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**Teagasc, Oak Park, Carlow
Electrical Works Project**

**MEP PRELIMINARY HEALTH & SAFETY PLAN
DESIGN RISK ASSESSMENT**

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1.0 – INTRODUCTION

Lawler Consulting are acting as Ancillary Design Certifiers for the Project. We have a responsibility to co-ordinate with the design team to ensure that adequate attention is paid to Health & Safety in relation to the design, use and maintenance of the buildings and environs under consideration. This document forms the basis of that co-ordination by explaining the various measures, and particular risks the relevant to the project.

Regulation 15 of the Safety Health & Welfare at Work (Construction) Regulations 2013 requires Designers to have regard to the General Principles of Prevention outlined in Schedule 3 of the Safety Health & Welfare at Work Act 2005.

2.0 GENERAL PRINCIPLES OF PREVENTION

The purpose of the General Principles of Prevention is to provide a framework within which design and detailing issues can be assessed.

To assist in applying those principles they are outlined below for your information;

- i) The avoidance of risks
- ii) The evaluation of unavoidable risks
- iii) The combating of risks at source
- iv) The adaptation of work to the individual, especially as regards the design of places of work, the choice of work equipment and systems of work, with a view to alleviating monotonous work and work at a predetermined rate and to reduce their effect on health
- v) The adaptation of the workplace to technical progress
- vi) The replacement of dangerous articles, substances or systems of work by non-dangerous articles, substances or systems of work.
- vii) The development of an adequate prevention policy in relation to safety, health and welfare at work, which takes account of technology, organisation of work, working conditions, social factors and the influence of factors related to the working environment.
- viii) The giving to collective protective measures of priority over individual protective measures.
- ix) The giving of appropriate training and instruction to employees.

3.0 DUTIES OF DESIGNERS

Designers are organisations or individuals who undertake design work for a project, which includes the design of temporary works. Designers are in a position which that allows them to reduce risk to the Health and Safety during the construction stage and also during the use and maintenance.

Designers include:

- i) Architects, Civil and Structural Engineers, Building Services Consultants, Building Surveyors, Landscape Architects and other design practices and individuals who contribute to, or have a responsibility for analysing, calculating, preparatory design work, designing, detailing, specifying and/or preparing bills of quantities for construction work;
- ii) Mechanical, Electrical, Chemical and other Engineers as appropriate to the project being undertaken;
- iii) Those who specify or alter a design, or who specify the adoption of certain methods of work or the use of specific materials (this may be the client);
- iv) Temporary works designers, interior designers, specialist sub-contractors with design input such as engineering services sub-contractors and others involved in the choice of construction materials.

The scope/area of design responsibility of a designer is determined by his or her brief. It is essential that areas of responsibility between the various designers on a project are delineated as clearly as possible to avoid overlap or gaps which could be confusing and/or potentially dangerous. Once those areas of responsibility have been determined, the duties of each designer relating to safety and health can be clearly set down.

The duties of Designers under Regulation 15 stand alone and are not dependent on the existence of a Client and the appointment of Project Supervisors. The duties apply whenever a designer is engaged in a design which will be used for the purposes of construction work.

Designers are recommended to apply a formal risk assessment protocol using the HSE document Work Sector Guidance for Designers 2nd Edition (2003) CIRIA as an element of the design file.

The text of Regulation 15 of the Safety Health & Welfare at Work (Construction) Regulations 2013 is noted below.

15. (1) In carrying out work related to the design of a particular project, a designer shall - (a) take account of - (i) the general principles of prevention, (ii) the relevant safety and health plan, and safety file prepared in accordance with these Regulations, and

(b) provide in writing to the project supervisor for the design process all relevant information Necessary for the project supervisor to carry out the project supervisor's duties under these Regulations.

15. (2) In carrying out work related to the design of a particular project, a designer shall - (a) cooperate with the project supervisor for the design process or the project supervisor for the construction stage, as appropriate, to enable that project supervisor to comply with these Regulations, (b) co-operate with other designers, as appropriate, to enable them to comply with these Regulations in relation to the project (c) comply with all directions from

the project supervisor for the design process or the project supervisor for the construction stage, that are issued pursuant to Regulation 14 or 20, as appropriate.

15. (3) In carrying out work related to the design of a particular project, a designer shall promptly provide in writing to the project supervisor for the design process or for the construction stage, whichever is appropriate, all information -(a) about the project that is known to the designer regarding particular risks to the safety, health and welfare of persons at work, including but not limited to the risks referred to in Schedule 1, (b) regarding the nature and scope of the project to the extent necessary to enable the project supervisor to comply with these Regulations, (c) about the project that is necessary for that project supervisor to prepare the safety file (d) that is known to that person and is necessary to ensure, so far as is reasonably practicable, the safe construction of the design for the project.

15. (4) For the purposes of paragraph (3), if no project supervisor is known to the designer to have been appointed for the project, the designer shall provide the information referred to in that provision to the appropriate contractor instead of to a project supervisor.

15. (5) If a designer is not aware of the appointment of a project supervisor for the design process, the designer shall promptly inform the client of the client's duties under Regulation 6.

3.0 - MANDATORY MEASURES

Before any work starts, the following **must** be in place.

Supervision

Every activity must be initiated and controlled. Supervision, generally by the person in charge, e.g. the foreman, is essential to ensure the activity is completed as planned, and to ensure a safe system of work.

Safe Pass

As identified in the Construction Regulations, all persons engaged in construction work must be in possession of a current Safe Pass card and have successfully completed the one-day Safe Pass training. Safe Pass cards must be renewed as appropriate.

Plant/Equipment Certification

It is a legal requirement that most construction plant is tested and examined on a regular basis, in particular all lifting appliances and lifting gear. The Certificates relating to these must be kept up to date.

CSCS

The Construction Skills Certification Scheme (CSCS): as outlined in the Construction Regulations, requires that certain construction skills have mandatory training. On successful completion of this training, persons are given a CSCS card. CSCS cards must be renewed as appropriate.

Induction

Every new contractor or new employee to a site must undergo an induction process when they first arrive on site. This induction should inform the attendees about site rules and procedures, and the arrangements for their safety and welfare on the site, and also who the key duty holders are.

Communication

Timely and good communication is essential. Such clear communication helps to ensure that tasks are understood and completed in a safe manner. Workers need to know how to do their work safely.

WC & Washing

Contractors shall only use dedicated facilities on site which are agreed prior to work commencing.

Parking.

Parking restrictions around site must be adhered to at all times.

Canteen

A facility must be provided for workers to take breaks. Minimum requirements include a facility for boiling water, tables with impermeable surfaces, and chairs with backs. It must be properly ventilated, adequately lighted, kept in a clean, hygienic orderly condition not used for the storage of building materials or plant.

Drying/Changing

Arrangements, separate from the canteen facility, must be in place to allow workers to change and dry clothes.

Drinking Water

An adequate supply of wholesome drinking water must be provided at a convenient point(s).

Control

This is a No Smoking site. Smoking is prohibited only in designated areas.

4.0 - ELECTRICITY

Electrical Supply Board (ESB)/or other Electrical Utility Company

In general routes of existing services are known, however where a work activity is to begin, and services are unknown, the ESB, or other electrical utility company, must be contacted for drawings and advice on the position of underground services.

Divert/OFF

Before work is to commence adjacent to underground services, the ESB, or other electrical utility company, must be contacted to request that, either power lines be diverted away from the work zone, or, if necessary, they can be temporarily switched off to allow work to proceed safely.

Survey Map

Before work is to commence, a drawing of the underground services should be procured, and the ground suitably surveyed and subsequently marked out to identify the position of such services.

Detector

Before digging is to commence, the ground should be scanned with a suitable detector to verify the position of any underground services, and any variances identified should be reflected on the drawing.

Overhead Lines

Refer to ESB & EIR drawings for locations of any overhead lines within the vicinity of the site.

Must adhere to Code of Practice for Networks - Avoiding Danger from Overhead Electricity Lines. Document No: DOC-230910-BBA

Warning Signs

Contact with power lines can kill. People working close to, or accessing close to, or at power lines must be made aware of the power lines existence, to allow them to apply the necessary controls. Suitable and sufficient Warning Signs should be erected to advice persons of the danger.

No Mechanical Digging

Mechanical excavating at, or immediately close to, underground electrical services is not permitted. Such services should be uncovered or made visible by hand digging only, to minimize the potential of cutting or puncturing the service. Only with all the lines clearly

visible should mechanical digging recommence. Consideration may also be given to having a representative of the ESB, or other electrical utility company, on site when working close to, or excavating close to underground services.

Hand Dig

Hand Digging should only be used to unearth or make visible underground services. However, care should be taken during hand digging, as this can also result in cutting services, and exposing live conductors.

Barriers

Where services have been uncovered/made visible, and remain visible or insufficiently backfilled, suitable barriers should be erected at a sufficient distance around the service area to prevent persons entering the danger area.

Tipping

N/A

5.0 PARTICULAR RISKS (ENABLING WORKS)

The following is the non exhaustive list of particular risks to the safety and health of persons as set out in the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013), together with the opinion of the Project Supervisor for Design Stage on what elements of the works may fall within each risk category. It should be noted that many of the risks on the project may arise out of working methods which are at the discretion of the Contractors and as such cannot be determined by the Project Supervisor for Design Stage. All design drawings are available for inspection.

1	<i>Works which put persons at work at risk of burial under earthfalls, engulfment in swampland or falling from a height, where the risk is particularly aggravated by the nature of the work or process used or by the environment at the place of work or site.</i>	All such works shall be adequately supervised in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) by the Project Supervisor for Construction Stage. Any / all major roof openings shall be adequately protected prior to the installation of ductwork and services.
2	<i>Work which puts persons at risk from chemical or biological substances constituting a particular danger to the safety and health of such persons or involving a legal requirement for health monitoring.</i>	Such risk being Fumes from adhesives used on flooring products/dust from general building activities. Proper ventilation is to be maintained at all times, proper breathing apparatus PPE to be worn at all times
3	<i>Work with ionising radiation requiring the designation of controlled or supervised areas as defined in Article 20 of Directive 80/836/Euratom such as: radioactive lightning conductors, radioactive smoke detectors or other radioactive materials or plant.</i>	Not Applicable
4	<i>Work near high voltage power lines.</i>	Overhead & underground ESB live MV services exist within the site. Contractor to liaise with ESB Networks to ensure that all necessary precautions are taken where required.
5	<i>Work exposing persons at work to the risk of drowning such as works significantly below water table, work to bridges, culverts, work on or near the sea, lakes, ponds, reservoirs.</i>	Not Applicable
6	<i>Work on wells, underground earth work and tunnels.</i>	Not Applicable

7	<i>Work carried out by divers at work having a system of air supply.</i>	Not Applicable
8	<i>Work carried out in a caisson with a compressed air atmosphere.</i>	Not Applicable
9	<i>Work involving the use of explosives such as rock blasting or demolition.</i>	Not Applicable
10	<i>Work involving the installation, assembly or dismantling of heavy pre-fabricated components such as heavy structural steel elements, heavy pre-cast concrete elements or heavy pre-fabricated plant items.</i>	The Contractor will be responsible for liaising with the manufacturer of the plant to establish the weight / shape / no. of components of the individual plant items that are being stripped out as part of the enabling works package. All such works associated with the lifting and dismantling of these elements shall be adequately supervised in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) by the Project Supervisor for Construction Stage.
11	<i>Work involving gas pipework installation / gas connections</i>	Not Applicable
12	<i>Particular Risks General</i>	See list below

The following is a list of particular risk items which contractors should be aware of:

<u>No.</u>	<u>Key Hazards Identified</u>	<u>Decisions/Action</u>
1.	Main and sub-contract works shall be carried out on site at the same time. All works shall be co-ordinated and health & safety file to be prepared incorporating all elements.	Main contractor and Project Supervisor Construction Stage to liaise with all sub-contractors. Weekly meetings to review Health & Safety issues to be taken and minutes recorded.
2.	Installation of a new general power layout. Risk of electrocution	Mains power disconnected prior to commencement of works. Use tag-on-tag off system. Fully qualified electrical contractors only to be employed.
3.	Installation of a new general power layout .Risk of falling from a height.	Provide scaffolding with protected guard rail in to allow safe access. Use safety harness system when working at a height.
4.	Installation of new distribution boards. Risk of injury due to risk of electrocution.	Mains power disconnected prior to commencement of works. Use tag-on-tag off system. Fully qualified electrical contractors only to be employed

Items to be drawn to the attention of tenders/contractors:

Design element	Hazard / Risk	Design Mitigation	Residual risk	Area applicable
Electrical containment installation	Live circuits serving live operations may be damaged or interrupted during diversion works	Full circuit tracing, phased diversions, temporary switchgear installation prior to transfer	Residual risk remains where undocumented live circuits exist	5HL Brewery & existing office areas
Sub-main cable diversions	Loss of supplies affecting live operations	Out-of-hours cutover, staged commissioning, temporary feeds maintained	Shutdown sequencing remains critical	5 HL Brewey & existing office areas