressure on the axle (maximum 10 tonnes/axle)	3	B	6		
1.4.2	On-site transport											
	General	Collision with pedestrians upon entering or leaving the site	Me	5	C	15	- Provide for clear signage at site entrances - Provide for clear prohibition signs “Do not enter the site” - Respect the maximum speed - Place fencing all around the site to prevent access from the public road - Respect the traffic regulations - Coordination of transport by site management/transport supervisor - Trucks must be equipped with blind spot mirror or equivalent safety device - Internal site circulation plan with marked storage area and interaction between on-site traffic and vulnerable road users	4	B	8		- S-0020: Construction site within public domain

Risk and Impact Register

Eliminate | Substitute | Design verification | Administrative verification | PPE | Reaction & Recovery

E = Seriousness K= Probability Ma = Equipment
Me = People Re = Reputation R = Risk

No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking E	K	R	Risk-mitigating measures	Residual risk E	K	R	Legislative register	Reference documents
		Collisions between pedestrians with vehicles on the site	Me, Ma	5	C	15	- Seperate walkways are defined to seperate pedestrians from moving vehicles in main passageways. These are physically borderd and provided with the necessary signage. - Only authorized and instructed personnel can access to (part of) the work site where they have to execute their activities. - Respect maximum speed. Adjust the speed to the circumstances. - Follow site layout plan - Wear fluorescent jacket - Make eye contact with drivers when approaching vehicles. - All personnel should be fully aware of their surrounding and the circumstances.	3	C	9		- JDN.INSTR.2015: Vehicle movements and Onshore traffic management
	Manual unloading of truck	Objects falling down	Me	3	C	9	- Use technical auxiliary equipment if loads are too heavy (vehicle-mounted crane,. lifting equipment...)	3	B	6		
		Contracting injuries due to incorrect lifting technique or too heavy loads	Me	3	C	9	- Apply correct lifting techniques - Lift loads that are too heavy (>25 kg per person) with auxiliary tools (power arm lift...) - Assess the object to be lifted (size, shape, weight, best spots to hold it...)	3	B	6		
1.5	Fire											
	Fire-fighting water	Polluted fire-fighting water when extinguishing a fire	Mi	4	B	8	- Containment of fire-fighting water with absorbent material - Contact the emergency services	3	B	6		
	Emergency planning	Fire on the site	Me, Ma	5	B	10	- Sufficient number of fire extinguishers that have been properly identified. The fire extinguishers must be inspected annually and be accessible at all times - Display sheet with emergency telephone numbers - Ban on smoking in social facilities - Hang up evacuation plans after the structural works phase - Carry out grinding and torch cutting works at a suitable location - Avoid leaving waste (fire hazard) on site	3	B	6		- S-0091: Extinguishing fires
		No first aider or first aid material available	Me	3	C	9	- At the very least, first aid material (basic first aid kit, complementary first aid kit, stretcher according to emergency response plan or specific HSE plan) must be available on all construction and project sites. - A first aider must be present on sites as from +/- 20 employees.	2	C	6		
		No possibility to evacuate the site area	Me	3	C	9	- Good housekeeping	2	C	6		
1.6	Environment											
	Waste	Incorrect collection and recycling of waste	Mi	3	D	12	- Pursue maximum collection and recycling in line with the sorting obligations - Provide for different waste containers/big bags for the different materials, depending on the specific on-site activities - Give instructions to personnel	1	D	4		
		Pollution of construction site and adjacent environment on account of generated waste	Mi	2	E	10	- Placement of waste containers in well-considered areas and according to layout plan - Waste sorting - Disposal using certified processors - Contractual agreement with supplier to take back waste - Clear instructions to employees and subcontractors regarding waste collection	1	D	4		
		Illegal dumping by third parties	Mi	2	C	6	- Good lighting - Close off the site - Close off dangerous openings	1	B	2		
	Air	Dust emissions	Me, Mi	4	A	12	- Shielding the area using cloths/tarpaulins - Nebulisation of the area - Use equipment fitted with dust extraction	2	B	4		
	Wastewater	Discharging of wastewater	Mi	3	C	9	- Apply for an environmental permit and, if necessary, request permission from the site operator	2	C	6		
		Accidental discharges (hydraulics...) into surface water	Mi	4	C	12	- Regular maintenance and inspection of machines and piping - Apply good practice when filling tanks: not close to water - The necessary absorption material for use on water must be available on site	3	B	6		
	Noise	Noise nuisance	Me	4	C	12	- Work within the pre-set daily hours - Do not idle machines unnecessarily - Install noise barriers where necessary	3	B	6		
		Hearing impairment	Me	4	C	12	- Wearing hearing protection is mandatory as of 85 db(A)	2	C	6		- S-0195: Use of otoplastics - S-0196: Use of earplugs
	Soil	Soil pollution	Mi	4	B	8	- Provide for absorption kit - Store recipients in specific shed equipped with collection bins and drip-trays	2	B	4		
	Hazardous products	Leakage or accidental release of hazardous products on the site	Me, Mi	3	C	9	- Adhere to label instructions - Read the SDS safety sheets - Thoroughly read the risk sentences - Apply the safety sentences - Wear the designated PPE - Place hazardous products in oil barrel depot - Collect empty aerosols in ASP container	2	B	4		- E-0009: Primary actions in case of damaged leaking drums containing hazardous products - E-0019: Use of containers for chemical waste - E-0024: Use of oil barrel depot - S-0109: Hazardous products - 20 golden rules - S-0197: CLP labelling
		Leaking oil and heating oil tanks	Mi	3	D	12	- Equip tanks with drip-trays and install under a roof to prevent the tank from overflowing in rainy weather - Always shut down the valves tightly	2	D	8		- S-0109: Hazardous products - 20 golden rules
		Contamination of environment during handling/ treatment/ processing of hazardous products	Mi	3	C	9	- Ensile (and cover) environmentally harmful products - Provide for pictograms: ban on making fire and ban on smoking - Work permit	2	C	6		- S-0109: Hazardous products - 20 golden rules
1.7	Special categories of employees											
	Pregnant women	Overexertion of pregnant women (stress, fatigue)	Me	3	D	12	- Maternity protection - Discuss with occupational physician which works can and cannot be performed - Provide for a space to rest/a room for expressing milk - Good maternity leave arrangements	2	D	8		
		Exposure to chemical, physical and radiation risks during pregnancy	Me	3	C	9	- Employee informs prevention team - Prevention team informs occupational physician - Employee undergoes medical examination - Occupational physician determines further measures to be taken	2	C	6		
	Temporary personnel	Exposure to risks related to the workplace	Me	3	C	9	- Guided tour around the workplace - Information on safety issues by site manager - Wear PPE - Draw up specific workplace data sheet	2	C	6		

Risk and Impact Register

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No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking E	K	R	Risk-mitigating measures	Residual risk E	K	R	Legislative register	Reference documents
	Trainees/Job students	Exposure to risks related to the workplace	Me	3	D	12	- Draw up specific risk analysis/workplace data sheet before starting tasks - Wear PPE (safety helmet, safety shoes and fluorescent jacket) - Every employee must be given a project introduction - Sufficient supervision is provided	2	C	6		- S-0111: Feet protection - S-0152: Working with (job) students
	Employees employed according to social clause	Exposure to risks related to the workplace	Me	3	C	9	- Make arrangements concerning the tasks to be carried out with the department monitoring these employees - Welcoming them to the site (introduction) - Designate a permanent on-site supervisor (coach)	2	C	6		
	External persons	Entering the site without permission	Me	3	C	9	- Sign-in procedure for entering the site - Wear PPE (safety helmet, safety shoes and fluorescent jacket) - Have external persons at all times accompanied by someone from the company	2	C	6		- S-0111: Feet protection
		Exposure to risks related to the on-site works	Me	3	C	9	- Wear the necessary PPE - Have external persons at all times accompanied by someone from the company - Keep a sufficient distance from the works	2	B	4		- S-0111: Feet protection
1.8	Psychosocial											
	General	High work pressure	Me	3	D	12	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	D	8		
		Emotional strain - stress	Me	3	D	12	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	D	8		
		Aggression and violence at the workplace	Me	4	B	8	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	B	4		
		Bullying	Me	3	C	9	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	C	6		
		Discrimination	Me	3	C	9	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	C	6		
		Lack of variation.	Me	3	C	9	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	C	6		
		Sexual harassment	Me	4	C	12	- Appoint a confidential advisor - Create awareness of psychosocial risks	2	C	6		
2	Work equipment											
2.1	General clauses											
	Use	Accident due to non-conforming work equipment	Me, Ma	4	D	16	- Commissioning of work equipment - Presence of CE marking - Presence of user manual (Dutch, French and/or English) - Periodic inspection - Follow procedure for purchasing work equipment	2	B	4		
		Wear	Mo	3	D	12	- Inspection of machines - Maintenance programme - Going over checklist before starting works	3	B	6		
2.2	Non-electrical work equipment											
2.2.1	Non-powered work equipment											
	Fuel oil tank	Meter cabinet heavily polluted with heating oil (leaked from spray gun)	Mi	3	C	9	- Equipment holder in accordance with VLAREM - General and limited investigations - Inspection by environmental expert when put into service	2	C	6		
		Falling of load	Ma	4	C	12	- Correct hitching on of fuel tank - Use of approved equipment	3	B	6		
	Oil barrel depot	Leaking oil and heating oil tanks during storage/on site	Mi	3	C	9	- Equip tanks with drip-trays and install under a roof to prevent the tank from overflowing in rainy weather - Always shut down the valves tightly - Install an autonomously resetting pressure valve	2	C	6		- E-0024: Use of oil barrel depot
	Wheelbarrow	Back injury from lifting a wheelbarrow to a higher level	Me	4	C	12	- Use proper auxiliary equipment to hoist the wheelbarrow	2	B	4		
	Ladder	Injuries caused by using a ladder that is not intended for the aimed at application (defective...)	Me	3	D	12	- Use JDN-approved ladders (approval sticker JDN) - Inspect ladders prior to every use	3	C	9		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
		Bending of ladder	Me, Ma	3	D	12	- Never use a ladder horizontally. - Never climb simultaneously with 2 persons on a ladder - Set up ladder correctly	2	C	6		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
		Injuries due to falling or tilting of ladder	Me	3	D	12	- Use slip-resistant ladder shoes on a flat and level surface - Always step on the ladder facing the rungs - The ladder must extend at least 1 metre above the surface to be climbed - Fully enclose the rung with your hand when climbing - Always keep one hand free to hold on while working (three-point rule) - Do not reach further than an arm's length beyond the sides of the ladder - Ladders should always be secured - Position the ladder at the correct angle of inclination	2	C	6		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
		Injuries caused by slipping on the rungs	Me	3	D	12	- Always wear safety shoes with non-slip soles - Clean the rungs - Use a non-slip profile - Avoid mud and oil on the rungs	2	C	6		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
		Fingers/feet get caught while using the ladder	Me	3	D	12	- Always keep your face facing the ladder - One should always stand with both feet on the ladder - Fully enclose the rung with your hand while climbing	2	C	6		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
	Platform ladder	Use of a platform ladder that is not suited for the aimed at application	Me	3	D	12	- Assess prior to executing the task which type of ladder is best suited	2	C	6		
		Injury due to tilting of ladder	Me	3	D	12	- Do not bend over the railing of the platform	3	C	9		
		Injuries caused by slipping on the rungs	Me	3	D	12	- Always wear safety shoes with non-slip soles - Clean the rungs - Use a non-slip profile - Avoid mud and oil on the rungs	2	C	6		- S-0111: Feet protection
		Injuries due to use of damaged or incomplete platform ladder	Me	3	D	12	- Use JDN-approved ladders (approval sticker JDN) - Inspect ladders prior to every use	2	C	6		
		Injuries due to sagging of ladder / platform	Me	3	D	12	- Only take light tools with you on the platform ladder - Never climb simultaneously with 2 persons on the ladder	2	C	6		
		Tripping over tools on platform	Me	2	D	8	- Always keep the platform clear of tools or other objects	2	C	6		
	Cage ladder	Failure to close off access to unauthorised persons	Me	3	D	12	- Provide for signage (prohibited access) - Close off access	2	C	6		
		Falling hazards due to fatigue	Me	3	D	12	- Install resting points at a distance of <6 m. Make provisions so that access to the cage ladder is provided with a platform that can also be used as a resting point	2	C	6		
		Risk of slipping/falling from the rungs	Me	4	D	16	- Use suitable equipment - Attach cage ladder according to the manufacturer's instructions - Cage ladders taller than 10 metres must have staggered rest platforms every 6 metres	3	C	9		

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No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking E	K	R	Risk-mitigating measures	Residual risk E	K	R	Legislative register	Reference documents
	Scaffold	Fall hazard when setting up the scaffold	Me	4	D	16	- Place the scaffold on a stable surface - Install railings, intermediate railings and skirting boards - Close the walkway/work floor - Provide a safe access to the scaffold - The scaffold must be released prior to its use	4	B	8		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Falling / tilting of scaffold (instability)	Me	4	C	12	- Stability calculation for scaffold - Use standardised scaffold - Install railings - Use original parts (lock pins) - Scaffold must be released after its erection and after every alteration - Correct installation of scaffold in relation to the load to be handled	3	B	6		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Collapsing of scaffold while hoisting	Me, Ma	4	C	12	- The different sections of the scaffold are mutually secured. Provide for diagonal bracing on both surfaces. The scaffolding structure is fitted with bracing - The scaffold is fitted with fixed hoisting points - Use a leveller if the hoisting angle is not sufficiently large - Anchor foot rests - Use correct hoisting clamps - The hoisting area is cordoned off - Scaffolds are hitched on by adequately trained employees	3	B	6		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Objects falling while hoisting	Me, Ma	4	C	12	- While hoisting, the work floors are free of loose parts and materials	3	B	6		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Uncontrolled hoisting of scaffold	Me	4	C	12	- The scaffold is fitted with guide ropes during hoisting - Good communication between crane operator and riggers (walkie-talkie, hand-arm signals)	4	B	8		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER - S-0067: Lifting – Hand-arm signals for crane operators - S-0241: Rigger's guide
	Bigbag	Being hit while loading the collection receptacle into a container	Me	3	C	9	- If possible, collect waste directly into a container. If this is not possible, check whether a rubble bin can be used. If site conditions do not allow the use of a rubble bin, bigbags will be used	2	B	4		- E-0028: Sorting on-site waste
		Tearing of bigbag due to the presence of material or objects with sharp edges in it	Me, Ma	4	C	12	- No sharp-edged material should be put in a bigbag - Never go under the load while it is hoisted (no-go zone)	3	B	6		
		Exceeding the maximum load of the bigbag	Me, Ma	4	C	12	- Before use, always check the SWL (safe working load) of the bigbags	4	B	8		
		Tearing of bigbag due to repeated use of a bigbag intended for one-time use only	Me, Ma	4	C	12	- Always check before use whether the bigbag is for one-time use; never use one-time use bigbags more than once	4	B	8		
		Hitting persons or objects while lifting a bigbag onto a truck	Me, Ma	3	C	9	- Never walk under a load - Keep sufficient distance	2	B	4		
		Cutting one's hand or other limbs when using a knife to open the bigbag	Me	2	C	6	- First check whether the bigbag can be transported in its entirety; if this is not possible, always be attentive when opening it with a knife - Wear safety gloves	1	B	2		
		Getting stuck between waste and container	Me	3	C	9	- Check whether it is possible to use a rubble bin; if this is not possible, cut the bigbag open when it has been set down and only then lift it - Always position yourself so that you cannot be hit - Always wear safety gloves	2	B	4		
	Mortar silos	Stability risks	Me, Ma	3	C	9	- Horizontal and stable positioning - Make enquiries with engineering office	2	B	4		
		Short circuit due to contact with power cables	Me	4	D	16	- Emergency stop - Differential switch - Provide for sufficient room to move around - Orderly and tidy workplace	3	C	9		
2.2.2	Powered work equipment											
	Cutting torch	Flashback	Me	3	C	9	- Installation of flashback arrestor on each nozzle 1.5m from the torch - Keep cutting torch nozzles clean and unobstructed (if polluted: replace or clean) - Store the cutting torch in a dry and proper state after every use - On the occurrence of a flashback, immediately shut down the acetylene and oxygen supply	3	B	6		
		Burst pipe	Me, Ma	4	C	12	- Regular inspection of pipes for ageing and damage - Correct separation of pipes (acetylene - oxygen) when connecting pipes to torch - Hold the torch when cutting/welding by the torch, not by the pipes	3	B	6		
		Burns	Me	4	C	12	- Check the environment - Use a fire permit - Have the necessary fire-fighting equipment available at the workplace - After the works, the site must be checked once more in terms of any potential fire hazard - Never use oil and fats when working on torch, pressure relief valve or hoses - Wear PPE (cotton work clothes, welding gloves)	3	C	9		
		Eye injuries	Me	4	C	12	- Wear PPE: protective goggles	3	C	9		
		Fire or explosion hazard due to use of gas cylinders	Me	5	C	15	- Gas and oxygen cylinders must be stored upright, secured and separated from each other, preferably in the open air - Empty cylinders must be separated from full cylinders - Hoses, clamps, valves and pressure regulators must be in good condition - Cylinders must be fitted with sealed shut-off valves and protective caps - Hoses must be secured at the nipples with hose clips - Gas cylinders must be protected from direct sunlight - If a cylinder gets hot: close the shut-off valve immediately and cool with water	3	B	6		- E-0003: Separation distances for above-ground storage of hazardous liquids and solids (classes 1, 2 and 3) - E-0005: Determining the distance for restricted above-ground storage of class-3 chemicals - S-0024: Storage of gas cylinders in Belgium
	Pneumatic hammer drill	Vibrations and noise nuisance	Me	3	C	9	- Use safety gloves - Work with intervals for vibrations - Wear ear muffs	2	B	4		
		Dust formation	Me, Mi	3	C	9	- In case of dust formation, spray objects to be demolished wet	2	B	4		
		Injuries caused by moving parts (projected particles, loose clothing getting stuck)	Me	3	C	9	- Knowledge and application of user manual and instructions - Pay attention to the work at hand and stay focussed - Do not wear loose clothing - Wear safety goggles, gloves and safety shoes - Proper maintenance of hammer drill - Inspect compressed air hoses prior to use - Periodic inspection	2	B	4		- S-0111: Feet protection

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		Injury caused by poor state of maintenance of machine	Me	3	C	9	- Knowledge and application of user manual and instructions - Proper maintenance of hammer drill - Inspect compressed air hoses prior to use - Periodic inspection	2	B	4		
	Air gun (pneumatic impact spanner)	Cuts	Me	4	C	12	- Wear work gloves	3	C	9		
		Eye injury	Me	4	C	12	- Wear safety goggles	3	C	9		
		Injuries caused by poor state of maintenance of machine	Me	4	C	12	- Periodic inspection of machine	3	B	6		
		Injuries from machine being knocked away	Me	4	C	12	- Pay attention to the work at hand and stay focussed - Hold machine with both hands	3	B	6		
		Leakage in compressed air line	Ma	4	B	8	- Periodic inspection of leak-tightness	3	B	6		
2.3	Electrical work equipment											
	Lighting pylon	Injuries due to defective anti-locking system of hoists resulting in a rapidly reversing handle and a falling pylon	Me, Ma	4	C	12	- Inspection of hoists during periodic maintenance - Verify the proper operation of the hoists before using them - Observe instructions/user manual	2	B	4		
		Hand injuries as a result of being crushed or getting caught when tilting the pylon	Me	4	C	12	- Be attentive during the installation works - Wear gloves - Proper maintenance of hoist/winch.	3	B	6		
		Tipping over of lighting pylon resulting in material damage and/or physical injuries	Me, Ma	3	C	9	- Stable installation on level surface - Maintain a safe distance from constructions - Take the necessary measures in case of high wind speeds	2	B	4		
		Foot injuries when putting the lighting pylon down	Me	3	C	9	- Keep your distance when moving/installing the lighting pylon - Wear safety shoes	2	B	4		- S-0111: Feet protection
		Tripping hazard when passing by the lighting pylon	Me	2	D	8	- Adequately mark the corners and outer struts - Keep your eyes on the path that you are following	1	B	2		
		Damage to buildings or materials close to the lighting pylon when the pylon tips over or falls down	Ma	2	D	8	- Take into account the dimensions of the construction - Install the pylon on a level surface - Take the necessary measures in case of high wind speeds and gusts	2	B	4		
		Electrification/Electrocution	Me, Ma	5	C	15	- Knowledge and application of user and safety instructions - Proper maintenance of equipment - Periodic inspection - Adhere to safety instructions - Check and maintain earthing	3	B	6		
	Generator	Electrification/Electrocution	Me	5	C	15	- Knowledge and application of user and safety instructions - Proper maintenance of equipment - Periodic inspection - Adhere to safety instructions - Check and maintain earthing	3	B	6		
		Spillage of oil during maintenance or spilling of fuel when filling the generator	Mi	3	D	12	- Regular checking of drip-tray - Empty it whenever needed - Provide for absorbing material - Check filters	2	C	6		
	Extension cables	Electric shocks or electrocution due to poor condition and maintenance of equipment (loose wires, no splash-proof transitions, poor insulation, plugs not cast on...)	Me, Ma	4	C	12	- Never exceed the maximum allowable current intensity (power) of cable or junction box - Plug connectors in and pull them out of sockets with great care - Hold the plug itself and never pull at the cords - Suspend the cables - Store junction boxes in a dry place - Use equipment with IP44-protection (splash-proof)	2	B	4		
	Milling machine	Cuts	Me	4	C	12	- Knowledge of user instructions and safety instructions - Annual inspection of electric equipment	2	B	4		
		Eye injury	Me	4	C	12	- Knowledge of user instructions and safety instructions - Wear safety goggles - Annual inspection of electric equipment	2	B	4		
		Injuries to limbs caused by poor state of maintenance of machine	Me	3	C	9	- Use correct and sharp discs - Periodic inspection of machine	2	B	4		
		Injury caused by machine being knocked away	Me	3	C	9	- Pay attention to the work at hand and stay focussed - Hold machine with both hands	2	B	4		
	Band saw	Injuries to fingers/hands when using band saw	Me	4	C	12	- Pay attention to the work at hand and stay focussed - When reaching the end of the work piece to be sawn, one must place one's hands behind the band saw and pull at the work piece	3	B	6		
		Injuries to face/eyes	Me	4	C	12	- Wear safety goggles	3	B	6		
	Drilling machine	Injuries caused by moving parts (projected particles, loose clothing getting stuck)	Me	3	C	9	- Knowledge and application of user and safety instructions - Proper securing of work pieces - Pay attention to the work at hand and stay focussed - Protection of hair - Wear safety glasses and safety shoes - Observe instructions of manufacturer - Proper maintenance of drilling machine - Use good drills - Periodic inspection by competent person	2	B	4		
		Injury due to poor state of maintenance of machine (use of poor drills, drill bit broken off, metal chips, careless removal of iron chips)	Me	3	C	9	- Knowledge and application of user manual and instructions - Proper maintenance of drilling machine - Use good drills - Periodic inspection by competent person	2	B	4		
		Electrical shock due to poor condition and maintenance of machine	Me	3	C	9	- Check for external defects and periodic inspection - Knowledge and application of user and safety instructions - Proper machine maintenance - Check plugs and cables for damage - Avoid charging in moist conditions - Always have spare batteries available	2	C	6		
	Orbital sander	Injuries caused by moving parts (projected particles, loose clothing getting stuck)	Me	3	C	9	- Knowledge and application of user manual and instructions - Hold machine with both hands - Pay attention to the work at hand and stay focussed - Wear safety goggles and safety shoes	2	B	4		- S-0111: Feet protection
		Injury due to poor machine condition (poor condition of accessories, use of poor sanding sheets...)	Me	3	C	9	- Check the machine for external defects - Check that the machine is double insulated and periodically serviced - Proper machine maintenance	2	B	4		
		Pneumoconiosis	Me	4	C	12	- Ensure proper extraction or wear dust mask - Attention to this item during the annual medical check-up	3	B	6		- S-0076: Selection table dust mask - gas mask
		Dust in environment	Me	4	C	12	- Provide for (individual) extraction or screen off/demarcate area	3	B	6		

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	Whip saw	Injuries caused by moving parts (projected particles, loose clothing getting stuck)	Me	3	C	9	- Knowledge and application of user manual and (safety) instructions - Hold machine with both hands - Pay attention to the work at hand and stay focussed - Wear safety goggles and safety shoes	2	B	4		- S-0111: Feet protection
		Injury due to poor machine condition (poor condition of accessories, use of poor sanding sheets...)	Me	3	A	9	- Check the machine for external defects - Check that the machine is double insulated and periodically serviced - Proper machine maintenance	2	B	4		
	Angle grinder	Injuries caused by moving parts (projected particles, loose clothing getting stuck)	Me	3	C	9	- Knowledge and application of user manual and instructions - Hold machine with both hands - Pay attention to the work at hand and stay focussed - Wear safety goggles and safety shoes	2	B	4		- S-0111: Feet protection - S-0153: Use of angle grinder
		Injury due to poor condition of machines (use of poor-quality and non-adapted discs, broken disc, metal sparks...)	Me	3	C	9	- Check machine for external defects - Periodic inspection and check for the mark indicating double insulation - Proper machine maintenance - Periodic inspection - Check conformity of discs (maximum speed versus machine speed)	2	B	4		- S-0153: Use of angle grinder
		Pneumoconiosis	Me	4	C	12	- Ensure proper extraction or wear dust mask	3	B	6		- S-0076: Selection table dust mask - gas mask - S-0153: Use of angle grinder
		Proximity of passers-by and inflammable or hazardous products	Me	4	C	12	- Do not grind towards inflammable materials or persons	3	B	6		- S-0153: Use of angle grinder
		Dust in environment	Mi	3	D	12	- Provide for (individual) extraction or screen off/demarcate area	2	C	6		- S-0153: Use of angle grinder
	Cross-cut saw	Injuries caused by moving parts (projected particles, loose clothing getting stuck)	Me	3	C	9	- Check that the machine is double insulated and has been serviced periodically - Knowledge and application of operating instructions/safety instructions - Hold the machine with both hands - When cutting, always press the sole against the material - Never place your hand in line with the saw blade, especially when cutting at an angle - Do not wear loose clothing	2	B	4		
		Injury due to poor condition of machines (use of poor-quality or worn out saw blades, saw blade breaking off...)	Me	3	C	9	- Check machine for external defects	2	B	4		
		Cutting of power cable	Mo	4	C	12	- Always check the proper operation of the self-closing protective device beforehand	3	B	6		
		Hearing impairment	Me	3	C	9	- Wear hearing protection (earplugs)	2	B	4		- S-0195: Use of otoplastics - S-0196: Use of earplugs
		Inhalation of dust	Me	3	C	9	- Dust mask or extraction unit is necessary when working with certain types of wood, where the inhalation of fine dust may be carcinogenic - Wear protective goggles	2	B	4		- S-0076: Selection table dust mask - gas mask
	Electrode welding	Injuries due to poor condition and maintenance of machine (electrical shock or actual radiation)	Me	3	D	12	- Knowledge and application of user instructions - (Safety) instructions - Proper maintenance of machine - Periodic inspection for damage to plugs and cables - Electrode holders - Earthing of machine and piece to be welded - Weld in open air - Always weld with back towards the wind - Orderly and tidy workplace environment	2	C	6		
		Irritation of respiratory tracts	Me	4	C	12	- Smoke extraction and air purification	2	B	4		
		Fire hazard	Me	4	C	12	- Remove all combustible substances, liquids or materials from the immediate vicinity - Make sure fire extinguishers are available - Do not wear clothes soaked with combustible substances - Check the environment	2	B	4		
	Circular table saw machine	Injuries caused by moving parts (contact with saw blade)	Me	4	C	12	- The saw bench must at all times be equipped with a screening cap and must always automatically screen off the saw teeth - The screening cap should not obstruct the operator's view - It must be possible to adjust the screening cap easily and manually and it shouldn't constitute any risk when the saw blade comes into contact with it - Always use the accessories, both for cutting small work pieces and for sawing at the end of the cut - Do not wear loose clothes - Do not wear gloves	3	B	6		
		Injuries due to incorrect use	Me	4	D	16	- Knowledge and application of user manual - (Safety) instructions - Pay attention to the work at hand and stay focussed - Wear safety goggles and safety shoes	3	A	9		- S-0111: Feet protection
		Injuries caused by cutting long and/or large planks	Me	3	D	12	- The operator must ask for help from a colleague	2	C	6		
		Injuries caused by cutting wet work pieces	Me	3	D	12	- Use to the maximum extent possible dry and clean material - if the conditions allow for it, store processed materials and materials to be processed in a dry place	2	C	6		
		Saw blade breaks off or comes loose	Mo	3	C	9	- Check if the saw blade has been properly mounted and secured - Use original parts for maintenance or repairs	2	B	4		
		Injuries due to particles flying off	Me	3	C	9	- Always use safety goggles - Always use flat, new or expertly sharpened saw blades - Try to avoid cutting objects containing nails, staples...	2	B	8		
		Noise	Me	4	E	20	- Wear ear protection (as from 85dBA). Mandatory in case of repeated and frequent sawing - Use solid equipment (cutting quality of saw blade...)	2	E	10		
		Environmental pollution	Mi	3	D	12	- Collection of waste wood in separate waste bin/container and disposal to recognised processor	2	C	6		- E-0028: Sorting on-site waste
	Panel saw	Injury caused by incorrect use of panel saw	Me	3	D	12	- Carefully read and follow the user manual and instructions.	3	C	9		
		Inhalation of wood dust	Me	3	D	12	- Make sure the extraction is always switched on and working properly - Wear a dust mask	2	C	6		- S-0076: Selection table dust mask - gas mask
		Injuries caused by contact with saw blade	Me	3	D	12	- The protective caps must be in good condition and must be used at all times	2	C	6		
		Injuries caused by saw blade jumping	Me	3	C	9	- The correct type of saw blade must be used for the material to be cut - The saw blade must be checked regularly for any damage	2	B	4		
		Injuries caused by wood kickback	Me	3	C	9	- Correct setting of riving knife - The riving knife must be adjusted to the saw blade	3	B	6		
		Injuries due to moving parts	Me	4	C	12	- Do not wear loose clothing or jewellery - Make use of auxiliary tools for guiding the work pieces	4	B	8		
		Eye injuries caused by wood dust	Me	4	C	12	- Wear safety goggles.	2	C	6		
		Hearing impairment	Me	4	C	12	- Wear hearing protection.	3	C	9		- S-0195: Use of otoplastics - S-0196: Use of earplugs

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		Falling and tripping near the machine.	Me	3	D	12	- Make sure the machine is positioned correctly - Make sure there is sufficient workspace around the machine - Keep the work area tidy and clean	3	C	9		
	Stone saw	Injuries caused by moving parts (contact with saw blade)	Me	4	C	12	- Always make sure that the screening cap has been mounted correctly - Damage to the screening cap must be repaired immediately - Unplug when changing the saw blade - While sawing, always hold both hands on the handle of the saw bench until the stone has been fully sawn through - Do not wear loose clothes	3	C	6		- S-0156: Use of stone saw
		Injuries due to incorrect use	Me	3	D	12	- Knowledge and application of user manual and (safety) instructions - Pay attention to the work at hand and stay focussed - Wear safety goggles and safety shoes	2	D	8		- S-0156: Use of stone saw
		Injuries caused by saw blade breaking off or coming loose	Me	3	C	9	- Check if the saw blade has been properly mounted and secured - Use original parts for maintenance or repairs	2	B	4		- S-0156: Use of stone saw
		Injuries due to particles flying off	Me	4	C	12	- Always use safety goggles - Always use flat, new or expertly sharpened saw blades	3	C	9		- S-0156: Use of stone saw
		Noise	Me	4	C	12	- Wear hearing protection (as from 85dBA). Mandatory in case of repeated and frequent sawing - Use solid equipment (cutting quality of saw blade...)	3	C	9		- S-0156: Use of stone saw
		Environmental pollution	Mi	3	D	12	- Collection of stone/debris waste in separate waste bin/container and disposal to recognised processor	2	C	6		- E-0028: Sorting on-site waste
		Exposure to quartz dust	Me	4	C	12	- Use sprinkler system (water) and wear P3 mask	3	C	9		
	Concrete mixer	Injuries caused by contact with moving parts	Me	4	C	12	- Proper shielding of moving parts - Do not wear loose clothing - Do not put hands inside the mixer - Do not remove protective covers - Replace protective covers after maintenance or repair works	3	B	6		
		Short circuit due to contact with power cables	Me	3	C	9	- Emergency stop - Differential switch - Provide for sufficient room to move around - Tidy workplace	3	C	9		
2.4	Mobile work equipment											
2.4.1	General											
	Use	Accident due to incorrect action of or insufficient visibility for the machine operator	Me, Ma	4	D	16	- Use is only permitted when being at least 18 years of age and medically suited (health check) and after having followed suited training - Appoint a signaller outside the turning circle	3	B	6		
		Collision with persons and/or equipment/materials	Me	5	C	15	- Keep sufficient distance from work equipment in motion - Screen off and illuminate work and travel areas - Acoustic signal when reversing machines - Use competent drivers and operators - Always make eye contact with the machine operator - Let on-site workers wear fluorescent clothing	3	B	6		- S-0163: Measures during excavation works
		Tilting of machines	Me, Ma	4	C	12	- Check the stability of the subsoil before starting the excavation works, explore the site - Do not work with heavy machinery along the edge of building pits or trenches so as to prevent the slope from collapsing	3	B	6		- S-0163: Measures during excavation works
	Entering and leaving machine	Tripping, falling or hurting oneself when entering or leaving the machine	Me	3	C	9	- Use the designated handles and steps - Always enter and leave the machine facing it - Be attentive and concentrated when entering or leaving the machine and, if needed, take on an intermediate position when stepping down - Position/park the machine so that the tracks are in line with the cabin. - Always apply the "3 points of contact" rule	3	B	6		
2.4.2	Aerial work platform											
	Entering and leaving the aerial work platform	Falling when entering / leaving the aerial work platform	Me	3	D	12	- Always use the access door with the designated steps and handles - Always close the access door after having entered the platform - Only step on from ground level, never from a structure or scaffold - Never enter or leave a moving machine. Also never get on and off when the platform is still being lowered/raised - Make sure the work platform and railings are clean (remove oil, mud, snow, ice...)	2	C	6		- S-0085: Instructions for use of aerial work platform
	Use	Injuries caused by incorrect use of aerial work platform	Me	3	D	12	- The operator must have received training - The operator must be at least 18 years old and medically approved for exercising a safety function - The operator must know and properly apply the equipment and associated instructions - The operator must select the correct aerial work platform (range) for the work to be carried out - The operator must carry out the necessary standard checks before starting the works	3	C	9		- S-0085: Instructions for use of aerial work platform
		Injuries due to falling from a height	Me	5	C	15	- Always wear safety harness and stop chute. Safety harness and stop chute must be fastened at the designated attachment points. - The operator must remain in the cage (no climbing out or standing on the railing or using ladders, etc.). - Always hold on to the railings - Make sure the cage is closed at all times - Always wear a helmet and safety shoes - Always avoid sudden stops, starts and turns - Park the aerial work platform in its lowest position. Engage the brake, switch the machine off and take the key with you	3	B	6		- S-0085: Instructions for use of aerial work platform
		Injuries due to falling objects	Me	4	C	12	- The cage of the aerial work platform must have a skirting board - Do not use the aerial work platform to transport materials - No-go zone: demarcate the zone - Never work below the turning radius of the aerial work platform. Provide for a signaller if needed.	3	B	6		- S-0085: Instructions for use of aerial work platform
		Injuries caused by tilting of aerial work platform	Me	4	C	12	- Flat and solid surface (free from obstacles) - Do not exceed the maximum service load of the platform (material and persons) - Take into account the wind speed (max. 12.5 m/s) - Use stabilisers if necessary - Never drive with the platform in an elevated position - Keep the boom in line with the direction	2	B	4		- S-0085: Instructions for use of aerial work platform
		Collision injuries	Me	4	C	12	- Take into account obstacles such as air lines, electricity wires, etc.	4	B	8		- S-0085: Instructions for use of aerial work platform

Risk and Impact Register

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No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking E	K	R	Risk-mitigating measures	Residual risk E	K	R	Legislative register	Reference documents
		Injuries caused by collisions with bystanders	Me	5	C	15	- Adhere to an adjusted speed - No-go zone: demarcate the work area	3	B	6		- S-0085: Instructions for use of aerial work platform
		Running into or being caught by something fixed and/or stationary	Me, Ma	3	C	9	- Clear site of obstacles - Keep sufficient distance from fixed objects - Attach safety brackets to the aerial work platform	2	B	4		- S-0085: Instructions for use of aerial work platform
		Injuries caused by defective aerial work platform	Mo	4	C	12	- The equipment must be inspected periodically (quarterly by an external body) - The inspection certificate must be kept on site - Maintenance must always be carried out by authorised personnel - Check the operation of the emergency stop (never disable or bypass safety devices) - Work must be stopped in the event of defects, abnormal vibrations or noise, etc.	4	B	8		- S-0085: Instructions for use of aerial work platform
	Refuelling	Escaping gases when refuelling	Mi	3	C	9	- Never fuel up with the engine running	2	B	4		- S-0085: Instructions for use of aerial work platform
		Explosion	Me, Ma, Mi	5	C	15	- Never smoke when fuelling up - Do not make an open fire when fuelling up	3	B	6		- S-0085: Instructions for use of aerial work platform
		Environmental pollution due to spillage of fuel	Mi	4	C	12	- Fuel up in the correct way and with due care and attention - Have absorbing material nearby	3	B	6		- S-0085: Instructions for use of aerial work platform
2.4.3	Excavator											
	Stability	Tilting of excavator	Me, Ma	5	C	15	- Make sure the surface is stable - Wear seat belts during use - Identify trench excavations and other uneven terrain - Instruct the operator - Brackets must be fitted on the sides of the excavator as extra protection if no cabin is available	4	B	8		- S-0163: Measures during excavation works
2.5	Lifting and hoisting equipment											
2.5.1	General											
	Use	Accident due to incorrect action of or insufficient visibility for the machine operator	Me, Ma	4	D	16	- Use is only permitted when being at least 18 years of age and medically suited (health check) and after having followed suited training. - Appoint a signaller outside the turning circle	3	B	6		
		Collision with persons and/or equipment/materials	Me	5	C	15	- Keep sufficient distance from work equipment in motion - Do not enter the turning circle - Screen off and illuminate work and travel areas - Acoustic signal when reversing machines - Use competent drivers and operators - Ensure good communication between machine operator and workers: use of walkie-talkies + always make eye contact with the machine operator - Let on-site workers wear fluorescent clothing	3	B	6		- S-0067: Lifting – Hand-arm signals for crane operators - S-0163: Measures during excavation works
		Tilting of machines	Me, Ma	4	C	12	- Check the stability of the subsoil before starting the excavation works, explore the site - Do not work with heavy machinery along the edge of building pits or trenches so as to prevent the slope from collapsing	3	B	6		- S-0163: Measures during excavation works
		Hitting persons with work equipment	Me	5	C	15	- Persons must observe sufficient distance during the operation of the mobile work equipment	4	B	8		- S-0163: Measures during excavation works
		Fall of material when hoisting a load	Me, Ma	4	C	12	- Use the correct method for hitching on loads - Check if everything has been properly secured - Use the correct (approved of) slinging gear - Observe the maximum service load	3	B	6		- S-0073: - Lifting - hoisting belts
		Uncontrollable movement of load/lifting block due to wind impact	Me, Ma	2	C	6	- In case of significant wind, the limits of the crane and of the maximum load of the objects to be lifted must be adapted to the actual average wind speed and gusts. - Follow up wind forecasts and perform measurements using, for instance, an anemometer. - Limit the height and items to be lifted (weight, volume, surface area) according to the actual wind speeds. - Use guide ropes - Pay attention when setting up and orienting crane, lifting block, direction of rotation, etc. Weather conditions must always be taken into account during hoisting operations: * Hoisting operations must be interrupted when the wind speed exceeds the conditions set by the manufacturer. * In the absence of clear manufacturer's conditions, hoisting operations must be stopped at wind speeds above 12 m/s. * Regardless of the fact that the manufacturer's conditions are known, wind speed limits vary depending on various factors such as load area and weight, lifting height, wind gusts, wind direction, position of load & hoist, etc. When in doubt, seek advice from your supervisor. * During a thunderstorm, if there is less than 10s (±3km) between lightning and thunder, all hoisting activities must be interrupted. * At least one anemometer must be installed at the site - preferably on the highest crane or structure or any other mounting location that provides a representative indication of the on-site wind speed.	2	B	4	Incident	JDN.INSTR.2006.Hoisting works
	Entering and leaving the machine	Tripping, falling or hurting oneself when entering or leaving the machine	Me	3	C	9	- Use the designated handles and steps - Always enter and leave the crane facing the crane - Be attentive and concentrated when entering or leaving the machine and, if needed, take on an intermediate position when stepping down. Set up/park the machine in such a way that the tracks are aligned with the cabin. - Always apply the "3 points of contact" rule	3	B	6		
	Hitching on of loads	Incorrect hitching on of loads	Me, Ma	4	D	16	- Apply correct method for hitching on loads	4	B	8		
		Injuries while hitching on or taking off loads	Me	4	C	12	- Use suitable method and equipment for hitching on loads. - Lower the hoisting hook sufficiently so that no force is left on the hoisting chains or that belts/ropes/... are under as little tension as possible. - Limit manual handling and pay attention to hand placement. - Wear safety gloves	2	C	6	Incident	S-0344: Avoiding hand injuries
		Incorrect use of slinging gear due to exceeding the maximum service load	Me	4	C	12	- Reduce the service load through good planning	4	C	4		
		Use of unsuited slinging gear	Me, Ma	4	D	16	- Use the correct (approved) slinging gear - Observe the maximum service load	4	B	8		
		Fall of person while hitching on loads	Me	5	C	15	- One must always ensure the stability of the objects when hitching on loads - Upon any shred of doubt, ask the direct superior for assistance and stabilise the object	4	B	8		
2.5.2	Tower crane - N/A											
2.5.3	Cable crane											

No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking E	K	R	Risk-mitigating measures	Residual risk E	K	R	Legislative register	Reference documents
	Mounting	Unauthorised persons getting pinched or collision with unauthorised persons	Me	4	C	12	- Demarcate the area of the hoisting operation, the auxiliary crane and the storage zone for the different crane elements (No-Go zone)	2	B	4		
		Tilting of crane due to non-stable surface	Me	3	D	12	- Application of geotextile and crushed rock with, as an additional measure in case of insufficient stability, use of weight distribution plates (sufficient in number, connected to one another and perpendicular to the direction of travel). - Ensure a stable, load-bearing surface	2	C	6		
		Hitting HV lines above or close to the work area	Me	4	C	12	- Select another location for setting up the crane or examine the spark breakdown risk first - Earth the machine	2	B	4		
		Injuries due to insufficient workspace	Me	3	D	12	- Sufficient space must be ensured for setting up the cable crane	2	C	6		
		Wrong actions due to insufficient training	Me	4	D	16	- Employees must have got adequate training for setting up and dismantling the cable crane	3	C	9		
		Overexertion due to insufficient manpower	Me	3	D	12	- At least three persons (with personal protection) are needed to set up the cable crane (the operator and two helpers)	2	C	6		
		Injuries when fixing crane elements (bouncing off of locking pins, use of sledgehammer...)	Me	3	D	12	- Be focussed while using the sledgehammer - Another technician may not be present in the immediate vicinity - No manipulation by any other technician during use of sledgehammer. Another technician may not yet prepare the next pin connection. - Use PPE: safety gloves	2	C	6		
		Materials falling down when fixing crane elements	Me	3	C	9	- Never work on top of each other	2	B	4		
		Finger fracture or amputation when fingers get caught in the connection of 2 brackets when checking to make sure they are overlapping one another	Me	4	C	12	- Never insert fingers in the holes of the pins to check whether they match correctly - Never insert fingers in an opening to perform a pulling or pushing movement	2	B	6		
		Risk of bumping against the boom structure when pulling and positioning cables	Me	2	D	8	- Always be focussed during the job	2	C	6		
		Cuts from cutting loose cable ties using a box cutter	Me	3	C	9	- Untie cable ties using pliers	3	B	6		- S-0168: Use of a box cutter or foil cutter
		Crane block falls down	Me, Ma	4	C	12	- Always ensure the stability of the crane block	3	B	6		
		Contamination with plastic due to many cable ties being left behind in the work area	Mi	3	D	12	- Immediate collection of cable ties when disconnecting cables	2	B	4		
		Pollution due to lubricating oil and grease being left behind	Mi	3	D	12	- Collection and disposal with KGA (small hazardous waste) on site	2	B	4		
	Use	Collisions due to insufficient visibility through the windows and/or mirrors of the driver's cabin	Me	4	D	16	- Ensure visibility by correctly setting windows and mirrors in advance and cleaning them whenever necessary. - Good visibility of the work area and the area around the crane is necessary	2	C	6		
		Injury due to tripping, falling or landing badly when climbing onto or getting down from the cable crane	Me	3	D	12	- Use the designated handles and steps	2	C	6		
		Injuries caused by not being visible when leaving the cable crane	Me	4	C	12	- Wear fluorescent clothing (jacket)	2	B	4		
		Fall of hoisting block on persons	Me	4	C	12	- Persons must maintain a safe distance during the operation of the cable crane - Make sure the hoisting block lies flat (stable) when bringing down the boom	2	B	4		
		Injuries caused by poor visibility of persons	Me	3	D	12	- Wear fluorescent clothing (jacket)	2	C	6		
		Injury caused by not using PPE or using it incorrectly	Me	4	D	13	- Put on the helmet correctly (right direction) - Wear the safety harness correctly - Wear safety shoes - Wear fluorescent clothing	3	C	7		- S-0111: Feet protection
		No first aider or first aid material available	Me	4	C	12	- At the very least, first aid material (basic first aid kit, complementary first aid kit, stretcher) according to emergency response plan or specific HSE plan of site/warehouse	2	C	6		
		Wrong use of slinging gear	Me	4	C	12	- Correct application of slinging gear (four-chain sling) during hoisting operation	2	B	4		
		Cable break	Me, Ma	4	B	16	- Inspection by approved inspection body - Periodic inspection of crane and cables - Correct hitching on of loads - Factory certificate of hoisting cable must be traceable	3	C	9		
		Hook in face during manipulations as chains are twisted together	Me	4	C	12	- Correct connection of four-chain sling with counterweight - Correct use as a two-chain sling when the hooks hook into each other - Training in hitching on loads has been given	2	B	4		
		Personnel getting caught between crane and crane elements	Me	5	C	15	- Do not allow personnel in the danger zone while the machine is being moved - Perform one counterweight lifting/handling operation at a time - Do not leave counterweights suspended in wait in front of the crane body	3	B	6		
		Limbs getting caught or becoming injured	Me	4	C	12	- Provide for a guide rope - Do not use your body to position the counterweight	2	B	4		
		Overexertion due to non-ergonomic work posture	Me	3	D	12	- Alternating work	2	A	6		
2.5.4	Telescopic crane											
	General	Collision with persons	Me	5	C	15	- Wear fluorescent clothing (jacket or vest) - Always remain outside the crane's turning radius (no-go zone)	3	B	6		
		Tilting of telescopic crane	Me, Ma	5	C	15	- Check whether the surface is sufficiently firm and load-bearing (expansion of outriggers) - Check the presence of underground obstacles	3	B	6		
		Falling of load	Me, Ma	4	C	12	- No-go zone all around the telescopic crane	3	B	6		
		Falling when entering and/or leaving the machine	Me	3	C	9	- Use the three-point method - Clear steps from mud, grease or ice - Replace broken steps	2	C	6		
		Cable break	Me, Ma	4	C	12	- Inspection by approved inspection body - Periodic inspection of crane and cables - Correct hitching on of loads	3	B	6		
	Machine operator	Accidents due to lack of physical capacities	Me	4	C	12	- Operators must have been medically approved - Operators must be at least 18 years old	4	B	8		
		Accidents due to lack of knowledge and experience	Me	4	C	12	- Operators must have received sufficient demonstrable adequate training to work with the equipment - Operators must have a valid VCA certificate - Operators must have disposal of the user manual and any other instructions in a language they can understand	4	B	8		- S-0005: General safety & maintenance instructions for machine operators
		Accidents due to irresponsible behaviour	Me	3	D	12	- The operator must have sufficient sense of responsibility to handle the machine responsibly (know the machine's capabilities, does not override safety mechanisms...) - Perform an LMRA, the operator must assess hazardous situations in advance	2	B	4		- S-0175: Performing an LMRA

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	Environment	Water and or soil contamination due to spilled oil/fuel	Mi	3	C	9	- Do not refuel near waterways - Availability of spill kit on the site - Clean up spilled oil or fuel immediately	2	B	4		
		Air pollution	Mi	3	C	9	- Do not let the telescopic crane run idle unnecessarily	2	B	4		
3	Civil activities											
3.1	Site layout and preparation											
	Site exploration	Damage to underground pipes and overhead lines when digging exploration trenches	Ma	3	D	12	- Retrieving and consulting piping plans - Manual search for pipes using cross-trenches - Marking of pipes - Perform the necessary measurements	2	C	6		
		Contaminated soil	Me, Mi	3	D	12	- Alert the medical and prevention team - Take samples of soil and groundwater - Perform measurements - Perform analyses - Take hygienic measures - Follow the instructions of the occupational physician	2	D	8		
		Ground settlements	Me	4	C	12	- Install shoring if depth exceeds 1.2 m or incorporate the necessary slopes - Make sure ladders are available (for access and evacuation)	3	C	9		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
	Site demarcation	Person(s) entering the site without permission	Me	4	D	16	- Close off the entire construction site - Place warning signs - Provide for lighting at night - Connect fences to one another - Mark gates or access points with road signposts - Install camera surveillance if needed	3	C	9		
		Back injuries when manually moving fences along with their concrete supports	Me	3	D	12	- Lift in the correct way (weightlifting technique) - Use auxiliary equipment or machines to the maximum extent possible - Carry loads of over 25 kg with two persons	2	C	6		
		Injuries or damage caused by toppling of site fences	Me	2	D	8	- Provide for a flat and stable surface - Provide for sufficient supports and braces	2	C	6		
		Poor site accessibility for emergency services	Me	5	C	15	- Provide for sufficient and adequately accessible entrances	3	B	6		
	Intrusion protection	Theft/vandalism	Mo	4	D	16	- Request specific advice from QHSSE regarding intrusion protection - Close off the entire construction site - Take extra measures during construction sector holidays - Install camera surveillance if needed - Install light towers	3	B	6		
	Topography	Eye injury caused by laser beam	Me	4	C	12	- Do not look into the laser beam - Have the device checked every year by the supplier	3	B	6		
	Deforestation and levelling	Injury caused by collision with machine	Me	4	C	12	- No-go zone: Do not come near operating machines	3	B	6		- S-0115: Taking the necessary SHE measures during clearing operations
		Tilting of machines when pulling out trees and bushes due to unstable surface	Me, Ma	4	C	12	- Safety cabin on machine - Provide for road plates on unstable grounds - Use tracked excavator on unpaved grounds	3	B	6		- S-0115: Taking the necessary SHE measures during clearing operations
		Dust flying about	Me, Mi	3	D	12	- Observe the user instructions of chain saws - Wear dust goggles or full-face mask	2	D	8		- S-0115: Taking the necessary SHE measures during clearing operations - S-0180: Use of an electric chainsaw
		Being hit by falling prunings and trees	Me	5	C	15	- Evacuate the space around trees to be pruned and/or cut down - Demarcate the work area - Perform an LMRA	4	B	8		- S-0115: Taking the necessary SHE measures during clearing operations - S-0175: Performing an LMRA
		Coming into contact with pesticides and herbicides	Me, Mi	4	C	12	- Read product information leaflet and observe safety and environmental regulations - Inform neighbourhood - Clear the site - Spray along with the wind - Wear safety goggles and mask - Work hygienically - Keep doors and sheds closed	3	B	6		- S-0115: Taking the necessary SHE measures during clearing operations
		Hoisting equipment breaks off	Me, Ma	4	C	12	- Only work with approved hoisting equipment - Respect the SWL of the hoisting equipment - No persons in the vicinity of the hoisting operations	2	B	4		
	Cone penetration test	Damaging underground installations during exploratory drilling works	Me, Ma	3	C	9	- Verification of plans of third parties - Make exploratory trenches when in doubt - Clearly measure and mark the location of the drillings - Provide for road signs	2	B	4		
		Contact with hazardous substances or contaminated soil	Me	4	D	16	- Retrieve the OVAM soil certificate - Technical report and soil management plan upon a presumption of contaminated soil - Also have samples taken in this case - Standard vaccinations of workers	3	C	9		
	On-site signage	Instability of on-site track (on account of adjacent excavations)	Me	4	C	12	- Lay the tracks at a safe distance from pit borders - Reduction of vehicle vibrations - Trench revetment - Clear marking of edges - Adequate training of workers	3	B	6		
		Injuries due to excessive speed on the road/on-site track	Me	4	D	16	- Limit speed on public roads in agreement with traffic code/police instructions - Limit the on-site speed	3	C	9		
		Injuries due to poor visibility on the road/on-site track	Me	4	D	16	- Define signage of exit in consultation with the police authorities - Clear signage of exit - Limit speed on public road in consultation with the police authorities - Limit the on-site speed - Keep on-site roads, public roads and exit clean using a road sweeper - Provide for sufficient lighting	3	C	9		
		Injuries due to poorly constructed on-site track (mud and sludge)	Me, Ma	4	D	16	- Wherever possible, pave the on-site tracks - Keep on-site roads, public road and exit clean with road sweeper - Install facility for washing wheels if possible	3	C	9		
		Accidents due to narrowed passageway on public road	Me	3	D	12	- Draw up traffic plan in consultation with the police authorities	2	C	6		
		Misappropriation or damage of material by third parties	Me	3	D	12	- Provide for proper fencing around the site - Provide for a pictogram "No access to construction site" - If possible, close off the site with gate and fences - Provide for adequate on-site lighting	2	C	6		

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	Dewatering operation	Stability of nearby buildings	Me, Ma	4	C	12	- Assess the impact of dewatering operations on surrounding buildings and pipelines - Draw up a topographical survey when in doubt - Prop up in advance if needed - Apply for discharge authorisation or notify the competent authority	4	B	8		
		Soil being washed away by pumped up water and building pits being flooded	Mi	4	C	12	- Ensure proper drainage of water, use plastic piping if needed - Discharge authorisation/notification	3	B	6		
		Construction pit flooding and slopes being washed away due to suspension of dewatering operations	Mi	4	C	12	- Provide for a buffer basin for water or install remote alarm by phone - Keep building pits tidy (no equipment in it) - Cover slopes with plastic - Daily inspection of dewatering equipment (filters, pumps, electricity...)	2	B	4		
		Short circuit due to contact with power cables	Me, Ma	4	C	12	- Earthen pump and electrical installations - Suspend power cables	2	B	4		- S-0253: Temporary electrical installations
		Polluted groundwater	Mi	3	C	9	- When in doubt, have the discharged water analysed - In case of hazardous substances, inform occupational physician and prevention department - Maintain excellent hygiene - Observe working method drawn up by experts	2	B	4		
	Site installation works	Subsiding of installation or machine	Mo	4	C	12	- Lay out the on-site tracks - Provide for foundation beams	2	C	6		
		Inaccessible terrain	Me	4	C	12	- Lay out the on-site tracks - Provide for dock boards/road plates where needed	2	C	6		
		Electrocution by electrical installation or electrical cabinets	Me, Ma	4	C	12	- Inspection of electrical installation - Only trained personnel should work on electrical installations	4	B	8		- S-0253: Temporary electrical installations
		Injuries caused by heating through liquid gas	Me	4	C	12	- Block access to tank and demarcate an area with a radius of 5 m around the tank - Do not weld or grind nearby - Do not install next to pits or trenches (gas is explosive and heavier than air)	4	B	8		
		Injuries when installing, mounting and dismounting electrical cabinets	Me	3	C	9	- Take due care when performing the task at hand - Correct positioning of hands - Perform an LMRA and assess the work method - Observe the instructions for the manual handling of loads	3	B	6		- S-0175: Performing an LMRA
	Order and neatness	Tripping due to difficult passage/cluttered work areas	Me, Ma	2	D	8	- Wear PPE - Regular clearing of workstations/work areas - Provide for sufficient waste bins and empty them on time - Keep passageways clear of equipment - Visually mark passageways	2	C	6		- E-0028: Sort on-site waste - S-0111: Feet protection
		Tripping over rebars (or other objects) protruding from the ground/concrete	Me	2	D	8	- Remove, burn off or shield rebars protruding from the ground - Remove other objects protruding from the ground	1	C	3		
	Hazardous products	Fire hazard due to polluted environment	Me, Mi	3	D	12	- Ensile (and cover) environmentally harmful products - Provide for pictograms: ban on making fire and ban on smoking - Work permit	2	D	8		
		Ignorance during use and difficulties in recognising hazardous products	Me	3	D	12	- Make sure that the relevant product information is available on site - The packaging must contain the legally established labels - Inform people about hazard symbols	2	C	6		- S-0197: CLP labelling
		Explosion due to improper handling of gas and oxygen cylinders	Mo	2	E	10	- The cylinders must be secured at all times (e.g. in baskets) - Protect cylinders against direct sunlight - Put cylinders in vertical position - Mount flashback in pipe to cylinders (preferably: one behind the cylinder and one ahead of the cutting torch)	2	D	8		
	Access to workstation	Difficult accessibility of workplace at a height	Me	3	C	9	- Install stairs with a railing as works progress (staircase tower) - Lighting of dark areas - Sufficient number of ladders on the construction site - Correct maintenance, installation and inspection of ladders. - Staircase tower must be released before use.	2	B	4		- S-0007: Selection and use of ladders - S-0008: Setting up ladders - S-0092: Mounting, use and release of staircase tower DOKA LAYHERR
		Difficult accessibility to the workplace laterally	Me	3	C	9	- Install gangways with a railing as works progress - Lighting of dark transition areas - Fit out gangways with skirting boards	2	B	4		
		Difficult accessibility to the workplace at a depth	Me	3	C	9	- Install stairs with a railing as works progress (staircase tower) - Regular cleaning of running surface and neat stacking of construction site materials - Lighting of dark areas - Correct installation and securing of ladders - Do not enter ladder while holding tools in your hands.	2	B	4		- S-0007: Selection and use of ladders - S-0008: Setting up ladders - S-0092: Mounting, use and release of staircase tower DOKA LAYHERR
	High-voltage cabin	Access of unauthorised persons in electrical cabin	Me	5	C	15	- Keys to electrical cabins are kept by the competent person only - Only BA5 personnel is allowed - Equipped with the necessary signs/pictograms - Always close the doors when leaving the cabins + close electrical cabinets	3	B	6		
	Installation of electrical installations	Fire hazard when working on electrical installations	Me	5	C	15	- Provide for approved CO_2 extinguishers in the electrical cabins - The relevant emergency procedures must be known	3	C	9		
		Electrocution/burns when there is still voltage on the installation	Me	4	C	12	- Have the electrical installation checked + tested by qualified person (BA5) - Check for any residual energy - Wear the necessary PPE: insulated safety gloves	3	B	6		- S-0253: Temporary electrical installations
		Performing a wrong action	Me	3	C	9	- Draw up a clear step-by-step plan of the works to be carried out + provide for the necessary drawings/diagrams - Consultation/discussion prior to the works between supervisors and electricians	3	B	6		- S-0253: Temporary electrical installations
		Insufficient lighting	Me	3	C	9	- Provide for the necessary lighting (in electrical rooms, the standard lighting will not work)	3	B	6		
		Injuries caused by touching live parts	Me	4	C	12	- Wear the necessary PPE - Install/use screens - Check conductors (insulation, sheathing, strength...) and other electrical parts + repair if necessary	3	C	9		- S-0253: Temporary electrical installations - S-0111: Feet protection
		Carrying out works on electrical installations alone	Me	4	C	12	- Never work alone; an extra person should always be present (BA4/BA5) who can intervene in a case of emergency	3	C	9		- S-0253: Temporary electrical installations
	Works on electrical installations	Electrocution, burns from a flash, eye injury	Me	4	D	16	- Strictly observe the decommissioning procedure THE VITAL 5, i.e. : - disconnect the work area from the electrical mains - secure the power disconnection against reactivation - Check the voltage (must be dead) - Mark out the work area - Screen off live parts - Follow LOTO procedure	4	B	8		- S-0253: Temporary electrical installations - S-0212: Lock-out tag-out

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Risk and Impact Register

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No.	Description	Type of risk	Me, Ma, Mi, Re	Risk ranking			Risk-mitigating measures	Residual risk			Legislative register	Reference documents
				E	K	R		E	K	R		
		Wrong working method	Me	4	D	16	- Use work card or work permit - Use correct tools	3	A	9		
		Eye injury	Me	3	A	9	- Wear protective goggles	3	B	6		
		Flash, burns	Me	4	C	12	- Provide for individual protection (rubber boots, place rubber mats on the floor)	4	B	8		
3.2	Demolition works - N/A											
3.3	Earthworks											
	Soil survey	Incomplete knowledge of condition of soil and connections to be made in the study phase	Me	3	C	9	- Direct on-site observation of location, vegetation and relief - Study of topographic and hydrographic maps - Look up soil surveys - Survey soil stratums and taking samples	3	B	6		
		Insufficient knowledge of the nature of the site (rocky, sandy, loamy... grounds)	Me, Ma	3	C	9	- Study and map water discharge - Describe pollutions and the way to prevent them from spreading	3	B	6		
		Contaminated soil	Mi	3	C	9	- Alert the medical and prevention team - Take samples of soil and groundwater - Perform measurements & conduct analyses - Take hygienic measures - Follow the instructions of the occupational physician	2	B	4		- S-0145: SHE measures – storage of contaminated soil - S-0163: Measures during excavation works

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		Injuries caused by excavation of trees	Me	5	C	15	- Implement specific procedure including the following elements: inspection of storage places; releasing, declaring cleared and screening off of explosion zone - Alert neighbourhood/third parties - Communication with de-mining services	4	B	8		- S-0072: Action plan on finding UXOs - Belgium - S-0163: Measures during excavation works
		Historic soil contamination	Mi	4	B	8	- Observe VLAREBO instructions - Periodic exploratory soil survey, activity B: 10-annually	2	B	4		- S-0163: Measures during excavation works
	Utility networks	Damage to underground pipes and overhead lines when digging exploration trenches	Mo	3	C	9	- Retrieve and consult piping plans - Manually search for pipes using cross-trenches - Mark pipes - Perform the necessary measurements - Take photos and note where and which pipes have been found (level!)	2	B	4		- Q.0002: Positioning of utility pipes - S-0078: Contact with underground structures - S-0163: Measures during excavation works
		Damage to or rupture in adjacent or intersecting underground installations	Mo	3	C	9	- Bury or suspend the installations - Select suited supports (metal, wood...) - Have emergency phone numbers ready - Protect installations against weather conditions - Do not use installations as supports	2	B	4		- Q.0002: Positioning of utility pipes - S-0078: Contact with underground structures
		Damage to natural gas distribution pipe resulting in gas leak	Ma, Mi	3	C	9	- Retrieve location plans - When in doubt trace gas pipe with detector - Always pre-dig manually near gas pipes - When suspending the pipe, it must be checked that the pipe is properly secured and cannot bend	3	B	6		- Q.0002: Positioning of utility pipes - S-0078: Contact with underground structures - S-0163: Measures during excavation works
		Damage to high-pressure gas pipe resulting in gas leak	Ma, Mi	4	C	12	- Retrieve location plans - Report works to gas pipe operator - Discuss location plans and safety regulations with the gas pipe operator - Have the gas pipe staked out by the gas pipe operator - Dig trial trenches under the supervision of the gas pipe operator - Screen off the gas pipe with HERAS fences - Place metal dock boards above the gas pipe - No storage of soil or material within an area of 5m around the pipe	3	B	6		- Q.0002: Positioning of utility pipes - S-0078: Contact with underground structures
	Digging and working in trenches	Engulfment of workers while inside the excavation	Me	4	C	12	- Digging trenches following best practice for depth and width. - Provide slopes, terraces, revetment-/dragbox or shoring depending on the depth, width and soiltype. - The slope gradients must be determined by (stability) engineering office. - No heavy loads near the slopes - No transport, circulation or other vehicle circulation in the vicinity of the slope - When working beneath the ground water level a dewatering installation needs to be established to prevent leaching. - Explore the site in advance - Mark unstable areas with ribbon - Screen off excavation areas from any other persons on the construction site - Minimize the amount of workers in or near the trench or excavation pit so only relevant people are in the zone. - Minimize the time certain workers needs to be in a trench to the shortest time possible. - Provide for a watchman	3	B	6		- S-0163: Measures during excavation works - S-0198: Works in trenches and excavations - Q-0007: On-site excavations
		Cave-ins due to erosion or collapsing of the surrounding soil	Me	4	C	12	- Digging trenches following best practice for depth and width. - Provide slopes, terraces, revetment-/dragbox or shoring depending on the depth, width and soiltype. - No heavy loads near the slopes - No transport or other vehicle circulation in the vicinity of the slope - When slopes needs to be in place for a longer period, provide cover with plastic to prevent leaching caused by rain - When working beneath the ground water level a dewatering operations to prevent leaching. - The slope gradients must be determined by (stability) engineering office. - Explore the site in advance - Mark unstable areas with ribbon - Screen off excavation areas from any other persons on the construction site - Minimize the amount of workers in or near the trench or excavation pit so only relevant people are in the zone. - Minimize the time certain workers needs to be in a trench to the shortest time possible.	3	B	6		- S-0163: Measures during excavation works - S-0198: Works in trenches and excavations - Q-0007: On-site excavations
		Falling objects from equipment, materials or soil from the sidewalls or top of the slope	Mo	4	C	12	- Install railings or screens all around the excavation area - No storage of material in the crest of the embankment. - Only the team working on or in the trench is allowed access to the work area (incl. their supervisors). No other passage or co-activity allowed. - When using a dragbox the shoring needs to extend at least 15cm above the surrounding level to act as a skirting board.	2	B	4		- S-0198: Works in trenches and excavations - Q-0007: On-site excavations
		Utility strikes due to the presence of underground utilities	Ma	3	C	9	- Retrieve and consult KLIM and KLIP plans (KLIM and KLIP notification must be carried out before the start of the works) or other utily plans of the excavation zone available via the Client. - Manually search for pipes using cross-trenches (dig test trenches if necessary with a mini-excavator guided by a worker). - Near known areas of (possible) utility lines choose for manual excavation or layered scraping of the soil until the pipes or lines are identified. - Don't use digging buckets with teeth to avoid pulling over cables or puncture pipelines. - Mark pipes and cables of the existing situation. When placing new or temporary utilities, mark them and take measures to adjust the plans of the new situation. - Perform the necessary measurements. - When needed, use detection devices to locate the exact location of cables and pipes.	2	B	4		- S-0163: Measures during excavation works - S-0078: Contact with subterranean structures

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				E	K	R		E	K	R		
		Hazardous atmosphere in trench	Me, Mi	4	B	8	- Keep gas storage place away from building pits and trenches - Do not store gas cylinders in (deepened) trenches. - When natural ventilation is not guaranteed, avoid the presence of personnel in the trench when using equipment with engines running on fossil fuel in trenches to limit the risk of CO. When in doubt, take measurement of parameters and deploy a gas detection system when needed.	3	B	6		- S-0024: Storage of gas cylinders in Belgium - S-0256: Gas detection and monitoring - S-0108: Gas detection device
		Fall of person in pit/trench	Me	5	C	15	- Physical screening off the excavation area from the rest of the construction site. - Provide for sufficient pit/trench entrances and exits via 'slope stairs'. - Demarcate the work area - Ensure lighting at night - Minimize the amount of workers in or near the trench or excavation pit so only relevant people are in the zone. - Provide dragbox with sufficient height (at least 110cm) above the level of the surrounding so this can act as collective fall protection. - No storage of material in the crest of the embankment	3	B	6		- S-0163: Measures during excavation works - S-0198: Works in trenches and excavations
		Injuries due to poor accessibility of building pit/trench	Me	4	C	12	- Provide for enough 'slope stairs' according to the depth of the pit and/or the length of the trench (minimally every 40 metre)	2	B	4		- S-0007: Selection and use of ladders - S-0008: Setting up ladders - S-0198: Works in trenches and excavations
		Injuries due to incorrect passageways in the trench	Me	4	C	12	- Provide parallel passageways at both sides of the pipes/cables in the trench after installing them to provide easy and safe passing along. - Provide walking bridges with railing from one side to the other to overcome lower laying cables/hoses.	2	B	4		- S-0007: Selection and use of ladders - S-0008: Setting up ladders - S-0198: Works in trenches and excavations
		Physical overexertion when digging manually	Me	4	C	12	- Using excavators to avoid manual digging - Adopt a good work posture - Limit the time a worker spends digging manually at a time (e.g. through job rotation schedule)	3	B	6		
		Flooding of the trench	Mo	3	C	9	- When working beneath the ground water level a dewatering operations to prevent leaching. - Excavation of trenches lower then the strictly needed level to provide a drainage layer at the bottom of the trench. - Provide drainage layer and lower collection areas to pump away water due to heavy rain. - Deploy pumps to quickly pump out ground- and rainwater	3	B	6		
		Collision with machines	Me	4	C	12	- Explore the site in advance - Mark unstable areas with ribbon - Screen off excavation areas - Communication between machine operator and workers - Acoustic signal when reversing - Provide for a blind spot mirror - Demarcate the work area of machines - Avoid multiple machines in the vicinity of each other. Respect no-go and danger areas. - Follow site traffic plans and best practice to make visual connection when moving around.	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0163: Measures during excavation works
		Tilting of machine	Me, Ma	4	C	12	- Stability around pits - Keep sufficient distance from the excavation - Do not work along the edge of the construction pit or trench with heavy machinery to prevent the slope from collapsing	3	B	6		- S-0163: Measures during excavation works

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		Excavation of contaminated/toxic soils	Mi	3	C	9	- When working in zones with known or suspicion of contamination examination of chemical quality and concentration to be executed when no specific information available. - Temporary suspension of excavations and application of 'stop & rethink'. - Separate storage with precautionary measures (e.g. plastic film)	2	B	4		- S-0145: SHE measures – storage of contaminated soil - S-0163: Measures during excavation works
		Being hit by dragline	Me	5	C	15	- Do not allow anyone in the vicinity unnecessarily - Always make eye contact with crane operator when approaching machine - Guidance/supervision by site manager - Communication with crane operator via walkie-talkie or international arm signals	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0163: Measures during excavation works
	Excavation in open air	Collapsing of excavation	Me	4	C	12	- Keep heavy loads at a distance from the excavation - Do not create steep slopes and screen them off with plastic as a protection against rain - For lack of space, provide sheet piling - Create a free space of minimum 80 cm all around the excavation as work area - If the risk is higher and if there is a lack of space in the trench, appoint a watchman on ground level and have a lifeline available	3	B	6		
	Small sewage works	Getting buried due to mechanical introduction of foundation layer	Me	5	C	15	- Good communication and visibility between trench diggers and machine operator - Stay out of the operational range of machine and equipment	3	B	6		- S-0067: Lifting – Hand-arm signals for crane operators
		Injuries during delivery of sewer pipes	Me	3	C	9	- Use PPE - Stay out of the operational area - Equal stacking of pipes along the trench and at sufficient distance - Approved equipment - Excavation equipment approved for use as lifting equipment	2	B	4		
		Fall of persons	Me	2	D	8	- Do not walk on installed pipes - Do not let workers work separately	2	C	6		
		Injuries while installing and pulling in pipes	Me	3	C	9	- Always install complete pipes - Use original parts - When grinding or sawing, use protective goggles	3	B	6		
	Liming	Atomisation of lime to adjacent plots	Mi	2	D	8	- Engage specialised subcontractor - Provide for eye washing facilities - Apply the lime out of the wind and do not proceed in strong wind conditions - Hygiene	1	A	3		
3.4	Collector works											
3.4.1	Preparation											
	Soil survey	Incomplete knowledge of condition of soil and connections to be made in the study phase	Me	2	D	8	- Direct on-site observation of location, vegetation and relief - Study of topographic and hydrographic maps - Look up soil surveys - Survey soil stratums and taking samples	2	C	6		
		Insufficient knowledge of soil stratums of site (rocky, sandy, loamy or argillaceous sites)	Me	2	D	8	- Study and map water discharge - Describe pollutions and the way to prevent them from spreading	2	C	6		
	Excavation works	Collapsing following vertical excavation with dragline	Me	3	D	12	- Provide for suited revetment (sheet piles, KRINGS revetment, wooden beams...)	2	C	6		- S-0163: Measures during excavation works
		Collapsing of trenches if soil is unstable	Me	3	C	9	- Create a suited angle of inclination for slopes	3	B	6		- S-0163: Measures during excavation works
		Fall of person in trench	Me	3	D	12	- Physical screening off of excavation area - Provide for sufficient trench entrances and exits - Ensure lighting at night	3	C	9		- Q-0007: On-site excavations - S-0163: Measures during excavation works
		Damage to or rupture in adjacent or intersecting underground installations/pipes	Me, Ma	2	C	6	- Bury or suspend installations/cables/pipe - Select suitable supports (metal, wood...) - Have emergency phone numbers ready - Protect installations against weather conditions - Do not use installations as supports	2	B	4		- S-0253: Temporary electrical installations - S-0163: Measures during excavation works
		Prevent damage to surrounding buildings, on-site roads, public road	Ma	3	C	9	- Carry out site surveys at the start of works - Inform local residents of upcoming works	3	B	6		
		Trench collapses, caves in	Me	3	C	9	- Ensure a minimum trench width - Provide for a watchman - Do not allow any circulation of traffic nearby - Provide for escape ladders	3	B	6		- S-0163: Measures during excavation works
		Physical overexertion when digging manually	Me	3	C	9	- Adopt a good work posture	3	B	6		
3.4.2	Standard collector works											
	Lifting pipes and inspection chambers for installation	Load falls off	Me, Ma	5	C	15	- Use approved D-lock - Correct hitching on of approved chains - Follow lifting instructions of supplier/manufacturer	5	B	10		
		Limbs getting caught	Me	4	C	12	- Stay out of the immediate vicinity during lifting operations and, if necessary, accompany with rope - When lowering the load, do not move below it and see to it that feet do not move under the load when positioning it	4	B	8		
		Cuts while guiding or positioning the load	Me	3	C	9	- Always wear gloves as the seams may be rough or sharp - Use taglines for guiding loads	2	C	6		
		Fall hazard when picking up a chamber	Me	4	C	12	- Initiate the picking up via access hatch of inspection chamber or via a ladder with stable setup	4	B	8		

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		Poor communication between workers/rigger and crane operator	Me	4	C	12	- Use of walkie-talkie, international arm signals or other equivalent means of communication	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0241: Rigger's guide
	Installation of collector	Getting buried due to mechanical introduction of foundation layer	Me	3	C	9	- Good communication and visibility between trench diggers and machine operator - Stay out of the operational range of machine and equipment	3	B	6		
		Delivery of pipes	Me	3	C	9	- Use of PPE: helmet, safety shoes and gloves - Stay out of the operational range of the crane - Equal stacking of pipes along the trench and at sufficient distance from the edge of the trench - Use approved slinging gear and approved hoisting crane	3	B	6		- S-0111: Feet protection
		Fall of persons	Me	4	C	12	- Do not walk on installed pipes	3	B	6		
		Injuries while installing and pulling in pipes	Me	4	C	12	- Always install complete pipes - Only use original parts - When grinding or sawing, use protective goggles	4	B	8		
		Injuries when entering installed pipes for checks or additional works	Me	4	C	12	- Respect the principles for entering confined spaces	4	B	8		
		Drowning during water-tightness test or when valves stop working	Me	5	C	15	- Nobody in zone behind the seal - Close off and/or screen off all openings during the water-tightness test - Never carry out inspections alone	4	B	8		
		Becoming unwell in the installed pipe (during inspection)	Me	4	C	12	- Apply the procedure for working in enclosed spaces	3	B	6		
		Explosion	Me	4	C	12	- Ensure that water is pumped over - Employees are vaccinated - Install ventilation - Measure hazardous substances and gases - Apply the principles for working in enclosed spaces (never work alone!)	3	B	6		
	Installation of accessories	Contact with sewer or waste water resulting in illness	Me	3	C	9	- Do not walk through water - Workers must have received the necessary vaccinations - Workers must be medically examined - Wear the necessary PPE: safety boots, gloves	2	B	4		- H-0004: Overview of vaccinations
		Falling in collector	Me	5	C	15	- No isolated workers - Always close off openings	4	B	8		
	Installation of revetment box	Hand gets caught during assembly of revetment box (e.g. gantry and movable intermediate connection)	Me	4	C	12	- Pay attention and be focussed when carrying out works - Keep away from movable parts of revetment box	3	B	6		
	Connections	Connection to sewers in use: explosion, illness, drowning	Me	4	C	12	- Ensure that water is pumped over - Employees are vaccinated and subjected to medical examinations - Install ventilation - Measure hazardous substances and gases - Apply the principles for working in enclosed spaces	3	B	6		
	Pushing pipes into one another using a push bar	The push bar falls from the crane	Me, Ma	5	B	10	- Use suitable slinging gear - Check that the crane hook is equipped with a safety catch - No one is in the hoisting zone while the beam is being moved by the crane - Once the movement is stopped for positioning the pipe, workers will move into the hoisting zone	5	A	7		- S-0220: Use of push bar for connecting sewer pipes
		Push bar breaks	Me, Ma	4	C	12	- Workers must wear protective goggles. As soon as one hears a crack, one must immediately leave the pipe to be pushed in and use a walkie-talkie or other means of communication to have the works stopped	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0220: Use push bar for connecting sewer pipes
		Risk of being hit or getting caught when handling the push bar	Me	2	C	6	- After having hitched on the load, move out of the crane's danger zone - Always seek eye contact with the crane operator before entering the danger zone	2	B	4		- S-0220: Use push bar for connecting sewer pipes
		Risk of hands or feet getting caught when storing or positioning the push bar	Me	2	C	6	- Always check that hands and feet are positioned so that there is no danger of getting caught - Hold the push bar at one of its fins and not at the joint of the pipe	2	B	4		- S-0220: Use of push bar for connecting sewer pipes
		Push bar falls off for lack of stability of the push bar	Mo	3	C	9	- The necessary additional fins are provided at the push zone of the crane jib and at the edge of the pipes - Correct positioning of push bar - Push bar is always suspended in a second crane during the entire pushing operation	3	B	6		- S-0220: Use of push bar for connecting sewer pipes
		Getting caught between push bar and pipe	Me	4	C	12	- After having positioned himself in the pipe to be installed and using his hands to move the push bar into the correct position, the worker will move away from this work area and go further into the pipe already installed to check the joint - Workers may only leave their position in the pipe after a clear signal to this end from the foreman - While pushing the pipe, it is strictly forbidden to enter the area around the push bar (NO-GO ZONE) - Make sure the necessary means of communication are available and used.	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0220: Use push bar for connecting sewer pipes
	Pulling pipes into one another using a pipe puller	Poor communication between workers/rigger and crane operator	Me	4	C	12	- Use of walkie-talkie, international arm signals or other equivalent means of communication	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0241: Rigger's guide
		Failure to use the correct hoisting equipment (3-chain sling) to transport the pipe puller	Me, Ma	4	C	12	- Only use a 3-chain sling for transport - Instruction note available to workers	4	B	8		
		Use of damaged or deformed 3-chain sling	Me, Ma	4	C	12	- Always check the condition of hoisting equipment before using it - Replace damaged or deformed 3-chain slings immediately - Give the necessary instructions to employees	4	B	8		
		Use of a pipe puller for pulling in unsuited pipes	Me, Ma	4	C	12	- Only allow using the pipe puller for pipes made of reinforced concrete in accordance with DIN 4035 - Pulling in non-reinforced concrete pipes or pipes made from other materials must be prohibited - Give the necessary instructions to employees	4	B	8		
		Use of pipe puller to pull in pipes that are not within the range of the pipe puller	Me, Ma	4	C	12	- Only allow using the pipe puller for pipes that are within its range - Give the necessary instructions to employees	4	B	8		
		Exceeding the maximum pulling force	Me, Ma	4	C	12	- Check in advance what the required pulling force is - Give the necessary instructions to employees	4	B	8		
		Use of a pipe puller that is damaged or defective	Me, Ma	4	C	12	- Always check for damage or defects before use - Immediately report any damage and defects found to the supervisor - Do not use the equipment until the defects have been rectified - Give the necessary instructions to employees	3	B	6		

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		Failure to use a polyester strap as a connecting device between the pipe puller and the crossbar	Me, Ma	4	C	12	- Under no circumstances allow the use of anything other than a polyester strap (e.g. chain or cable)	4	B	8		
		Failure to secure the wheels of the pipe puller	Me, Ma	4	C	12	- Always check that the wheels have been secured to protect the pipe puller from rolling away - Give the necessary instructions to employees	3	B	6		
		Securing the pipe puller at the wrong support angle	Me, Ma	4	C	12	- Make sure that the support angle is set such that the pendulum is within the green range of the indicator plate - Give the necessary instructions to employees	3	B	6		
		Presence of employee in the danger zone between the pipe puller and the crossbar during pulling operation	Me	5	C	15	- Make sure that when pulling, there is never anyone between the crossbar and the pipe puller - The operator must always stand in front of the pipe to be pulled - Give the necessary instructions to employees	4	B	8		
		Use of pipe puller in a wet environment	Me, Ma	4	C	12	- Protect the equipment, especially the hydraulic system and battery, from humidity and make sure it is not submerged in water - Instruction note available to workers	3	B	6		
		Transport of persons using a pipe puller	Me	3	B	6	- Never allow persons to be transported with a pipe puller - Give the necessary instructions to employees	2	B	4		
		Failure of workers to wear personal protective equipment (correctly)	Me	3	C	9	- See to it that personal protective equipment is worn correctly: protective clothing, protective gloves, safety shoes and safety helmet - Give the necessary instructions to employees	3	B	6		- S-0111: Feet protection
		Pipe puller operated by untrained/unskilled personnel	Me, Ma	3	C	9	- Make sure employees have received adequate training - Give the necessary instructions to employees	3	B	6		
		Dropping the crossbar on one's foot	Me	3	C	9	- Always be careful when positioning the crossbar - If possible, position the crossbar with two persons - Give the necessary instructions to employees	3	B	6		
		Use of non-original parts/spare parts	Me, Ma	4	C	12	- See to it that only original parts are used - Give the necessary instructions to employees	4	B	8		
		Affecting proper operation by not cleaning the pipe puller in time	Me, Ma	3	C	9	- See to it that pipe puller is cleaned in time - Give the necessary instructions to employees	3	B	6		
		Non-execution of annual inspection	Me, Ma	3	C	9	- Make sure the pipe puller is checked at least once a year and after repairs	3	B	6		
		Failure to check the proper operation and condition of the pipe puller before using it	Me, Ma	4	C	12	- Always check the proper operation and condition of the pipe puller before using it - Give the necessary instructions to employees	4	B	8		
	Use of pipe-layer for laying pipes	Collision with worker during on-site transport of pipes	Me	4	C	12	- Always pay attention to on-site traffic - Never assume that the machine operator has seen you - Always make eye contact with the machine operator	4	B	8		
		Pipe sliding off the installation pin because the installation pin has not been inserted far enough into the pipe	Me	4	B	8	- The installation pin must always be seated against the board.	3	B	6		
		Overloading the jib of the dragline, which may cause it to drop suddenly	Me, Ma	4	B	8	- Check in advance, in the manufacturer's specifications, the required capacity of the crane - Install a hose rupture valve.	3	B	6		
		Exceeding the maximum capacity of the pipe-layer	Me, Ma	4	B	8	- The maximum capacity of the pipe-layer must be checked beforehand in the manufacturer's specifications - Always consult the table that shows the maximum capacity of the pipe-layer, depending on the length of the pipe to be laid	3	B	6		
		Entering the danger zone near a crane	Me	4	C	12	- Always respect the danger zones (no-go zones) near the pipe to be installed. - Never walk under a load, maintain sufficient distance - Give the necessary instructions to employees	4	B	8		
		Entering the danger zone near the pipe to be installed	Me	4	C	12	- Always respect the danger zones (no-go zones) near the pipe to be installed. - Never walk under a load, maintain sufficient distance - Give the necessary instructions to employees	4	B	8		
		Entering a danger zone while cleaning and greasing the pipe in the trench	Me	4	C	12	- Cleaning and greasing the pipe must take place before the pipe is placed in the trench with the pipe-layer so that no worker needs to enter the trench to do this - Wear gloves to prevent cutting risks - Give the necessary instructions to employees	4	B	8		
		Damage to the pipe to be laid if the interchangeable plastic wear parts on the installation pin are not replaced in time when worn or damaged	Mo	1	C	3	- Carry out a visual inspection - On detecting damage, wear... to the wear parts of the pipe-layer, the damaged/worn parts must be replaced immediately	1	B	2		
		Tilting of crane	Me, Ma	5	B	10	- The pipe-layer should only be used when the dragline is on a stable and level surface	4	B	8		
		Failure to use tensioning straps to secure the pipe-layer to a pallet board	Me, Ma	4	B	8	- The pipe-layer must always be securely fastened to the pallet board using a sufficient number of tensioning straps	3	B	6		
		Failure to correctly hitch on and hoist the pipe clamp	Me, Ma	4	B	8	- The pipe clamp must always be attached to the lifting eyes provided on the base structure - The length of the chains must be adjusted so that the hoisting angle never exceeds 90°	3	B	6		
		Use of unsuited or non-approved hoisting equipment	Me, Ma	4	C	12	- Always use suited and approved hoisting equipment - Give the necessary instructions to employees	4	B	8		
		Being hit by pipe-layer during hoisting operation	Me, Ma	4	C	12	- Never walk under the load (No-go zone) - Always proceed with caution to avoid uncontrolled (pendulum) movements of the load - Always keep the pipe-layer as low to the ground as possible during movements - Give the necessary instructions to employees	4	B	8		
		Failure to check the condition of the pipe-layer before using it	Me, Ma	4	B	8	- Visual inspection prior to use. - In case of cracks, deformations or similar damage, the pipe-layer must definitely not be used again	3	B	6		
		Failure to check the proper operation of the pipe-layer before using it	Me, Ma	4	B	8	- Before each use, the proper operation and condition of the pipe-layer must be tested - In case of defects affecting safety, these must be remedied first - Any use of the pipe-layer is excluded until the defects have been remedied.	3	B	6		

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		Damage due to incorrect storage of pipe-layer	Ma	2	B	4	- Place on a pallet off the ground - Store in a dry and clean place - Do not lay anything on top and do not stack - When the pipe-layer is not used for an extended period, it is recommended to clean it thoroughly to avoid oxidation of the metal parts of the pipe-layer - Give the necessary instructions to employees	2	A	2		
	Use of pipe clamp for installation of pipes	Transport of pipe clamp in incorrect position	Me, Ma	3	C	9	- The pipe clamp must be transported in a correct horizontal transport position so that the lifting eye used to lift the pipe clamp off and onto the truck is approximately above the clamp's centre of gravity - Give the necessary instructions	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Failure to use the transport lugs provided to lift the pipe clamp from a truck	Me, Ma	4	B	8	- Give the necessary instructions - Execution of works by trained personnel	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Hitting people when hitching on the pipe clamp and lifting it off the ground	Me	3	C	9	- Pay attention when hitching on the pipe clamp - Respect the no-go zone so that as few people as possible are present in the danger zone (installation trajectory)	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Failure to correctly set the clamping range. When the arrow indicates 'Halt' ('Stop')	Me, Ma	4	B	8	- The pipe clamp may only be used when the arrow indicates 'Heben' ('Lift') - Hand over instruction note - Execution of the works by experienced personnel; supervision by superior	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Hands getting caught between clamp and pipe while determining the clamping range	Me	3	C	9	- Pay attention when spreading the arms of the clamp - Give the necessary instructions	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Load comes off due to failure to use the pipe clamp correctly as described in the operating manual	Me, Ma	4	C	12	- The clamp should only be used for moving round pipes in a horizontal position close to the ground - Give the necessary instructions	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Load comes off due to exceeding of the maximum load	Me, Ma	4	C	12	- The maximum allowable load for working safely should never be exceeded.	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Presence of employees under the load	Me	5	C	15	- Never work above people - Respect the no-go zone	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Moving pipes with dimensions that are not within the limits of the pipe clamp as described in the specifications	Me, Ma	5	B	10	- Only move pipes when the dimensions match the specifications mentioned in the operating manual and S-card. .	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Use of pipe clamp for simultaneous installation of multiple pipes	Me	4	C	12	- The pipe clamp should never be used to move multiple pipes simultaneously - Give the necessary instructions to employees	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Load tilts or comes off due to incorrect clamping	Me, Ma	5	C	15	- Check that the load is lifted so that the centre of gravity of the pipe is at the level of the clamp - Give the necessary instructions	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Load comes off due to pipes being wet or covered in ice	Me, Ma	4	B	8	- Before starting the works, always check the weather conditions as well as the pipes	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Load comes off due to wear to parts of the pipe clamp	Me, Ma	4	C	12	- Always check for signs of wear before use - Contact TD in case of damage or wear	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Worker gets caught between pipe clamp and pipe or wall...	Me	5	C	15	- Do not enter the danger zone - Pay attention and be focussed when carrying out works	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Use of damaged pipe clamp	Me, ma	4	C	12	- Never use damaged equipment - Always perform a visual inspection of the equipment before use - All damage and other defects to the equipment must be reported immediately - Quarterly inspection by ATK	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Use of a pipe clamp for pipes smeared with mud, concrete... which may reduce the grip around the pipe	Me, Ma	4	C	12	- Always check the neatness of pipes and clamp and clean if needed	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		The load may start swinging or come off if the crane operator makes sudden movements	Me, Ma	4	C	12	- The crane operator must have had adequate training - Give the necessary instructions	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Rolling away of pipes after having been laid down	Me, Ma	4	C	12	- The pipe must be immediately secured against rolling away - Give the necessary instructions to employees	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Use of clamp for pushing or dragging pipes, allowing the pipe to slide	Me	3	C	9	- The pipe clamp should never be used to push or drag pipes - Give the necessary instructions to employees	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Use of non-approved pipe clamp	Me	4	C	12	- Before use, check that the periodic inspection has been carried out (colour of cable tie)	3	B	6		- S-0250: Use of pipe clamp of type WRG 5-150
		Workers getting hit or equipment getting damaged when the load takes too much wind in adverse weather conditions	Me, Ma	4	C	12	- Suspend the works at high wind speeds.	4	B	8		- S-0250: Use of pipe clamp of type WRG 5-150
		Storage of pipe clamp in a wet environment	Me, Ma	3	C	9	- The pipe clamp must be stored in a dry storage area, protected from water and moisture	2	C	6		- S-0250: Use of pipe clamp of type WRG 5-150
	Use of sling for laying pipes	Risk of pipe falling out of sling	Me, Ma	5	C	15	- Check that the pipe is balanced when lifted - Never walk under or next to the load - Use suitable and approved slinging gear - Give the necessary instructions to employees.	4	B	8		
		Injuries due to entering the danger zone near the pipe to be installed	Me	4	C	12	- Always respect the danger zones (no-go zones) near the pipe to be installed - Never walk under a load, maintain sufficient distance - If necessary, use a guide rope to guide the load - Give the necessary instructions to employees	4	B	8		
		Poor communication between workers/rigger and crane operator	Me	4	C	12	- Use of walkie-talkie, international arm signals or other equivalent means of communication	4	B	8		- S-0067: Lifting – Hand-arm signals for crane operators - S-0241: Rigger's guide
		Fall hazard in trench when picking up pipes	Me	4	C	12	- Loosen the hoisting belt from behind the collective fall arrest device around the trench and then use the crane to pull the hoisting belt from under the pipe - In order to avoid friction, grooves must have been made near the hoisting belts in the stabilisation bed of the pipe.	4	B	8		
	Refilling the trench after installation of pipe/inspection chamber	Risk of worker being hit by machine	Me	4	C	12	- Workers must stay out of the danger zone of the crane	3	B	6		
		Getting buried due to mechanical introduction of additional soil	Me	3	C	9	- Good communication and visibility between trench diggers and machine operator - Stay out of the operational range of machine and equipment	3	B	6		- S-0067: Lifting – Hand-arm signals for crane operators
3.4.3	GVK pipes and inspection chambers - N/A											
3.4.4	Specific applications - N/A											
3.5	Foundation works											
3.5.1	Implementation of CFA (Continuous Flight Auger)-piles											
	Taking measurements	Injuries or falling while staking out on the site	Me	2	D	8	- Screen off pits and protruding reinforcing rods - Use spray cans according to user instructions	1	C	3		
		Eye injury caused by laser beam	Me	4	C	12	- Do not look into the beam - Have the device checked every year by the supplier - Use laser device of class 3 or lower	3	B	6		

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	Laying of bulkheads (mats)	Crushing of hands and feet	Me	3	D	12	- Keep an eye on the position of hands and feet - PPE: gloves, shoes - walk within sight of the operator	1	C	3		
	Erecting scaffolding (erecting the mast, extending the undercarriage, securing the mast,...)	Tipping of foundation machine	Ma	4	D	16	- Review the site before starting work - complete checklist site start - verify the machines soil pressure vs. Bearing capacity of the subsoil	4	B	8		
		Breakage of material, slinging gear	Me, Ma	3	D	12	- lifting equipment and attachement must be inspected by EDTC - comment from EDTC should be addressed ASAP - keep an inventory of the slinging gear's attachments	3	C	9		
	Attaching the drill motor and auger, coupling of the augers and the screw head, screwing of the auger	contact with moving parts (manipulations, screws...)	Me, Ma	3	C	9	- prohibited acces around the scaffolding for anyone not working at the company - use a suitable stop device fot lifting the feed tube - be aware of the movements of the machines and parts	3	B	6		
		parts turning away when picking up or putting them down	Me, Ma	3	C	9	- anticipate unexpected movements of the equipment and position firmly, keep eye contact - ramain outsinde the turning radius of the crane	3	B	6		
		instability of equipment	Me, Ma	3	D	12	- prior inspection of the work site by the supervisor, discuss and resolve remarks with the client - work on stable ground, soil characteristics - use mats (bulkheads)	3	B	6		
		exposure to noise	Me	3	D	12	- PPE: helmet with hearing protection, safety shoes, gloves, goggles, protective clothing...) Wearing personal hearing protection from 85 dB(A) is mandatory.	1	C	3		
		Damage to underground pipes	Me, Ma	2	D	8	- PPE: helmet with hearing protection, safety shoes, gloves, goggles, protective clothing...) Wearing personal hearing protection from 85 dB(A) is mandatory.	3	C	9		
		Electrocution, intoxication and explosion or fire in the event of damage to utility lines	Me	4	D	16	- shut off installation - possible pre-digging	3	B	6		
		Exposure to electric current when working in the vicinity of medium or high-voltage lines	Me	3	D	12	- request disconnection of live conductors - observe the safe working distance in order to avoid spark discharges - assume that all air ducts are life-threatening - Set up the lines in GPS modules of machines or other area resticting software/aid	3	C	9		
		Accidents due to impaired vision	Me	2	D	8	- all employees/workers are obliged to undergo an annual medical examination at the occupational health service - regular cleaning of the cabin and windows, Use stickers "Do you see me, do I see you?" - make use of the agreed hand and arm signals	3	B	6		
	Filling the pile with concrete while the screw is turned back	Contact with concrete - cement	Me	2	D	8	- PPE: gloves, goggles, long trousers	2	D	8		
		crushing of limbs	Me	3	D	12	- keep an eye on the position of hands and feet - PPE: gloves, shoes, helmet	3	C	9		
		contact with moving parts	Me, Ma	3	D	12	- pay attention to the movement of work equipment, do not go near it - always keep visual contact with the crane operator and the concrete pumper	3	C	9		
	Insertion of reinforcement basket (with winch foundation machine or auxiliary crane)	contact with reinforcement basket during lifting	Me, Ma	3	D	12	- Attention to movement of the reinforcement basket, never go under load and keep sufficient distance.	3	B	6		
		dislodging of welded parts	Ma	3	D	12	- Remove loose or dislodged parts, visually check the reinforcement baskets beforehand.	3	B	6		
3.5.2	Pile cropping											
	Manual pile cropping with hydraulic or pneumatic jackhammers	Flying debris such as dislodged concrete fragments.	Me, Ma	3	D	12	- Limit people working in the vicinity of the pile. - Proper training on manual cropping techniques. - Keen strategy to limit little concrete fragments and focus on bigger parts. - Choose a correct angle so potential loose parts go away from yourself - Wear PPE: safety glasses/goggles and vizor when needed, gloves, safety shoes, long trousers and long sleeves	1	C	3		
		Tipping over or falling of loosened pieces of pile	Me	5	D	20	- Limit people working in the vicinity of the pile. - Proper training on manual cropping techniques focussing on correct steps of pile cropping in layers. - Keen strategy to limit the amount of concrete above working level. Work in smaller layers so no loosened parts or debris is above people working in the lower areas. - When in doubt on the stability of (the loosened parts of) the pile, test it by pushing with a nearby excavator after taking enough distance. - Stabilize pile head with sling during cutting on the rebar.	3	C	9		
		Musculoskeletal injuries due to repetitive motion, vibration and manual handling of heavy tools	Me	3	D	12	- Avoid long periods of handling tools and use manual handling only for specific areas or remaining spots. - Provide job rotation to limit the exposure time. - Wear antivibrating gloves	3	B	6		
		Risk of injury from or broken tools.	Me, Ma	2	D	8	- Choose correct type of tool and apply in a correct way. - Regular inspection and maintenance of tools. Provide a visual aid to check the periodic inspection of the tools. - Warn technical department when the tool is nog working as foreseen or problems occur during usage.	2	B	4		
		Inhalation of concrete dust or particles	Me	3	C	9	- Limit people working in the vicinity of the pile. - Dust control by using water sprays - Keen strategy to limit little concrete fragments and focus on bigger parts. - Wear correct type of PPE (dust mask with filter) for breathing protection - Provide job rotation to limit the exposure time.	3	A	3		

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		High noise levels from manual striking.	Me	3	C	9	- Limit people working in the vicinity of the pile. - Wear correct type of PPE (ear muffs/caps, plugs, ...) for hearing protection - Provide job rotation to limit the exposure time.	3	A	3		
	Pile cropping with hydraulic hammer/chissel on an excavator	People exposed to flying debris, dust, high noise, ...	Me, Ma	3	C	9	- Avoid people working in the direct vicinity of the pile. Only the operator in the excavator should be in the vicinity of the pile. - Check interaction with nearby piles or other work stations so there's enough distance between them to limit exposure. - Depending on noise levels, operator should wear extra hearing protection inside the cabine. - Provide dust control by applying water spray (in a mechanical way on the excavator, or seperate system). - Allow only presence of people near the pile for e.g. visual inspection after excavator made clearance and is not active.	3	A	3		
		Risk of injury from broken tools.	Me, Ma	2	D	8	- Choose correct type of tool and apply in a correct way. - Regular inspection and maintenance of tools. Provide a visual aid to check the periodic inspection of the tools. - Warn technical department when the tool is nog working as foreseen or problems occur during usage.	2	B	4		
		Tipping over of the machine	Me, Ma	5	C	15	- Correct setting up the machine so maximal distance and angle is safe within limit of the machine. - Avoid deep pits around the piles, excavator on a safe distance of the slope. - Don't allow people under a moving or working excavator	4	A	4		
	Use of a pile cropper (specialized attachement/tool)	People exposed to flying debris, dust, high noise, ...	Me	3	C	9	- Avoid people working in the direct vicinity of the pile. Only the operator in the excavator should be in the vicinity of the pile. - Check interaction with nearby piles or other work stations so there's enough distance between them to limit exposure. - Depending on noise levels, operator should wear extra hearing protection inside the cabine. - Provide dust control by applying water spray (in a mechanical way on the excavator, or seperate system). - Allow only presence of people near the pile for e.g. visual inspection after excavator made clearance and is not active.	3	A	3		
		Risk of injury from broken tools.	Me, Ma	2	D	8	- Choose correct type of tool and apply in a correct way. - Regular inspection and maintenance of tools. Provide a visual aid to check the periodic inspection of the tools. - Warn technical department when the tool is nog working as foreseen or problems occur during usage.	2	B	4		
		Tipping over of the machine	Me, Ma	5	C	15	- Correct setting up the machine so maximal distance and angle is safe within limit of the machine. - Avoid deep pits around the piles, excavator on a safe distance of the slope. - Don't allow people under a moving or working excavator	4	A	4		
3.6	Rough structure works											
3.6.1	General											
	General	Tripping due to difficult passage/cluttered work areas	Me	2	D	8	- Wear a helmet and safety shoes (S3) - Clean up at regular intervals - Place sufficient waste bins - Clean up around saw benches - Regular disposal according to environmental regulations	1	A	3		- E-0028: Sorting of on-site waste - S-0111: Feet protection
		Skin diseases or allergies due to contact with cement or mortar	Me	3	C	9	- Wear suited gloves and work clothes that cover the body to the maximum extent possible - Consult a physician	2	B	4		
		Back injuries due to straining posture	Me	4	D	16	- Apply correct lifting and carrying technique - Assume postures so as to limit the physical efforts - Respect medical examination regulations	3	C	9		
3.6.2	Rough structure works - Formwork											
	General	Tripping due to difficult passage/cluttered work areas	Me	2	D	8	- Clean up regularly - Provide for waste bins for formwork material	1	C	3		
		Eye injury caused by cleaning and removing formwork	Me, Ma	2	D	8	- Wear working gloves, safety shoes, protective goggles and safety helmet - Assume a comfortable posture (work ergonomically) - Stack form panels correctly and in a stable manner, etc.	2	B	4		- S-0111: Feet protection
		Accidents due to poor communication with operator of hoisting crane due to incorrect use of signals/arm signals	Me	2	D	8	- Discuss in advance the general signals/arm signals with crane operator and workers	2	C	6		- S-0067: Lifting – Hand-arm signals for crane operators
		Incomplete formwork	Mo	4	C	12	- Inspection of formwork by site manager/experienced formwork fitter prior to its further use	4	B	8		
	Installation of formwork	Back injuries caused by lifting/handling heavy form panels	Me	3	D	12	- Use cranes and lifting equipment - Apply correct lifting techniques - Work from a scaffold or from an aerial work platform	3	C	9		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Risk of fall/tilting of panel during hoisting	Me	4	D	16	- Always adequately secure/shore up panel - Place loose panels obliquely and secure them on top - Active hitching on of form panels (do not place hoisting hooks on formwork in advance) - Use of correct and approved hoisting equipment. - Good communication between formwork fitter and crane operator - Place the necessary shores before unloading formwork	4	C	12		- S-0067: Lifting – Hand-arm signals for crane operators
		Rotating/turning of panels due to wind load	Me, Ma	3	D	12	- Do not handle panels at wind speeds exceeding 20m/sec - Use guide rope	3	C	9		
		Toppling of installed formwork	Ma	4	C	12	- Apply sufficient braces at different levels - Place braces immediately after having placed formwork	3	B	6		
		Injuries while assembling or fabricating the formwork on site	Me	2	D	8	- Wear PPE	2	C	4		- S-0111: Feet protection
		Fingers getting caught while hitching on formwork	Me	2	C	6	- Follow manufacturer's instructions - Always place hands on the outside - Wear the necessary PPE	2	B	4		- S-0111: Feet protection
		Props being knocked away	Me	4	C	12	- Use original lock pins (no reinforcing steel) during the assembly - Take up props by the outside casing	3	B	6		

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		Fall due to difficult access to work platform	Me	2	D	8	- Provide for a stair tower - Work platform higher than 2m must be protected with handrails - If access via ladder, ladder must be secured at the top	1	C	3		- S-0007: Selection and use of ladders - S-0008: Setting up ladders - S-0092: Mounting, use and release of staircase tower DOKA LAYHERR
		Risk of falling of persons and material when fitting formwork at a height	Me, Ma	4	D	16	- Use work platform fitted with handrails and close off the head end - Good access to work platform - Never climb on formwork	4	B	8		
		Fall of persons and materials/tools when fabricating edge formwork at a height	Me, Ma	4	D	16	- Use scaffolding on the outside of the building and use the work platform of the scaffold as floor (at the same level as the floor slab) - If collective protection is not possible, anchor with harness to a fixed point of attachment - Screen off the area below (falling objects)	4	B	8		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Formwork or parts of it falling down during hoisting	Me, Ma	4	C	12	- Check the completeness of the formwork and the securing of the various components - Correct hitching on of formwork using approved hoisting equipment - Take wind speed into account - Guide large form panels with a rope - Do not hoist above persons and do not walk under the load - Reserve the work area for the employees involved in the works only	4	B	8		
	Climbing formwork	Fall due to difficult access	Me	2	D	8	- Provide access with man basket - Draw up special safety procedure	1	C	3		
	Thin formwork slabs	Falling on adjacent underlying reinforcement	Me	4	C	12	- Use work platform fitted with handrails and close off the head end - Screen off the underlying reinforcement	4	B	8		
	System formwork	Injuries during handling due to the use of non-original parts	Me	2	D	8	- Follow manufacturer's instructions - All supplier's hoisting equipment must be inspected on site and then included in the quarterly inspection - Wear the necessary PPE	2	C	6		
		Injuries due to the use of centring pins and in suspension cones of different lengths to be concreted	Me	4	C	12	- Observe the manufacturer's instructions - Use only 1 type of centring pin (long) within the company - Whenever centre pins are being mounted, check whether they can be screwed on properly	3	B	6		
	Battery formwork	Incorrect use of battery formwork	Me	2	E	10	- Use the formwork according to the manufacturer's instructions	2	D	8		
	Manto panels	Manto panels falling down while hoisting with crane or telescopic handler	Me, Ma	3	C	9	- Use correct hoisting method - Use correct and approved hoisting equipment (Manto clamps)	3	B	6		- S-0216: Hoisting package of Manto formwork
		Injuries caused by loose clamps that remain snagged onto the panel	Me	2	D	8	- Pull out the Manto clamp from the panel entirely - Hold and guide the Manto clamps until they have been hoisted over the panel	2	C	6		- S-0216: Hoisting package of Manto formwork
		Hitched on Manto panel comes off the Manto clamp	Me, Ma	3	C	9	- Fasten unused hooks to the ring - Only used approved clamps	3	B	6		- S-0216: Hoisting package of Manto formwork
	Installation of props	Getting caught or other injuries while installing and removing props	Me	2	D	8	- Wear work gloves, safety helmet and safety shoes - Use original locking pins when mounting the props (no rebars) - Hold props by the outer casing	2	B	4		
		Toppling of formwork due to the use of incorrect pulling and pushing props	Me	4	D	16	- Accurately follow the formwork plan - Make sure the correct equipment is available on site	4	C	12		
		Toppling of formwork due to incorrect fastening of props	Me, Ma	4	D	16	- Correct securing of props to the formwork panels using locking pins and wedges - Anchor the props in the floor slab. - Wear protective goggles when drilling into the floor slab - Secure the props so that they cannot slide in or out - Always use the original locking pins (no rebars)	4	C	12		
	Removing the formwork	Allergies due to the use of dismantling oil	Me	3	C	9	- MSDS available at the workplace and hazards known to workers - Apply oil using spraying equipment if there is no wind and/or when working out of the wind - Wear protective goggles and safety gloves	2	B	4		- S-0186: Use of dismantling product PIERI LM E-22 E-22
		Environmental pollution due to spillage of dismantling oil	Mi	3	C	9	- MSDS available at the workplace and hazards known to workers - Oil stored above drip-trays - Apply oil using spraying equipment if there is no wind and/or when working out of the wind - Shield off the surroundings - Wear protective goggles and safety gloves	2	B	4		- S-0186: Use of dismantling product PIERI LM E-23 E-22
		Disconnected panels falling down	Me, Ma	4	C	12	- Form panels must always have been hitched on and be suspended in the crane before removing the props	4	B	8		
		Tipping/knocking over of temporarily stacked panels	Ma, Me	4	C	12	- Secure high, obliquely positioned panels against sliding off - Secure high panels at the top against bad weather conditions - Neat, horizontal stacking with intermediate girders	4	B	8		
		Fall hazard when cleaning the panels and greasing them with concrete form oil	Me, Ma	4	C	12	- Separate stacking and rapid disposal	4	B	8		
		Fall hazard on underlying reinforcement when dismantling formwork	Me	4	C	12	- Close off work platforms laterally - Cover underlying reinforcement with correct screening caps (reinforced with steel) - Demarcate the work zone	4	B	8		
		Outriggers pulled down when removing formwork between DOKA beams and ceiling	Me, Ma	3	C	9	- Where possible use tripods and set them up correctly - Keep on holding the respective outriggers	3	B	6		
		Materials falling down	Me, Ma	3	D	12	- Use correct working method for removing the formwork (work step by step).	3	C	9		
		Risk of falling when reaching the upper side of the formwork	Me, Ma	3	D	12	- Never climb on formwork - Use sufficiently high ladder according to the height of the form panel - Always secure access ladders	3	C	9		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
		Persons falling	Me	4	C	12	- Pick up the formwork in the crane hook from an aerial work platform or scaffold - Disconnect the steel shuttering cramps while standing on a scaffold or on the ground.	4	B	8		
3.6.3	Rough structure works - Reinforcement											
	General	Injuries due to falling rebars	Me, Ma	4	D	16	- Always check rebar packages for loose bars before lifting the package - Always use approved crane and approved hoisting equipment - Do not use the slings used for the delivery (single-use lifting belts) to handle rebars on site - Do not hoist above persons	4	A	12		- S-0073: - Lifting - hoisting belts
		Injuries due to improper fastening of rebar packages	Me, Ma	4	D	16	- Always check rebar packages for loose bars before lifting the package - Do not use the slings used for the delivery (single-use lifting belts) to handle rebars on site	4	C	12		- S-0073: - Lifting - hoisting belts
		Fall of person from a height in reinforcement cage or on rebars	Me	4	C	12	- Always shield protruding reinforcement around the ladder with proper protective caps (reinforced with steel)	3	C	9		
		Injuries as hands may stick to rebars in freezing weather	Me, Ma	2	C	6	- Wear work gloves	2	B	4		
		Injuries/cuts caused by walking into protruding rebars	Me	2	D	8	- Shield protruding reinforcement - Wear suitable work clothes (long trousers and long sleeves)	1	C	3		

Risk and Impact Register

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		Injuries when picking up steel structures	Me, Ma	2	D	8	- Check that the structures haven't folded into one another - Wear the necessary PPE	2	C	6		
		Injuries from walking on reinforcement mats or contact with protruding rebars	Me	2	D	8	- Place work platform on inner formwork - Provide for wooden bearing surfaces that can be placed onto the reinforcement mat so as to avoid tripping and ensure a good load distribution - Shield protruding reinforcement - Wear suitable work clothes and safety boots - Avoid using reinforcement mats with meshes that are too big	2	C	6		
	Cutting and bending of reinforcement	Tripping over rebars lying about at the workplace	Me	2	D	8	- Pay attention to order and cleanliness at the workplace - Place a waste bin at the workplace - Keep passages and walkways clear	2	C	6		- E-0028: Sorting on-site waste
		Eye injuries when cutting reinforcement	Me	2	D	8	- Wear protective goggles	2	C	6		
		Cuts from handling rebars	Me	2	D	8	- Wear working gloves and suitable work clothes (long trousers and long sleeves)	2	C	6		
		Electrocution	Me	2	C	6	- Only work with approved equipment with double insulation that is visually checked on a daily basis - Protect electrical cables and do not guide them over sharp edges	2	B	4		
		Burns from cutting off or burning through reinforcement	Me	2	D	8	- Wear suitable work clothes (flame-retardant when working with cutting torch) - Wear PPE	2	C	6		
	Fabrication of reinforcement cage	Falling from a height	Me	4	D	16	- Reinforcement works on reinforcement cage (including installation of spacers) should be carried out at ground level wherever possible - Use an aerial work platform, scissor lift or (mobile) scaffold if the work cannot be carried out at ground level	4	B	8		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
		Injuries due to falling reinforcement cage	Me	4	D	16	- Correct hitching on of reinforcement cage with approved hoisting equipment - Do not hoist above persons - The work zone must be kept free of non-involved employees (no-go zone)	4	B	8		- S-0073: - Lifting - hoisting belts
	Fabrication of reinforcement cage	Injuries when connecting the reinforcement cage with connection rebars	Me	2	C	6	- Wear PPE	2	B	4		
		Injuries caused by toppling of reinforcement cage	Me	3	C	9	- After having interwoven the cage, lower the hoisting chain a bit to check if it remains standing. Only then, the cage may be disconnected from the tower crane	3	B	6		
		Fall hazard when picking up a reinforcement cage	Me	3	C	9	- Use a properly constructed scaffold - Always keep both feet on the platform floor	3	B	6		
3.6.4	Rough structure works - Concrete works											
	General	Irritation of skin or eye injuries on contact with concrete or mortar	Me	2	D	8	- Wear the necessary PPE (gloves, protective goggles, safety boots) - Wear suitable work clothes - Limit casting height in case of a floor slab + guide the flexible hose of the concrete kibble - Wear work clothes	2	C	6		- S-0111: Feet protection
		Risk of falling, slipping	Me	2	D	8	- Avoid wet and/or unpaved surfaces (e.g. fresh concrete) - When working on a slope, carry out the task at hand from the bottom, not from the top - Perform an LMRA	2	C	6		- S-0175: Performing an LMRA
		Contamination from surplus concrete	Mi	2	D	8	- Have the concrete supplier take back residual concrete or cast it at a suitable location where it does not interfere with the works	1	D	4		
	Use of concrete kibble	Fall of persons from platform of concrete kibble	Me	4	D	16	- Use concrete kibble with a work platform fitted with railings - Explain the use of personal fall protection when working from the concrete kibble platform - Agree on communication with hoisting crane operator	4	B	8		- S-0017: Concrete kibble with space for one or two persons S-0067: Lifting – Hand-arm signals for crane operators
		Hoisting accessories breaking off	Me, Ma	4	D	16	- Select hoisting equipment according to the weight of the concrete kibble + concrete - Only use approved hoisting equipment and approved hoisting cranes - Do not lift above people	4	B	8		- S-0017: Concrete kibble with space for one or two persons
		Formwork bursts open due to hydraulic pressure of concrete	Me, Ma	4	C	12	- Use of solid metal formwork elements - Sufficient props at different levels of formwork - Cast concrete in several layers or phases	3	B	6		
		Fingers getting caught while hitching on or picking up the concrete kibble	Me	3	B	6	- Wear work gloves - Give clear signals to the machine operator - When using an "Eichinger" concrete kibble of 3m³, one must use a short chain mounted as a fixed part onto the concrete kibble so that one must connect or disconnect the chain to or from the cable block.	3	A	3		
		Fall of person from scaffold while casting concrete	Me	4	C	12	- Use properly erected scaffold with the necessary collective protective equipment - Only work from a cleared scaffold - Make the scaffold high enough so that all works can be carried out easily from the platform floor	4	B	8		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
	Use of concrete pump	Injuries or material damage caused by tipping or subsiding of concrete pump	Me, Ma	3	C	9	- Determine location for stable set-up of concrete pump in advance	3	B	6		
		Getting a blow from the concrete hose while pumping or while moving the concrete hose	Me	3	D	12	- Secure hoses against being blown away - Move concrete hoses using suited auxiliary tools - Correct work posture when holding the nozzle	3	C	9		
		Injuries caused by the impact of a falling concrete hose	Me	3	C	9	- Sections of the concrete hose are additionally secured at the metal rings between two sections of the concrete hose	3	B	6		
	Compaction of concrete	Electrocution	Me	3	C	9	- Take good care of the electric wiring - Place concrete mixer close to the spot where concrete is poured - Suspend cables and do not pull them	3	B	6		
		Vibrations during use of needle vibrators/concrete mixers	Me	3	C	9	- Wear gloves as vibration absorbers - Work with intervals to avoid continued exposure to vibrations	3	B	6		
		Back and muscle pain	Me	2	C	6	- Assume a correct posture - Do not pull the hose of the needle vibrator inexpertly when jammed.	2	B	4		
		Fall of persons from scaffold while vibrating concrete	Me	4	C	12	- Use properly erected scaffold with the necessary collective protective equipment - Only work from a cleared scaffold - Make the scaffold high enough so that all works can be carried out easily from the platform floor - When using the needle vibrator, ensure that the hose does not obstruct the workers and does not wind around them	4	B	8		- S-0061: Setting up, releasing and use of fixed scaffolds LAYHER
	Core drilling	Use of non-approved equipment	Me	4	C	12	- Use approved equipment only - Inspection certificates available on site	4	B	8		
		Significant physical strain	Me	4	C	12	- Ergonomic work posture - Use auxiliary tools - Lift with 2 persons - Use correct lifting techniques	3	B	6		
		Jamming of drill bit when drilling anchor holes	Me	3	C	9	- Use approved equipment only - Fitted with anti-blocking system	3	B	6		
		Exposure to vibrations	Me	4	C	12	- Regular maintenance of equipment - Use low-vibration equipment - Include risk in medical supervision	3	B	6		

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		Injuries to limbs caused by contact with moving parts	Me	4	C	12	- Shield rotating parts - Keep sufficient distance - No loose clothing	3	B	6		
		Hand injuries	Me	4	C	12	- Wear safety gloves	3	A	9		
		Release of dust	Me, Mi	3	C	9	- Clean the area where drilling operations take place - Wear dust mask	2	C	6		- S-0076: Selection table dust mask - gas mask
		Damage to parts to be retained	Ma	3	C	9	- Clear description of holes to be drilled - Ensure stability - Mark out work area - Place supports	3	B	6		
		Hearing damage	Me	4	C	12	- Use low-noise equipment - Use hearing protection - Include risk in medical supervision	3	B	6		- S-0195: Use of otoplastics - S-0196: Use of earplugs
		Fall of persons during works	Me	5	C	15	- Use rolling scaffold - Mount railings - Use original parts - Release scaffold after its erection and after every alteration (scaffold tag)	4	B	8		
		Fall of objects	Me, Ma	4	C	12	- Never walk under the work zone (no-go zone) - Wear safety helmet	3	B	6		
		Contact with projected particles	Me	4	C	12	- Avoid projection in work zone by correct positioning of tools in the work zone - Shielding of persons in the immediate vicinity - Wear the necessary PPE	3	B	6		
3.6.5	Rough structure works - Masonry works - N/A											
3.6.6	Rough structure works - Prefabricated elements - N/A											
3.7	Roof structures - N/A											
3.8	Finishing											
3.8.1	Outdoor landscaping											
	Foundation	Irritation from contact with insecticides and crop killers during spraying	Me, Mi	3	C	9	- Well-considered choice of products - SDS datasheet: available on the site, read it before use - Inform neighbourhood - Clear the site - Spray along with the wind - Wear PPE (goggles and mask) - Work hygienically (washing of hands)	2	B	4		
		Injury due to poor visibility while driving on top soil	Me	4	C	12	- Screen off and light work and driving areas - Acoustic signal when truck/machine is in reverse gear - Capable drivers and machine operators	4	B	8		
		Collision	Me	5	C	15	- Acoustic signal when reversing - Contact with driver/machine operator - Avoid simultaneous activities as much as possible	4	B	8		
		Truck gets stuck or topples	Me	4	C	12	- Take weather conditions into account - Stability of roadway/knowledge of soil and subsoil - Provide for a paved track	3	B	6		
		Noise nuisance	Me	3	D	12	- PPE: hearing protection	2	D	8		- S-0195: Use of otoplastics - S-0196: Use of earplugs
		Cable is hit when unloading material	Me, Ma	4	C	12	- Clear marking of cable - Personal and verbal notification on first delivery to the site	3	B	6		
	Tiles/cobblestones/clinkers	Fall of objects	Me	4	C	12	- Pay attention when stacking pallets - Do not lift pallets with its shrink-wrapping - PPE: safety shoes and safety helmet	4	B	8		
		Excessive physical strain: knee/back injuries	Me	3	C	9	- Adopt a good work posture: information and instructions - Job rotation/regular change of work - Request assistance from colleagues/crane - Place pallets immediately in the right place - Take into account max. weight: cement and sand bags of 25 kg - PPE: e.g. knee pads	3	B	6		
		Exposure to hazardous products: skin, eyes and breathing (inhalation of dust)	Me	3	C	9	- Use of PPE: gloves, dust mask and protective goggles - Take wind direction into account	2	C	6		- S-0076: Selection table dust mask - gas mask
		Cuts from broken/cut tiles or contact with grinding wheel	Me	3	C	9	- PPE: gloves - Never dismantle or disable a machine's safety devices - Use CE-marked machines	2	B	4		- S-0153: Use of angle grinder
		Noise nuisance	Me	3	D	12	- Use of PPE: hearing protection - Limit simultaneous activities: make arrangements with co-contractors and respect timing - Regular maintenance of machinery - Order customised clinkers: e.g. half pieces, 'cardinal's caps'	2	C	6		- S-0195: Use of otoplastics - S-0196: Use of earplugs
		Particles bouncing off when grinding to size	Me	3	C	9	- PPE: protective goggles and hearing protection - Never dismantle or disable a machine's safety devices - Cut clinkers if possible instead of grinding them	2	B	4		
	Coping stones and gutters	Fall of objects	Me	4	C	12	- Pay attention when stacking pallets - PPE: wear safety shoes	4	B	8		
		Excessive physical strain	Me	3	C	9	- Adopt a good work posture: information and instructions - Job rotation/regular change of work - Request assistance from colleagues - Assistance of crane fitted with coping stone clamp - Place pallets immediately in the right place - Take into account max. weight of 25 kg	3	B	6		
		Limbs getting caught in between coping stone clamp	Me	4	C	12	- Check safety mechanism of coping stone clamp - Only use CE approved clamp	3	B	6		
		Cuts from broken/cut coping stones or contact with grinding wheel	Me	3	C	9	- PPE: dust mask, protective goggles and gloves - Never dismantle or disable a machine's safety devices - Only use CE-approved equipment	2	A	6		- S-0076: Selection table dust mask - gas mask - S-0153: Use of angle grinder
		Noise nuisance	Me	3	D	12	- Use of PPE: hearing protection - Regular maintenance of machines	2	A	6		- S-0195: Use of otoplastics - S-0196: Use of earplugs
		Injuries due to particles bouncing off when grinding coping stones/gutters to size	Me	3	C	9	- PPE: protective goggles - Never dismantle or disable a machine's safety mechanisms	2	B	4		
	Cleaning of manhole cover	Manhole cover falling shut/sliding off	Me, Ma	3	D	12	- Use wooden bar to avoid the cover from falling shut - Use suited cover lifting equipment or hand tools	3	C	9		
4	Specific situations											
4.1	Works at night											

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	General	Accidents due to poor visibility	Me	3	C	9	- Provide for adequate lighting - Perform critical activities during the day wherever possible - Provide personal head lamps for employees - Wear fluorescent jacket - First aider present during night work	2	B	4		
		Accident due to fatigue	Me	4	C	12	- Respect working hours by splitting day and night shifts - Organise transition between day & night rhythm - Sufficient rest	3	B	6		
		Nuisance for third parties due to excessively bright lighting	Me	2	C	6	- Adjust lighting to limit nuisance to third parties - When there are no activities, switch off lights	2	B	4		
4.2	Confined space											
	General	Suffocation	Me	5	C	15	- Perform gas measurement before entering the space (registration through confined space permit) - Measure oxygen levels and leave the space immediately in the event of an alarm - Presence of watchman at the entrance to the space to sound the alarm if necessary - Provide for adequate ventilation of the space	4	B	8		
		Electrocution caused by lighting during works in confined space	Me	4	C	12	- Use LED lighting (safe voltage) - Work in dry rooms or use 50 V voltage	3	B	6		
		Fall at entrance to confined space	Me	3	C	9	- If a ladder is used, it should always be stable and secured - Remove handrails only at the location of the ladder and keep clearances limited - Adequately cordon off entrances to the confined space or place barrier strips at ample distance to prevent falls	2	B	4		- S-0007: Selection and use of ladders - S-0008: Setting up ladders
		Fall of objects due to removal of material	Me	4	C	12	- Never walk under suspended loads - Communication between person in confined space and those removing the material	3	B	6		- S-0067: Lifting – Hand-arm signals for crane operators
		Intoxication or poisoning due to accumulation of toxic gases	Me	4	C	12	- Provide for additional ventilation - Consult safety data sheet of products used and apply the control measures described in it	3	B	6		
		Evacuation of person from confined space.	Me	5	C	15	- In case of gas meter alarm, never enter the space - Call emergency services in case of unconsciousness - Execute works with safety harness, if the space is very confined to evacuate someone from - Never work alone. There must always be a second person present.	4	B	8		- S-0177: Instructions for use of MiniRAE 2000 PID meter - S-0179: Instructions for use of QRAE II gas meter
4.3	Works near railway tracks - N/A											
4.4	Works near water - N/A											
4.5	Diving works - N/A											
4.6	Works near a power plant - N/A											
4.7	Works below high-voltage transmission lines											
	General	Contact with high-voltage transmission line (150 kV- 380 kV)	Ma	4	C	12	- Consult with grid operator for establishing the necessary safety measures (safety distances to be observed, establishing of clear heights below high-voltage transmission lines) - Establish emergency procedure for the event of contact with high-voltage transmission line	4	B	8		- S-0097: Works near overhead lines
		Spark breakdown when approaching the safety zone	Me, Ma	4	C	12	- Consult with grid operator for establishing the necessary safety measures (safety distances to be observed, establishing of clear heights below high-voltage transmission lines) - Establish emergency procedure for the event of contact with high-voltage transmission line - Limit the height of the crane boom so that it cannot enter the safety zone	4	B	8		- S-0097: Works near overhead lines
		Contact with high-voltage transmission line (150 kV- 380 kV) when setting up the crane	Ma	5	C	15	- Consult with grid operator for establishing the necessary safety measures (safety distances to be observed, establishing of clear heights below high-voltage transmission lines) - Establish emergency procedure for the event of contact with high-voltage transmission line - Consider the possibility of setting up the crane outside the safety zone of the high-voltage transmission line	4	B	8		- S-0097: Works near overhead lines
		Spark breakdown when approaching the safety zone while setting up the crane	Ma	4	C	12	- Consult with grid operator for establishing the necessary safety measures (safety distances to be observed, establishing of clear heights below high-voltage transmission lines) - Establish emergency procedure for the event of contact with high-voltage transmission line - Consider the possibility of setting up the crane outside the safety zone of the high-voltage transmission line	4	B	8		- S-0097: Works near overhead lines
		Fall hazard for machine when backfilling soil	Me	5	C	15	- A safety distance of 1 metre must be maintained between the machine and the edge of the slope. If this is not possible, the subcontractor should use a less wide machine (to ensure the safety distance can be maintained) or carry out the backfilling manually (in which case a safety harness must be worn).	4	B	8		
		Fall hazard for worker while compacting backfilled soil	Me	5	C	15	- A machine can be used for compacting the backfill provided that the safety distance of 1 metre from the edge of the slope is observed. - If the safety distance cannot be respected, a vibrating plate (manually operated) should be used. In this case, the worker must anchor himself using a harness and lifeline.	3	B	6		
4.8	Working in warm weather											
	General	Incineration	Me	3	D	12	- Adapt the work schedule by starting earlier (if possible) - Provide work clothes that fully cover the body and ensure that they are worn - Organise work so that all workers can work in a shaded area if possible. Take weather forecasts into account. - Provide for a site shed so that workers can take a break in the shade	2	D	8		- S-0217: Working in warm weather
		Dehydration	Me	3	C	9	- Provide for sufficient cool drinks (no-alcohol policy) - Perform measurements if this is considered necessary (occupational physician, employees' representatives...) - Evaluate + possibly provide air-conditioning systems in the site shed and in machines - Adapt the intensity and characteristics of the task to be performed to the actual conditions - Set up the shed in a shaded area - Avoid caffeinated drinks	2	B	4		- H-0006: Heat stress & dehydration symptoms of the body - S-0217: Working in warm weather
		Sunstroke and/or heat stroke	Me	3	D	12	- Provide work clothes that fully cover the body and ensure that they are worn - Adapt the work schedule by starting earlier (if possible) - Job rotation so that workers are not constantly exposed to the sun - Reduce exposure	2	C	6		- H-0006: Heat stress & dehydration symptoms of the body - S-0217: Working in warm weather

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		Other health complaints	Me	3	D	12	- Carry out periodic health monitoring + offer the possibility of a spontaneous consultation - Presence of first aider + the necessary first aid equipment available - Make protective sunglasses available - Take into account side effects of any medication taken - General ban on alcohol and drugs - Perform measurements if this is considered necessary - Give the necessary information and training	2	C	6		- S-0217: Working in warm weather
		Accidents due to impaired concentration/responsiveness	Me	3	D	12	- Adjustment of working hours - Rotation of tasks if possible	3	C	9		- S-0217: Working in warm weather
		Falling objects due to perspiration (slippery hands)	Me	3	C	9	- Wear safety gloves - Provide for disposable paper towels to dry hands and face	2	C	6		- S-0217: Working in warm weather
		Blinding by the sun	Me	3	D	12	- Make protective sunglasses available	2	D	8		- S-0217: Working in warm weather
		Burns caused by contact with heated/hot surfaces	Me	3	C	9	- Wear safety gloves - Be extra careful for metals	2	C	6		- S-0217: Working in warm weather
		Incendiary intoxication due to presence of hazardous substances	Me	3	C	9	- Specific storage of hazardous products (out of the sun) - Sufficient ventilation in shed - Presence of approved fire extinguishers	2	B	4		- S-0217: Working in warm weather
4.9	Working in cold weather											
	General	Hypothermia	Me	4	C	12	- Organisation of work so that, if possible, workers can work in an area sheltered from wind, cold and rain - Make available work clothes that keep the whole body warm - Provision of sufficient hot drinks - Check whether it is possible to adapt the intensity and characteristics of the task to be performed to the actual conditions - Provide for heating in site shed - Perform measurements if this is considered necessary - Adjustment of planning according to climate and seasons	3	B	6		
		Frostbite	Me	4	C	12	- Make available work clothes that keep the body sufficiently warm - Wear safety gloves when touching cold surfaces	3	B	6		
		Raynaud's phenomenon (musculoskeletal disorders)	Me	3	C	9	- Avoid works that cause vibrations (e.g. pneumatic drill)	2	C	6		
		Diseases	Me	3	C	9	- See to it that the temperature difference between inside and outside is not too high - Maintain hygiene in the shed and regularly wash hands - Wear sufficient work clothes - Wear clothes that protect against rain and snow (wet clothes: faster cooling down) - Give the necessary information and training	3	B	6		
		Slipping on slippery surfaces or ice	Me	3	D	12	- Spreading of salt - Avoid slippery surfaces (formwork timber) - Place corresponding signs at hazardous spots - Demarcation of zone	3	C	9		
		Radiators catching fire	Me	4	C	12	- Do not cover radiators with clothing - Do not store inflammable products nearby - Provide for adequate ventilation - Provide for certified fire extinguishers - Proper maintenance of radiators	3	B	6		
		Falling in cold water	Me	5	C	15	- Provide for collective protection - Wear life jackets - Provide for thermal blankets - Provide for first aid assistance on the site	4	B	8		
		Facilities/pipes breaking down	Mo	3	C	9	- Insulation of pipes - Close windows and doors	2	B	4		
5	Events - N/A											
5.1	Open-site day - N/A											

Annex E: Winter Plan BESGRE24.227

WORKING IN COLD ENVIRONMENT - WINTER PLAN GBL 7- BESGRE24.227

JAN DE NUL GROUP

Document control

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Review and approval

Revision	Date	Responsible	Content reviewer	Approver
00	13-dec-2024	Carolien Symkens	Mike Van Geert	Niek Van Boxstael

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1 Scope

1.1 Purpose of this document

This Winter Plan outlines the project's approach and preparation to ensure safe and efficient operations in cold environments. It provides an overview of the risks associated with cold weather conditions, the precautionary measures and resources needed to protect employees.

The primary goal is to safeguard the safety and well-being of all employees by responding quickly and effectively to cold-related risks. This not only protects workers but also prevents potential negative impacts on equipment and the environment. This Winter Plan is part of the broader QHSSE Implementation Plan and should be read in conjunction with other relevant documents addressing cold weather risks and emergency procedures.

The plan was developed by the (Sr.) QHSSE Advisor in close collaboration with the Project Management Team. It applies to all project personnel, including subcontractors and suppliers, involved in contract-related activities. All personnel on-site will receive clear instructions to act in accordance with the guidelines of this plan.

In addition to this Winter Plan, Jan De Nul provides supplementary documentation to enhance preparedness. These supporting documents are detailed in Section 11.

1.2 Project location

Adress: Rue des Roseaux, 7331 Saint-Ghislain

1.3 General project information

This project is being carried out at a construction site in Saint-Ghislain, which requires specific precautions and adjustments due to the ongoing business activities at this location.

A stockpile will be put in place, with soil coming from the treatment centre from Jan De Nul.

2 References

2.1 Instructions, standards and guidelines

The documents referred to below are absolutely essential for the application of this document.

(1) ISO 9001:2015 standard
(2) ISO 14001:2015 standard
(3) ISO 45001:2018 standard
(4) VCA**

2.2 Jan De Nul Group Documents

(1)	Cold Environments and Cold Stress Control	*CARD S-0331.e*
(2)	Working in cold environments	*JDN.Instr.2018.e*
(3)	Working in Cold Weather	*S-0240.e*

3 Identification of Winter Hazards (working in cold environments)

Working in cold environments presents unique risks that must be identified and properly managed to ensure the safety and health of workers. On this project, which involves outdoor activities during the winter period, several cold-related hazards must be considered. These hazards can pose serious risks to both workers and equipment if not properly mitigated. Below, we outline the main cold weather hazards relevant to this site:

3.1 Health Hazards

Cold conditions can be harmful to the health and comfort of humans as they influence body temperature. When exposed to extreme cold, the body reacts by trying to stay warm, shutting down the loss of water through sweating to reduce heat loss, and activating involuntary muscle activity, such as shivering, to generate more heat. However, if the body temperature drops below 35°C, it can lead to hypothermia, a dangerous condition where the body can no longer regulate its core temperature.

3.1.1 Hypothermia

Hypothermia is a well-known phenomenon in cold environments and poses a significant risk if immediate action is not taken to restore body heat. It occurs when the body's core temperature drops to 35°C.

3.1.1.1 Causes of Hypothermia

- Cold and wet conditions
  These significantly reduce the insulating properties of clothing. When clothing becomes wet from rain or snow, it loses its insulating capabilities, causing the body to lose heat much faster.
- Windchill
  The effect of cold combined with wind lowers the perceived temperature, further increasing heat loss.
- Prolonged exposure to cold
  Even at moderate temperatures (between 5°C and 10°C), prolonged exposure can lead to hypothermia, especially if workers are insufficiently protected against the cold.

3.1.1.2 Symptoms

Early and mild symptoms include shivering, slurred speech, mental slowness or lethargy, muscular stiffness clumsiness. Symptoms of severe hypothermia include mental confusion, disorientation, stupor or coma, absence of shivering, stiff or rigid muscles, shallow and very slow breathing, weak pulse and fall in blood pressure. This can lead to disorientation, panic and even cold shock.

In this project, there is a real risk of hypothermia for workers who are exposed to cold and wet weather conditions for extended periods. Since the work takes place outdoors, particularly during the winter months, workers may be exposed to rain, snow, or muddy conditions, which can reduce the insulating properties of clothing and cause the body to lose heat more quickly. This increases the likelihood of hypothermia, especially when adequate protection from the elements is not provided.

3.1.2 Frostbite

Frostbite is a serious injury that occurs when skin and other tissues freeze due to prolonged exposure to cold temperatures. It usually affects the extremities, such as fingers, toes, ears, and the nose, as these parts of the body are more susceptible to the cold. When the body is exposed to freezing temperatures, blood vessels constrict to preserve core body heat, reducing blood flow to extremities, which increases the risk of tissue damage.

3.1.2.1 Causes of Frostbite

- Exposure to cold air
  Prolonged exposure to cold, windy conditions can lower the skin temperature, leading to frostbite. This risk is increased when the air temperature drops significantly below freezing (0°C or 32°F), especially with windchill, which accelerates heat loss from the body.
- Touching cold objects
  Contact with metal or other materials with a surface temperature below 0°C can also cause frostbite. Materials like iron or steel, especially in environments such as industrial or outdoor work settings, can become dangerously cold and cause tissue damage upon direct contact.

3.1.2.2 Symptoms

In the early stages of frostbite, the skin may become red, cold, and numb, and a tingling sensation or "pins and needles" may occur. As the condition progresses, the skin may turn white or pale and become hard or waxy in texture, with a loss of sensation in the affected area. In severe cases, the skin and underlying tissues may freeze completely, resulting in permanent damage. This can lead to the development of blisters, blackened skin, and necrosis (tissue death), which may require medical intervention or even amputation in extreme cases.

3.1.3 Trench Foot

Trench Foot is a serious condition that occurs when the feet are exposed to prolonged wet and cold conditions, causing tissue damage due to prolonged exposure to moisture and reduced blood circulation. It primarily affects the feet but can also impact the lower legs if the exposure continues. The condition develops as wet feet lose heat much faster than dry feet, which leads to the cooling of tissues and constriction of blood vessels. This limits the flow of oxygen and nutrients to the affected areas, leading to damage.

3.1.3.1 Causes of Trench Foot

- Prolonged exposure to wet and cold temperatures
  Trench foot can occur even at temperatures as high as 15°C if the feet remain constantly wet. Wet feet lose heat 25 times faster than dry feet, which increases the risk of developing the condition.
- Wearing wet shoes and socks
  Keeping feet in wet footwear for extended periods, especially in conditions where the feet cannot dry out, significantly increases the risk of trench foot.

3.1.3.2 Symptoms

In the early stages of trench foot, the skin may become red, swollen, and numb, with a cold or tingling sensation, sometimes accompanied by a "pins and needles" feeling. As the condition progresses, the skin may turn pale or blotchy, harden, and blisters may form, with the area becoming increasingly numb. In severe cases, the lack of oxygen and nutrients, combined with the build-up of toxic waste products, can cause the skin tissue to die, leading to permanent damage, and in extreme cases, amputation may be necessary.

3.2 Slippery Surfaces and Ice Hazards

During the winter months, slippery surfaces and ice hazards pose significant risks on construction sites and outdoor work areas. The accumulation of snow and ice on walkways, work surfaces, and vehicles can create dangerous conditions that increase the likelihood of slips, trips , and falls. Even a thin layer of ice can make surfaces unexpectedly slippery and difficult to detect.

On this project, the risk is heightened, as the work is primarily performed outdoors during the winter months. Workers operating heavy machinery or performing tasks in high-risk areas are particularly vulnerable to accidents caused by ice. The risk of injury from falls is greater, as it can lead to serious injuries such as fractures, sprains, or bruises. Therefore, it is crucial to prevent the accumulation of snow and ice and to regularly inspect the worksite to ensure a safe working environment.

3.3 Reduced Visibility

During the winter months, reduced visibility and dense fog can pose significant risks, especially for outdoor work. It is more common during winter for fog, snowfall, or poor lighting conditions to reduce visibility at the workplace. This increases the risk of accidents, particularly for workers operating heavy machinery, driving vehicles, or working in hazardous areas.

On this project, work may be carried out outdoors during the winter months, where poor weather conditions such as fog, snowfall, and limited daylight can significantly affect visibility at the worksite. Reduced visibility can lead to mistakes when operating machines, failing to notice obstacles, or misjudging distances, which increases the risk of accidents. Additionally, work in high-risk areas, such as near vehicles or heavy equipment, can become more dangerous when visibility is limited.

3.4 Windchill

Windchill is a phenomenon where the combination of low temperatures and wind significantly lowers the temperature the body experiences. In cold, windy conditions, the wind can make the temperature feel much lower than the actual air temperature. This increases the risk of hypothermia, cold injuries such as frostbite, and other cold-related health issues, even at temperatures just above freezing.

On this project, where work takes place outdoors, windy conditions can increase the risk of windchill, especially during the winter months. Even if the air temperature is above freezing, the wind can lower the perceived temperature, causing workers to be exposed more quickly to the risks of cold-related conditions. This is particularly important when workers are outside for long periods or when they wear heavy work clothing that can restrict movement, reducing its insulating effectiveness.

3.5 Site Movement

In winter conditions, vehicles can face significant risks due to black ice, snow, and limited visibility. Snow and ice can make roads slippery, increasing the risk of skidding and losing control, especially with black ice, which is difficult to detect. Additionally, snow accumulation on vehicles can reduce visibility and create additional risks for the driver and other road users.

3.6 Equipment Failure Due to Cold

Cold weather conditions can have a significant impact on the operation and reliability of equipment. Low temperatures can cause mechanical failures, reduced fuel efficiency, and lower battery performance. Hydraulic systems, engines, and other vital components of machinery are particularly susceptible to freezing, which can lead to malfunctions, breakdowns, or even complete equipment failure.

On this project, where work is carried out outdoors during the winter months, the risk of equipment failure due to cold is possible.

4 Measures and Protective Actions

To manage the risks of working in cold environments, appropriate protective measures must be taken, such as wearing insulating work clothing and regularly taking breaks in heated areas. Equipment must be properly maintained and adapted for cold conditions.

4.1 Health Hazards

- Proper Clothing
  Ensure that all employees wear appropriate insulating, waterproof, and breathable clothing, including thermal underwear, gloves, hats, and waterproof boots to minimize heat loss (see subtitle 4.7).
- Regular Breaks

  Schedule regular breaks in heated areas to give employees the opportunity to warm up and improve circulation. These breaks will happen in the project basecamp of Marcus in the JDN offices.
- First Aid and Assistance
  The Project Team will ensure that well-trained first aid staff are available on-site to handle cases of hypothermia and other cold-related incidents. The first aid facilities are located at the basecamp.

Temp. (rectal) and symptoms		Actions
37.5°C	Normal	
36°C	Feel cold	Seek dry shelter, replace wet clothing by dry ones, including socks, gloves, hat, cover neck. Insulate the whole body, including the head, from cold.
35 °C	Shivering	Exercise but avoid sweating. Add external warmth (bath, fire) Only if core temp. above 35°C. Take in warm sweet drinks and food
< 35°C	Hypothermia	Go to the hospital
34°C	Clumsy, irrational, confused (may appear drunk)	No exercise, handle gently, rest. No external warmth (except to chest, trunk). Warm sweet drinks and calories. Internal warming via warm moist air (exhaled air, steam) or warm moist oxygen (40 - 42°C at mask).
33°C	Muscle stiffness	Monitor pulse, breathing. Restrict all activity and lay down with feet slightly raised.
32°C	Shivering stops, collapse.	Urgent transfer to hospital.
31°C	Semi unconscious	Nothing by mouth. Check airway remains open.
30°C	Unconscious. No response to painful stimuli	Nothing by mouth. Check airway remains open.
29°C	Slow pulse and breathing	Slow mouth-to-mouth breathing, at victim's own rate (may be very slow).
28°C	Cardiac arrest. No obvious pulse or breathing. Pupils dilated	Slow mouth-to-mouth breathing, at victim's own rate (may be very slow).
< 28°C	No vital signs, cold.	Do not give up treatment.

- Temperature Monitoring
  Regularly monitor weather conditions and work outside only at safe temperatures. Avoid working in extreme cold or when windchill increases the risk of hypothermia. In case of negative temperature, below 7 and 10 degrees, it's a temporary stop of the activity.

4.2 Slippery Surfaces and Ice Hazards

- Snow and Ice Removal
  All main roads and entrances will be made snowfree by owner. Ensure that walkways, work surfaces, and access points are regularly cleared of snow and ice. This can be done using de-icing salt.
- Anti-slip Mats and Protection
  If really needed, place anti-slip mats in high-risk areas, such as entrances and stair treads, and provide anti-slip protection on work surfaces where ice may accumulate.
- Improved Site Lighting
  Provide adequate lighting in outdoor spaces and work areas so that potential hazards such as ice and snow are clearly visible, even in low daylight conditions.

- Regular Inspections
  Conduct regular inspections of all walkways, work surfaces, and vehicle routes to detect ice buildup and take swift action to address any hazardous conditions.

4.3 Reduced Visibility

- Use of High-Visibility Clothing

  Ensure all workers wear high-visibility clothing, such as reflective vests or jackets, to increase their visibility in low light or foggy conditions (see subtitle 4.7).

- Improved Site Lighting

  Install additional lighting in outdoor work areas to ensure adequate illumination during short daylight hours or in poor weather conditions.

- Use of Warning Signals
  Equip vehicles and machinery with flashing lights or beacons to increase visibility for operators and workers in low-visibility conditions.

- Work Zone Marking
  Clearly mark work zones and pathways with reflective tape or barriers to indicate hazardous areas and guide workers safely in reduced visibility environments.

- Vehicle and Equipment Speed Limitations
  Reduce the speed of vehicles and machinery on-site when visibility is poor to allow for better reaction time in case of sudden obstacles or hazards.

4.4 Windchill

- Appropriate Clothing
  Ensure employees wear multiple layers of insulating, windproof clothing, including thermal undergarments, waterproof jackets, gloves, and windproof hats to provide protection against cold and wind (see subtitle 4.7).

- Protection for Vulnerable Body Parts

Pay special attention to protecting body parts that are particularly susceptible to cold, such as hands, feet, ears, and face, by wearing suitable gloves, hats, scarves, and face coverings (see subtitle 4.7).

- Regular Breaks in Heated Areas
  Schedule regular breaks in heated areas to give employees the opportunity to warm up, especially when working in conditions with high windchill.
- Temperature Monitoring
  Regularly monitor weather conditions and work outside only at safe temperatures. Avoid working in extreme cold or when windchill increases the risk of hypothermia. As previously mentioned, in the event of temperatures below 7 to 10 degrees, the activity will be paused temporarily.

4.5 Site Movement

- Drive slowly and carefully
  In cold conditions, extra caution is needed for hazardous situations like black ice, which can be difficult to detect. Always adjust speed according to road conditions and visibility.
- Avoid sudden movements
  When driving in slippery conditions, avoid sharp turns and sudden braking, as this can affect control over the vehicle.
- Take regular breaks
  For long drives, plain breaks to prevent fatigue. Fatigue can affect reaction time and alertness, making dangerous weather conditions even riskier.
- Fatigue
  Ensure adequate sleep before long trips to maintain energy levels.

4.6 Equipment Failure Due to Cold

- Regular Maintenance
  Ensure that vehicles and equipment are well-maintained before cold weather sets in. This includes checking the battery, lights, tires (tire pressure and tread), and cleaning the windows. Also, check the spare wheel.
- Protection Against Freezing
  Protect fuel systems and engines from freezing by using antifreeze and ensuring fuel lines are properly insulated.
- Brake System Check
  Ensure that the braking system is functioning properly, as cold conditions increase the risk of freezing or reduced brake performance.
- Winter Tires
  Ensure vehicles operating in cold conditions are equipped with appropriate winter tires. These provide better traction on snow and icy surfaces.

4.7 Personal Protective Equipment provided

The signalization jacket is designed to provide protection against rain, cold, and wind, ensuring that workers are shielded from adverse weather conditions. Its reflective stripes and bright fluorescent yellow colour enhance visibility, significantly improving safety, especially in low-light or hazardous environments. This jacket is CE-approved and complies with the following standards: EN ISO 20471 (Class 3 for high visibility, Class 2 for separate waistcoat), EN 343 (Class 1 for weather protection), and EN ISO 13688 (General requirements for protective clothing).

5 Communication

All personnel should be informed about the environmental conditions that they might be exposed to. A system of communication shall be set up when people need to work alone / remotely in extreme environmental conditions. This information can be communicated through a Toolbox Talk, ensuring that all workers are aware of the potential risks and know how to respond appropriately in these conditions. During the DABS meeting, the risks due to weather conditions can be discussed.

Annex F: Site layout plan - BESGRE24.227 -JDN-CIV-LAY-0001-00.05-Proposal layout

GBL7 - Logistics plan

JAN DE NUL

Office JDN
Parking

Office PMC

Parking

Wheelwash

20 Km/H

20 Km/H

20 Km/H

topsoil stock

Stockpile area: 18.500m²

Zone 3B: 8.370m² (+4m =10.020m²)

topsoil stock

Date: 14/01/2025

Schaal: 1/2500

GBL7 - Entrance signalisation plan

Outbounding traffic only allowed to take a right (direction Tertre)

JAN DE NUL

Zone: GBL7 Entrance
Date: 14-01-2025

GBL7 - Site installation Entrance

JAN DE NUL

Basecamp area:
- Office JDN
- Office PMC
- Parking personel
- Parking HE

Weightbridge area:
- Parking (2 spots)
- Small container
- Wheight bridge

Banksman area:
- Entrance
- Banksman container
- Signalisation:

Date:	Schaal:
14/01/2025	1/2500

Annex G: JDN.SF.04.05.C - Instructions for subcontractors in connection with QHSSE – Civil Works Benelux

SCOPE

1.1 Reference is made to the legal agreement between Jan De Nul Group, or any of its companies, (JDN) and the other party (the subcontractor) in connection with agreed upon works or services, which are in turn part of the legal agreement between JDN and the client.

1.2 A subcontractor is a party that performs part of the scope of the legal agreement between JDN and the client.

1.3 The regulations for subcontractors in terms of Quality, Health, Safety, Security & Environment (QHSSE regulations), as defined below, apply to all works and services performed and provided by the subcontractor, including all works and services outsourced by the latter and relating to the legal agreement between JDN and the subcontractor.

1.4 The QHSSE regulations for subcontractors, as defined below, apply to all works and services performed and provided by the subcontractor, including all works and services outsourced by the latter, in and on:

- all corporate buildings and premises owned, let or rented by the client;
- JDN's corporate buildings and premises (whether owned, let or rented), such as construction sites, vessels, temporary storage facilities, containers;
- all corporate buildings and premises of the subcontractor (whether owned, let or rented), such as depots and workshops, including all areas where personnel working for or on behalf of JDN carries out activities, including access roads to the workplace.

1.5 The subcontractor must take all necessary and mandatory actions to create and maintain safe working conditions at the workplace, as described in section 1.3. The subcontractor is responsible for coordinating all QHSSE matters for all executed works, including all outsourced works or services, without thereby compromising the QHSSE regulations for subcontractors. The requirements set out below are considered to be minimum requirements. More stringent requirements should be applied whenever this is deemed necessary

1.6 All personnel carrying out works for or on behalf of the subcontractor is part of the subcontractor's workforce. This also includes – without any limitation – subcontractors of subcontractors, suppliers, vendors, etc.

ORGANISATION OF QHSSE MATTERS

2.1 All communications and documentation relating to QHSSE matters must be available in the language agreed with JDN.

2.2 The subcontractor will strictly adhere to all relevant local, national and international laws, regulations, standards and codes of conduct, and observe the QHSSE regulations for subcontractors described in this document. The subcontractor may apply stricter measures. If the client's QHSSE regulations would differ from the standards applied by JDN, the subcontractor must comply with the most stringent requirements. If the subcontractor, including its employees, or employees of the subcontractor's own subcontractor would fail to comply with any obligation imposed by these QHSSE regulations for subcontractors performing on-site works, as described in section 1.4, JDN will be entitled to suspend the works until the situation has been rectified. This may include removing the relevant employees from the site. All costs for resulting delays will be at the subcontractor's expense.

2.3 The subcontractor undertakes to submit an HSE plan, including a job hazard analysis, prior to executing works.

2.4 The subcontractor undertakes to communicate the hazards and control measures to the employees accessing the site. The subcontractor must keep a record of such communications and make it available upon JDN's request. JDN will assess the HSE plan within a reasonable term. Any delays incurred as a result are not at the expense of JDN.

2.5 Upon JDN's request, and if available, the subcontractor must provide its most recent certification relating to QHSSE standards.

2.6 Each subcontractor must designate a safety officer, who must be present on the construction site during the activities.

2.7 The subcontractor undertakes to send all employees to the (project) introduction or to provide all employees with the HSE information communicated during the (project) introduction in the appropriate language. The subcontractor must retain corresponding records to demonstrate the communication on the (project) introduction.

2.8 The subcontractor undertakes to organise periodical meetings related to the work activities, or – as the case may be – to be present at such meetings organised by JDN.

2.9 The subcontractor must regularly check and inspect the workplace and the services rendered by it or its own subcontractors in terms of QHSSE matters. Its findings must be registered. Such audit and inspection reports must be submitted to JDN at its request.

2.10 Everyone has the authority and responsibility to stop works that are being carried out in an unsafe manner. The subcontractor must encourage employees to Stop & Rethink works whenever deemed necessary. This principle applies to all employees and subcontractors of JDN, regardless of their rank or position.

CSR requirements for subcontractors

2.11 JDN expects from its subcontractors that they respect JDN's Corporate Social Responsibility values and principles, in particular that:

- they comply with the applicable (international, national or regional) legislation concerning CSR matters, including labour practices, human rights, fair business practices in the supply chain, ethical issues and community involvement and development, and they must ensure that their own subcontractors do so as well;
- they protect the environment by behaving responsibly and ensuring operational excellence;
- they create and maintain healthy and safe working conditions for all their employees;
- they strictly adhere to the ban on child and forced labour;
- they enforce clear guidelines to promote business ethics and prohibit any form of discrimination;
- they avoid conflicts of interest in their organisations;
- they ensure that all relevant environmental requirements are complied with, including those relating to waste management and exhaust gases.

The subcontractor is responsible for the implementation of these requirements in its supply chain.

Alcohol and Drugs Policy

2.12 The subcontractor must ensure that none of its employees or representatives working on the site are in possession of drugs or alcohol, or use drugs or alcohol during the works. The subcontractor must have a written internal policy or plan as regards to drug abuse or, upon such absence, subscribe to JDN's alcohol and drugs policy. This includes, amongst others, random tests on the use of alcohol or drugs upon any suspicion and testing of personnel that is involved in an accident or serious near-miss.

2.13 JDN reserves the right to perform (un)announced alcohol and drugs tests on JDN premises as well as tests after an incident in view of ascertaining its causes. It may also have these tests performed by a third party. In order to keep the workplace safe, JDN reserves the right to search for and check on the possession of alcohol or drugs.

Facilities

2.14 Employees of the subcontractor working on JDN premises may only enter those places that are necessary to carry out their work.

2.15 At JDN's request, a site survey will be carried out before and after the works. JDN reserves the right to recover all damage incurred by it, if any, from the subcontractor.

2.16 The subcontractor must provide to its employees the health facilities required by law and keep them tidy. Meals may only be consumed in rooms provided for that purpose. If JDN provides these facilities, the subcontractor will be responsible for their maintenance.

2.17 Subcontractors are not entitled to use JDN equipment on the premises unless this has been mutually agreed in writing.

2.18 Sufficient lighting must be provided to enable the proper and safe execution of the works.

2.19 The subcontractor is responsible for the equipment used by it on the site. The equipment must be marked so that it can be identified.

2.20 The subcontractor must ensure that its work equipment is suitable for the works to be executed and that it is regularly tested by a qualified person in order to ensure their safe operation. Instructions for use and safety instructions must be submitted to JDN at the latter's request.

2.21 The subcontractor must clean the areas on JDN's premises where it is executing works at least every day and remove all waste in accordance with local legislation and regulations. If the subcontractor fails to clean the work areas, JDN reserves the right to clean them or have them cleaned at the subcontractor's expense.

2.22 Certificates concerning the disposal of hazardous waste must be handed over to JDN personnel upon such request.

2.23 Efforts should be made to reduce the impact of waste generated at the workplace. It is not entitled to incinerate waste at the workplace.

2.24 Roads, passageways and stairs must at all times be kept free from obstacles. Make sure that flexible pipes or cables do not obstruct passageways. If they pass through a passageway, they must be protected against damage.

2.25 All materials must be stacked in an orderly and stable manner, protected from water, and in the designated rooms.

2.26 Preventive measures must be taken against soil, air and water pollution.

2.27 The noise, vibration, radiation and dust levels must be kept within the agreed limits and may never exceed the limits laid down in legislation.

2.28 The subcontractor must ensure that smoking is only done in the designated areas.

QHSSE REQUIREMENTS FOR SUBCONTRACTORS

Risk management

3.1 The subcontractor must manage the risks related to its works as described in section 1.4. The subcontractor must adhere to the prevention principles, giving priority to collective protection measures over individual protection measures.

3.2 It is at all times forbidden to remove collective protective equipment such as handrails without installing other equivalent protective equipment.

3.3 Both at project and task level, the subcontractor has – for all its works – risk management tools in place to identify hazards and control measures and to communicate about them.

Permit to Work

3.4 JDN has identified a number of tasks that could potentially pose serious hazards. Although the subcontractor is responsible for the on-site implementation of QHSSE measures, it must, when planning tasks that might endanger JDN equipment or personnel, consult with JDN prior to the commencement of tasks for which a Permit to Work (PTW) is required.

Such tasks include but are not limited to:

- entering or performing works in a confined space;
- critical lifting operations with single cranes (> 80% of the crane's power);
- lifting works with two or more cranes;
- works in a place where a person may fall from a height of more than 2 metres due to a lack of collective protection;
- activities carried out above water (excluding standard company activities);
- working from an elevated man basket or boatswain's chair;
- all kinds of works using or generating heat outside a designated hot works area;
- works during which sparks or other sources of ignition may be generated outside a designated hot works area;
- works on high-voltage installations;
- works near electrical cables / installations, pipelines;
- works on a system with stored energy or a system under pressure (see LOTO);
- diving works;
- works with hazardous substances, including asbestos, radioactive material/radioactive sources and explosives.

Training & competence

3.5 The subcontractor must ensure that all employees working for it or on behalf of it have the required training/professional skills and physical capabilities to perform the tasks assigned to them, including responsibilities in a safety-related position, and to use and operate the corresponding equipment in a professional and safe manner. The subcontractor must provide JDN with the required documents attesting to this when requested by JDN. This may include but is not limited to: driving licence, operating and training certificate, seaman's book, certificate of basic safety training, certificate of medical fitness, welding certificate.

Emergency procedures

3.6 The subcontractor must ensure that all employees are familiar with the emergency procedures and that sufficient first aiders, first aid equipment, rescue equipment, fire fighters, fire extinguishers are available, unless it has been mutually agreed that JDN's arrangements are to be shared (in whole or in part).

3.7 The subcontractor must have arrangements in place with medical facilities and emergency services such as ambulances and fire brigades.

3.8 The subcontractor must participate in all exercises or initiatives undertaken by JDN to test and validate the emergency response plan.

Incident management

3.9 The subcontractor must inform JDN of all accidents, incidents or damage within the scope of its activities on the premises; it must submit a written incident report to JDN on the day that the incident occurs. The subcontractor must provide all other reports as imposed by local legislation or requested by JDN (i.e. accident investigation report) in a timely manner. The subcontractor remains responsible for the further follow-up of the investigation and bears all costs related to the investigation.

3.10 The subcontractor must provide JDN with a copy of all reports communicated to public authorities or insurance companies regarding any accident, injury or incident at the workplace that occurred during the subcontractor's works.

Security

3.11 The subcontractor must obtain permission from JDN to enter JDN's premises before starting the works. The subcontractor must notify JDN when leaving JDN's premises. If required or requested by JDN or applicable legislation, e.g. ISPS, the subcontractor must control the access to the site to prevent unauthorised access. Personnel entering JDN premises must carry identification + a "Checkin@work" badge. Entry passes may be made mandatory.

PPE (personal protective equipment)

3.12 All persons entering JDN's premises must wear PPE as imposed by applicable legislation and in accordance with the site regulations drawn up by JDN or the client.

3.13 The subcontractor must provide its personnel and/or visitors with all required PPE at its own expense. The subcontractor must ensure that the PPE is in a proper state of maintenance and must check it regularly and replace it if necessary.

3.14 The subcontractor must ensure that all workers on the site use the PPE correctly and store it safely after use, in accordance with their training and the instructions given to them.

Lock out / Tag out

3.15 The subcontractor must have a lock out/tag out system in place to protect employees against any unexpected start-up, movement, activation, energy release, etc. of or from plant/machine parts during assistance, maintenance or inspection activities.

Lifting operations

3.16 The subcontractor must ensure that:

- the lifting equipment and tools brought onto JDN's premises have a valid test certificate. A copy of the test certificates must be handed over to JDN if so requested;
- the SWL (maximum workload) is never exceeded;
- safety installations can never be bypassed;
- all persons are removed from under suspended loads;
- all employees participating in lifting operations are competent to perform their task, taking into account the local requirements;
- all employees participating in lifting operations are guided away from any crushing hazard. Where necessary, auxiliary tools such as taglines must be used;
- the wind speed and visibility are assessed before starting lifting operations.
- When several cranes are used, there must be agreement on the priority rules.

Works with open flame

3.17 The subcontractor must ensure that:

- signs are in place to warn that works with an open flame are taking place in that area;
- welding shields or barriers are used to protect nearby persons and property from sparks or flames;
- fire extinguishers are available nearby;
- the equipment is inspected and approved before it is used;
- gas cylinders are stored outside, upright, secured and protected from the sun;
- full cylinders are kept separate from empty cylinders;
- the mandatory distance between gas cylinders is observed, e.g. 3 m distance between oxygen/acetylene in storage areas;
- valid flame arresters are mounted immediately behind the regulators and the torch, both on oxygen and acetylene gas cylinders.

Confined space

3.18 The subcontractor must ensure that:

- the atmosphere in the confined space is tested before entering and at regular intervals during the works in the confined space;
- a communication system is agreed between the watchman / person on stand-by and the person in the confined space;
- portable safety lighting with a very low voltage is available;
- sufficient ventilation is available;
- a plan and the necessary equipment are available to rescue personnel from the confined space.

Working at heights

3.19 The subcontractor must ensure that:

- collective protective equipment (CPE) against falls is in place for all works carried out at a height of more than 2 m. If no CPE can be used, a safety harness and fall protection must be used;
- the work area is fenced off or supervisors are present;
- openings / hatches are secured or covered to prevent people from falling;
- ladders are in a good state of maintenance (undamaged and stable) and properly secured when they are used as access ladders or when the ladder has more than 25 rungs;
- working from a ladder is avoided.

Scaffolds

3.20 The subcontractor must ensure that:

- scaffolds are equipped with suitable top railings, intermediate railings and skirting boards. The components of the work floor must be mounted in a close-fitting way without leaving any gaps between them.
- the work floor is accessed by a staircase (tower) or ladder;

- before the scaffolding is put into use, it is inspected by a qualified agent of the subcontractor. The scaffolding must then be inspected at least twice a month or whenever changes have been made to it.
- upon such request from JDN, the calculation notes for the scaffolds are submitted to JDN.
- employees who work on scaffolding have been trained in accordance with the applicable legislation and regulations. If the scaffolding must be modified in order to carry out works (e.g. moving work platforms), this may only be done by employees who have had appropriate training for this. After modifications have been made, the scaffolding must be inspected by a qualified agent of the subcontractor.
- at the request of JDN, the necessary training certificates for working on, (dis)assembling, adapting and releasing scaffolds can be submitted. It is the subcontractor's responsibility to organise adequate training courses for its employees.

Electrical installation

3.21 The subcontractor must ensure that:

- the electrical installations have been approved by a recognised body in accordance with the applicable legislation and regulations;
- only suitable and undamaged electrical equipment, which can be connected to correct and safe sockets, is used on the site;
- electrical cabinets are always closed. They must be connected using suitable cables only. All equipment (cables/ sockets/...) must be suitable for use in humid conditions;
- cables are always suspended and/or protected against potential damage;
- the electrical installation is protected against infiltrating water;
- cables do not pose a risk of falling, tripping & slipping;
- cables are not exposed.

Hazardous substances

3.22 The subcontractor must ensure that:

- all hazardous substances on the site are labelled in accordance with the applicable legislation and regulations. The use of flammable, toxic or other hazardous products must be reported to JDN. The relevant material safety data sheets must be submitted to JDN before the start of the works;
- hazardous substances are stored, processed, transported and used, and their packaging is disposed of in accordance with the applicable legislation and regulations;
- appropriate warning signs (e.g. no smoking, no open flames) must be displayed on storage facilities;
- substances that may leak into the environment are retained in secondary soil containment systems that, in the event of a leak, are capable of holding at least 110% of the capacity of the largest container;
- if works are carried out during which harmful or irritating fumes / gases are released, this is reported to JDN, and that appropriate measures are taken to extract the fumes / gases in a safe and effective manner (extraction system, etc.);
- no materials containing asbestos are used or installed on JDN's premises. The subcontractor may be asked to submit a corresponding certificate.

Bunkering

3.23 The subcontractor must ensure that:

- no bunkering operations are performed without JDN's prior consent;
- joint bunker samples are taken;
- spill absorbing materials are available.

Working alone

3.24 The subcontractor must ensure that:

- when working alone, no activities are carried out as described in section 3.3;
- when an employee is working alone, he/she has appropriate means of communication and there is a system in place to ensure regular contact.

Vehicles and heavy equipment

3.25 The subcontractor must ensure that vehicles and heavy equipment meet the requirements that are specific to the site. This may include but is not limited to:

- a seatbelt for the driver and all passengers;
- a rotating and flashing beacon;
- an acoustic alarm device;
- a UHF radio.

Traffic

3.26 The subcontractor must adhere to the following:

- separation between pedestrians – light vehicles – heavy equipment;
- on-site signposting;
- speed limits;
- no use of mobile phones while driving / operating;
- sufficient distance must be kept from machines;
- wherever possible, vehicles must be parked in the designated parking zones.

Annex H: JDN.SF.04.03 - Overview of periodic inspection

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
1.	**Floating equipment subject to classification**	1 x per year	Classification agency	MTD	Classification agency	Certificate	Not applicable
2.	**Floating equipment not subject to classification**	1 x per year	Checklist	MTD	STIVM	List of inspections	Not applicable
3.	**Electrical installations** • All new installations	Prior to commissioning	AREI 272,267	MTD, HNDE, HTDW	R.O.	Report	Not applicable
	• High-voltage installation that is in use	1 x per year	AREI Art.271	MTD, HNDE, HTDW MTD, HNDE, HTDW	R.O.	Report	Not applicable
	• Low-voltage installation that is in use (mobile plant)	1 x per year	AREI 1 HFS 6.5.2	MTD, HNDE, HTDW	R.O.	Report	Not applicable
	• Low-voltage installation that is in use (fixed site)	5-annually	CODEX III, Title 2, HFS V		R.O.	Report	Report
4.	**Electrical installations** • Temporary connections	1 x per year	AREI 270-271	MTD, HNDE, HTDW	R.O.	Report	Report
5.	**Gas recipients** • New recipients	Prior to commissioning	ARAB 363	Supplier	R.O.	Report with supplier	E + date + calibration stamp
	• Recipients that are in use	3-, 5- or 10-annually	ARAB 363	Supplier	R.O.	Report with supplier	R + date + calibration stamp
6.	**Compressed air cylinders (allowable pressure x volume > 3000 bar.litre)** • New cylinders	Prior to commissioning	VLAREM II art. 5.16.3.2	HNDE	R.O.	Report	Not applicable
	• Cylinders that are in use	5-annually	VLAREM II art. 5.16.3.2	HNDE	R.O.	Report	Not applicable
7.	**Compressed air cylinders (allowable pressure x volume >= 3000 bar.litre)** • New cylinders	Prior to commissioning	VLAREM II art. 5.16.3	HNDE	R.O./ manufacturer	Report	Calibration stamp

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
8.	**Hydraulic lift for vehicles** • New • Already in use	Prior to commissioning 1 x per year	ARAB 283bis 6 ARAB 283bis 6	HNDE HNDE	R.O. R.O.	Report Report	Not applicable Colour code
9.	**Lifting equipment (passenger lift, cranes, aerial work platform…) not on board of sea-going vessels** • New or after installation • Use: cables, chains, rods, lifting accessories • Use: mechanisms and frames	Prior to commissioning 4 x per year [1] 1 x per year [2]	ARAB 282283 Codex: Book IV Titles 1 to 4 ARAB 280-283 (bis)	MTD, HNDE MTD, HNDE MTD, HNDE	R.O. R.O. R.O.	Report Report Report	Not applicable Colour code Not applicable
10.	**Passenger Lifts** By maintaining by qualified installer	2x per year	KB 09/03/2003 Directive 2014/33/EU	MTD, HNDE MTD, HNDE	R.O.	Report	Label + certificate
11.	**Lifting equipment on board of seagoing vessels** • New • Already in use	Prior to commissioning 1 x per year	ILO 152/BMI/BV/ARAB ILO 152/BMI/BV/ARAB	MTD MTD	BZI/Classification agency BZI/Classification agency	Certificate Certificate	Not applicable Not applicable
12.	**Hitching equipment**: steel ropes, chains, hooks, hoisting belts, C-hooks, grippers, end connections, hoisting clamps, H- and D-fasteners, cross-beams, pallet lifting tools, barrel lifting tools, gas cylinder brackets, etc. • New • Already in use	Prior to commissioning 4 x per year	ARAB 280-283, ARAB 280-283 Codex Title IVsections 2-4	MTD, HNDE MTD, HNDE	R.O. R.O.	CE-certificate of compliance Report	Identification number Colour code
13.	**Lifting magnets**	4 x per year	Instructions of supplier	MTD, HNDE	Supplier/R.O.	Certificate	Not applicable

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
14.	**Hitching material (on board of seagoing vessels)**: steel ropes, chains, man baskets, TORO... • New • Already in use	Prior to commissioning 4 x per year	ARAB 280-283 ILO Convention 152	MTD MTD	R.O. R.O. / qualified person [3]	CE-certificate of compliance Report / -	Identification number Colour code
15.	**Personnel Transfer Basket (on board seagoing vessels):** TORO, Billy Pugh, WAVE, FROG,... • New • Already in use	Prior to commissioning Among scheme manufacturer	ILO convention 152/manufacturer ILO convention 152/manufacturer	MTD MTD	- E.O / Qualified Person[3]	CE certificate of compliance Report/-	Identification number Colour code
16.	**Fork-lift trucks and earthmoving machines with lifting hook** • New • Already in use • Use: mechanisms and frames	Prior to commissioning 4 x per year [1] 1 x per year [2]	ARAB 282-283 ARAB 282-283 ARAB 282-283	HNDE HNDE HNDE	R.O. R.O. R.O.	Report Report Report	Not applicable Colour code Not applicable
17.	**(Manual) power tools** • New • Already in use	Prior to commissioning 1 x per year	SCC** SCC**	HNDE HNDE	Qualified person JDN	CE-certificate of compliance Checklist	Identification number Sticker
18.	**Stud gun** • New • Already in use	Prior to commissioning 1 x per year	Royal Decree 26.09.66 Royal Decree 26.09.66	HNDE HNDE	- Manufacturer	CE-certificate of compliance Report	CE-quality mark -
19.	**Device with ionising radiation** • New • Already in use	Prior to commissioning 1 x per year	Royal Decree 28/02/1963 Royal Decree 28/02/1963	MTD, HNDE MTD, HNDE	R.O. R.O.	Report Report	Not applicable Not applicable
20.	**Ladders, emergency ladders**	Minimum 1 x per year	Codex: Book IV, Title 5 Chapter 2/SCC	PM, CPT, HTDS	Qualified person JDN	Checklist	Sticker

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
21.	**LPG tanks, cylinders**	Prior to each filling and minimum 1 x per year	ARAB 358	PM, CPT	Supplier	/	Not applicable
22.	**Fire extinguisher (powder, CO_2, foam…)**	1 x per year	ARAB 358, Codex Book III Title III Chapter 3 afd 7	PM, TINDE	Supplier	Sticker	Sticker
23.	**Scaffold**	Prior to use, weekly, after work interruption and after risk	ARAB 441,451,456 Codex Title VI, chapter 3	PM, CPT	Qualified person JDN	Checklist	Label
24.	**Gas meters (QRAE,Custodian, Dräger Pac III, Tetra…)**	1 x per year (internal) 5-annually (external)	User instructions of device	Prevention department	Qualified person JDN External inspection body	Report	Sticker Sticker
25.	**Safety belts and harnesses (lifeline, anti-fall device, anchorage points, accessories, Life line…)** • **New:** • **Already in use:**	Prior to commissioning 4 x per year and after a fall	CODEX Title IX, title II, Chapt II/ BS EN 365-2004	MTD, HNDE HNDE	R.O./ qualified person[3]	CE-certificate of compliance Report	CE-quality mark Colour code
26.	**UNDERGROUND storage tanks (storage of inflammable and hazardous liquids)** • New cylinders • Cylinders that are in use	Prior to first use Annually/2-annually (limited inspection) every 10 years/15 years (general inspection)	Royal Decree 12/08/1993 art. 8.3 and Vlarem II art. 5.17 Vlarem II art 5.17	HNDE HNDE	R.O. R.O.	Report Report	Calibration stamp/ green filler cap Calibration stamp/green filler cap

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
27.	**ABOVEGROUND storage tanks (storage of inflammable and hazardous liquids)** • New cylinders	Prior to first use 3-annually (limited inspection)	Royal Decree 12/08/1993 art. 8.3 and Vlarem II art. 5.17	HNDE	R.O.	Report	Calibration stamp/ green filler cap
	• Cylinders that are in use	every 20 years (general inspection)	Vlarem II art 5.17	HNDE	R.O.	Report	Calibration stamp/ green filler cap
28.	**Inflatable lifejacket (CE-approved / SOLAS)**	1 x per year	SCC**/ manufacturer	MTD	Service station approved by the manufacturer	Report	Date of inspection on lifejacket
29.	**Immersion suits** • Routine shipboard inspection	Monthly	JDN	Qualified person JDN	Qualified person JDN	Report	Date of inspection on the immersion suit and/or certificates.
	• IMO recommendation	3-yearly (replacement after 10 years)	IMO	Qualified person JDN	Manufacturer	Report	Date of inspection on the immersion suit and/or certificates.
30.	**Heating installations (natural gas): emission measurements** (300kW < P < 5MW)	5 yearly if P<1MW 2 yearly if P>1MW	Vlarem II art. 5.43.2.3.3	HNDE	Lab recognised for air emission measuring	Report	Not applicable
31.	**Periodic exploratory soil investigation, operating office Tragel 60** (activity A)	Every 20 years	Classification list Vlarem I	Envisan	Soil remediation expert	Report	Not applicable

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
32.	**Cooling installations (including air conditioners) offices Tragel 60**	Depending on amount of cooling agent (ozone-depleting and fluorinated greenhouse gases) - Over 300 kg: every 3 months - Over 30 kg up to and including 300 kg: every 6 months - Over 3 kg up to and including 30 kg: every 12 months	Vlarem II art. 5.16.3.3	Building maintenance team	Recognised refrigeration engineers	Report	Not applicable
33.	**Oil/water separator (cooling water system) at Tragel**	1 x per year	Environmental permit – special condition	Building maintenance team	Certified sewage cleaning agency	Report	Not applicable
34.	**Storage places for medical compressed, liquefied oxygen or oxygen kept in a solution (on board of seagoing vessels)**	1x per year Among scheme manufacturer or every 5 years when not mentioned	JDN TD-0033 JDN TD-0033	Qualified person JDN Qualified person JDN	Qualified person JDN Manufacturer or qualified person	Report Report	Not applicable Not applicable
35.	**Storage places for compressed or liquefied gases or gases kept in a solution** (oxygen, tetrene, propane…)	5 years or date mentioned in previous report	Vlarem II Art. 5.16.6.8	HNDE	Recognised environmental expert	Report	Not applicable
36.	**Sectional doors**	1 x per year	Codex IV, title 1&2	Building maintenance team (Tragel 60)	Manufacturer or qualified person	Report	Not applicable

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
37.	**Notification (fire control panel...), warning (fire detection buttons...), alarm (sirens...) and detection equipment (smoke, gas...) in offices and operating offices**	1 x per year	Codex Book III title III, Chapt III, afd. 7	Building maintenance team (Tragel 60)	Supplier/ manufacturer /qualified person	Report	Not applicable
38.	**Fire extinguishing equipment** • **Water reel** • **Hydrants** • **Sprinkler** • **Argon extinguishing system (including detection)** **in offices and operating offices**	1 x per year 1 x per year 1 x per year 1 x per year	Codex Book III, Title III, Chap III, afd 7 **Reels** according to EN 673-1 (flow measurement, pressure measurement, 5-annual pressure test) **Sprinkler** according to EN 12845	Building maintenance team (Tragel 60)	Supplier/ manufacturer /qualified person	Report/ certificate	Seal mark Not applicable Not applicable Not applicable
39.	**Safety lighting (emergency lighting) in offices and operating offices**	1 x per year	Codex Book III Title III HFS III afd 7,according to NBN C71-100	Building maintenance team (Tragel 60)	Supplier/manufacturer/qualified person BA4	Report/ certificate	Not applicable
40.	**Safety net for persons/safety net**	Prior for commissioning 1 x per year (NET SHOULD NOT BE USED ANY LONGER THAN 5 YEARS)	Codex, IX, Title 1 EN 1263-1 (inspection of sample mesh)	HNDE	Manufacturer	Report Certificate	Inspection tag with net identification number
41.	**IBC heating oil tank**	2.5 years (density test/visual inspection) 5 years (interior, identification mark, construction)	ADR § 6.5.1.6	HNDE	R.O./ manufacturer	Report/ certificate	UN identification mark

	Equipment/Tools	Frequency	Inspection according to	Person responsible*	Performed by	Registration	Identification
42.	**Waste container for chemical waste**	5 years (interior, identification mark, construction according to the manufacturer's information)	ADR § 6.5.1.6	HNDE	R.O./ manufacturer	Report/ certificate	UN identification mark
43.	**Oxygen resuscitation case**	Prior to commissioning 1 x per year	CODEX, Book IV, ARAB art 358 SCC**/manufacturer	MTD	Manufacturer	Report	Label/ calibration stamp

1 The three-monthly inspection covers all cables, chains, brakes, lift limiting devices, discs, hoisting accessories,...
2 The annual inspection covers the frame and mechanisms.
3 The inspection is performed as follows: in 3 quarters by a qualified person and in 1 quarter by a recognised inspection body, with the extra condition that the period between two inspections by a recognised body should never exceed 4 quarters.

SCC: Safety Checklist Contractors

* The used abbreviations are explained in JDN.SP.04.01 - Inspection and registration material.

Annex I: JDN.BESGRE24.227 – List of emergency phone numbers of emergency services & relevant contact persons

Emergency Contact Numbers – GBL7A EWP1

Project information

Project name	GBL7A EWP1 - BESGRE24.227
Address	Rue de Roseaux, 7331 Saint-Ghislain

Contact Numbers Staff

Role	Name	Phone Number
Project Manager	Nicolas Maton	+32 474 64 11 96
Site Supervisor	Nicolas Lecher	+33 682 54 27 09
Project Engineer	Niek Van Boxstael	+32 499 48 39 21
Works Preparator	Charlie Roland	+32 491 73 46 53
HSE Manager	Mike Van Geert	+32 470 60 39 67
HSE Supervisors	Carolien Symkens	+32 497 34 92 22
	Michiel Derlyn	+32 493 79 44 02

First Aiders

Name	Phone Number
Niek Van Boxstael	+32 499 48 39 21
Carolien Symkens	+32 497 34 92 22

Emergency Numbers

Service	Contact Information	Phone Numbers
Fire Brigade	ZHC - Poste de secours de St Ghislain Rue de l'Abattoir 17, 7330 Saint-Ghislain 065 77 03 04	112
Police	Zone de Police de Saint-Ghislain Rue du Peuple 57, 7333 Saint-Ghislain 065 76 10 10	101
Hospital	Hospital Center Epicura De Baudour Rue Louis Caty 136, 7331 Saint-Ghislain 078 15 01 70	112
Antipoison Centre	Poison Control Center For urgent advice in case of possible poisoning	070 245 245
Gas Leak	Fluxys Handles reports of gas leaks and ensures safe response to prevent accidents or explosions	080 090 102 02 282 72 53
High Voltage Lines	Elia HS-station or Elia HS-cabel Manages high-voltage electrical infrastructure in case of emergencies	0800 99 044 0800 95 062
Low Voltage Lines	Fluvius Responsible for low-voltage electricity distribution and related emergencies	078 35 35 00

Annex J: JDN.QF.10.01 - Approval of materials

Jan De Nul GROUP	GOEDKEURING MATERIALEN	FORM JDN.QF.10.01 REVISION 01

FICHE / APPRO	NR.:		REV.:	

WERFNUMMER	
PROJECT	
BOUWHEER	

ONDERWERP	

OPVOLGING REVISIES	**0**	**A**	**B**	**C**	**D**
datum opmaak:					
datum ingediend:					
uiterste datum goedkeuring:					

Indien U uw goedkeuring niet bevestigt voor de aangegeven datum, nemen wij aan dat U akkoord gaat met het gebruik van de voorgestelde materialen

Conform lastenboek(en):	**ja -nee**	
Voorlegging van staal:	**ja - nee**	

MATERIAALOMSCHRIJVING
OPMERKING(EN)
BIJLAGE(EN)

GOEDKEURING	**Architect**			**Studiebureau**			**Veiligheidscoördinator**		
beslissing:	G	GMO	NG	G	GMO	NG	G	GMO	NG
datum:									
handtekening:									

Verklaring afkortingen:

G= goedgekeurd

NG= niet goedgekeurd

GMO= goedkeuring met opmerkingen, een nieuwe versie moet worden ingediend

OPMERKING(EN) BOUWHEER	
Datum:	**Handtekening:**

Annex K: S-0353.e.00-Order and tidiness on the building site

INTRODUCTION

General order and tidiness lays a good foundation for a safe working environment. Work locations which make a high priority of safety and quality often stand out at once for their prevailing order and tidiness. Workers run a high risk of accidents because they could easily stumble or fall over tools, waste materials, cables, ...That is why it is important to take structural measures to promote order and tidiness on the building site.

1 SITE ENTRY AND FENCING

An orderly and tidy site entry yields a site which is well organised and safe to enter. The site entry is an access route for various persons and vehicles (e.g. suppliers, subcontractors, and employees). In addition, the site fencing and entrance must send a clear message to third parties that they may not enter the site because the site zone is a high-risk area. The rule also applies that no building materials may be stored on a public road so that passers-by cannot stumble or injure themselves.

Good practice:

The site entrance has a display board, fence on wheels, and a secure padlock. The site entry is clearly accessible and there are no stored materials blocking the way across the site.

Article numbers in the catalogue	
Site board	1350249
Site canvas	1492456
Fence connector	222830
Wheel	291026
Padlock	66463

2 SITE SHED ENTRY

The entry to the site shed is one of the busiest places on the building site. Various persons pass the site shed (e.g. the client, suppliers, subcontractors, personnel, or cleaning team). Accidents and incidents as a result of loose materials, pallets, and unevenness have shown that clear access to the site shed is essential.

Good practice:

The entry to the site shed is made of conformable scaffolding material and the plan and required materials can be found on MESO:

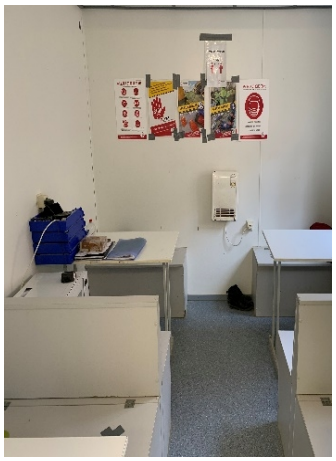
https://d2.app.jandenul.com/D2/?docbase=meso&locateId=0b0236ed88dd9faf

There are also standard plans available for a conformable stair construction as access to elevated site sheds.

Next to the platforms, there is a boot cleaner (*Art. no. 225137*) for cleaning work boots/shoes before entering the site shed.

3 SITE SHEDS

Site sheds should always be clean and tidy so that everyone can eat, rest, and change in a hygienic environment. This is an important aspect from a social perspective (humanisation of the work), but also for the work hygiene. Site sheds should be cleaned on a weekly basis. Moreover, arrangements need to be made for daily cleaning and maintenance (e.g. appoint a person or make a rota).



Good practice:

- The changing room is neat and tidy, and all equipment is stored in the lockers provided.
- Safety documents are on display in a visible place. Helpful posters can always be requested from the QHSSE service.
- The dining room is clean and tidy so that the workers can eat at an empty table and this table is easy to clean/keep clean.
- No tools, appliances, or chemical substances are stored here. These belong in equipment containers.

4 PASSAGES AND ACCESS

Work locations should be accessible at all times through clean and safe passages. Note that it is a legal obligation that all evacuation routes are kept free from obstacles. Avoid stockage of materials in passageways, but stock them in zones specifically provided for that purpose. As well as stockage of materials in passageways, loose cables also form a risk. Always try to hang them up as much as possible or equip the electrical installation in such a way as to keep cables in passageways to a minimum.

Good practice:

- Mark walkways or passageways with a rug, planks, tape, or paint (spray can).
- Instruct workers not to stock any equipment on the walkway.
- The walkway should always be free of equipment and also serves as the evacuation route.
- Provide standard passageways to the stockage zones from the beginning.
- Ensure that steel plates are securely connected and free of mud and puddles.

Good practice:

- Cables are hung up as much as possible to prevent the risk of stumbling, but this also reduces electrical risks.
- Bury cables in a cable duct.
- Tools for hanging up cables:

Article numbers in the catalogue	
Cable tape	*25782*
S-hook	*1295301*
Cable hanger	*102315*
Cable threshold	*898526*

5 EQUIPMENT STORAGE

Equipment should be stored in the zones provided for that purpose on the site. Orderly equipment storage reduces the risk of falling and stumbling, but also ensures that equipment can be connected quickly and the zone is well organised. Time spent on this, soon repays itself.

Good practice:

- Mesh reinforcements are stacked upright and fitted with a yellow plank railing to screen off prime reinforcement next to the site passageway.
- Small packets of reinforcement are stored in equipment boxes so that no one can stumble over them and they are easy to find. Make clear agreements with the supplier.
- Make agreements with the supplier about orderliness.

Good practice:

- Formwork panels are stored in the zone provided for that purpose.
- Formwork panels are stacked according to size and sort and are securely connected to each other.
- Correct storage of formwork panels prevents damage to the formwork panels and accidents.

Good practice:

- Chemical fluids are always stored in a vessel container or warehouse container provided for that purpose.
- The vessels are fitted with a metal tap valve; plastic is not recommended because it spills.
- All receptacles are stored above the drip tray.
- Leaks are always cleaned up using the absorption kit.

Article numbers in the catalogue	
Vessel container	653271
Collection container	941260
Metal barrel tap	1277826
Absorption kit	1366161

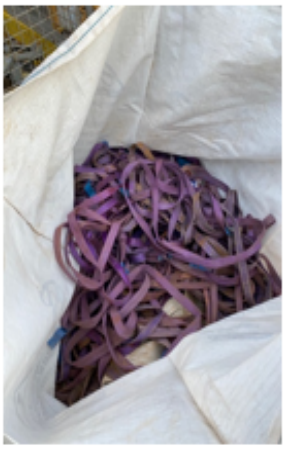
6 WASTE COLLECTION

Waste should always be removed from the site as soon as possible. Waste left lying around increases the risk of falling and stumbling on the site and clutters up the site zone. Raise the workers' awareness to organise sufficient clean-up operations and provide enough receptacles where the waste can be gathered.

Good practice:

- Separate zone on the site for waste containers.
- Four main waste streams: wood, metals, paper/cardboard, and mixed waste.
- Notice boards to distinguish between waste streams can be found in the Article Catalogue: *894369 (inert substances), 894371 (wood), 894372 (all sorts of waste), and 894373 (metals).*
- Jan De Nul Group has a framework contract with Containers Maes. Via the Containers Maes application you can with a few clicks have the container collected when it is full.
- Make sure at least that PMD and paper are collected separately/at the site shed. This can be done via roller containers and takes up only limited space.

Model signpost

Good practice:

There is a big-bag provided on the site specially for single-use lifting straps. This bag displays a warning in various languages that the big bag is used only for single-use lifting straps which may not be re-used.

Article numbers in the catalogue	
Big-bag (single-use)	1524090
Big-bag holder	1485956

Good practice:

- There is an ash tray on the site for collecting cigarette ends to keep cigarette ends on the site and around the site shed to a minimum.

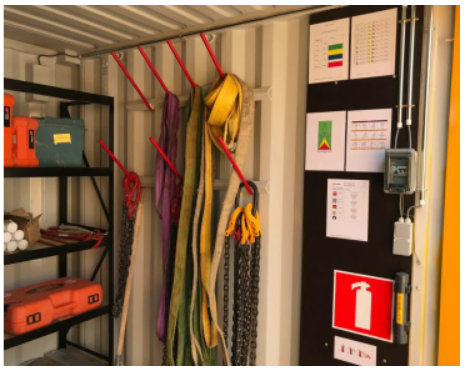
Article numbers in the catalogue	
Ash tray	838006

7 WORK EQUIPMENT

Various types of work equipment is used on the site. It is important to keep this work equipment clean and tidy in order to ensure the safety of the work equipment when it is used. Poorly stored work equipment can get damaged and it will then form a safety hazard when it is used. Not only the working equipment itself, but also the environment itself must be kept clean and tidy so that the user of the work equipment does not stumble or fall during use, entry, or exit of the work equipment.

Good practice:

- Large equipment on the site is cleaned regularly so that the caterpillar cranes and steps are fit for use.
- With environmental works, always use the required personal protective equipment (PBM) to clean the machine.
- The work equipment cabin should always be clean and should be inspected every day.



Good practice:

- All equipment is kept on shelves in the equipment container.
- Hazardous substances are stored above the drip tray.
- Lifting straps are hung on hangers according to type.
- The fire extinguisher is hung up in the location provided.
- There is no equipment on the work bench, so that it can always be used if necessary.