3FMProject

Bringing
Dublin Port
To 2040

Maritime Village:
Mechanical and Electrical Services Report

COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

Varming
Consulting Engineers Ltd.

Third & Final
Masterplan
Project

Varming
Consulting Engineers Ltd.

MARITIME VILLAGE: MECHANICAL AND ELECTRICAL SERVICES REPORT

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MECHANICAL AND ELECTRICAL SERVICES REPORT

1. General

This report only deals with the proposed mechanical and electrical services for the proposed 'Maritime Village', which form parts of the overall proposed 3FM Project, for which a planning application is being submitted. The proposed M&E and sustainable options and recommendations hereby meet the Building Regulations and complies with Technical Guidance Document L - Conservation of Fuel and Energy - Buildings other than Dwellings (Part L).

The Mechanical and Electrical Services Report is based on full compliance with the following regulations, standards and recommendations.

- Department of Housing, Planning, Community & Local Government Building Regulations, namely;
  - Technical Guidance Document B - Fire Safety
  - Technical Guidance Document D - Materials and Workmanship
  - Technical Guidance Document F - Ventilation
  - Technical Guidance Document G – Hygiene
  - Technical Guidance Document H – Drainage and Waste Water Disposal
  - Technical Guidance Document J - Heat Producing Appliances
  - Technical Guidance Document L - Conservation of Fuel and Energy - Buildings other than Dwellings
  - Technical Guidance Document M - Access and Use
- National Rules for Electrical Installations, IS 10101:2020
- I.S. 3217:2013+A1:2019 Emergency Lighting Systems
- I.S. 3218:2013+A1:2019 Fire Detection & Alarm Systems
- CIBSE Lighting Guides
- Safety, Health and Welfare at Work (Construction) Regulations - SI 291 of 2013
- Utility Service Providers Infrastructure Requirements Guidelines
- Heating and Ventilation and Domestic Water Systems shall be designed to CIBSE Design Guides and Recommendations
- Building Services Research and Information Association (BSRIA)
- Manufacturer’s Instructions & Recommendations

1.1. Proposed Development

This Report has been prepared in support of an application for the 3FM Project being submitted by Dublin Port Company (DPC), focusing in particular on the proposed new Maritime Village site which forms one part of the overall development. The 3FM Project represents the concluding phase of the Masterplan initiatives essential for realizing Dublin Port's full potential by 2040. The project primarily centres on the Dublin Port Company-owned lands situated on the Poolbeg Peninsula, which constitutes one-fifth of the entire Dublin Port estate and is commonly referred to as the southern port area.

The proposed development site for the new Maritime Village is located on the western end of the Poolbeg Peninsula in Dublin 4. It is bounded by the East Link Road and Pigeon House Road to the south, the existing Dublin Port container terminal to the east, the Liffey channel to the north, and the existing Poolbeg marina to the west. The new site will cover approximately 1.8 hectares and will combine two areas: the current boat club site, home to Stella Maris Rowing Club, Poolbeg Yacht & Boat Club, and the Ringsend Registered Fishermen & Private Boat Owner's Association facilities, and part of the adjacent MTL container terminal.

The proposed Maritime Village will offer a new city destination for boating and rowing activities, building upon the established uses fostered by local clubs, which are an integral part of the Ringsend community.

The development includes several key enabling actions. These actions involve demolishing the two existing clubhouses and all other associated structures on the club site, relocating existing boat storage areas, decommissioning the existing marina, and forming the new 1.8-hectare site by incorporating part of the adjacent container terminal site. Part of the existing club site will be surrendered for the construction of the new Southern Port Access Route (S.P.A.R) and the adjacent Active Travel Route, and new quay walls will be constructed on the western extent of the site.

The new site will feature three dedicated two-storey club buildings for the Poolbeg Yacht & Boat Club, Stella Maris Rowing Club, and a new Maritime Training Centre, with a combined area of approximately 2,364 SqM. Additionally, it will include a 1.5-storey boat maintenance facility with integrated amenities for the Ringsend Registered Fishermen & Private Boat Owner's Association and Liffey & Port Marine Services, totalling 1,069 SqM. A five-storey DPC Harbour Operations building with 1,670 SqM of floorspace, including a fourth-floor function room, will also be part of the site.

The waterside amenities will comprise a new 258-berth marina, a dedicated boat launch area for the rowing club, a new slipway and boat lifting facilities, dedicated pontoons for DPC Harbour Operations, a new fuel berth, and all associated gangway and pontoon access infrastructure.

The project also includes 87 car parking spaces, 148 bicycle parking spaces, dedicated waste storage facilities, a new secure boat storage yard covering 3,965 SqM, two new vehicular entrances, and a new pedestrian crossing for improved site access. Additionally, there will be new publicly accessible landscaped open spaces, new boundary treatments and ISPS fencing where necessary, and associated landscaping, lighting, and site services works.

Overall, this project aims to build on the longstanding traditions established by local clubs and provide enhanced modern facilities for maritime activities, creating a welcoming hub for the club members, the local community and visitors alike.

2. Utilities / Site Services

2.1. Electricity Supply

We have made initial contact with ESB Networks (ESBN) and have received an existing ESBN infrastructure layout for the development. ESBN existing drawing included in Appendix 1.

There is an existing MV/LV 10KV/20KV 400V/230V underground cable currently serving the site. This power supply will be required to be upgraded with a new substation and adjacent metering room to serve the new development. A multi metering panel will be provided in the room adjacent the substation to allow individual metering to each user / occupier.

On completion of detailed design for the project a formal application will be required to be submitted to ESBN for processing which will in turn provide a complete infrastructure proposal and quotation.

2.2. Communication Services

We have made initial contact with EIR and have received an existing EIR infrastructure layout for the development. This drawing identifies existing EIR infrastructure that can be connected into, which passes directly outside the entrance to the proposed development. EIR existing drawing included in Appendix 1.

On completion of detailed design for the project a formal “New Development” application will be required to be submitted to EIR for processing which will in turn provide a complete infrastructure proposal and quotation.

EIR may require some minor equipment within the site of which exact locations can be agreed when their infrastructure design is complete.

2.3. Natural Gas

We have made initial contact with Gas Networks Ireland (GNI) and have received an existing GNI infrastructure layout in the development. GNI existing drawing included in Appendix 1.

There is an existing low pressure underground pipework currently serving the site. If utilising this natural gas supply, it will be required to be upgraded. If we go with our current recommendation of using electrically supplied heat pumps the existing service will be required to be disconnected.

3. Mechanical Services Provision & Distribution Zones

3.1. Heating

Low pressure hot water in each building shall be generated by an air source heat pump located on the external of the building which shall supply either underfloor heating, steel panel radiators or radiant panels (Shared Boat Maintenance Shed) at each of the levels via a pipework distribution system including pumps, pipework, fittings and insulation. The external heat pump shall be complete with a protective cage.

The heating installation shall be zoned on each level and a separate zone for the domestic hot water. A heating controller shall be installed and will incorporate separate time channels to allow for independent operation of the heating and hot water systems and also to allow priority heating of the hot water cylinder if required. Each zone shall be fitted with an adjustable thermostat.

The air source heat pump shall be split type consisting of an external condenser and internal boiler unit (heat exchanger). This unit shall be installed with minimum clearances for air flow and maintenance in accordance with manufacturer's installation instructions. Primary flow and return heating pipework shall connect the central heating system to the heat pump unit.

Heating distribution pipework shall generally be run at high level within the ceiling void on each of the floors and dropping to low level or rising up to serve the floor above.

Isolation valves shall be provided at connections to all equipment and a heating system drain off point shall be provided.

Heating installations shall be designed and installed in accordance with Technical Guidance Document Part L Conservation of Fuel and Energy - Buildings other than Dwellings & Part J Heat Producing Appliances.

3.2. Ventilation

Where spaces can achieve natural ventilation, this shall be by a combination of trickle vents, & openable windows. Where spaces can't achieve natural ventilation a heat recovery ventilation system shall be proposed.

This will provide fresh air to the space and exhausting stale air to the external while recovery energy in the process. The heat recovery unit shall be located internally either at high level within the ceiling void or a store nearby. The ductwork shall be routed at high level within the ceiling void on each level where required.

Where there is a kitchenette local mechanical extract will be provided via extract canopies over cooking hobs to extract stale air to external.

Ventilation systems shall be designed and installed in accordance with Technical Guidance Document Part F - Ventilation.

3.3. Mains Water Services

The installation shall comprise of an incoming metered mains water supply to each building which shall feed the cold water storage tank, drinking water points and the heating system fill point.

The mains service pipe to each building shall be provided with a stopcock fitted with a crutch wheel for manual operation near to the point of entry of the pipe.

Water distribution pipework shall generally be run within the ceiling void and drop to low level to serve appliance or rise up to floor above.

Mains water installations shall be designed and installed in accordance with Technical Guidance Document Part G - Hygiene.

3.4. Domestic Water Services

Cold water storage in each building shall be proposed from an insulated cold water storage tank located in either the roof space or a ground floor store space. Tanks within roof space to be on raised platforms in the roof space in order to achieve maximum head of water possible. Access shall also be provided for maintenance purposes.

The domestic hot and cold water installations in each building shall either be gravity type systems or pressurised via booster pump system.

Hot water storage for each of the buildings shall be provided via a floor standing indirect single coil, pre insulated stainless steel hot water cylinder served from the heat pump system complete with valves and fittings.

Water distribution pipework shall generally be run within the ceiling void and drop to low level to serve appliance or rise up to floor above.

Isolation valves shall be provided at connections to all equipment. Ballofix valves to be provided at connections to sanitary ware. Domestic hot water cylinder drain off point to be provided on cold feed to cylinder.

Domestic water installations shall be designed and installed in accordance with Technical Guidance Document Part G – Hygiene & Part L Conservation of Fuel and Energy - Buildings other than Dwellings.

3.5. Rain Water Harvesting

Rain Water Harvesting was reviewed but the site constraints did not warrant further design development with regards the installation of a rain water harvesting system.

3.6. Soils and Waste

The soils and waste system shall be generally single vent stacks with branch connections serving all sanitary applications. Overflows shall discharge through warning pipes where they shall cause a nuisance.

The soils and waste pipework shall include connection to the following: -

- Condensate from Heat Pumps
- Sanitary ware
- Kitchenette appliances

The above ground waste installation shall consist of ground floor services connecting to builders' upstands & upper floor services running within the ceiling voids & vertical boxed-out drainage stacks.

Above ground drainage installations shall be designed and installed in accordance with Technical Guidance Document Part H - Drainage and Waste Water Disposal.

4. Electrical Services Provision & Distribution Zones

4.1. Electricity Supply and Main Distribution

A 400Volt 50Hz LV electrical supply for each building shall be provided from the local ESB network. A central meter position is provided in the room adjacent the new ESB Networks substation located in the boat shed.

Mains cabling shall be provided to each building metered from ESB Network.

New form 4 main distributions will be provided for each building and sub-distribution boards will be provided where required.

Earthing and equipotential bonding will be provided in accordance with the ETCI National Rules for Electrical Installations IS10101:2020.

4.2. General Services Installation

A complete General Services & Small Power installation for the entire building will be provided. All final circuits will be fed from the sub distribution boards throughout the building.

This installation will be compliant with the new IS10101:2020 wiring regulations.

In general, final sub circuits at 230/400 Volts will comprise PVC/LSF insulated cables with stranded copper conductors enclosed in concealed metal trunking and metal conduits.

As per IS10101 all cabling will be Dca s1b, d2, a2 in accordance with EN50575.

Power installations shall be designed and installed in accordance with Technical Guidance Document Part M - Access and Use.

4.3. Lighting and Emergency Lighting Services

A General & Emergency Lighting system will be provided, and the system will be designed with careful consideration for energy efficiency and day lighting.

Residual Current Breaker with Over-Current protection (RCBO) on lighting circuits contained in bathrooms will be required as per IS10101:2020.

Standard lighting circuits and luminaires will be provided in accordance with the functionality of the various rooms and circulation spaces. In general, lighting design will be based on the recommendations of CIBSE Lighting Guide. In this context, due cognisance will be taken of general recommendations, specific recommendations, and of light sources and equipment.

In general, LED lighting will be employed with appropriate control systems to ensure efficient usage consistent with both occupancy and daylight availability. Good colour rendering will be provided in accordance with CIBSE standards.

Standby and escape lighting circuits, emergency luminaires and exit signs will all be provided in accordance with the functionality of the various rooms and escape routes.

Design standards will be in accordance with the recommendations of Irish Standard IS 3217:2013 + A1 2019, “Code of Practice for Emergency Lighting” as published by the NSAI.

4.4. Data / Telecom Services

A complete ICT structured cabling system shall be provided for each building. All data and communications cabling will extend from a centralised communications cabinets in each buildings communications room and will be segregated from power cabling to eliminate interference.

This installation will be compliant with the current, ISO/IEC 11801, EN 50173-1, IS10101:2020. A new fibre optic cable and multi-core telephone cable will be installed from the EIR and Virgin Media intake positions as part of the redevelopment.

The ICT cabling installation will be designed and carried out in accordance with the requirements and recommendations of IS EN 50174, “Information Technology – Cabling Installation”, Part 1 for specification and Part 2 for implementation.

A common style of outlet (RJ45) will be deployed for all cable segments throughout the building, whether carrying Voice or Data services.

These cable segments will be terminated in patch panels in ICT Cabinets and by means of patching will be available to distribute Telephone or LAN or other applications and services.

4.5. Protective Services

A new fire alarm system shall be provided for each building. This installation will be an L1 type and will be compliant IS 3218:2013+A1 2019 and the IS10101:2020.

Above ground stair cores will be provided with a disabled refuge call point linked back to a central panel in each building to be located adjacent the fire alarm panel as required under the regulation.

4.6. Security Services

A new access control system will be provided. The access control system will consist of access control readers, release pushbuttons, emergency green break glass units and abloy locks. All access-controlled doors will de-energise under fire alarm condition.

A new IP-CCTV system will be provided throughout the site.

Intruder Alarm systems will be provided for each building. This will consist of PIRs and contactors on windows and doors.

4.7. Solar Photovoltaic System (PV)

PV Panels are indicated on the roofs as per the Architectural drawings for planning purposes. Should PV panels be installed they are set out to allow an array per building that can directly feed into that building LV supply.

5. Fuel Strategy

There is electrical and gas infrastructure currently routed adjacent to the site, as per drawings contained in Appendix 1. This makes both options feasible to use and extend/upgrade for the development's requirements.

The mechanical services proposal for using heat pumps system for the heating and domestic hot water requirements would only require the electrical supply to the development upgraded.

6. Lift Strategy

All floors above ground level shall be served by a passenger lift. The lift shall be minimum 8 person and comply with Part M Access and Use of the Building Regulations.

7. Part L Conservation of Fuel and Energy - Buildings other than Dwellings Compliance

7.1. Introduction

Section 7 outlines that the Sustainability and Energy Usage approach to the buildings inclusive of; Stella Maris Rowing Club, Poolbeg Yacht and Boat Club, Maritime Training Centre, Boat Maintenance Building & Harbour Operations.

This section verifies that the proposed design for the 3FM Project: Maritime Village Development complies with Building Regulations Technical Guidance Documents Part L Conservation of fuel and energy - buildings other than dwellings.

The overall energy efficiency objective for this project is to deliver a BER A3 development which complies with Technical Guidance Documents Part L Conservation of fuel and energy - buildings other than dwellings..

Section 7 will outline the target U-values, air permeability and details for the space heating, hot water, ventilation, and lighting.

The following checks were carried out:

- Overheating assessed in line with Thermal Comfort Metric CIBSE Technical Memorandum 52 (CIBSE TM52), referenced in Technical Guidance Documents Part L Conservation of fuel and energy - buildings other than dwellings.
- Indoor Air Quality (IAQ) assessed in line with CIBSE Applications Manual 10 ‘Natural Ventilation in Non-domestic Buildings’ (CIBSE AM10).
- Confirmation that a preliminary A3 Building Energy Rating (BER) is achieved.

Note that the results in this report are directly affected by the inputs and any deviation from these will output different results.

7.2. Findings

The overheating analysis indicated a low risk of overheating in the Yacht Club Social Area based on the CIBSE TM52 overheating assessment methodology and criteria. Initial overheating analysis highlighted a high risk of overheating in the Yacht Club Social area. Further analysis showed this overheating can be mitigated when the free openable area of glazing in the space was increased.

The output from the simulations also demonstrates that all the occupied achieve acceptable levels of CO_2 when utilising methods specified in CIBSE AM10. CIBSE AM10 recommends using CO_2 concentration as an indicator of indoor air quality (IAQ).

The Provisional BER certificate shown in Section 8 of this report, Figures 1-5 demonstrate that the proposed buildings achieve an A3 rating when the inputs listed in Tables 14 to 23 are applied.

7.3. Building Regulations Requirement

The proposed development falls under the remit of the requirements set out in L5 of Technical Guidance Documents Part L Conservation of fuel and energy - buildings other than dwellings, with guidance provided in Section 0. Part L5 applies to all works to new buildings other than dwellings.

“L1: A building shall be designed and constructed so as to ensure that the energy performance of the building is such as to limit the amount of energy required for the operation of the building and the amount of Carbon Dioxide (CO_2) emissions associated with this energy use insofar as is reasonably practicable.”

“L5 For new buildings other than dwellings, the requirements of L1 shall be met by:”

(a) providing that the energy performance of the building is such as to limit the calculated primary energy consumption and related Carbon Dioxide (CO2) emissions to a Nearly Zero Energy Building level insofar as is reasonably practicable, when both energy consumption and Carbon Dioxide emissions are calculated using the Non-domestic Energy Assessment Procedure (NEAP) published by Sustainable Energy Authority of Ireland;

(b) providing that, the nearly zero or very low amount of energy required is covered to a very significant extent by energy from renewable sources produced on-site or nearby;

(c) limiting the heat loss and, where appropriate, availing of the heat gains through the fabric of the building;

(d) providing and commissioning energy efficient space heating and cooling systems, with effective controls;

(e) ensuring that the building is appropriately designed to limit need for cooling and, where air-conditioning or mechanical ventilation is installed, that installed systems are energy efficient, appropriately sized and adequately controlled;

(f) limiting the heat loss from pipes, ducts and vessels used for the transport or storage of heated water or air;

(g) limiting the heat gains by chilled water and refrigerant vessels, and by pipes and ducts that serve air-conditioning systems;

(h) providing energy efficient artificial lighting systems and adequate control of these systems;

(i) providing to the building owner sufficient information about the building, the fixed building services, controls and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and energy than is reasonable.

An important factor in NZEB compliance is renewable energy. The following represents a very significant level of energy provision from renewable energy technologies in order to satisfy Regulation L5(b):

- "Where the MPEPC of 1.0 and MPCPC of 1.15 is achieved an RER of 0.20 represents a very significant level of energy provision from renewable energy technologies"
- "Where an EPC of 0.9 and a CPC of 1.04 is achieved an RER of 0.10 represents a very significant level of energy provision from renewable energy technologies"

"Renewable Energy Technologies" means technology products or equipment that supply energy derived from renewable energy sources, e.g. solar thermal systems, on-site solar photovoltaic systems, biomass systems, systems using biofuels, heat pumps, combined heat and power, aerothermal, geothermal, hydrothermal, wind, biomass and biogases; and other on-site renewables.

7.4. Dynamic Simulation Model - Input Data

Simulation Software

Simulations were carried out using the IES VE-Pro 2022 suite of simulation software. This software is in accordance with CIBSE Applications Manual 11 'Building Energy & Environmental Modelling' (CIBSE AM11).

Climate Data

It is noted that the CIBSE TM52 methodology recommends using an appropriate 'design summer year' (DSY) weather file. DSY weather files have been developed by CIBSE and the University of Exeter to account for changes in temperature and weather patterns due to climate change. The weather files available are limited to 14 locations in the UK. The Belfast weather file was used for the analysis.

Architectural Design

The dynamic simulation model (DSM) was constructed based on drawings received from the Architect.

Building Envelope

The following construction fabric data was used in all simulations.

Element	Proposed U-Value (W/m².K)
External Wall	0.18
Ground/Exposed Floor	0.15
Roof	0.15
Doors	1.40

Table 1: Thermal Properties of Building Fabric

Glazing Description	Proposed U-Value (W/m².K)	g-value	LT-value
External Glazing (Including Frame)	1.40	0.30	0.70

Table 2 - Glazing Properties

Heat Gains

The following heat gains from occupants, lights, equipment, and computers were assigned to the model for overheating evaluation.

Occupancy	Occupancy Gain (W/per)	Lighting Gain (W/m²)	Equipment Gain (W/m²)	Computer Gain (Watts)
As per Architectural model	90W Sensible 60W Latent	10	5	90 per PC

Table 3 - Internal Gains

Window Openings

It is proposed to natural ventilate the Offices, Breakout spaces and the Meeting rooms on the Harbour Operations. It is also proposed to natural ventilate the Offices, Breakout spaces, Meeting rooms and Staff Rest on the club buildings through openable windows, the remaining occupied spaces will be mechanically ventilated.

Windows are assigned to be shut 18.00 - 08:00. All windows were assigned not to open when external temperatures are below 0ºC in order to account for the likelihood that occupants will wish to avoid cold drafts.

The modelling of the naturally ventilated spaces assumes window openable sections have a free openable area equating to 5% of the floor area.

All windows are assigned to open during occupied hours (08:00-18.00) when;
The internal air temperature within the space is >21ºC, with windows fully open when the internal temperature is >23ºC
AND
The external air temperature is >0ºC
OR
The internal CO_2 concentration exceeds 700ppm, with windows fully open when the internal CO_2 concentration exceeds 1,000ppm

Table 4 - Window Opening Characteristics.

7.5. Overheating

A dynamic simulation was carried out to investigate the risk of overheating in the Offices, Breakout areas and meeting Rooms within the Harbour Operations, whereas Offices, Breakout areas and Staff rooms in the boat club buildings.

CIBSE TM52 Adaptive Comfort

Absolute thresholds although simple to simulate/predict and relatively simple to communicate and address, do not take into consideration the fact that occupant comfort temperature in naturally ventilated buildings vary with outdoor temperature. Occupants tend to adapt to higher temperatures experienced over an extended period.

Technical Guidance Documents Part L Conservation of fuel and energy - buildings other than dwellings – Section 1.3.6 recommends performing an overheating assessment in accordance with the ‘adaptive method’ described in CIBSE TM52. Described below are the design criteria detailed within the document.

The following is the overheating requirement from CIBSE TM52. The three criteria below, taken together, provide a robust yet balanced assessment of the risk of overheating of buildings in the UK and Europe.

A room or building that fails any two of the three criteria is classed as overheating.

Criterion 1: Hours of Exceedance:

The first criterion sets a limit for the number of hours that the operative temperature can exceed the threshold comfort temperature (upper limit of the range of comfort temperature) by 1 K or more during the occupied hours of a typical non-heating season (1 May to 30 September).

Criterion 2: Daily weighted Exceedance:

The second criterion deals with the severity of overheating within any one day, which can be as important as its frequency, the level of which is a function of both temperature rise and its duration. This criterion sets a daily limit for acceptable temperature for a room, beyond which the level of overheating is unacceptable.

Criterion 3: Upper limit temperature:

The third criterion sets an absolute maximum daily temperature for a room, beyond which the level of overheating is unacceptable. To set an absolute maximum value for the indoor operative temperature the value of ΔT shall not exceed 4K.

It is important to note that there will be times when naturally ventilated rooms overheat. The single biggest issue that influences the viability of natural ventilation is summertime temperatures. The cooling potential of natural ventilation is limited by the prevailing climate and by occupant expectations of thermal comfort. Natural ventilation systems will not maintain ideal comfort conditions 100% of the time. Natural ventilation is driven by wind and buoyancy forces that are unpredictable in nature making control challenging, as a result natural ventilation systems may at times under-ventilate, resulting in overheating or reduced air quality conditions.

CIBSE TM52 Results:

Harbour Operations:

Room Name	Criterion 1 %Hrs Top-Tmax>=1K	Criterion 2 Max. Daily Deg.Hrs	Criterion 3 Max. DeltaT	Criterion Failing	Result
00-Duty Room	1	2	1	-	Pass
00-Reception/Security	0	0	0	-	Pass
01-Canteen/Kitchen	1	9	2	2	Pass
01-Gym	1	10	3	2	Pass
02-Breakout Space	2	9	4	2	Pass
02-Deputy Harbour Master	1	4	1	-	Pass
02-Emergency Management	2	11	3	2	Pass
02-Harbour Master	2	16	3	2	Pass
02-Restroom 01	1	7	2	2	Pass
02-Restroom 02	1	6	1	-	Pass
02-Restroom 03	1	10	2	2	Pass
02-Restroom 04	2	15	3	2	Pass
02-Restroom 05	3	18	4	2	Pass
02-Restroom 06	2	6	2	-	Pass
02-Small Meeting	1	8	2	2	Pass
03-Breakout Space	2	11	3	2	Pass
03-Marine Office	1	6	2	-	Pass
03-Open Plan Office	2	16	3	2	Pass
03-Small Meeting	2	8	4	2	Pass
03-VTS & Shipping Desk	1	4	1	-	Pass
04-Bar/Catering	1	7	3	2	Pass
04-Conference Room/Pre Event Space	2	10	3	2	Pass
04-Large Event Space	1	7	2	2	Pass

Table 5 -CIBSE TM52 Results – Harbour Operations

Stella Maris Rowing Club

Room Name	Criterion 1 %Hrs Top-Tmax>=1K	Criterion 2 Max. Daily Deg.Hrs	Criterion 3 Max. DeltaT	Criterion Failing	Result
00-Junior Area	1	6	3	-	Pass
00-Marina Management	2	6	2	-	Pass
00-Reception/Office	1	4	1	-	Pass
01-Club Area Social	1	5	1	-	Pass
01-Meeting Rm	2	10	3	2	Pass
01-Members Gym	1	2	1	-	Pass

Table 6 –CIBSE TM52 Results- Stella Maris Rowing Club

Poolbeg Yacht and Boat Club

Room Name	Criterion 1 %Hrs Top-Tmax>=1K	Criterion 2 Max. Daily Deg.Hrs	Criterion 3 Max. DeltaT	Criterion Failing	Result
00-Club Management	0	0	0	-	Pass
00-Meeting Room	2	10	3	2	Pass
00-Youth Club	1	6	2	-	Pass
01-Club Area Social	3	22	4	2	Overheats*

Table 7 –CIBSE TM52 Results- Poolbeg Yacht and Boat Club

*As noted in the Findings the Initial overheating analysis highlighted a high risk of overheating in the Club Area Social on the first floor. A second simulation was completed with an increase in the openable area of glazing to 2.2m^2. When the second analysis was carried out the Club Area Social was found to comply with CIBSE TM52 criteria (as shown in Table 7).

Boat Maintenance Building

Room Name	Criterion 1 %Hrs Top-Tmax>=1K	Criterion 2 Max. Daily Deg.Hrs	Criterion 3 Max. DeltaT	Criterion Failing	Result
00-Boat Owner's Break Rm	1	18	4	2	Pass
00-HO Break Room	2	7	2	2	Pass
01-LPMS Meetings/Training Room	3	22	4	2	Pass
01-LPMS Office	2	15	3	2	Pass

Table 8 –CIBSE TM52 Results- Boat Maintenance Building

Maritime Training Centre

Room Name	Criterion 1 %Hrs Top-Tmax>=1K	Criterion 2 Max. Daily Deg.Hrs	Criterion 3 Max. DeltaT	Criterion Failing	Result
00-Retail Merchant Chandlery	1	9	2	2	Pass
00-Sales	1	4	1	-	Pass
00-Workshop	0	0	0	-	Pass
01-Breakout Space/Social Area	1	2	1	-	Pass
01-Classroom/Multi-Purpose	1	6	2	-	Pass
01-Classroom/Multi-Purpose	3	14	4	2	Pass
01-Communications Training	1	2	1	-	Pass
01-Library	2	13	3	2	Pass
01-Meeting Room	1	10	2	2	Pass
01-Office	0	0	0	-	Pass
01-Office	0	0	0	-	Pass
01-Staff Room	1	8	2	2	Pass

Table 8 –CIBSE TM52 Results- Maritime Training Centre

7.6. Indoor Air Quality

In addition to simulating the risk of overheating in the occupied spaces, the Indoor Air Quality (IAQ) was also analysed.

CIBSE AM10 recommends using CO_2 concentration as an indicator of IAQ to show that the required ventilation rate is being achieved. This is done by showing that the IAQ achieved by the natural ventilation strategy is equivalent to that provided using a constant ventilation rate of 10 litres per second per person during occupied hours.

From the dynamic simulations performed it was found that all spaces achieve lower CO_2 levels by the use of natural ventilation compared to the CO_2 level provided by a constant fresh air supply of 10 litres per second per person in compliance with CIBSE AM10.

Indoor Air Quality Results

Room Name	Carbon Concentration (ppm)	
	Constant 10l/s/p	Openable Windows
00-Duty Room	968	687
00-Reception/Security	915	551
01-Canteen/Kitchen	976	771
01-Gym	964	668
02-Breakout Space	966	669
02-Deputy Harbour Master	832	554
02-Emergency Management	971	687
02-Harbour Master	778	555
02-Restroom 01	871	568
02-Restroom 02	866	561
02-Restroom 03	864	536
02-Restroom 04	866	558
02-Restroom 05	861	557
02-Restroom 06	863	535
02-Small Meeting	971	697
03-Breakout Space	966	673
03-Marine Office	857	549
03-Open Plan Office	909	574
03-Small Meeting	971	712
03-VTS & Shipping Desk	847	572
04-Bar/Catering	951	674
04-Conference Room/Pre Event Space	953	620
04-Large Event Space	952	667

Table 9 - Indoor Air Quality Results – Harbour Operations

Room Name	Carbon Concentration (ppm)	
	Constant 10l/s/p	Openable Windows
00-Junior Area	936	627
00-Marina Management	930	720
00-Reception/Office	871	546
01-Club Area Social	956	779
01-Meeting Rm	961	664
01-Members Gym	937	643

Table 10 - Indoor Air Quality Results – Stella Maris Rowing Club

Room Name	Carbon Concentration (ppm)	
	Constant 10l/s/p	Openable Windows
00-Club Management	838	571
00-Meeting Room	972	724
00-Youth Club	949	750
01-Club Area Social	967	922

Table 11 - Indoor Air Quality Results – Poolbeg Yacht and Boat Club

Room Name	Carbon Concentration (ppm)	
	Constant 10l/s/p	Openable Windows
00-Retail Merchant Chandlery	929	821
00-Sales	862	625
00-Workshop	939	729
01-Breakout Space/Social Area	927	640
01-Classroom/Multi-Purpose	949	750
01-Classroom/Multi-Purpose	935	695
01-Communications Training	961	755
01-Library	913	547
01-Meeting Room	961	664
01-Office	879	544
01-Office	865	577
01-Staff Room	967	734

Table 12 - Indoor Air Quality Results – Maritime Training Centre

Room Name	Carbon Concentration (ppm)	
	Constant 10l/s/p	Openable Windows
00-Boat Owner's Break Rm	944	667
00-HO Break Room	956	640
01-LPMS Meetings/Training Room	956	638
01-LPMS Office	778	534

Table 13 - Indoor Air Quality Results – Boat Maintenance Building

7.7. Overheating & IAQ Conclusion

The overheating analysis indicated a low risk of overheating in the Offices, Breakout areas and meeting Rooms within the Harbour Operations, whereas Offices, Breakout areas and Staff rooms in the boat club buildings. Based on the CIBSE TM52 overheating assessment methodology and criteria. Initial overheating analysis highlighted a high risk of overheating in the Club area social. Further analysis shows this overheating can be mitigated by increasing the openable area of the glazing in the space.

The output from the IAQ simulations demonstrates that all naturally ventilated rooms analysed achieve lower CO_2 levels by the use of natural ventilation compared to the CO2 level provided by a constant fresh air supply of 10 litres per second per person in compliance with CIBSE AM10.

8. BER & Part L Compliance Analysis

The preliminary BER assessment and compliance check were carried out using SBEMie compliance tool within IES Virtual Environment Software version 2022. This software has been validated under CIBSE TM33: Tests for software accreditation and verification (CIBSE TM33) and approved by the SEAI and the Department of Housing, Planning and Local Government.

SBEMie is the official Irish methodology for calculating the energy performance and associated carbon dioxide emissions for the provision of space heating, ventilation, water heating and lighting in buildings other than dwellings. The SBEMie software tool is a key component of the Irish Building Energy Rating (BER) scheme.

Proposed Building Fabric

The following construction fabric data was used for the new construction in the SBEMie calculation.

Building Element	Proposed U-Value (W/m².K)
External Wall	0.18
Ground/Exposed Floor	0.15
Roof	0.15
Doors	1.40

Table 14 - Thermal Properties of Building Fabric

Glazing Description	U-Value (W/m².K)	g-value	LT-value
External Glazing (Including Frame)	1.40	0.30	0.70

Table 15 - Glazing Properties

The following default thermal bridging Psi values were used in the SBEMie calculation. These values were taken from Table 7, Section 3.4.3 of the SBEMie Technical Manual v5.5.h.

Thermal Bridging - Psi (W/(m.K))	
Type of Junction	**Junctions Not Involving Metal Cladding**
Roof-wall	0.180
Wall-ground floor	0.240
Wall-wall (corner)	0.140
Wall-floor (not ground)	0.110
Lintel above window/door	0.450
Sill below window	0.080
Jamb at window/door	0.090

Table 16 - Thermal Bridging Details

Building air permeability - 2.50 m³/h/m² @50Pa.

Proposed Mechanical & Electrical Specification

Heating & Cooling Systems

The space heating and DHW systems will be served by Heat Pumps. A chilled water system will serve heat recovery air handling unit cooling coils.

Heating & Cooling	
Heat source	Heat Pumps
Heating Fuel	Electricity
Heating system seasonal efficiency	3.00
DHW system seasonal efficiency	2.00
Chiller Type	Air Cooled
Chiller Fuel	Electricity
Seasonal EER	3.90

Table 17 - Heating & Cooling System Inputs

DHW	
Generator type	Heat Pump
Seasonal efficiency (%)	2.00
Fuel	Electricity
Storage volume (l)	600
Storage insulation type	Factory insulated
Storage insulation thickness (mm)	80

Table 18: DHW System Inputs

Metering

Metering Provision	
Systems Provision for Metering	Yes
Metering Warns of “out of range” Values	Yes

Table 19 - Metering Inputs

Ventilation

The building will generally be mechanically ventilated with supply & return air by means of mechanical ventilation systems complete with heat recovery. Toilets and stores to be provided with general extract. The background vents will be sized in accordance with Table 4 of Building Regulations Part F 2019 – Ventilation.

Table 20 shows the specific fan power (SFP) value for selected mechanical ventilation systems. Variable speed drives will be provided on all on selected fans to minimise energy consumption.

Mechanical Ventilation	
AHU CEN Leakage Classification	Class L2
SFP of System (W/(l/s))	1.60
Heat Recovery	Plate heat exchanger
Heat Rec. Seasonal Efficiency	75%
SFP of General Extract Terminal Unit (W/(l/s))	0.30

Table 20 - Mechanical Ventilation Inputs

Lighting

It is proposed to use high efficient LED lighting through the project combined with absence/presence sensors to minimise energy use when rooms are not in use. All lighting sensors to operate on day light harvesting were exposed to natural light. This provides energy efficiency, reduced electrical costs, and also a long life so that replacement and maintenance costs are minimised.

Occupancy Detectors (e.g., Passive Infrared (PIR)) – Activates lighting when presence is detected to prevent lights being left on wasting energy. Normally utilised in low traffic areas such as toilets and Stores, in addition areas such as plant spaces and circulation areas. The system will incorporate a time delay to prevent premature switching whilst the rooms are still occupied.

Daylight Optimisation – Daylight optimisation utilised in perimeter areas to reduce the lighting load by dimming or switching off luminaires when not required due to adequate daylight illumination levels. Day light optimisation will be achieved through the separate switching of lights adjacent to daylight sources.

Lighting	
Lighting type	LED
Luminaire (lm/circuit watt)	130
Light output ratio	1.00
Daylight sensing	Yes (where applicable)
Occupancy sensing	Yes (where applicable)
Sensor parasitic power	0.05

Table 21 - LED lighting and Controls Inputs

Additional Electrical Information

The building electric power factor is assumed as >0.95 for the purposes of the NEAP assessment.

8.1. Results

Figure 1-5 demonstrates the proposed design achieves a provisional energy rating of A3.

Building	BER Rating	Estimated Primary Energy Demand (kWh/m2/year)
Harbour Operations	A3	186
Stella Maris Rowing Club	A3	153
Poolbeg Yacht and Boat Club	A3	175
Maritime Training Centre	A3	155
Boat Maintenance Building	A3	331

Table 24: Building Estimated Primary Energy Demand (kWh/m2/yr)

Based on the building fabric and mechanical/electrical specification within this report the proposed 3FM Project: Maritime Village achieves compliance with Technical Guidance Documents Part L Conservation of fuel and energy - buildings other than dwellings.

Table 25 shows the energy breakdown for the proposed design by end use. Although energy associated with equipment is not included in the NEAP calculation as it is deemed unregulated energy, it has been included in the list of results.

Category	Harbour Operations	Stella Maris Rowing Club	Poolbeg Yacht and Boat Club	Maritime Training Centre	Boat Maintenance Building
Space Heating	27.5	13.88	15.88	15.89	32.11
Cooling	1.08	4.25	3.99	3.75	0.82
Domestic Hot Water	54.31	20.13	37.80	18.78	92.26
Lighting	7.94	10.07	8.22	11.89	21.01
Auxiliary (pumps, fans etc.)	17.54	40.08	27.62	29.44	16.85
Equipment	31.81	42.15	37.97	38.96	43.50

Table 25: Building Delivered Energy Breakdown (kWh/m2/yr)

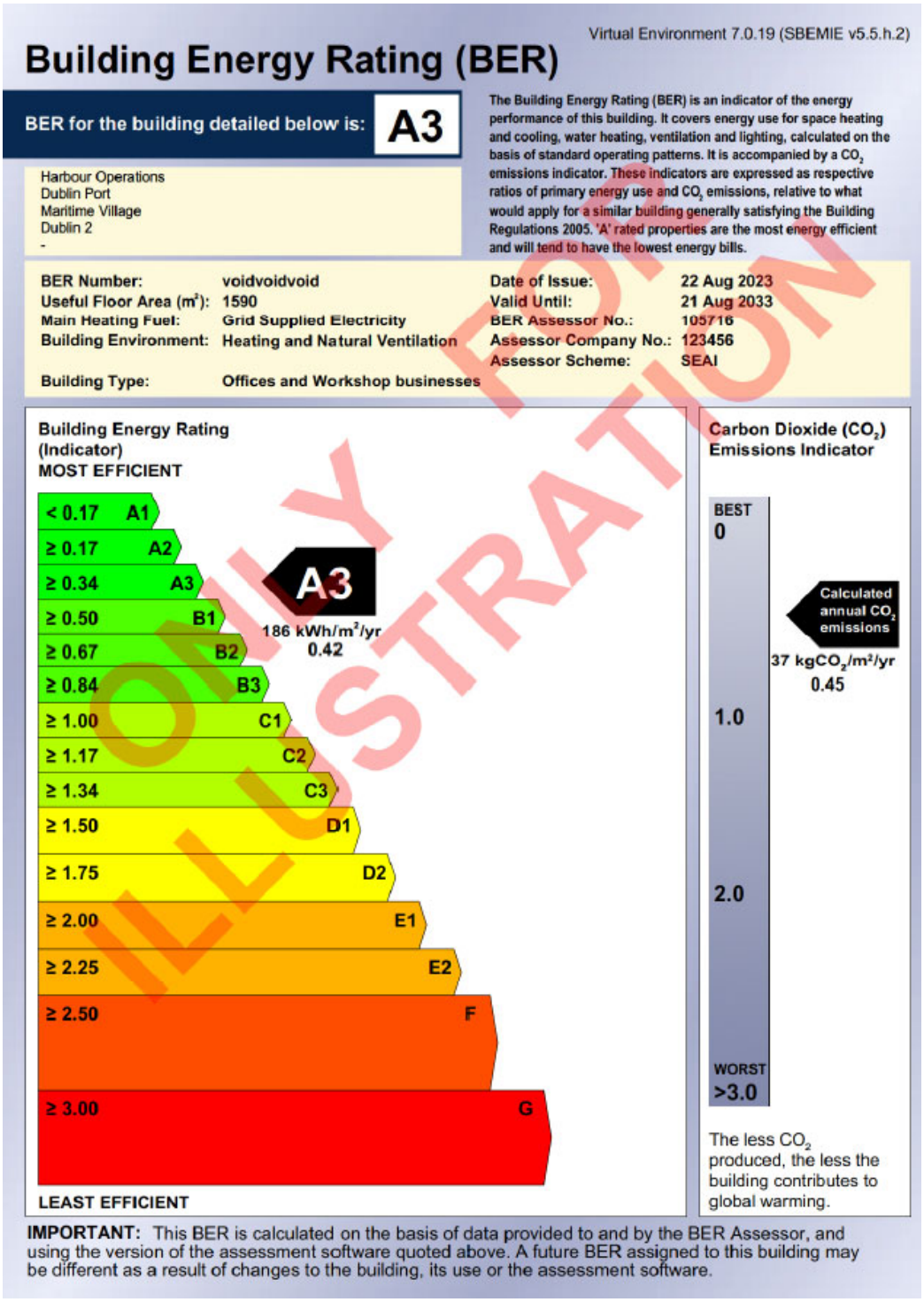

Figure 1: Provisional BER Certificate – Harbour Operations

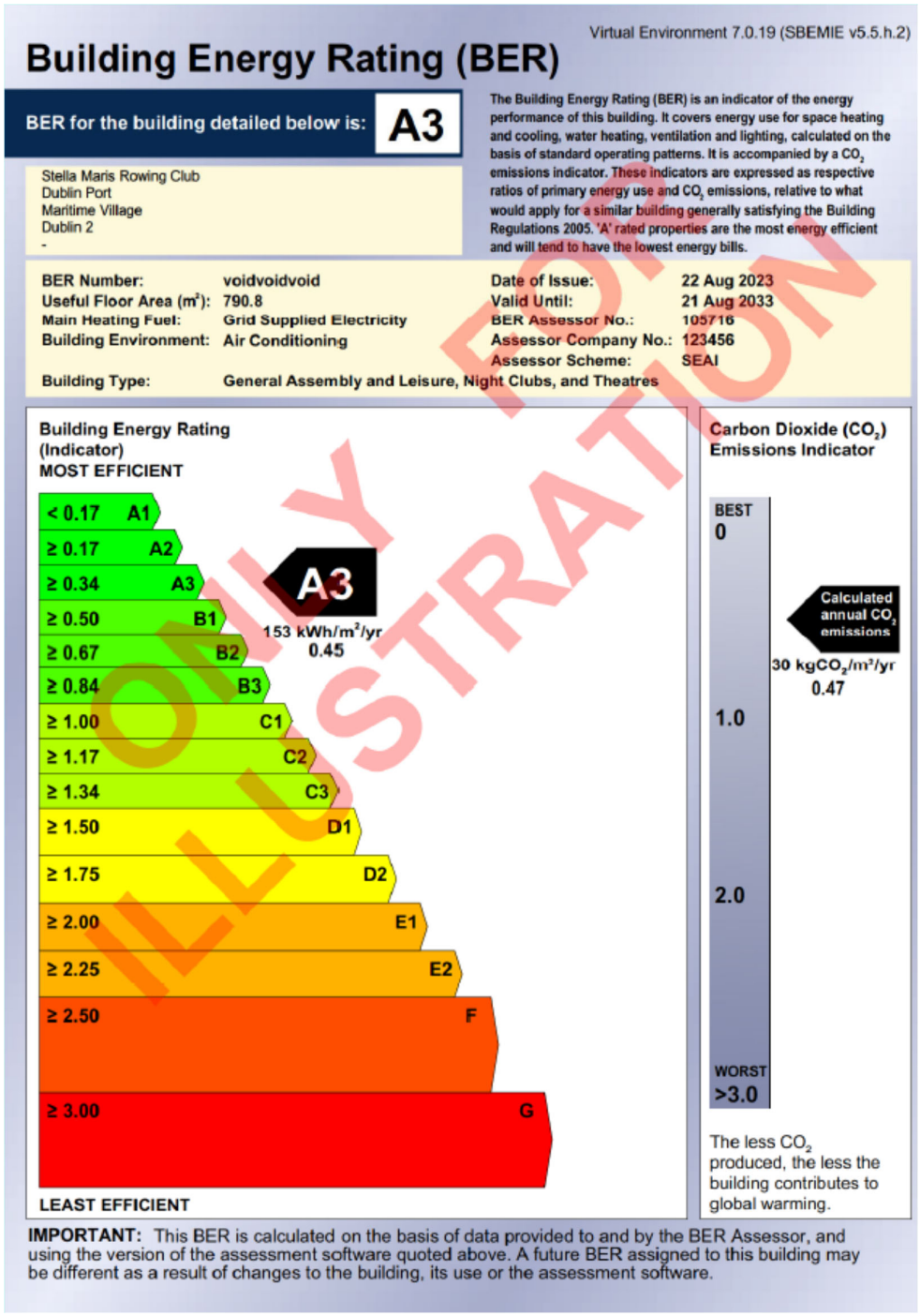

Figure 2: Provisional BER Certificate – Stella Marris Boat Club

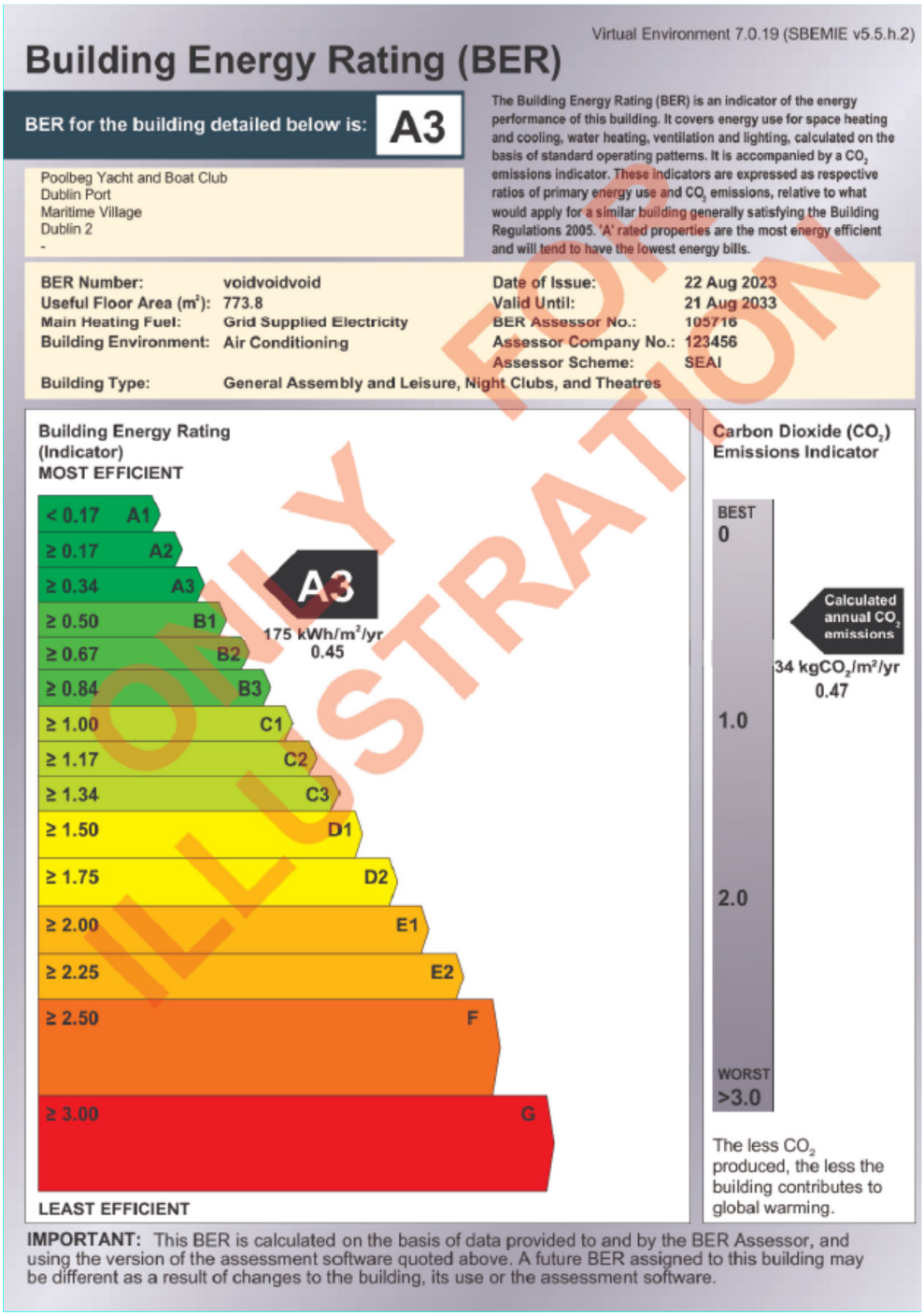

Figure 3: Provisional BER Certificate – Poolbeg Yacht Club

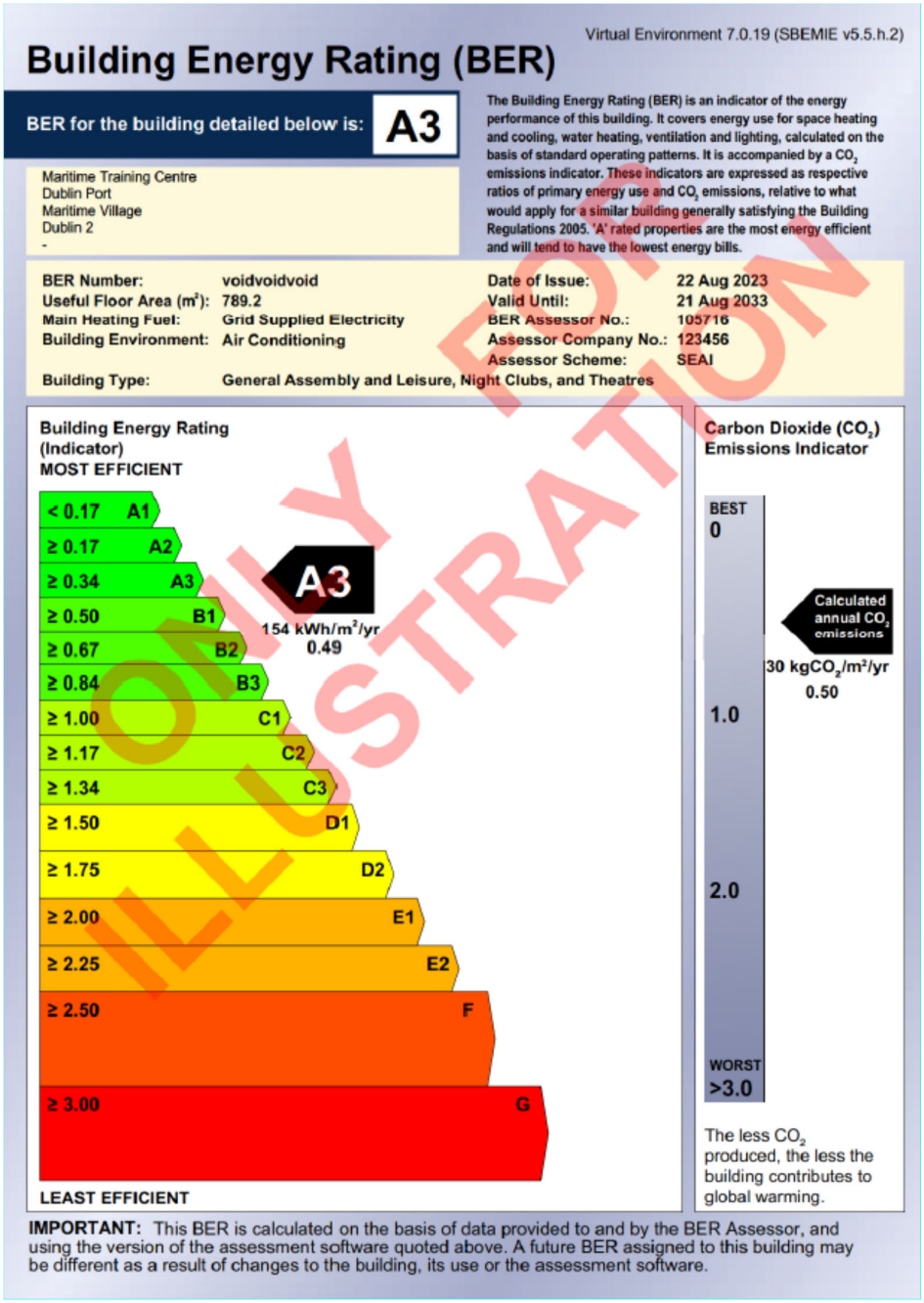

Figure 4: Provisional BER Certificate – Maritime Training Centre

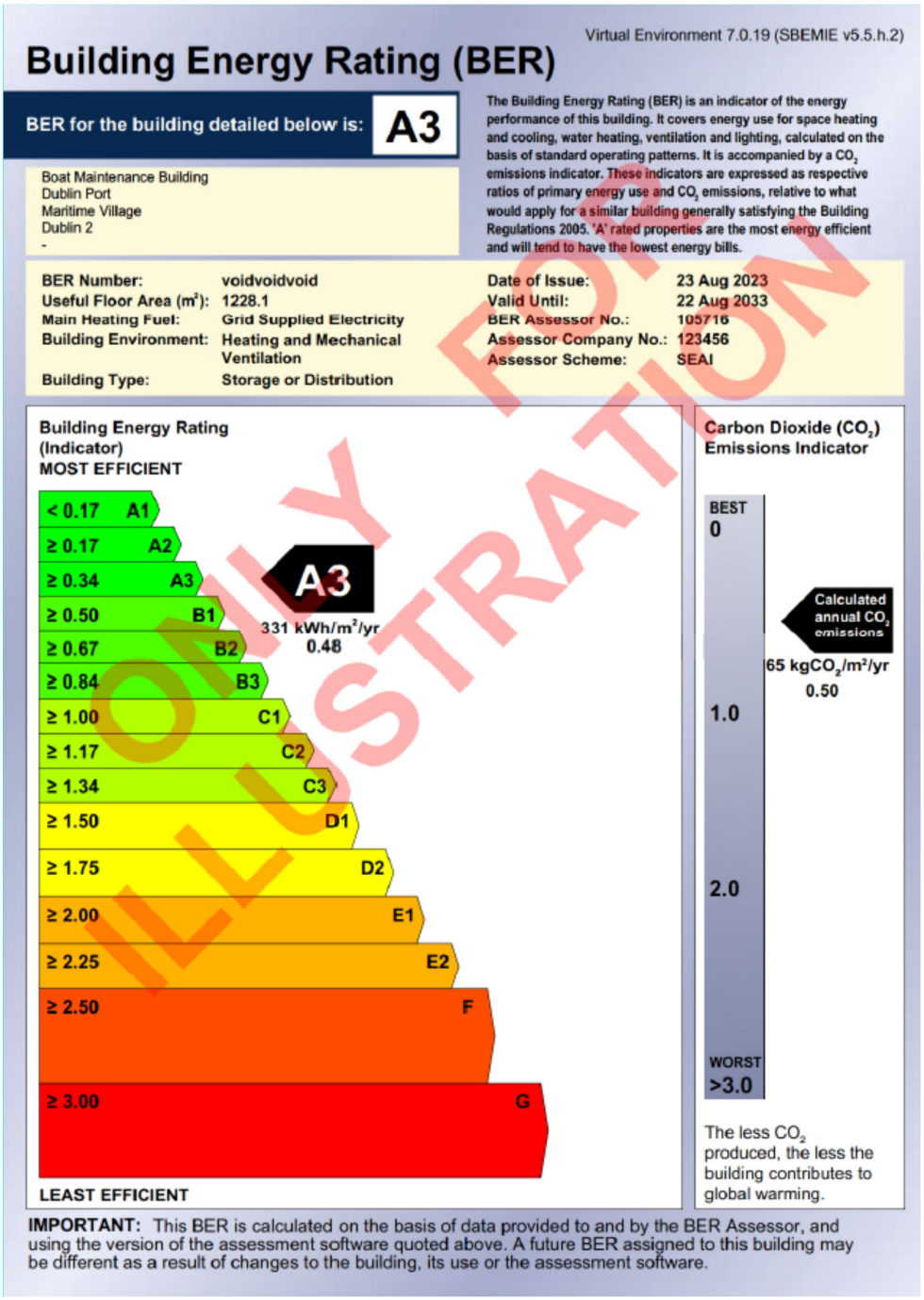

Figure 5: Provisional BER Certificate – Boat Shed

9. Preliminary H&S Documentation

Designer's Assessment of Safety during Construction and Maintenance taking account of the Principles of Prevention *(read in conjunction with the ACEI/IEI/RIAI Guidance Notes)*			
Project Title: Dublin Port Marine Village	Project: No.: 22742	Designers: Mark O' Rourke / Jonathan Swanton	Date: June 2023
			Sheet No. Page **1** of **5**
Design Stage: Tender			

No.	Key hazards identified	Decisions / action
1.0	(Transfer and transmission of Coronavirus Covid-19) European Commission Directive 2000/54/EC: Group 3 biological agent meaning one that can cause severe human disease and present a serious hazard to workers; it may present a risk of spreading to the community, but there is usually effective prophylaxis or treatment available; (*Risk of Transfer and transmission of Coronavirus (Covid 19) for building occupants, construction workers, specialist suppliers, design team, site visitors and general public.*)	As contracting the Covid 19 virus presents a serious risk to all personnel, the contractor needs to assume that precautions will be required in their approach to the site, confines, work practices, and preparations. Keep current with all changing Government advice and publications. Monitor, observe and implement all HSE guidance as it continues to be updated. Observe all HSE guidelines relating to physical distancing, site hygiene and contact reduction, PPE, use of hand sanitizer and mouth covering/cough and sneeze etiquette. Plan and programme works in such a way to minimise meetings, site inspections and such that physical distancing requirements can be maintained between site operatives. Implement the guidance in the NSAI "Covid-19 Workplace Protection and Improvement Guide" to manage continuity of the Works Requirements during the COVID-19 pandemic and address risks to both workers and the public. Refer in detail to Clause 3 of this document " Defence – How to Defend Against the Spread of Covid-19" for strategies for minimising the spread of Covid-19. Implement the recommendations in the CIF Standard Operating Procedures document (current version) as a guide for the management of COVID-19 on construction sites for the duration of the pandemic. The actions set out in this document should be implemented in tandem with the Construction Stage Health and Safety Plan.

Designer's Assessment of Safety during Construction and Maintenance taking account of the Principles of Prevention *(read in conjunction with the ACEI/IEI/RIAI Guidance Notes)*			
Project Title: Dublin Port Marine Village	Project: No.: 22742	Designers: Mark O' Rourke / Jonathan Swanton	Date: June 2023
			Sheet No. Page **1** of **5**
Design Stage: Tender			

No.	Key hazards identified	Decisions / action
		A restriction on visitors to the site shall be put in place. However, where project critical visitors are required to attend the site, a controlled access process should be in place including adherence to sanitisation processes and full personal contact details (e.g. telephone number, last place visited should be collected to assist with contact tracing) The following should be implemented where it is practicable to do so; • revision of staffing rosters and splitting of teams to ensure separation of critical personnel in order to limit joint exposure and protecting the completion of the Works Requirements; • cross-train, and identify alternative sources of labour to facilitate a full complement of the required skills needed on each team/shift; • Avoid switching of employees from one shift to another; • implement an 'air gap' or delayed shift changeover to accommodate a full cleaning/disinfection of all shared equipment, and reduce unnecessary interactions between different shift personnel; • minimise the sharing of equipment and/or tools; • identify and suspend all non-essential works which do not directly impact the Works Requirements Maintain communications with essential suppliers and service providers and discuss and understand their business continuity plans such that equipment lead-in times are properly incorporated into the project programme. Develop a plan on how and when to activate alternative suppliers and/or alternative delivery means.
2.0	Danger of electrocution, explosion, injury, harm or damage due to existing gas, water sewerage, electric or communication services hidden in underground cavities	Obtain written confirmation from utilities providers on the presence of existing services and underground cavities prior to the commencement of the works, a copy of which is to be included in the health and safety plan.

Designer's Assessment of Safety during Construction and Maintenance taking account of the Principles of Prevention *(read in conjunction with the ACEI/IEI/RIAI Guidance Notes)*			
Project Title: Dublin Port Marine Village	Project: No.: 22742	Designers: Mark O' Rourke / Jonathan Swanton	Date: June 2023
			Sheet No. Page **1** of **5**
Design Stage: Tender			
No.	Key hazards identified	Decisions / action	
		Excavations to be made away from these services only after scanning has taken place and slit trenches have been opened to identify the direction and depth of services. Strict measures for controlling live services to be implemented at all times to prevent any uncontrolled release. Connections to be made to isolated/controlled services only. Observe ESB directives regarding safety in vicinity of underground cables. Observe Gas Networks Ireland directives regarding safety in the vicinity of underground pipework. Coordinate and integrate installation of all services including those to other buildings to prevent damage to other services or infrastructure during installation. Agree with ESB for safe route for new electrical supply. Location of cables identified on drawings. Coordinate and integrate ESB cables with all other underground services. Provide cable markers at ground level at each change of direction and along entire route of underground cables. Ensure underground cables are installed at appropriate depths in accordance with ESB specification. Agree with Gas Networks Ireland for safe route for new gas supply. Location of pipework identified on drawings. Provide marker slabs/tape at each change of direction and along entire route of new underground gas pipework. Ensure underground gas pipework is installed at appropriate depths in accordance with Gas Networks Irland specification and appropriate separation distances to other underground services are maintained. Agree with telephone and cable TV service providers for safe route for underground cables. Location of cables identified on drawings. Provide cable markers at ground level at each change of direction and at intervals not	

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Consulting Engineers Ltd.

Designer's Assessment of Safety during Construction and Maintenance taking account of the Principles of Prevention *(read in conjunction with the ACEI/IEI/RIAI Guidance Notes)*			
Project Title: Dublin Port Marine Village	Project: No.: 22742	Designers: Mark O' Rourke / Jonathan Swanton	Date: June 2023
			Sheet No. Page **1** of **5**

Design Stage: Tender

No.	Key hazards identified	Decisions / action
		exceeding 40m. All open trenches to be sealed off.
3.0	Danger of explosion, injury or harm due to work near existing Gas Networks Ireland high pressure underground gas mains	Existing high pressure Gas Networks Ireland gas mains are present on the site and have been anecdotally identified as being redundant. The route and direction of the gas mains is highlighted on the site drawings with the 'no-build' wayleaves clearly indicated. If any works are planned to take place in the vicinity of the gas mains, these are to be carried out in strict accordance with the provisions set down by Gas Networks Ireland and Irish Standard IS 329. Detailed method statements, with safety as a primary concern, will be required to be prepared by the appointed Contractor for assessment by the PSDP prior to commencement of any work near the existing gas mains. Construction management issue: inform PSDP.
4.0	Danger of electrocution from temporary services	Transformers switchgear to comply with ETCI regulations including provision and correct settings of breaker trip settings.
5.0	Obstructed access around major plant and equipment.	Space provision required around all plant & equipment for access, servicing, maintenance & repair. Consultation sought from all relevant manufacturers of plant and compliance with all BSRIA & CIBSE guidelines.
6.0	Heavy plant items (internal)	All heavy plant items, e.g. cold water tanks and booster pumpsets are located internally at basement level. Tanks specified as sectional to reduce component size.
7.0	Working at height while installing roof mounted services	Roof mounted solar PV panels are proposed as part of the design intent. Construction management issue: inform PSDP. Contractor to provide suitable working platforms & scaffolding including toe boards, wear the necessary PPE and take all relevant safety precautions. Ladders and scaffolds to be used by trained & experienced personnel only, and maintained in good condition.

Designer's Assessment of Safety during Construction and Maintenance taking account of the Principles of Prevention *(read in conjunction with the ACEI/IEI/RIAI Guidance Notes)*			
Project Title: Dublin Port Marine Village	Project: No.: 22742	Designers: Mark O' Rourke / Jonathan Swanton	Date: June 2023
			Sheet No. Page **1** of **5**
Design Stage: Tender			
No.	Key hazards identified	Decisions / action	
Items to be drawn to the attention of tenders / contractors:			
Senior Engineer: Mark O' Rourke (Signature)			
Design Engineer: Jonathan Swanton (Signature)			

Designer's Assessment of the Risk Index
(read with Designer's Assessment of Safety during Construction and Maintenance)

Project Title:	Project: No.:	Designers:	Date: June 2023
Dublin Port – Marine Village	22742	Mark O'Rourke / Jonathan Swanton	Sheet No. Page **1** of **1**

Design Stage:

No.	Key hazards identified	Likelihood	Severity	Risk Index
1.0	(Transfer and transmission of Coronavirus Covid-19) European Commission Directive 2000/54/EC Group 3 biological agent meaning one that can cause severe human disease and present a serious hazard to workers; it may present a risk of spreading to the community, but there is usually effective prophylaxis or treatment available;	4	5	20
2.0	Danger of electrocution, explosion, injury, harm or damage due to existing gas, water sewerage, electric or communication services hidden in underground cavities	2	5	10
3.0	Danger of explosion, injury or harm due to work near existing Gas Networks Ireland high pressure underground gas mains	2	5	10
4.0	Danger of electrocution from temporary services	2	4	8
5.0	Obstructed access around major plant and equipment.	2	3	6
6.0	Heavy plant items (internal)	1	5	10
7.0	Working at height while installing roof mounted services	2	5	10

Risk Index Based on a 5 x 5 Matrix

Senior Engineer: Mark O' Rourke
Signature

Design Engineer: Jonathan Swanton
Signature

Project Title: **Information for the Project Supervisor Design Process** **Copies to Design Team Members** **From** *Varming Consulting Engineers*	*Rev: P01* *Issue Date: June 2023*
In relation to that section of the Project which under the terms of our appointment by the Client we are responsible for designing/specifying.	
Design Stage: Tender	
1.	**'Particular Risks'** The following information comprises our opinion in relation to such information as is known or reasonable foreseeable concerning (a) items 1 and 2 of the Second Schedule of the Regulations where the existence of such risks would not be evident and reasonably deducible from drawings or other support documentation to a competent Project Supervisor (Construction Stage) and (b) items 3 to 10 of the Second Schedule of Regulations:
	Danger of explosion, injury or harm due to work near existing Gas Networks Ireland high pressure underground gas mains
	Working at height while installing roof mounted services
2.	**Other Residual Risks** Having taken account of the 'Principles of Prevention' as recommended in "Designing for Safety" published by ACEI/IEI/RIAI, we set out below all residual hazards (other than 'Particular Risks' as set out above) identified by us which in our opinion (i) are significant and unusual and (ii) could not otherwise reasonably be known or deducted by a competent contractor. This information is provided to the extent appropriate in our opinion to enable reliable performance by a competent contractor. It should be read in conjunction with the contract documents where appropriate.
	Transfer or transmission of Coronavirus (Covid-19). Keep current with all changing Government advice and publications. Monitor, observe and implement all HSE Guidelines as they develop and implement the recommendations in the NSAI Covid-19 Workplace Protection and Improvement Guide and CIF Standard Operating Procedures (Current Version)
3.	**Construction Methods** The detailed, comprehensive identification of hazards and control of risk on site is the responsibility of the contractor(s). The Regulations do not require designers to dictate construction methods generally, or to evaluate contractors' proposals. However, where specific construction methods or sequences were envisaged by us during design which in our opinion are not reasonable discernable from the contract documents or are outside the normal scope of a competent contractor in the context of the proposed work, these are set out below. This information should be read in conjunction with the contract documents where appropriate.
	Prepare and implement detailed work plans and site protocols in a manner that minimises H&S risks to all persons on the site. Plan, programme and sequence works in such a way to minimise meetings, site inspections and such that physical distancing requirements can be maintained between site operatives.
	None identified at this time

10. Narrative on coordination of services within Architectural Design

10.1. All Architectural drawings have been reviewed and incorporate sufficient service zones for:

- Boiler Plant
- Heat Pumps
- Primary Distribution Routes
- Vertical Distribution Routes – Risers
- Distribution Panels
- Communications Equipment

10.2. A coordination process has taken place between ourselves and the Architect to allow a full detailed design drawings be produced from the current design.