



PROFESSIONAL BUILDING SERVICES & ENERGY REDUCTION CONSULTANTS

DESIGN RISK ASSESSMENT

EMERGENCY WORKS SCHEME

*Coláiste Mhuire Co-Ed, Castlemeadows, Thurles,
Co. Tipperary*

Gas Upgrade Works

Mechanical & Electrical Design Risk Assessment

INTRODUCTION

Under the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021, the duties of the designer extend to the following:

- Taking account of the Health & Safety Plan and Safety File,
- Providing in writing all relevant information necessary to the Project Supervisor for the Design Process (PSDP), so as the project supervisor can carry out his / her duties as per the regulations,
- Co-operating with other designers, the PSDP and the Project Supervisor for the Construction Stage (PSCS) to enable them to comply with the regulations,
- Providing all information known to the PSDP regarding particular risks to safety, health and welfare of persons at work,
- Identify any hazards that a design may present during the construction stage and subsequent maintenance and where possible eliminate,
- Providing information to the appropriate contractor if no project supervisor has been assigned,

DISCLAIMER

Geaney Engineering Consultants believe reasonable efforts have been made to ensure the accuracy of the information contained in this document. It may include inaccuracies or typographical errors and may be changed or updated without notice. It is intended for discussion and reference purposes only and is provided "AS IS", without warranty of any kind. Reliance on any information presented is at your own risk. Geaney Engineering Consultants hereby disclaims all warranties and conditions with regard to this information. In no event shall Geaney Engineering Consultants be liable for any damages of any form arising out of, or in any way connected with the use of this document. If you are dissatisfied with any portion of this document, your sole and exclusive remedy is to discontinue using this document.

Mechanical & Electrical Design Risk Assessment

PROJECT DESCRIPTION

The site comprises the existing Coláiste Mhuire Co-Ed, Castlemeadows, Thurles, Co. Tipperary. The site boundaries and extent of the works are indicated on the accompanying drawings. The Contractor shall confine all operations, storage and access arrangements to the agreed work areas.

The works comprise the decommissioning, purging, disconnection and removal of the existing LPG installation and the supply, installation, testing, commissioning and certification of a new LPG storage and distribution system. The works include new LPG cylinder storage arrangements, regulators, above-ground and underground LPG distribution pipework, gas proving and detection systems, emergency isolation devices, replacement gas taps within the relevant teaching rooms, electrical and fire-alarm interfaces, builders' works, fire-stopping, making good and all associated ancillary works. All LPG works shall be undertaken by suitably qualified, registered and competent personnel with appropriate experience in non-domestic LPG installations of a similar nature, scale and complexity.

Refer to the accompanying drawings, specifications and tender documents for the full extent and requirements of the proposed works.

Mechanical Services Installation Works

The works comprise the complete replacement and upgrade of the existing LPG storage, distribution and safety installations, including associated gas pipework, regulators, gas proving panels and valves, gas and carbon monoxide detection, emergency isolation devices, classroom gas outlets, electrical supplies, controls, fire-alarm interfaces, builders' works and ancillary installations. The works shall be carried out under a direct contract with the Client.

General Construction Notes:

The Contractor shall undertake a full review of all relevant project information before commencing the works, including the drawings, specifications, existing record information, Preliminary Safety and Health Plan and documentation provided by the School. The Contractor shall survey and verify the location, condition and extent of all existing LPG, mechanical, electrical, fire-alarm and builders' services and shall liaise with the Design Team regarding any discrepancies.

The works will be carried out within or adjacent to an operational school environment. The Contractor shall securely segregate all work areas and implement appropriate controls for access, deliveries, vehicle movements, material storage and waste removal. Particular care shall be taken during the purging, disconnection and removal of the existing LPG installation to prevent uncontrolled gas release, fire, explosion or interference with services serving occupied areas.

All LPG shutdowns, purging operations, isolations and reconnections shall be planned in advance and agreed with the School Authority and Design Team. Existing services shall not be interrupted without prior approval, and out-of-hours working shall be allowed for where required.

Before commencing excavation, drilling, demolition, cutting or stripping-out works, the Contractor shall review the available Health and Safety File, Asbestos Register and existing service records. The Contractor shall trace and verify all concealed, underground and above-ground services, implement safe isolation procedures and protect all services that are to remain operational.

THE PRINCIPLES OF PREVENTION:

Regulation 15(1) of S.I. No. 291 of 2013 states that all designers must take account of the General Principles of Prevention which are contained in Schedule 3 to the Safety, Health and Welfare at Work Act 2005. They are as follows:

- a) The avoidance of risks.
- b) The evaluation of unavoidable risks.
- c) The combating of risks at source.
- d) The adaptation of work to the individual, especially as regards the design of places of work, the choice of work equipment and the choice of systems of work with a view, in particular to alleviating monotonous work, and work at a predetermined work rate and to reducing their effect on health.
- e) The adaptation of the place of work to technical progress.
- f) The replacement of dangerous articles, substances or systems of work by non-dangerous or less dangerous articles, substances or systems of work.
- g) 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.
- h) The giving to collective protective measures priority over individual protective measures.
- i) The giving of appropriate training and instructions to employees.

It should be noted that:

- Only risks that can reasonably be foreseen at design stage can be assessed.
- Risks to those building and to those who might be affected by this work (eg: members of the public) must be considered. Risks during construction, and subsequent maintenance or repairs must be considered.
- Risk assessment may be simple or elaborate depending on the nature of the project and the risk in question. Conventions, generally taken, define a “hazard” as a condition or event with the potential to cause harm, and define a “risk” as the probability (P) that harm from a particular hazard will occur, combined with the likely severity (S) of the harm. $R = S \times P$. Note: it is accepted that this is a very subjective area where good judgement counts more than rigid formulae.
- As the project proceeds, designers need to assess the design and the materials to be used, to establish whether a risk is being introduced and to consider whether this risk can be removed or minimised.

Mechanical & Electrical Design Risk Assessment

RISK ASSESSMENT

A Design Risk Assessment has been completed. The risk ratings and action bands are defined as follows:

Likelihood

L	–	So unlikely that it can be assumed that it may never occur
M	–	Is unlikely but possible to occur during the life of the project
H	–	Is likely to occur during the life of the project

Severity

L	–	All other injuries or illnesses
M	–	3 day injury or illness
H	–	Death or major injury

Risk Rating

L	–	Minimal Risk
M	–	Low Risk
H	–	Immediate Risk

Action Required

L	–	Maintain Control Measures
M	–	Review & Improve Control Measures if necessary
H	–	Improve Control Measures Immediately

DESIGNER'S RISK ASSESSMENT

Designer: Geaney Engineering Consultants					Project: Coláiste Mhuire Co-Ed, Thurles, Co. Tipperary - Gas Upgrade Works	
Project No. 0850					Date: 26/08/2026	
No.	Activity / Element	Potential Hazards	Population at Risk	Risk Rating	Action at Design Stage	Possible Control Measures (Contractors)

No.	Activity / Hazard	Principal Risk	Persons at Risk	L	S	R	Design Measures / Information Provided	Residual Risk / PSCS Control Measures
1	Works within an operational school	Unauthorised access to work areas; interaction with students, staff and visitors; injury from tools, materials or construction activities	Students, staff, visitors and contractors	M	H	H	Works confined to defined areas. Phased working, secure segregation and agreed access routes identified as project requirements. Disruptive works and shutdowns to be undertaken outside school hours where necessary.	PSCS to agree a site logistics plan with the School Authority. Provide secure hoarding, barriers, signage and controlled access. Maintain safe escape routes and prevent unattended access to work areas.
2	Decommissioning the existing LPG installation	Uncontrolled LPG release resulting in fire, explosion, asphyxiation, cold burns or serious injury	Mechanical contractors, school occupants and emergency personnel	M	H	H	Existing installation to be isolated, purged, tested gas-free and disconnected by competent LPG personnel. Purging and removal requirements included within the tender documents.	Contractor to prepare a detailed isolation and purging method statement. Confirm isolation points, extinguish all ignition sources, provide gas monitoring and ventilation, and maintain emergency arrangements throughout the operation.
3	Residual LPG within redundant pipework	Ignition of trapped LPG during cutting, dismantling or removal	Mechanical contractors and others within the work area	M	H	H	Redundant pipework shall not be cut or removed until it has been isolated, purged and verified gas-free. Open pipe ends are to be securely capped.	Competent person to test and certify pipework gas-free before dismantling. Cold-cutting methods to be used where practicable. Hot works shall not commence until a permit has been issued.
4	Existing LPG cylinders and storage equipment	Gas release, fire, dropped cylinders or incorrect handling during disconnection and removal	Mechanical contractors, delivery personnel and school occupants	M	H	H	Existing cylinders and associated equipment to be removed in coordination with the LPG supplier. New storage arrangements are located externally in a ventilated and secured enclosure.	LPG supplier and PSCS to agree the disconnection and removal procedure. Cylinders shall remain upright, capped, secured and protected from impact, heat and unauthorised access.
5	Installation and future use of the new LPG cylinder compound	LPG accumulation, fire, impact damage, unauthorised interference or inadequate ventilation	School occupants, maintenance personnel and members of the	L	H	H	External LPG storage enclosure specified with secure access, permanent ventilation, regulators, isolation valve and	Contractor to maintain statutory separation distances and protect the compound from vehicles, ignition sources, drains and openings. Final installation to be inspected

Key:

L = Likelihood (Low, Medium, High)

S = Severity (Low, Medium, High)

R = Risk (Likelihood & Severity)

DESIGNER'S RISK ASSESSMENT

DESIGNER'S RISK ASSESSMENT							
Designer: Geaney Engineering Consultants					Project: Coláiste Mhuire Co-Ed, Thurles, Co. Tipperary - Gas Upgrade Works		
Project No. 0850					Date: 26/08/2026		
No.	Activity / Element	Potential Hazards	Population at Risk	Risk Rating	Action at Design Stage		Possible Control Measures (Contractors)

			public				required safety signage. Storage position and pipework routing are indicated on the drawings.	and certified by a competent LPG installer.
6	External excavation and underground LPG pipework	Contact with existing electrical, drainage, water, communications or other buried services; serious injury or service interruption	Contractors, school occupants and utility personnel	M	H	H	Underground routes have been selected to minimise conflict with the existing building and services where practicable. Existing service locations are to be verified before excavation.	PSCS to obtain available records, undertake GPR/service detection and mark routes. Trial holes and hand digging shall be used in high-risk areas. Excavations shall comply with the HSA Code of Practice for Avoiding Danger from Underground Services.
7	Open trenches and excavations	Falls, collapse, entrapment, water ingress or unauthorised access	Contractors, students, staff and visitors	M	H	H	Excavations are limited to the LPG distribution route and shall be backfilled as soon as practicable.	Provide barriers, trench covers, safe access and appropriate support or battering. Keep excavations secured outside working hours and inspect them following adverse weather or ground disturbance.
8	Transition between underground and above-ground LPG pipework	Mechanical damage, corrosion or loss of containment at vulnerable transition points	School occupants, contractors and maintenance personnel	L	H	H	Transition details, protective sleeving and corrosion-resistant materials are specified. Above-ground pipework is routed and supported to minimise accidental damage.	Contractor to verify protection, supports, sleeving and sealing before backfilling. Record concealed routes photographically and include them in the as-built documentation and Safety File.
9	Installation of LPG pipework at high level and within occupied rooms	Falls from height and falling tools or materials	Contractors, students, staff and visitors	M	H	H	Pipework routes have been selected to use accessible wall and ceiling zones and minimise high-level work where practicable.	Use suitable MEWPs or mobile towers. Ladders shall only be used for short-duration light work. Segregate the area below and prevent school occupancy during overhead works.
10	Drilling and forming penetrations through existing walls, floors and finishes	Contact with concealed services, asbestos-containing materials, dust and damage to fire compartments	Contractors and school occupants	M	H	H	Contractor required to review available record information, Health and Safety File and Asbestos Register before intrusive works. Penetrations are to be kept to the minimum necessary.	Scan before drilling. Complete refurbishment/demolition asbestos surveys where required. Use dust extraction and isolation. Reinstate all fire-rated construction with tested fire-stopping systems.

Key:

L = Likelihood (Low, Medium, High)

S = Severity (Low, Medium, High)

R = Risk (Likelihood & Severity)

Page 7

DESIGNER'S RISK ASSESSMENT

Designer: Geaney Engineering Consultants						Project: Coláiste Mhuire Co-Ed, Thurles, Co. Tipperary - Gas Upgrade Works		
Project No. 0850						Date: 26/08/2026		
No.	Activity / Element	Potential Hazards	Population at Risk	Risk Rating			Action at Design Stage	Possible Control Measures (Contractors)
11	Installation of gas taps and pipework within science, home economics and other teaching rooms	Damage to existing furniture/services, unsafe outlet positioning or subsequent unauthorised operation	Contractors, teachers, students and maintenance personnel	M	H	H	Gas outlets, proving valves and emergency isolation arrangements are indicated on the drawings. Local isolation and teacher-controlled proving systems are incorporated into the design.	Final locations to be coordinated on site with fixed furniture and appliances. Outlets shall be protected from impact, clearly labelled, leak-tested and inaccessible to unauthorised users when isolated.
12	Hot works associated with pipework installation	Fire, burns, smoke migration or ignition of residual LPG and combustible materials	Contractors, school occupants and property	M	H	H	Mechanical jointing and cold-working methods are to be used where practicable. Hot works adjacent to LPG equipment or pipework are to be avoided.	PSCS to operate a hot-work permit system. Confirm gas-free conditions, remove combustible materials, isolate detectors only where agreed, provide extinguishers and maintain a fire watch following completion.
13	Electrical supplies and wiring to gas proving and detection systems	Electric shock, arc fault, fire or inadvertent energisation	Electrical and mechanical contractors	M	H	H	Dedicated electrical supplies and galvanised steel containment are indicated. Gas safety wiring is to be segregated and installed in accordance with manufacturers' requirements.	Existing circuits shall be identified, safely isolated, locked off and proven dead. Electrical works to be completed, tested and certified by competent personnel in accordance with I.S. 10101.
14	Interface with the existing fire-alarm system	Unwanted alarm activation, impairment of fire protection or failure of the LPG system to isolate during a fire condition	School occupants, contractors and emergency services	M	H	H	Master gas proving system is designed to interface with the existing fire-alarm installation and shut off the LPG supply upon fire alarm activation.	Interface works and temporary isolations to be agreed with the School Authority. Maintain a fire-alarm impairment procedure. Complete witnessed cause-and-effect testing before handover.
15	Installation of LPG and carbon monoxide detectors	Failure to detect a leak due to incorrect location, obstruction, damage or incomplete commissioning	Students, staff, contractors and maintenance personnel	L	H	H	Detector types and indicative locations are shown on the drawings. LPG detectors are to be positioned at low level adjacent to the relevant appliances, with final locations coordinated on site.	Final detector positions to follow manufacturer's requirements and avoid dead zones or obstruction. Complete functional testing using approved test gas and record alarm, valve closure and reset operation.
16	Pressure testing, tightness testing and	Pipework or component failure, uncontrolled gas	Commissioning personnel and	M	H	H	Testing and commissioning requirements are included	Contractor to submit a commissioning method statement. Exclude non-essential

Key:

L = Likelihood (Low, Medium, High)

S = Severity (Low, Medium, High)

R = Risk (Likelihood & Severity)

Page 8

DESIGNER'S RISK ASSESSMENT

DESIGNER'S RISK ASSESSMENT							
<u>Designer:</u> Geaney Engineering Consultants				<u>Project:</u> Coláiste Mhuire Co-Ed, Thurles, Co. Tipperary - Gas Upgrade Works			
<u>Project No.</u> 0850				<u>Date:</u> 26/08/2026			
No.	Activity / Element	Potential Hazards	Population at Risk	Risk Rating	Action at Design Stage		Possible Control Measures (Contractors)

	commissioning	release, ignition or exposure to test pressure	others in the vicinity				within the specification. Installation shall be certified before LPG is introduced.	personnel, use calibrated equipment, test in controlled stages and undertake final tightness and functional testing by competent LPG personnel.
17	Introduction of LPG and initial system operation	Gas escape, incorrect regulator settings, failure of proving valves or unsafe appliance operation	Contractors, teachers, students and staff	M	H	H	Multi-stage regulation, master isolation, local proving valves, gas detection and emergency knock-off points are incorporated into the design.	Introduce gas only after completion of all inspections and certification. Witness the operation of regulators, detectors, proving valves, emergency controls, fire-alarm interface and appliance isolation.
18	Manual handling of cylinders, pipework, valves and equipment	Musculoskeletal injury, crushing or dropped materials	Mechanical contractors and delivery personnel	M	M	M	Equipment and components are capable of being delivered and installed in manageable sections. Access to the external storage location is available for controlled delivery.	Contractor to prepare a lifting and handling plan, use appropriate trolleys or lifting aids and provide sufficient trained personnel. LPG cylinders shall not be rolled, dropped or lifted by their valves.
19	Temporary impairment of existing gas services	Loss of teaching facilities, unsafe reconnection or use of incomplete installations	School staff, students and contractors	M	M	M	Shutdowns and phased changeovers are required to be agreed with the School Authority. Incomplete systems shall remain isolated.	Clearly label and secure all isolated services. Do not restore supplies until testing and certification are complete. Communicate shutdown and reinstatement arrangements to affected staff.
20	Future operation and maintenance	Exposure to LPG, inaccessible isolation devices, incorrect testing or unplanned modification of the installation	School maintenance personnel and specialist contractors	L	H	H	Isolation valves, proving panels, emergency knock-off points, regulators and detectors are located in accessible positions. Labelling, certification and handover information are required.	Provide as-built drawings, test certificates, operating instructions, detector maintenance requirements and emergency procedures within the Safety File. School personnel shall receive system demonstration and training.

Key:

L = Likelihood (Low, Medium, High)

S = Severity (Low, Medium, High)

R = Risk (Likelihood & Severity)