Company Name Here

PtD Execution Plan

**Sample Template**

NOTE:

Template provided for the purpose of enabling companies adopt PtD within each business.

Any text highlighted in yellow is intended to be edited by the author. All other text is suggested to be retained to align with the requirements of ASSP Z590.3-2021.

**Document Control Sheet**

Client: XXX

Project Name: XXX

Project Number: XXX

Document Reference: XXX

Filename: XXX

Document History:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Revision | Date | Description | Author | Reviewed | Approved |
|  |  |  |  |  |  |
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# Introduction

## Reference Documents

This Prevention through Design (PtD) Execution Plan shall be read in conjunction with the following:

Note to author: Confirm the details of any relevant PtD guidance, codes of practice or legislation which are applicable to this project and where your design is intended to be constructed.

1. ANSI/ASSP Z590.3-2021 Prevention through Design
2. The following internal references:
   1. Enter as appropriate.
   2. Enter as appropriate.
   3. Enter as appropriate.
3. Relevant client or project specific procedures, standards or guidance:
   1. Enter as appropriate.
   2. Enter as appropriate.
   3. Enter as appropriate.

## Purpose

With reference to Section 4 of ANSI/ASSP Z590.3-2021 Prevention through Design, during the project’s design phases, the PtD Execution Plan has been prepared to coordinate efforts of all persons who are involved or who may be impacted by design decisions made.

## What is Prevention through Design

Prevention through Design (PtD) encompasses all of the efforts to anticipate and design out hazards to workers in facilities, work methods and operations, processes, equipment, tools, products, new technologies, and the organization of work. The focus of PtD is on workers who execute the designs or have to work with the products of the design. The initiative has been developed to support designing out hazards, the most reliable and effective type of prevention.

The identification of Health Safety and Environmental (HSE) hazards must be considered against the whole asset lifecycle to benefit both people and the environment:

1. **Health** in design: Positive (or negative) influence of design on the health of construction workers and end users:
2. Occupational disease and cancers caused by the work environment or work-related activities.
3. Mental Health and wellbeing of all persons who will interact with the asset over its design life.
4. **Safety** in design: Positive (or negative) influence of design hazard mitigation and design decisions on the asset’s whole lifecycle.
5. **Environment** in design: Positive (or negative) influence of design on:
6. Ensuring compliance with legislative and regulatory requirements as a minimum,
7. Protecting and enhancing the local environment and
8. Preventing pollution.

# Project Team

## PtD Guidance

Confirm the details of any relevant PtD guidance, codes of practice or legislation which is applicable to this project where your design is intended to be constructed.

## Responsibilities

### PtD Risk Management Process

With reference to Section 9 of ANSI/ASSP Z590.3-2021, PtD incorporates a risk management process which considers risk assessment and prevention through design throughout the lifecycle of systems, facilities, equipment, services, and products.

The PtD process requires an exchange of timely information and opinions, relevant to risk and related factors, with internal and external stakeholders. The fundamental purpose of risk communication and consultation is to facilitate a higher degree of understanding of the nature of the risk among affected stakeholders so that risk can be effectively managed to an acceptable level.

### Project Design Review Manager

Section 7.1 of ANSI/ASSP Z590.3-2021 requires the identification of a Project Design Review Manager (PDRM). This person shall be a PtD advocate on the project who is responsible for the following:

1. Developing and updating the design hazard assessment process.
2. Scheduling and facilitating design reviews throughout the design process.
3. Report directly to the person or group with overall project management responsibilities, e.g., the project manager, or an executive with oversight responsibilities for the project design specifications and documents.
4. Shall possess the technical expertise and interpersonal skills necessary for the context of the design to understand how to apply the risk criteria established by the organization in the PtD risk management process.

The assigned PDRM for this project is as follows:

Name: XXX

Contact details: XXX

### Project team

Confirm/amend the list of stakeholders applicable to this project in the following table.

| Title | Name | Contact Details |
| --- | --- | --- |
| Project Director (PD) | TBC | TBC |
| Project Manager (PM) | TBC | TBC |
| Design Manager (DM) | TBC | TBC |
| Project Design Review Manager (PDRM) | TBC | TBC |
| Design Discipline Lead (DDL) i.e. Various engineers, architects etc working on the design of the project | TBC | TBC |
| Third Party Designer (TPD) | TBC | TBC |
| Contractor(s) | TBC | TBC |
| Enter as appropriate | TBC | TBC |
| Enter as appropriate | TBC | TBC |
| Enter as appropriate | TBC | TBC |

# PtD Plan

## Client Requirements

### Client PtD Requirements

The following Client PtD Requirements are included in the scope of services:

Amend as appropriate for this project.

### Client Design Stakeholders

The following stakeholders are persons or groups who will have an influence and/or input into design activities (e.g. Client operation and maintenance personnel etc) pertinent to the design process.

| Name | Role | Contact Details | Design Influence/Input |
| --- | --- | --- | --- |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |

## PtD KPI’s

The following PtD key performance indicators (KPIs) have been identified for this project as part of the procurement process or following Client and/or internal team consultation:

* + XXX (amend as appropriate for this project).
  + XXX (amend as appropriate for this project).
  + XXX (amend as appropriate for this project).

## Third-Party Design Stakeholders

The following third-party stakeholders are persons or groups who will have an influence and/or input into design activities pertinent to the design process. These third parties may be public bodies, government departments, local authority/council/state body etc which will require inclusion in design coordination activities.

| Name | Contact Details | Design Influence/Input | When to Engage |
| --- | --- | --- | --- |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |
| TBC | TBC | TBC | TBC |

## Whole Asset Lifecycle Design Approach

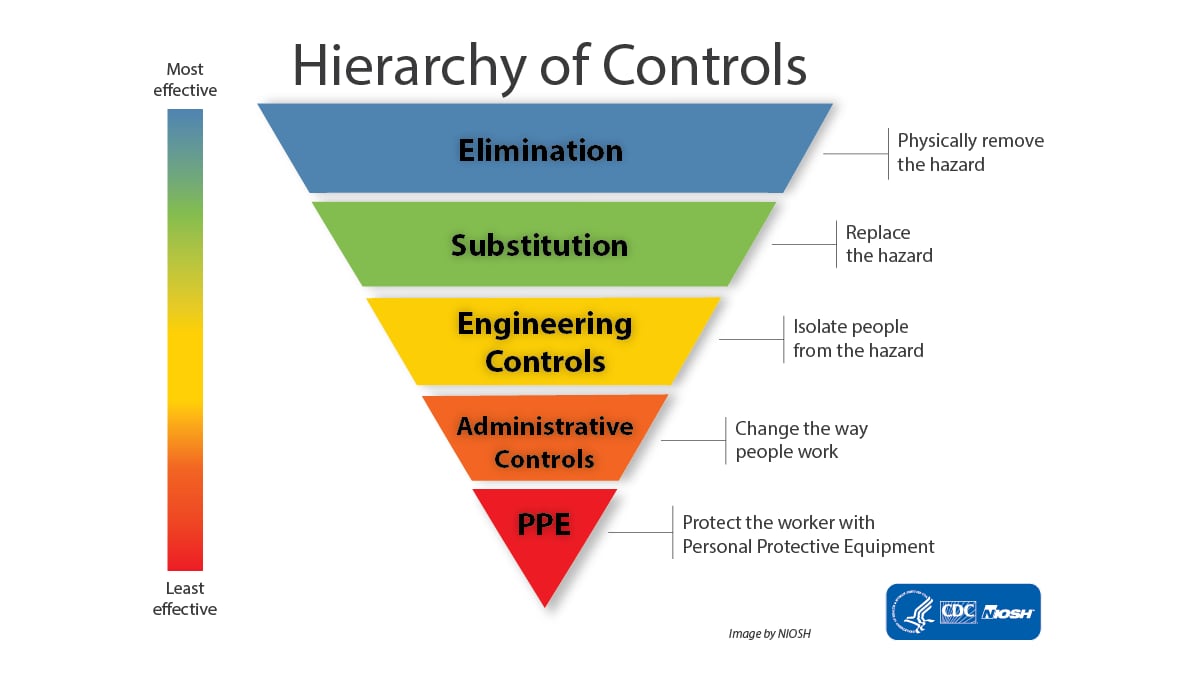
### Introduction

The greatest opportunity to reduce or eliminate risk to the health and safety of the construction worker and the end user lies with the designer.

Designers shall consider how their design will affect the health, safety and wellbeing of those who will interact with the proposed assets of this project, and the environment throughout its design life.

### Risk Mitigation – Hierarchy of Risk Control

The following outlines the hierarchy of risk control measures which are to be considered during the design process, where the most favorable form of risk mitigation is avoidance, with the least favorable being the provision of PPE:



Any residual risk remaining as a result of the application of the above hierarchy of risk control measures shall be documented for submission to the appropriate designer in the following design stage and/or the contractor, as appropriate to your project.

## RACI Matrix - PtD Deliverables

The following RACI matrix has been developed for the required PtD Deliverables for this project (amend as appropriate).

Refer to Section 2.2.3 of this report for acronyms.

| PtD Deliverables | Responsible | Accountable | Consulted | Informed |
| --- | --- | --- | --- | --- |
| Internal PtD Deliverables | | | | |
| PtD Execution Plan | DM | PM | DDL, PDRM | PD |
| PtD Checklists | Designers, TPD | PM | DM, PDRM, | PD |
| Risk Assessor Competency statement or matrix of (refer to Section 3.9 of this report) | DM | PM | DDL, PDRM | PD |
| Designer coordination (refer to Section 3.10 of this report) | DM | PM | DDL, PDRM | PD |
| Design Risk Assessment records (refer to Section 3.11 of this report) | Designers, TPD | PM | DM, DDL, PDRM, | PD |
| Register of Designers | DM | PM | DDL, PDRM, TPD | PD |
| Register of third-party design stakeholders | DM | PM | DDL, PDRM, | PD |
| Design Team Meeting action/decision register | DM | PM | PDRM , DDL, Designers, TPD | PD |
| Design/Task Input Statements | DM, DDL, Designers | PM | PDRM | PD |
| Design Safety Reviews: minutes / workshops / models etc. Refer to Section 3.12 of this report) | DM, DDL, Designers, TPD | PM | PDRM | PD |
| Records of HAZID, HAZOP, CHAZOP, ALM, Constructability reviews etc. | DM, DDL, Designers, TPD | PM | PDRM | PD |
| Lessons Learned | DM, DDL, Designers, TPD | PM | PDRM | PD |
| PtD Training | DM, DDL, Designers, TPD | PM | PDRM | PD |
| PtD File (refer to Section 5 of this report) | DM, DDL, Designers, TPD | PM | PDRM | PD |
| xxx |  |  |  |  |
| xxx |  |  |  |  |
| xxx |  |  |  |  |
| Client Project Related PtD Deliverables | | | | |
| xxx |  |  |  |  |
| xxx |  |  |  |  |
| xxx |  |  |  |  |

The above RACI matrix has been developed based on the following interpretation:

Responsible: People or stakeholders who do the work. They must complete the task or objective or make the decision. Several people can be jointly Responsible.

Accountable: Person or stakeholder who is the “owner” of the work. He or she must sign off or approve when the task is complete. This person must make sure that responsibilities are assigned in the matrix for all related activities. Success requires that there is only one person Accountable.

Consulted: People or stakeholders who need to give input before the work can be done and signed-off on. These people are “in the loop” and active participants.

Informed: People or stakeholders who need to be kept “in the picture.” They need updates on progress or decisions, but they do not need to be formally consulted, nor do they contribute directly to the task or decision.

## Reviews and Audits

This Plan shall be reviewed and updated at a minimum of the following:

1. Following significant change affecting its content or arrangements.
2. XXX (amend as appropriate for this project).
3. XXX (amend as appropriate for this project).

Auditing of this project by the Project Design Review Manager shall be in accordance with the relevant internal procedure.

## Communication of this Plan

This Plan shall be issued to all Design Discipline Leads on the project at the following stages of the design process, who shall then communicate this to their respective design teams: (Amend as appropriate for this project).

1. 30% design.
2. 60% design.
3. 90% design.
4. Preliminary design.
5. Design Safety Reviews.
6. Tender document review.
7. Temporary works design review.
8. Issue for Construction (IFC).

## Key Design Interfaces to be Managed

The following key design interfaces have been identified for this project where specific attention is to be placed on the coordination of design activities.

* XXX (amend as required).
* XXX (amend as required).
* XXX (amend as required).

This list will be reviewed throughout the design/construction/operation/maintenance/demolition process.

## Risk Assessor Competency

### PtD Requirement

Section 9.2 of ANSI/ASSP Z590.3-2021 notes that personnel who are to perform the hazard analysis/risk assessment shall be trained and competent to perform their roles and assigned tasks.

### Client Competency Requirements

The following competency requirements are set out in the scope for this project: (amend as appropriate for this project).

XXXX

### Project Competency Requirements

The PtD risk assessor competency requirements are outlined in the following documents:

|  |  |  |
| --- | --- | --- |
| Reference | Title | Location |
| XXX | XXX | XXX |
| XXX | XXX | XXX |
| XXX | XXX | XXX |

## Coordination of Designers

### Responsibilities

Section 4.1 of ANSI/ASSP Z590.3-2021 encourages a culture where employee knowledge is valued and respected which encourages collaboration across all design and redesign activities.

Of utmost importance to the design process is the coordination of design activities to ensure that there are no gaps in design knowledge exchange:

* The Project/Design Manager shall continuously coordinate all design activities on this project.
* The Design Discipline Leads shall (a) coordinate all design activities with their respective design teams and (b) continuously collaborate with other Design Discipline Leads to ensure that there are no gaps in design knowledge exchange.

### Designer Coordination Tools

The following list of documents shall be compiled to coordinate designers of this project:

| Document | Description | Purpose | Responsible |
| --- | --- | --- | --- |
| Register of Designers (including third-party consultant, Client, etc). | Project specific register of Discipline Design Leads and contact information on a discipline/output basis (as appropriate) | To ensure coordination of all designers involved with the project. | Design Manger |
| Design/Task Input Statement | Description of scope, required inputs, required outputs, list of Designers, programme and budget for a defined project task.  To include discipline specific competencies, including licenses and/or mandatory technical competencies required for each Input Statement. | Definitive scope of specific deliverables and a record of designers for the assigned design scope. | Design Manager  DDL Lead(s) |
| PtD Checklists | General themes and questions to be considered throughout the design process and as part of the PtD assessment process. | To ensure whole lifecyle approach to design including health, safety and the environment. | Design Manager  DDL Lead(s) |
| Design Risk Assessment | Whole asset lifecycle assessment of HSE hazards and design mitigation measures adopted | Using the hierarchy of risk controls to elimination, reduce, isolate or control (ERIC) hazards | Design Manager  DDL Lead(s) |
| Design Stakeholder List | Persons or third parties who have an influence and/or input into design activities (e.g. Client operation and maintenance personnel, third parties pertinent to the design process). | To ensure whole lifecyle approach to design including occupational disease, mental health and wellbeing for the end users | Design Manager  DDL Lead(s) |
| Other (include as appropriate for this project) | Other (include as appropriate for this project) | Other (include as appropriate for this project) | Other (include as appropriate for this project) |

### Third Parties Performing Design

The Project/Design Manager shall ensure that all subconsultants/suppliers who will be undertaking design for this project are identified for incorporation into the designer coordination schedule.

The Project/Design Manager shall also ensure that any subconsultants/suppliers who will be undertaking Design are briefed on:

1. The interdependency of their design scope against the full scope of works and
2. The requirement for their design output to be subject to ANSI/ASSP Z590.3-2021 and the identification of their risk assessors.

The Project/Design Manager shall maintain a register of those who have attended any briefings.

### Design Team Meetings

A schedule of design team coordination meetings shall be identified by the Project/Design Manager.

Design Team meetings shall be attended by the Design Manager, Discipline Design Leads, designers and design stakeholders (i.e. Client, O&M personnel etc) as appropriate for the design stage (or as otherwise appropriate as identified by the Project/Design Manager).

The Project/Design Manager shall keep a record of all Design Team Meetings and maintain an action/decision register of matters arising from each meeting.

Designers shall record any new hazards identified, risks eliminated or control measures implemented during the design phase, in the Design Risk Assessment for this project.

### Records of the Design Process and Design Decisions

It is imperative that records are kept of both the design process and design decisions to ensure that hazards are not reintroduced, during later project redesign phases.

1. The Design Manager shall maintain Design Records which documents the development of the design. In particular, the justification for selecting the design, any alternative designs rejected and any revisions to the design during the process shall be recorded. The Design Records for this project will be saved in this location on the project server: XXXXX
2. The Design Risk Assessment shall be continually updated with the identified hazards, assessed risks and chosen control measures, how and when the control measures were implemented, monitored and reviewed. The Design Risk Assessments for this project will be saved in this location on the project server: XXXXX

## Design Risk Assessments

### Responsibility for Preparation

Each design discipline shall prepare a Design Risk Assessment for their design output. It shall record the design hazards, risk assessment, control measures and residual risk in the Design Risk Assessment which will be forwarded to the Project Manager for review.

The Project/Design Manager shall collate a master copy of the Design Risk Assessment for the entire project.

1. All Design Risk Assessments shall be stored on the project server at this location XXX.
2. The Design Risk Assessment shall be formally reviewed during the Design Safety Reviews.

### Third-Party Design Risk Assessments

Each third-party designer on this project shall submit a Design Risk Assessment which shall be stored on the project server at this location XXX.

The Design Risk Assessments shall be formally reviewed at the project Design Safety Reviews.

### Residual Risk

A residual risk is the risk that remains after efforts by the designer to eliminate or reduce the design hazard through design control measures.

The Project/Design Manager will be responsible for communicating any residual risks from the Design Risk Assessment to the persons identified below. Clear information should be provided on any design control measures which have been adopted by the designer:

* Clients.
* Follow on designers.
* Temporary and/or permanent works designers.
* Contractors.
* Operators/maintainers.
* Demolition crews.

## Design Safety Review

### Overview

The Design Safety Review shall include the following:

1. A detailed review of the design to systematically identify hazards arising from the design and assess the extent and likelihood of the potential consequences (degree of harm).
2. Consideration of design mitigation measures to be implemented to eliminate, reduce, isolate or control the risk and the residual risk remaining after implementation of design mitigation.
3. A formal record of the ongoing process undertaken by the design teams to identify and mitigate hazards throughout the design process.

A Design Safety Review may occur in many forms as follows:

* Regular scheduled meetings/workshops between design discipline leads and project management.
* AutoCAD/BIM/GIS/hydraulic model reviews.
* Hazard and Operability Studies (HAZOP).
* Layers of Protection Analysis (LOPA).
* Safety Integrity Level (SIL) Studies.
* Constructability Assessments.
* Layout Reviews, etc.

They will be attended by the Design Manager, Project Design Review Manager, Discipline Design Leads, designers, third party designers, design stakeholders, Client, end users (amend as appropriate).

The output from each Design Safety Review shall be communicated to the Project Manager, Design Manager, Project Design Review Manager, Discipline Design Leads, Client, end users (amend as appropriate).

### Regular Occurrence of Design Safety Reviews

Design Safety Reviews shall be undertaken the following key stages:

1. XXX (amend as necessary for this project).
2. XXX (amend as necessary for this project).
3. XXX (amend as necessary for this project).

### Design Safety Review Guide

Refer to Appendix E of ANSI/ASSP Z590.3-2021 for an informative guide to Design Safety Reviews.

# Existing Sources of Information

Include details here of the sources of any existing information relevant to this PtD Execution Plan to be obtained from the Client, third parties or otherwise and where this information will be stored.

# PtD File

## Overview

Section 8 of ANSI/ASSP Z590.3-2021 calls for the establishment and implementation of a process to manage changes to facilities, systems, processes, chemicals, technology, equipment, or procedures to reduce potential risks from being introduced. The process for managing change shall include:

1) the recognition of change situations;

2) the identification of hazards and assessment of risk;

3) the decision on whether to allow a change to be made; and

4) necessary risk treatments and follow-up

The PtD File will contain a record of the completed asset to benefit the end user of that asset. It can be compiled in tandem or in combination with, the Operation and Maintenance manual of the completed asset.

The PtD file information will be specific to the work completed during the Construction Phase which will alert those who are responsible for the asset, and associated services, of any significant health, safety and environmental risks that will need to be addressed during any subsequent redesign, maintenance, repair or other later construction work (including demolition).

## What Should the PtD File Contain

The PtD File is not a record of the design process but should instead contain pertinent records of the completed asset for the end user to:

1. identify residual health, safety and environmental hazards remaining from the construction phase and
2. manage and control those hazards during subsequent maintenance, repair or other construction work including decommissioning/demolition.

## Format

The PtD File is proposed to be maintained in an electronic format with the recommendation that it is also delivered in a web based technical solution (e.g. BIM or GIS based data sources) for access to essential HSE information and amendments digitally over the asset lifecycle.

## Suggested Content

The suggested content of the PtD File is listed as follows:

1. Project Overview:
2. Project Details
   1. Project Name.
   2. Location and general description of the works.
   3. The names and addresses of the Designer(s) - Civil/Structural/M&E/Process/Architectural etc.
   4. Details of third party stakeholders appointed to design team and their design scope.
   5. The name, address and telephone number of the manufacturer of every item of plant and equipment, or, reference to product data sheets for same.
   6. Overview of regulations that are applicable to construction and operation (i.e. permits, licenses/registrations, and notifications required for construction and/or operation and associated records, required certifications, regulatory limitations to operating or using the asset etc.).
3. ​​​​​​​As Built Drawings:
   1. Civil/Structural/Process/M&E/Architectural:
      1. Any existing site details and drawings that are relevant to the management of HSE during Operation and/or future construction/demolition work.
      2. Layout plans giving details of supplies and services (including levels) and previously unchartered services encountered during construction.
   2. Electrical Supply and Lighting:
      1. Layout plans and details of electrical supply systems.
      2. Location plans and details of outdoor electrical and lighting systems, to include type of column, lantern, foundations and power supply.
      3. Piping and Instrumentation Diagram (P&ID) drawings for electrical panels and systems.
      4. Details of suppliers and specifications of all systems used.
   3. Construction Photographs:
      1. Include georeferenced (if possible) construction photos/recordings of hidden parts of any structure or service, where these can assist operation, maintenance, and future construction, management or demolition.
   4. Contaminated Land or in-situ Materials:
      1. Layout plans and profiles of areas of contaminated land giving the extent, details of any treatment and analysis of contaminants.
      2. Locations and details of any residual contaminated in-situ materials and/or on-site disposal areas, including details of materials and disposal methods used.
4. Design Criteria and Information:
   1. A detailed and easy-to-understand description of each engineering system, including what it is intended to be used for.
   2. Design scope, including design principles, performance data, limitations of each system.
   3. A list of residual risks, including hazards that have not been eliminated through the design and construction processes, recorded on the Design Risk Assessment form. Include information on mitigation measures adopted and source information (e.g., surveys confirming presence of asbestos, contaminated land, hazardous materials etc.).
   4. Detail any hazards which will persist into the operation and maintenance of the asset to benefit the end user.
5. Construction Methods:
   1. Details of construction methods and materials, which may present significant residual hazards with respect to cleaning, maintenance or demolition for each of the structures.
   2. Copies of manufacturers' current literature for all products used in the construction, including material safety data sheets and manufacturers' recommendations for cleaning and maintenance.
   3. Copies of all guarantees, warranties and maintenance agreements offered by subcontractors and manufacturers.
   4. Copies of all test certificates and reports required as per the specification.
6. Plant and Equipment:
   1. Full description of each of the systems installed, written to ensure that operations staff fully understand the scope and facilities provided.
   2. Schedules of all plant, equipment, valves etc., stating their purpose, location, duties and performance figures.
   3. A description of the mode of operation of all the systems clearly including service capacity and restrictions.
   4. Diagrammatic drawings of each system indicating principal items of plant, equipment, valves etc.
   5. A reduced version of detail drawings for each system with an index to show the various elements.
   6. Legend to describe all color-coded services.
   7. The name, address and telephone details of the manufacturer of every item of plant and equipment together with catalogue list numbers and serial numbers (if appropriate).
   8. Manufacturer’s technical literature for all plant and equipment together with catalogue list numbers.
   9. A copy of all test certificates.
   10. A copy of all manufacturers’ guarantees, warranties and maintenance agreements offered by subcontractors and manufacturers.
   11. Starting up, operating and shutting down instructions for all equipment and systems installed. Normal operation and emergency operation.
   12. Control Sequences for all systems installed in normal operation and in emergency situations.
   13. Schedules of all fixed and variable equipment settings established during commissioning.
7. Maintenance Procedures and Systems:
   1. Particular skills required in operating or maintaining specific equipment.
   2. Recommendations as to the preventative maintenance frequency and procedures to be adopted to ensure the most efficient operation of the systems.
   3. Personal protective systems and equipment required for the operation or maintenance of any plant or equipment.
   4. Names, addresses and contact details of specialist contractors required for the maintenance/ repair of specific plant or equipment.
   5. Emergency procedures.
   6. Fault-finding and troubleshooting systems.
   7. A list of normal consumable items.
   8. Lubrication schedules and preferred products.
   9. Hidden risks e.g., burial of contaminated materials.
   10. Where hazardous materials are present, full details of the product, material specification and material safety data sheet.
   11. Handling and disposal systems for waste materials.
   12. Location and nature of emergency and firefighting systems.
   13. Location of any operation and maintenance manuals. ​​​​​​​
8. Demolition/Decommissioning:
   1. Relevant information in respect of the health and safety implications to operatives and others, where total or partial decommissioning, demolition or dismantling of the asset is proposed.
   2. Details of any health or safety implications that the removal of any plant, machinery or equipment (particularly electrical/electronic) may have on others outside of the site.
   3. Precautions to be taken during site surveys (e.g., Design surveys, condition surveys).
   4. Environmental and health effects of materials and by-products.
   5. Dismantling sequences to be employed during demolition.
   6. Specific procedures for storage, handling, transportation and disposal of materials generated by demolishing or decommissioning various part of the plant.
   7. Information regarding the removal or dismantling of installed plant and equipment (e.g. any special arrangements for lifting such equipment, stored energy (i.e. pre/post-stressed beams/cables) etc.).