2025 Energy Review

OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

Prepared by
University of Galway's Energy Team
September 2025

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Executive Summary

This Energy Review is being carried out to comply with the requirements of the ISO5001: 2018 Energy Management System (EnMS) standard, clause is 6.3. The main purpose of this energy review is to analyse University of Galway's energy usage and consumption based on measurement and other data i.e. the identification of current types of energy use, the evaluation of past and present energy usage and the analysis and identification of the Significant Energy Users (SEUs). For each SEU, the relevant variables and current energy performance is determined and the person(s) doing work under our control, who have an influence, or effect, on each of the SEUs, have been identified. Additionally, opportunities for improving the energy performance of the University of Galway's SEUs are outlined and prioritised. Furthermore, the estimated future energy usage and consumption is documented.

Buildings that are included within the scope of the University of Galway's ISO50001 EnMS have been reviewed and are listed in our Energy Manual and Dashboard. There are fifty-eight buildings included that have a total internal floor area of 155,090 m^2. The overall treated unit floor areas of the University are 213,720 m.2. The main risks are in relation to the geo political uncertainties and extreme changes to our climate.

Internal audits of the ISO50001 EnMS have been carried out during 2024-25 and there were no non-conformances found. It is a testament to the hard work and dedication of the University of Galway's Buildings & Estates Team, that the college's energy performance has continued to improve (see also Figure 4).

The management team measure electrical and thermal energy performance using key performance indicators; kWh (e)[1] and kWh (th)[2] per metre squared of treated floor area per annum. These are termed Energy Performance Indicators, or EnPIs, and are being used to set targets for enhanced energy performance improvement plans. These metrics are used to monitor the performance of each of the SEU buildings, on a weekly/ monthly basis and are actively discussed during our monthly energy review meetings.

University of Galway operate a formal EnMS which is compliant with the requirements of ISO50001: 2018; Energy Management Systems Standard. The Energy Review is carried out once every 2-years and in response to major changes in facilities, equipment, systems, or energy using processes. It is normally carried out during August/September/October, and compiled, reviewed, and reported during October/November, each year and to align with the surveillance audit which is planned to take place on 7th & 8th October this year.

The methods and criteria used to develop each of our Energy Reviews are outlined and the results are documented and retained/ maintained as records under our Document Control Procedure.

[1] kWh (e) relates to electricity related usage – the average unit price per kWh(e) used is €0.25c
[2] kWh (th) relates to gas usage – the average unit price per kWh(gas) used is €0.11c

1. Analyse Energy Use & Consumption

1.1 Current Types of Energy

The types of energy being used at University of Galway are outlined on table 1, with further details outlined on Appendix F. In the main, the campus uses imported electrical and gas to sustain its operations. It also uses a number of renewable energies such as solar photovoltaic systems, heat pumps, biomass boiler and solar thermal. Over the past few years, the college has continued to roll out the installation of solar photovoltaic electrical energy generation systems and these are proving very worthwhile. The campus building's energy consumption during 2024 is set out in Table 1 and summarised in Figures 1, 2 and 3.

Table 1: Annual Energy Consumption, Energy Costs & CO2 Emissions (t)

Fuel	2024		
	Quantity [kWh]	Spend (Est.)	CO2 * Emissions [kg.]
Electricity Imports	12,021,330	€3,005,333	3,971,847
Electricity Generated on-site from PV	294,481	-€73,620	-97,297
Gas Imports	11,700,212	€1,287,023	2,373,973
LPG	490,681	€64,917	112,513
Gasoil - Kerosene & Heating	153,348	€16,831	38,628
Wood pellets	777,600	€62,208	0
Solar Thermal	75,000	-€7,500	-18,893
Road Diesel	12,420	€1,379	3,278
Biofuel -HVO	10,350	€1,071	0
Total	**25,535,422**	**€4,438,762**	**6,500,240**

**Referenced SEAI website on 23rd September 2025– see also Appendix G*

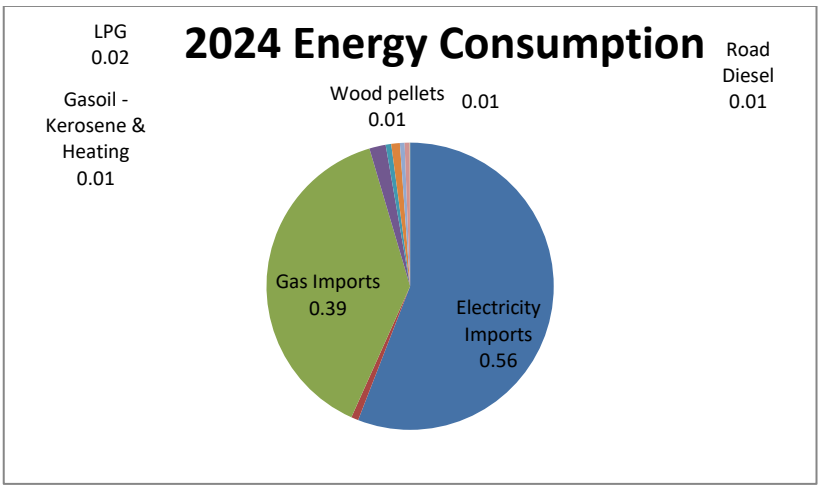


Figure 1: 2024 Breakdown of Energy Consumption (kWh)

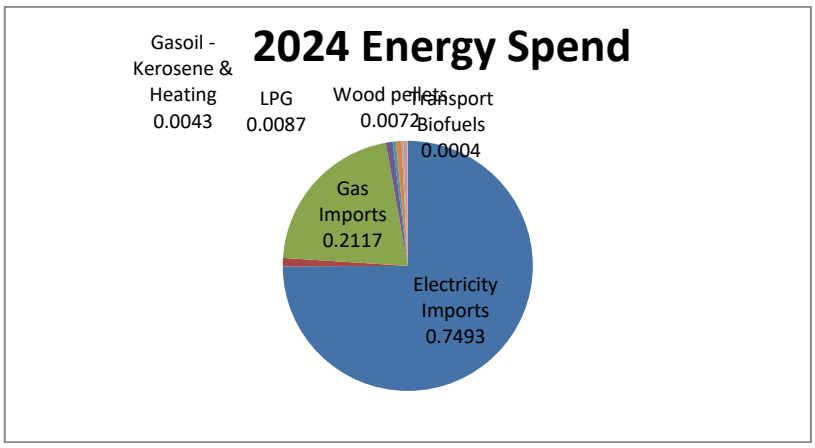


Figure 2: 2024 Breakdown of Energy Spend

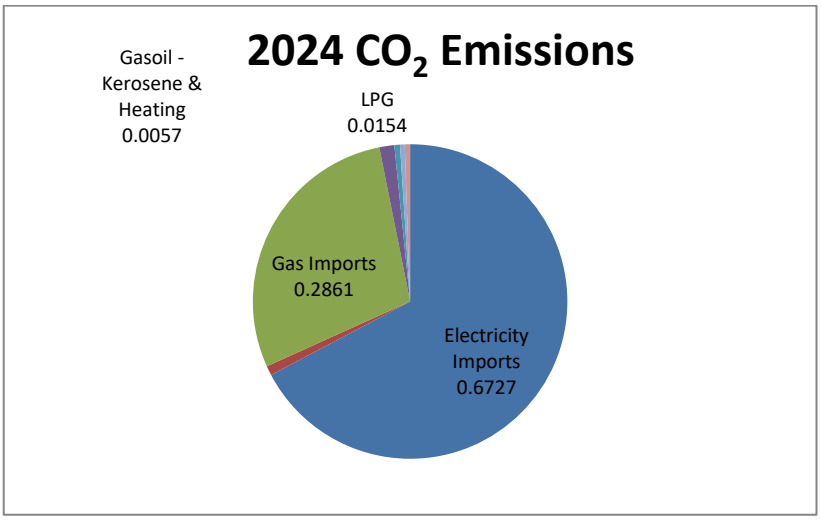


Figure 3: 2024 Breakdown of Energy Related CO_2 Emissions

1.2 Evaluation of past & present energy use & consumption

An evaluation of the past and present energy use and consumption was carried out using the SEAI's M&R System. This is the national profile database of all public sector organisations. It is 'independently assessed' using a stringent quality assurance system and uses electricity and natural gas data, accessed from the national Meter Point Registration Operators. The M&R System is heavily referenced as it demonstrates that we are being independent in our assessment criteria. That said, this data includes energy used to sustain science and research activities carried out at the SRB Building and that building is not included yet, in the scope of our ISO50001 EnMS. An annual highlight of our energy performance from 2006 to 2024, inclusive, is outlined on Figure 4, below.

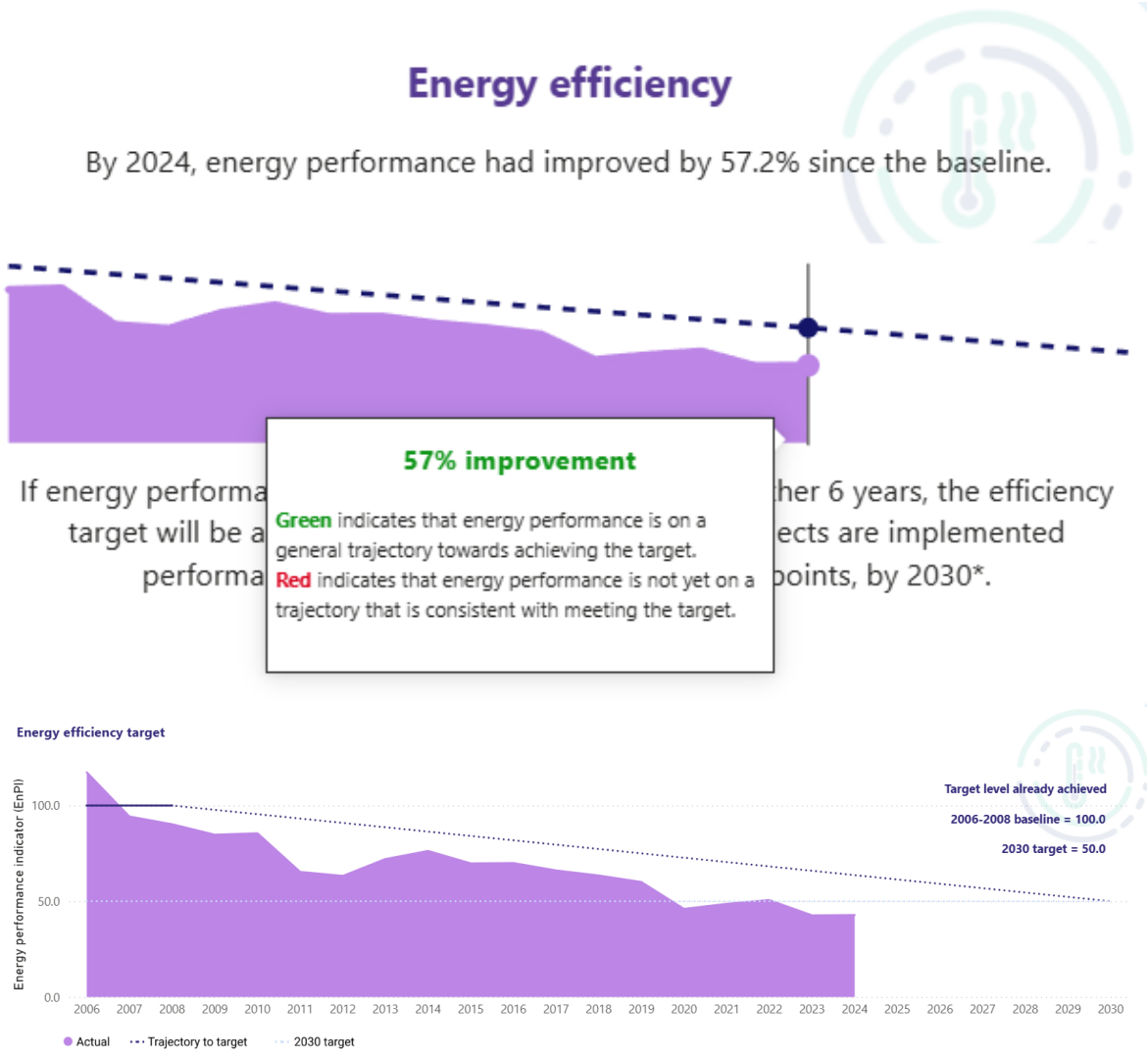


Figure 4: University of Galway's actual energy performance Source SEAI's M&R System – accessed on 27th September 2025

Additionally, the energy performance of each of our buildings is being monitored daily and reported monthly. The Energy Team reviews the performance of each of

our significant energy using buildings; using monthly cumulative electrical energy usage data and compares that to the cumulative electrical energy usage for the equivalent month, from the previous year. This is carried out to react to any untoward changes, in a timely fashion. The methodology was adjusted to factor pandemic related guidelines, but these have since returned to reflect 'normal' campus operations. A proactive approach allows us to micro-manage each of our building's energy performance so that monthly and annual objectives and targets are continuously met.

Additionally, the annual SEAI M&R Report is being used to review our past and present energy performance (as per figure 4). Our energy performance has steadily improved, and the downward trend has resulted in a 57.2% overall improvement in our energy performance, since our baseline year, which is 2006. The energy performance indicator used is kWh/TUFA (Treated Unit Floor Area). Since the first iteration of the National Climate Action Plan, the M&R has been updated to reflect annual carbon emissions related performance. This in turn encourages public sector organisations to take more active carbon efficient measures, such as removing fossil fuel related heating and transport systems and installing heat pump, HVO-hydrogenated vegetable oil, electric vehicle and photovoltaic systems.

A copy of the annual SEAI M&R Report is sent directly to our President, by SEAI, every year.

2. Identification and analysis of our Significant Energy Users

2.1 Significant Energy Users

The main energy consumers are summarised in Table 2 below. This table is based on the electrical & thermal energy usage per building. The data is taken from the University of Galway's Building Energy Management System (BMS) https://bms.universityofgalway.ie/login. It is used to prioritise opportunities and support cost accounting exercises. The Arts Science Building includes the Main Concourse, Chemistry/ Bio-Chemistry and Physics. A graphical summary of the thermal and electrical energy used at each of the top 10 buildings is represented on Figure 5.

This table confirms that the Bio Science Research and Human Biology Buildings, are intensive energy users. Both buildings are serviced with exact temperature and ventilation settings. Additionally, some areas are fully treated, with exact heating, cooling & humidity controls and house 'live' research laboratories. Both buildings are/have undergone extensive upgrades over the past year. The Bio Science Building has been retrofitted with new 'state of the art' steam traps and Human Biology will be fitted with new chillers by the end of this year. These are examples of projects being undertaken at these significant energy using buildings, that will have positive impacts on their energy performance. Furthermore, energy awareness is being raised at both buildings e.g. Green Labs at Bio Science and active scheduling programmes at the HBB.

Additionally, we have conducted a degree day regression analysis. There is a continued increase in the correlation between ambient and thermal demand, which is very pleasing. This is discussed in more detail in Section 2.2.2.

Table 2: Summary of top ten significant energy using buildings

	Name of Building	Ele (kWh) 1st June 2024 to 30th May 2025	Gas (kWh) 1st June 2024 to 30th May 2025	Total - kWh	M.2.
1	Bio Science Research Building	2,148,251	3,350,230	5,498,481	8,212
2	Arts Science Buildings	1,324,069	2,904,595	4,228,664	31,312
3	Human Biology Building	1,760,784	1,247,542	3,008,326	8,000
4	Alice Perry - School of Engineering	1,142,802	1,095,810	2,238,612	14,145
5	Áras Hardiman Building	735,123	1,470,000	2,205,123	9,415
6	Arts Millennium Building	359,593	458,451	818,044	8,054
7	Áras de Brún, Anatomy & Terrapin	402,897	386,504	789,401	2,425
8	Áras na Mac Léinn	627,777	139,293	767,070	4,307
9	Martin Ryan Institute	302,966	264,999	567,965	3,255
10	J.E. Cairns - School of Business	333,706	218,474	552,180	7,213
11	Martin Ryan Institute Annex	75,255	183,952	259,207	1,246

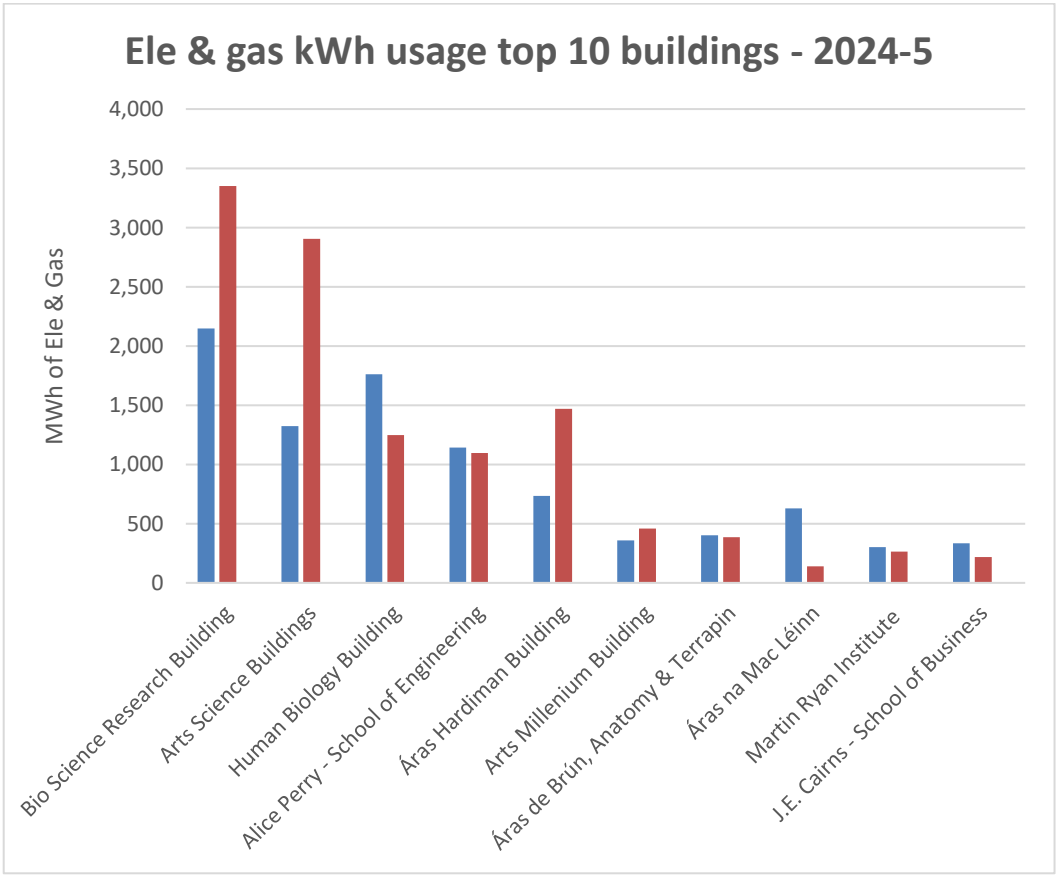


Figure 5: University of Galway's SEU Buildings

2.2 Relevant Variables

2.2.1 Baseline

The energy baseline used is the kWh (e) and kWh (th) per m2 of treated floor area. The baseline year is 2006 and University of Galway's progress since then is plotted on Figure 4. Our energy performance during 2006 was 392.9 kWh per m.2 of treated floor area. During 2024 that figure fell to 173.9 kWh per m.2. This demonstrates a significant improvement of 57.4% lower than the baseline. The University of Galway has reached the target set for all public sector organisations, which is to achieve a 50% improvement, by 2030.

As expected, the Climate Action Plan targets a 51% improvement in carbon[3] emissions performance compared to the baseline year; for all public sector organisations. In preparation for the transition to Carbon and Green House Gas Emissions – GHGs, we are monitoring our CO_2 emissions every year, since 2006. We have placed more emphasis on this aspect since 2014 and are delighted to report that our primary emissions are on the wane, since then. See also Appendix D - Yearly CO_2 emissions.

Finally, there is a requirement to monitor travel related carbon emissions associated with our operations and a database is being compiled to capture and populate all travel related carbon emissions. This is an onerous task and will take some time to develop and mature. It is expected that during next year's M&R return cycle our college will have enough data to accurately report travel related carbon emissions. This aspect is the responsibility of the Director of Sustainability.

2.2.2 Other Relevant Variables

There are a number of other relevant variables such as number of students and staff (and researchers), number of conferences, number of projects completed (including new or renovated buildings) and degree days[4]. Degree days and regression analysis exercises are being undertaken. The calculated regression or R value during the period from 2020 to 2024 was 0.878 (Strong Positive Relationship between gas usage and outside ambient temperatures). The R value during 2019 to 2023 was 0.675 which demonstrates that the college has improved the efficiency of gas usage.

[3] Carbon dioxide is abbreviated to carbon and is denoted by CO_2
[4] Degree days are a simplified representation of outside air-temperature data. "*Heating degree days*", or "*HDD*", are a measure of how much (in degrees), and for how long (in days), outside air temperature is lower than a specific "*base temperature*" (or "*balance point*"), which in our case is 15.5 deg C. Source www.degreedays.net

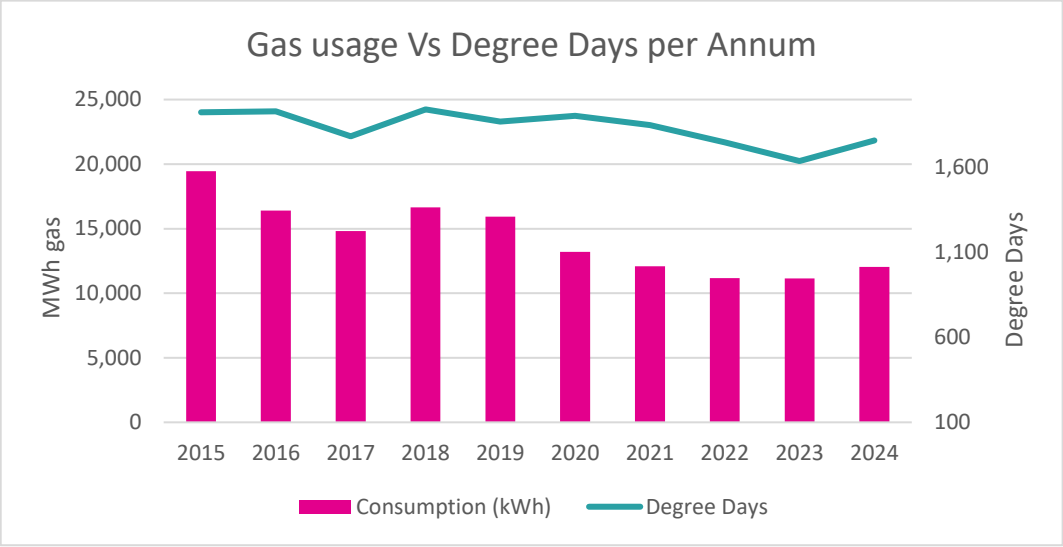


Figure 6: Degree Day Analysis

As part of the Green Flag initiative, we began reporting a carbon and energy per student related key performance metric, and this proved to be a very successful tool in engaging with students. We will continue this initiative during 2025-6 as this has enabled our students to become more conscious of their impact on energy and carbon usage at our university. During 2024, the weight of carbon dioxide emitted per student dropped from 293 kg to 286 kg, which is hugely positive. Figure 7 plots the kg of CO_2 per student during the period from 2006 to present. It also predicts the future weight of carbon emitted per student and that trajectory is set to fall. Additionally, as student number increase, the carbon performance per student will improve. Carbon performance metrics are becoming more prevalent as this approach compliments the move towards a more sustainable campus.

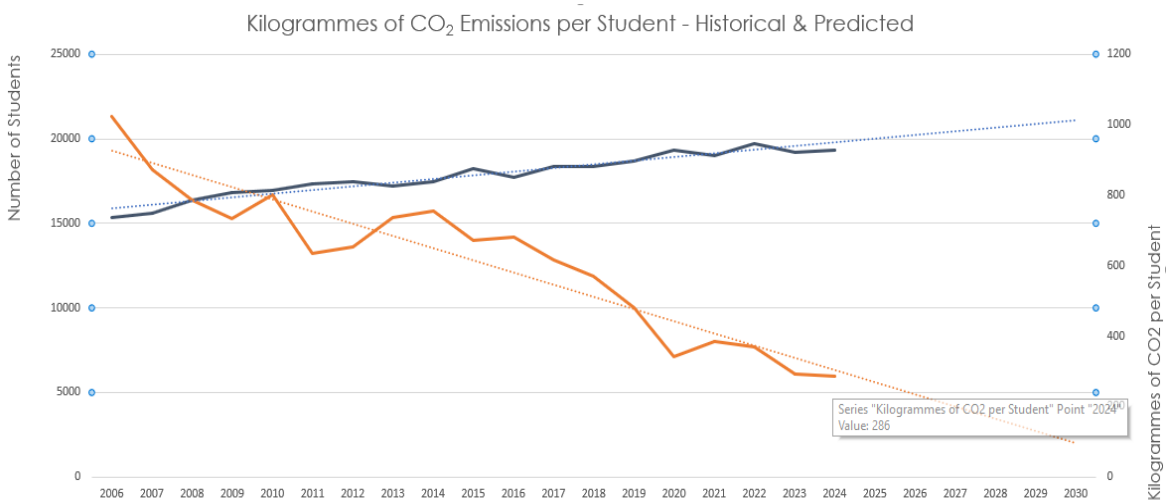


Figure 7: Kilogrammes of CO_2 per Student (2006-2024…2030)

2.2.3 Legal & Other Requirements

Legal and other requirements are being evaluated on an ongoing basis. Since Q1 of 2017, University of Galway has subscribed to an external register of energy legislation and staff has undergone training in its use, and the requirements of ISO50001: 2018 Clause 9.1.2.

The main pieces of legislation and other requirements that apply to the university on an ongoing basis are: -

- S.I. 426 of 2014 – European Union (Energy Efficiency) Regulations – that place responsibilities on public sector organisations to take an exemplar role in relation to energy efficiency and energy management.
- S.I. 292 & 183 of 2019, S.I. 243 of 2012, S.I. 872 of 2005 – European Union (Energy Performance of Buildings) Regulations 2005, 2012, 2019
- Revised Energy Performance of Buildings Directive entered into force on 28th May 2024 and will be transposed into Irish law by 29th May 2026.
- Climate Action Plan – 2025 and previous Climate Action Plans and National Energy Efficiency Action Plans
- Building Regulations 2021: Technical Guidance Document L – Buildings other than Dwellings Published on 7th December 2020 and updated on 12th August 2021.

Finally, the Buildings and Estates team operate a comprehensive 'Statement of fundamentals' that is integrated into the college's purchasing procedure. This document obliges all interested parties to undertake life cycle assessments so that all new and refurbished plant, equipment, and projects undertaken include energy efficiency measures during the design, procurement, installation, and commissioning phases.

2.3 Current energy performance

The management team measure its electrical and thermal energy performances using key performance indicators; kWh (e) and kWh (th) per metre squared of treated floor area per annum. These are termed Energy Performance Indicators, or EnPIs, and are being used to set targets for enhanced energy performance improvement plans. Table 3, as below, gives an outline of the kWh usage of both electricity and thermal energy per m.2. of treated floor area per annum. This table demonstrates that our annual energy performance has improved over the past 4-years. It went up slightly during 2022, as the college returned to more 'normal' operations. Electrical and thermal energy related energy performance indicators (EnPIs) are also used to demonstrate compliance with and achievement of Public Sector 2030 targets, the use of EnPIs may be developed further to include performance monitoring of each of its significant energy users such as the chillers, IT equipment, catering, lighting and boilers.

Table 3: 2006-24 Energy performance indictors

Year	Energy Performance Indicator (EnPI)	
2024	kWh (e & th) /m2	173.9
2023	kWh (e & th) /m2	177.33
2022	kWh (e & th) /m2	198.00
2021	kWh (e & th) /m2	189.98[5]
2020	kWh (e & th) /m2	180.25
2019	kWh (e & th) /m2	237.06
2018	kWh (e & th) /m2	249.42
2017	kWh (e & th) /m2	259.85
2016	kWh (e & th) /m2	274.81
2015	kWh (e & th) /m2	274.20
2014	kWh (e & th) /m2	299.76
2013	kWh (e & th) /m2	283.71
2012	kWh (e & th) /m2	248.77
2011	kWh (e & th) /m2	256.77
2010	kWh (e & th) /m2	336.32
2009	kWh (e & th) /m2	334.55
2008	kWh (e & th) /m2	356.04
2007	kWh (e & th) /m2	371.86
2006	kWh (e & th) /m2	392.9

EnPIs (kWh (e)/m2 of treated floor area are being used to monitor the energy performance of each building and those are reported and discussed during monthly energy review meetings. During 2024, performance has improved by 12.2% compared to 2022, and this is to be lauded.

The reasons why the performance has improved or worsened are noted and follow-on actions are agreed. Those are then documented and followed up on during the next few days and reviewed again during the next scheduled energy monthly meeting. In this manner, the EnPI data is being used as a springboard for enhanced energy efficiency. University of Galway are using EnPIs as an essential tool for developing an effective EnMS and are also using those as a method to demonstrate that it is achieving its targets for improvement.

Finally, we also use Display Energy Certificates (DECs) to report each publicly used building, to report the operational performance, in kilograms of CO_2 per m.2 of treated floor area. The DECs are a performance rating and demonstrate that we are compliant with the requirements of the European Union (Energy Efficiency) Regulations and the Irish Statutory Instrument; S.I. 426 of 2014. Copies of the ten most recent DECs are outlined on Appendix B.

[5] During 2020 & 2021 there was a significant drop largely due to the pandemic and not reflective of a 'normal' year.

2.4 The identification of person(s) that affect our SEUs.

The persons that affect the energy performance of our SEUs are identified and outlined on Table 3: Periodic & Operational Tasks/Roles in our Energy Manual. These include the details of each role and the person or title of the person who has overall responsibility for carrying out the duties and associated tasks. Seán Farrell, who is Head of Building Services has overarching responsibility for the operational control of our SEUs. Seán has a team of electrical and mechanic personnel and several preferred contractors, and he manages these personnel so that each of our SEU buildings are controlled and operated to strict performance specifications. Additionally, there are a few buildings that are managed by external companies. Seán Farrell and Noel Rogers have overarching responsibility for the performance of these buildings.

3. Determining & Prioritising Opportunities for Improvement

3.1 Recent/Existing Energy Saving Initiatives

University of Galway's Energy Team is doing great work in developing and using their ISO 50001: 2018 compliant energy management system, to achieve targets and objectives, and to demonstrate compliance with its legal obligations. The Energy Team comprises of Denis O'Connor (Director of Real Estate & Energy Performance Officer), Seán Farrell (Head of Building Services), Anthony Nevin (Mechanical Supervisor), Kenneth O'Toole (Electrical Supervisor), Lorraine Rushe (Environmental, Health & Safety Manager), Karl Byrne (Building Management Systems' Consultant) and John Harrington (Energy Management Systems' Consultant). Occasionally, other interested parties are invited to attend and to present to the EnMS Team. In general, the Energy Team meet once a month to undertake a review of the EnMS and to review each of the significant energy using building's monthly energy performance data.

Seán has continued to lead the ISO50001 Energy Management System and represents top management. He has continually demonstrated his commitment to supporting the EnMS and is focused on delivering an effective system; by defining, implementing, and maintaining the University of Galway's Energy Policy. He is pivotal in the management of the system elements and in providing the resources[6] needed to maintain and improve the EnMS and resulting energy performance, on a continual basis.

Lorraine Rushe has continued to develop the legal and other requirements aspect using the external legal registrar, known as Red it On line. That registrar updates and advises University of Galway on their Energy, Environmental, Health and Safety related legal obligations. The work carried out by Lorraine has ensured that University of Galway is fully compliant with the Legal and other requirements outlined in Section 9.1.2 of the standard.

Seán Farrell has led the way in terms of implementing energy efficiency projects throughout the year. He has developed the project to add resilience into the South Campus Medium Voltage System by managing the installation and commissioning

[6] Resources include human resources, specialised skills, technology, and financial resources.

of new cabling systems and new ESB sub-station. Other projects include the continued installation of LED lighting and upgrading oil and gas boilers to heat pump equivalents. Furthermore, the Energy Team has continued to decarbonise the University of Galway's campus and generated 397.5 MWh during 2025, year to date. Another notable aspect of this year's B&E related workload related to the considerable damage caused by Storm Eowyn during January 2025. The college underwent an extensive repair programme and a significant portion of the B&E budget and manpower resources went into a reactive maintenance regime for the immediate months, following the storm. New flue systems were fitted at the Orben and Bailey Allen Buildings, Blocks D&E had a number of external split units damaged and subsequently replaced and remedial work had to be undertaken to repair damaged photovoltaic panels; mainly on the Arts Science Building.

Karl Byrne has responsibility for developing and managing the Monthly Building Performance Metering and Reporting System. He presents the results to the energy team once a month and follows up on any metering related action(s) and updates the reports and corrective actions accordingly.

John Harrington has supported the team throughout and has carried out the 2024-5 Internal Audit Programme of the EnMS system. Additionally, he planned and documented the internal audit schedule for 2025-6 which is outlined on our EnMS Dashboard. John will continue to report any observations and/or non-conformances using the Internal Audit Report Feedback Forms. John will be responsible for following through, and closing out, actions required arising from those observations/ non-conformances, as applicable.

University of Galway's main objective is to reduce electricity and thermal related energy consumption and to improve the overall energy performance of its buildings. During 2024, we demonstrated energy savings of 57.4% lower than the baseline year (2006) and this is documented on the Sustainable Energy Authority of Ireland's M&R System. It provides independent proof that University of Galway's Energy Performance is continuously improving.

We have factored in risks associated with security of energy supplies and escalating energy costs caused by recent uncertainties in the international markets and mitigation factors are being managed on a monthly basis, by aligning our procurement strategies with the national procurement frameworks.

The Energy Team are developing further energy efficiency projects and new builds. We are using nZEB – nearly zero energy building techniques and technologies on the new library buildings. Additionally, we are using the results from the Áras de Brun deep retrofit project to roll out similar projects, on similar buildings, into the future. The Energy Team and indeed all of the Building & Estates Department continues to identify potential boiler-house upgrade projects, LED lighting replacement projects, Set-back HVAC opportunities (e.g. using interlocked HVAC-occupancy sensors e.g. at the Cairns Building) and pumps/ motors replaced with modern energy efficient equivalents. The boiler house upgrades include fuel switching and installing hydrogenated vegetable oil – HVO boiler systems on boiler systems at # 10 Newcastle Road, and 3 other properties on Distillery Road. It also is continuing to 'roll out' renewable energy projects such as the installation of large scale geothermal, photovoltaic, solar hot water and biomass boiler systems and power

plant upgrades and the combination of results will lead to the decarbonisation of the University of Galway campus by 2030.

A list of completed projects are outlined in the next section, 3.2 ~Energy Management Action Plan.

By taking an energy management system's approach to reducing energy costs and usage, University of Galway continually improve its energy performance and, in so doing, reduces its environmental burden.

One further point worth noting is that the Annual Public Sector Conference was held at the University of Galway on May 15th, 2025. It is a complement that the SEAI – Sustainable Energy Authority of Ireland choose to host this conference at University of Galway. It is the first time that the conference has been held outside of Dublin. See also Appendix D.

3.2 Energy Management Action Plan

A number of opportunities for energy savings have been carried out over the past year. €1.428 Million has been spent on these projects and the combined annual savings are €166k. The most significant projects include the Medium Voltage MV electricity distribution system upgrade project, the continued roll out of energy efficient boiler house upgrades, the ongoing replacement of florescent light fittings (with LED equivalents) and upgrades to the Building Management System with resulting improvements to air treatment controls and efficiencies. Additionally, the Buildings and Estates team continue to roll out photovoltaic electricity generation projects and during 2025 we generated almost 400 MWh of electricity on site.

Similarly, an ongoing list of opportunities for improvement and potential projects; for the current period, 2024-5, are outlined in the Register of Opportunities (ROO). The values quoted for energy savings are reasonable estimates and calculations, and any assumptions made, are carried out on the right-hand side of the ROO sheet.

One of the highlight action plans relates to the University of Galway 2030 Zero Carbon Action Plan. The University is formulating a fully costed action plan to transition to a zero-carbon campus in the next decade. It includes the installation of a district heating network, heat pump related thermal energy sources, occupancy controls, and other key actions relate to upgrading numerous fume cupboards; and retrofitting energy efficient motors, sensors, and hoods/doors/screens, carrying out behavioural change campaigns to improve the energy efficiency of laboratories and reviewing the buildings fabric with the view to improving U-values and the thermal mass of buildings.

The Register of Opportunities - ROO is an active document with twenty-six opportunities in the 'Seeking Funding Category,' twenty-one opportunities have been recently approved, one hundred and nine have been completed. The ROO is colour coded for ease of use. Table 5 below contains a summary of the potential projects and their expected savings. This table forms the basis for achieving energy efficient targets. Targets are reviewed during Annual Management Review Meetings.

Table 5: Summary of the 2024-5 energy efficient projects; either seeking approval, approved, or completed, and their respective kWh (t), kWh (e), Kilogrammes of CO2 and Cost Savings and the average payback periods.

	Status	kWh (t)	kWh (e)	KgCO2	Capital Cost (€)	Saving (€)	Payback
2024/5 Academic Year	Seeking	10,073,075	1,016,690	3,363,362	€21,177,550	€1,602,983	13.21
	Approved	1,028,920	525,620	444,540	€5,565,000	€166,227	33.48
	Completed during 2024-5	482,860	841,222	294,635	€1,427,851	€263,420	5.42
	Ongoing annual savings	3,690,086	2,097,459	2,165,255	€4,188,882	€1,145,156	3.66
	Total	**15,274,942**	**4,480,991**	**6,267,792**	**€32,359,283**	**€3,177,786**	**10.18**

Table 6, gives an outline of the opportunities for energy efficiency improvements and are categorised as Seeking Funding, Approved, Completed or Approved/Ongoing. These are colour coded in light brown, light green and dark green, respectively. The following tables should be read in conjunction with the Master ROO as per the Dashboard 2025 Rev. 4.

We are also using the Gap to Target tool to monitor our carbon emissions performance. Since the baseline years, which are the average of 2016-18, for overall emissions, we have cut fossil fuel related emissions by over 35%, which is a fantastic achievement. Overall, we have reduced our emissions by 3,911 Tonnes since the baseline. Our target is to reduce out emissions by a further 3,407 Tonnes by 2030. A copy of the SEAI's glidepath graph is outlined on Appendix E and explains the trajectory and 2030 targets, in a graphical format.

Table 6: Opportunities for Energy Savings and Action Plan (2024/5)

Ollscoil na Gaillimhe University of Galway		2025 Rev 4		
		Seán Farrell, Anthony Nevin, Kenny O'Toole, Noel Rodgers, Karl Byrne, John Harrington		
Energy	**Reason Included**	**Comments - Potential Risks**	**Business Unit**	**Project Approval**
Therm/Elec	Karl Byrne of EWA Controls has continued to update the BMS systems to keep pace with technology that maximises the effectiveness of energy using equipment with data and controls e.g. 3 port valves, sensors/actuators/valves etc) interfaces	Karl Byrne (BMS & Controls Expert). The UG BEMS is bespoke and state of the art. The system supports the availability of accurate, up-to-date information that enables the B&E Team to proactively manage energy. Additioanal benefits, it allows the team to control air quality at times of high occupancy e.g. in Lecture Halls, which has become utterly important in recent years.	Buildings and Estates	APPROVED - Ongoing
Transport	The college is continuing to promote the use of electric vehicles both on campus and beyond.	EV charging continues to be on our B&E agenda.	Buildings and Estates	APPROVED - Ongoing
Therm/Elec	Replace pumps	In-house project which has been a great success so far. Continue to replace these pumps when time and resources allow.	Buildings and Estates /Alice Perry	APPROVED - Ongoing
Therm/Elec	The energy performance of the HBB is poor. The energy rating for the period from July 2024 to June 2025 is an E2. The building has an actual Electrical kWh/m.2./yr result of 457.37 and Non-electrical kWh/m.2./yr result of 199.3. The typical energy usage for a building of this category should be 295.36 kWh (e) per m.2./yr and 246.93 kWh (ther) per m.2./yr.	There is an opportunity to carry out 3 actions to address or reduce energy usage. I.) carry out a review of the heating and cooling strategies with the Design and Build Teams. 2.) carry out training for the users of the HVAC Systems at HBB 3.) Review the dehumidifiers and consider replacing both. These appear to be inefficient, dumping hot water to drain.	Buildings and Estates	Ongoing
Elec	University of Galway must look at the behavioural requirements of all its staff in the use of IT equipment and also the cost of running of all equipment during the weekends and evenings. Green Procurement of all new equipment	Strategic alliance with ISS on the computer equipment. There may be risk that ISS may decide not to proceed with any energy efficiency improvements to its ISS. We will manage this risk accordingly. Fall as part of the emergency crisis. University of Galway has given global funding for hi-efficiency desktops and laptops.	Buildings and Estates /ISS	Ongoing

Therm	Strategic review of the buildings to look at costs associated with Fabric upgrades to buildings	Building Engineer and Energy team. The costs associated with fabric upgrades are prohibitive. Additionally, fabric will have to be exactly specified and lessons learnt from the Grenfell Towers Tragic Fire, incorporated into the design process.	Buildings and Estates	APPROVED - Ongoing
Therm/Elec	Behavioural opportunities. ARUPs has been appointed as the Consultants to Chair this.	Westside Decarbonisation Zone, Partners GCC, HSE, University of Galway, Dunnes Stores & 2000 Home Owners. Seeking European and SEAI funding. Budget of €200 million available.	Buildings and Estates	APPROVED - Ongoing
Ele	Install new ESB Sub Station & related MV and step down equipment - New Building. Also replaced the MV Cables to Paper Insulated wires.	Huge project - Campus shutdown. Carried out during August 2025	Buildings and Estates	Completed During 2025
Thermal	Existing 4 No. oil fired boilers to be replaced and install new wall hung gas condensing boilers and controls	Disconnection and removal of the existing oil tank install new Natural gas network points.	Buildings and Estates	Completed During 2025
Therm	Survey carried out by Steam ESCo - Sept 2024. Works completed during Q4 & Q1 2025	1 major fail, 7 sticking - mal functioning, 1 blowing and 3 x inconclusive	SRB	Completed During 2025
Therm	Modernise the hot water system, to improve the energy performance and resilience of the the DHW system	Installation of a new ACV unit and buffer vessel. The new ACV system operates at 99% efficiency, compared to the previous state water heaters operating below 50% efficiency. The buffer tank has been designed to accommodate a future heat pump, ensuring readiness for sustainable hot water production in the Library.	Library	Completed
Therm	Existing oil fired boiler/burner unit is a fossil fuel based system. HVO is at least 65% lower in CO2 emissions when compared with kerosene	Install new Hydrogenated Vegetable Oil supply to each boiler house at No.s 6, 12, 19 Distillery Road.	Buildings and Estates	Completed During 2025
Ele	Lighting LED Systems are a key element of this project	Lighting Biosciences Thorn chalice 18W x2 E-Ballast replaced with Ansell Comfort set @ 17W & Ansell Freska set @ 18W. 4 Comforts & 19 Freskas replaced. Thorn Diffusalux 36W E-Ballast replaced with Ansell Oxford set @ 21W. 42 units replaced Thorn Impact 28W x 2 E-Ballast replaced with Ansell Tornado set @ 30W. 90 units replaced	Buildings and Estates	Completed During 2025
Ele	Lighting LED Systems are a key element of this project	ILAS Thorn Impact 28W x 2 E-Ballast replaced with Ansell Tornado set @ 30W. 12 units replaced Ansell 28W E-Ballast replaced internals with Opple EC LED 16W. 72 units replaced	Buildings and Estates	Completed During 2025
Ele	Lighting LED Systems are a key element of this project	Various lighting - Systems - See also Case Study with itemised hand writted lists - GF-Ground Floors x 2 and Second Floor	Buildings and Estates	Completed During 2025
Elec	Installation of new LED Lighting Removed 28 No. 2*36W = 2016W and replaced with 24 No. 40w =960W	LED Lighting and controls	Chemistry	Completed During 2025

Elec	Installation of new LED Lighting Removed 6 No. 2*72W = 432W and replaced with 6 No. 30w =180W	LED Lighting and controls	Microbiology	Completed During 2025
Elec	Installation of new LED Lighting Removed 12 No. 49W = 588W and replaced with 6 No. 50w =300W. 40*49w replaced with 12*50w	LED Lighting and controls	Bailey Allen	Completed During 2025
Elec	Installation of new LED Lighting Removed 17 No. 40W = 680W and replaced with 17 No. 40w =680W.	LED Lighting and controls	7 Distillery Road	Completed During 2025
Elec	Installation of new LED Lighting Removed 29 No. 72W = 2088W and replaced with24 No. 26w =624w. 6No 2*2 flors with 4*28w LEDs	LED Lighting	Physics	Completed During 2025
Elec	Removed 894 w luminaires with 12No 28w = 336w (558w saving), Large colour changing panels removed (saving 776 W), Dining Area (saving 588 W0 and Recessed	LED Lighting	An Bialinn	Completed During 2025
Elec	Removed 8 * 70W (560w) and installed 7*50w (350W) overall saving = 210W	LED Lighting	Rm 102	Completed During 2025
Elec	Removed21 *2*18 w(756w) and installed 13*16w (208W) overall saving = 548	LED Lighting andPIR controls	Stairwells	Completed During 2025
Ele	Lighting Systems Controls are a key element of this project	Lighting	Buildings and Estates /DERI	Completed During 2025
Therm/Elec	Karl Byrne of EWA Controls has continued to update the BMS systems to keep pace with technology that maximises the effectiveness of energy using equipment with data and controls (sensors/actuators/valves etc) interfaces	In particular during 2025 the following heat metering systems were installed and commissioned - Heat Meter Installation Heat meters have been successfully installed across the campus to allow for accurate monitoring and management of energy consumption. library basement carns and Moyola	Buildings and Estates	Completed During 2025
Thermal	Occupancy sensors have been installed in Áras na Cairnna, allowing for: Reduced running times for heating systems and Air Handling Units (AHUs). An expected energy reduction of approximately 40% for ground and first-floor classrooms. Arts Millennium Theatres – Occupancy Sensors	New Occupancy controls fitted in AHU units InCairnes & Arts Millenium Buildings, this new control system is fully incorporated into the BMS - Set back the AHUs - Heating when no/reduced occupancy present	Buildings and Estates	Completed during 2025

4. Estimate of University of Galway's future energy consumption

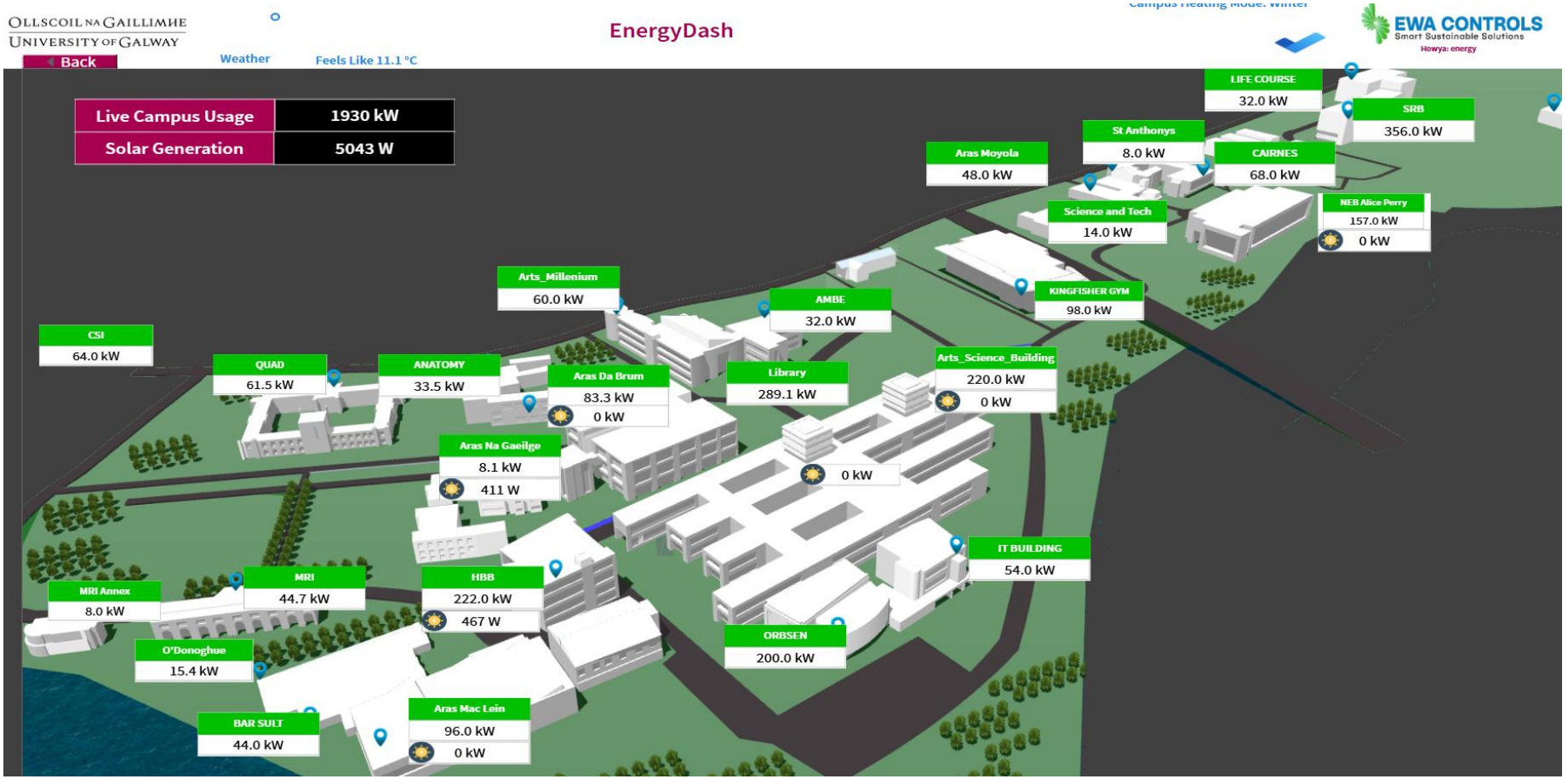
An estimate of University of Galway's future energy usage and consumption has been carried out. 10 years, historical data, was used to carry out these estimates. As predicted the energy usage and consumption decreased during 2024 due to the increased use of on-site renewable energy capacity and the effectiveness of the EnMS- Energy Management System. The expected energy usage and performance is used to carry out a budget for energy costs during 2026 and beyond. That increase is factored into the predicted energy use as outlined on the figures included in Table 7, as below. Additionally, the predicted

energy consumption is itemised and potential factors that will increase energy usage (more students, research intensity, ventilation rates and occupancy strategies) are accommodated. We are predicting that energy usage during 2025 will be slightly lower than 2024. We also increased the level of PV electricity production to reflect our year-to-date PV related energy production data. From 2023 on we are targeting a reduction in energy use and consumption by 3% per annum and are planning an increase in solar thermal by 5% per annum and an increase in PV electrical generation by15% per annum.

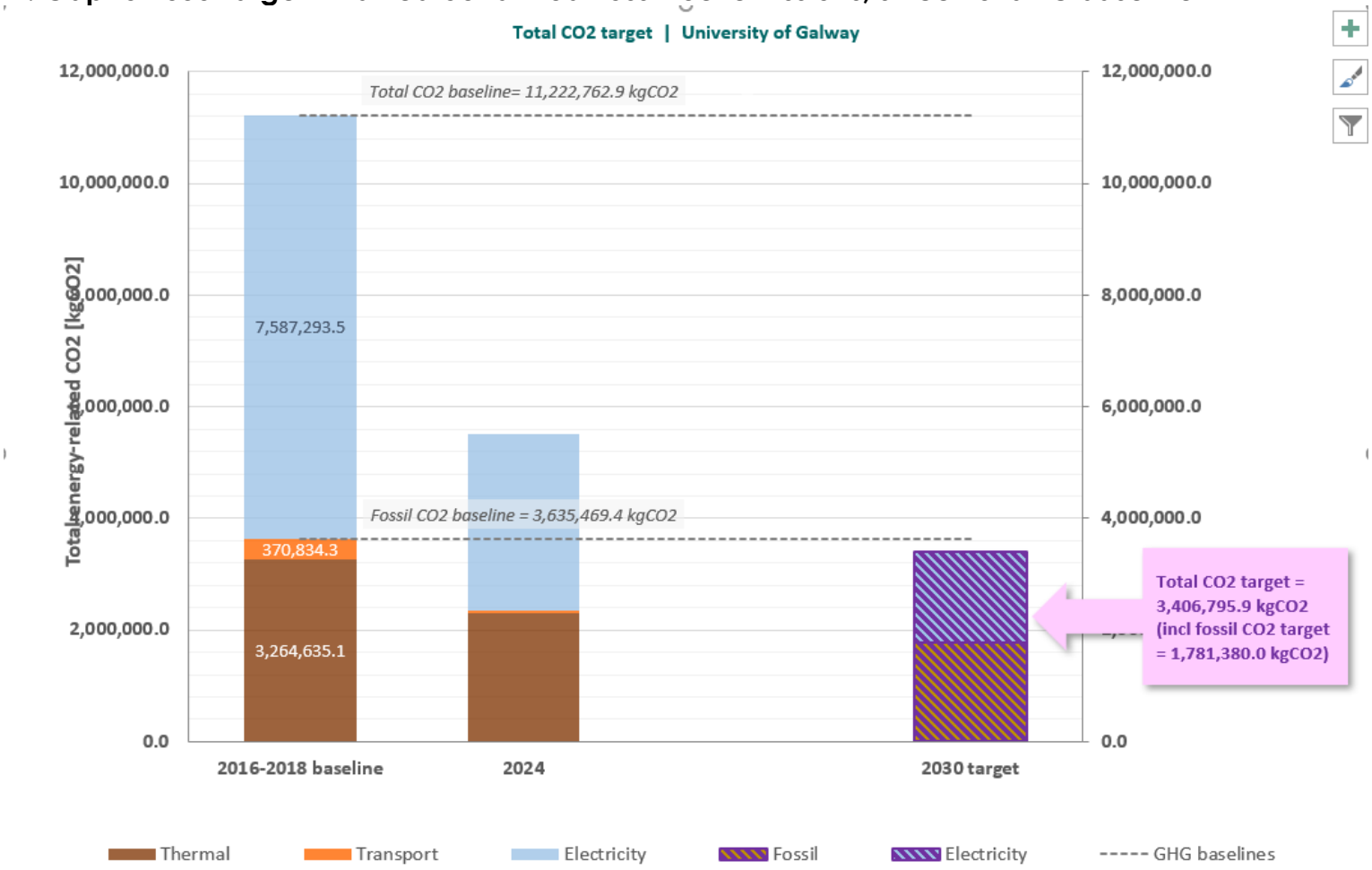
Table 7: estimate of future energy usage, generation, and consumption.

Estimate of Future Energy Usage and Consumption				
MWh -Usage	2024	2025	2026	2027
Electricity	12,021	11,660	11,311	10,971
Electricity Generated on-site from PV	294	338	389	447
Gas	11,700	11,349	11,009	10,678
LPG	490	475	461	447
Gasoil	153	148	144	140
Wood Fuels	778	755	732	710
Solar Thermal	75	79	83	87
Road Diesel	12	12	12	11
HVO	10.30	9.99	9.69	9.40
Total	25,534	24,827	24,149	23,501
EnPi -Consumption				
Total - KWh/M2	186.30	180.71	175.29	170.03
Conversion factors to calculate the Total Primary Energy Equivalent will change every year				

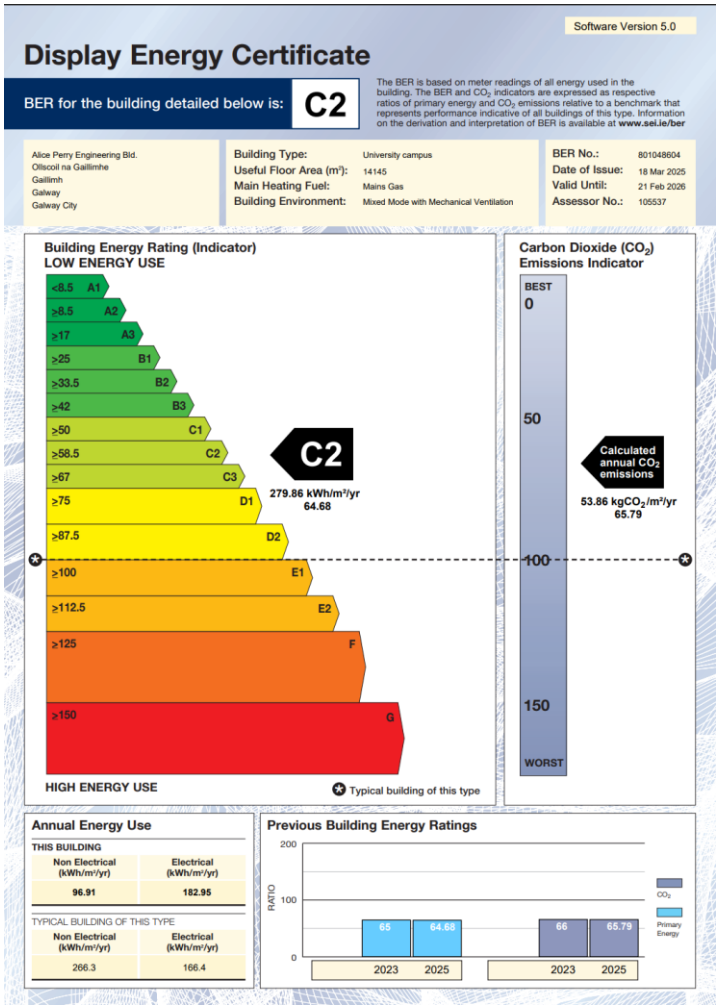
Appendix A: The Energy 'Dashboard' is an effective communication tool to promote energy efficiency



Appendix B: Gap to 2030 Target – halved our annual fossil fuel emissions, since 2016-18 baseline



Appendix C: Display Energy Certificates



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **C2**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Alice Perry Engineering Bld.
Ollscoil na Gaillimhe
Gaillimh
Galway
Galway City

Building Type:	University campus
Useful Floor Area (m^2):	14145
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801048604
Date of Issue:	18 Mar 2025
Valid Until:	21 Feb 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

<8.5 A1
≥8.5 A2
≥17 A3
≥25 B1
≥33.5 B2
≥42 B3
≥50 C1
≥58.5 C2
≥67 C3
≥75 D1
≥87.5 D2
≥100 E1
≥112.5 E2
≥125 F
≥150 G

C2
279.86 kWh/m²/yr
64.68

HIGH ENERGY USE
Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

BEST 0
50
100
150
WORST

Calculated annual CO_2 emissions
53.86 kgCO_2/m²/yr
65.79

Annual Energy Use

THIS BUILDING

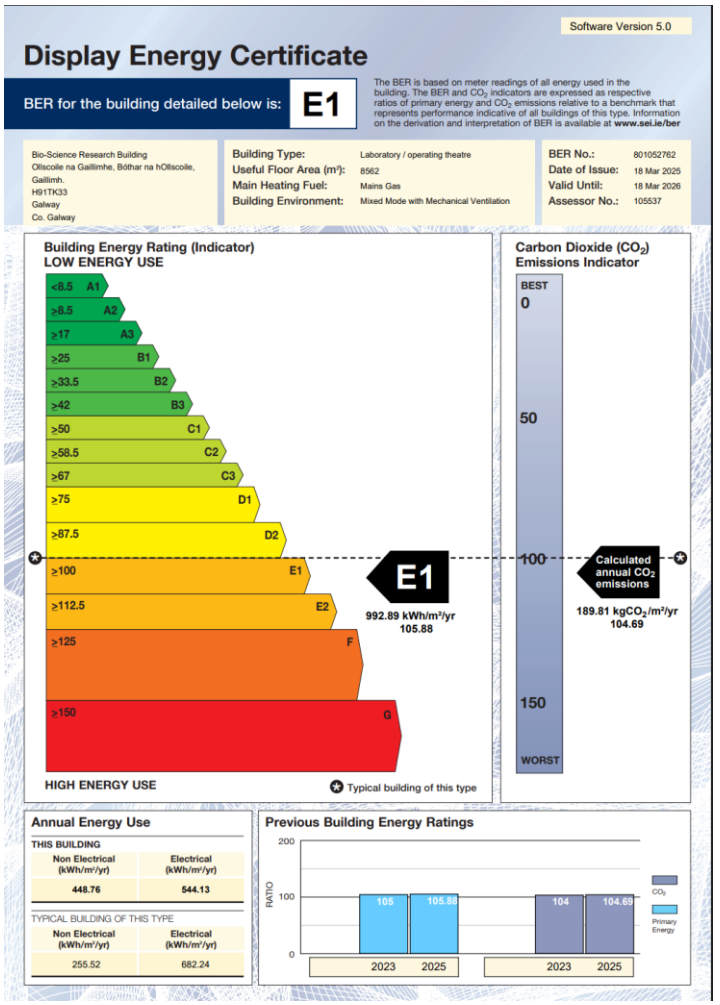
Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
96.91	182.95

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
266.3	166.4

Previous Building Energy Ratings

RATIO: 200, 100, 0
CO_2: 65, 66
Primary Energy: 64.68, 65.79
2023 2025 2023 2025



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **E1**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Bio-Science Research Building
Ollscoile na Gaillimhe, Bóthar na hOllscoile,
Gaillimh.
H91TK33
Galway
Co. Galway

Building Type:	Laboratory / operating theatre
Useful Floor Area (m^2):	8562
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801052762
Date of Issue:	18 Mar 2025
Valid Until:	18 Mar 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

<8.5 A1
≥8.5 A2
≥17 A3
≥25 B1
≥33.5 B2
≥42 B3
≥50 C1
≥58.5 C2
≥67 C3
≥75 D1
≥87.5 D2
≥100 E1
≥112.5 E2
≥125 F
≥150 G

E1
992.89 kWh/m²/yr
105.88

HIGH ENERGY USE
Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

BEST 0
50
100
150
WORST

Calculated annual CO_2 emissions
189.81 kgCO_2/m²/yr
104.69

Annual Energy Use

THIS BUILDING

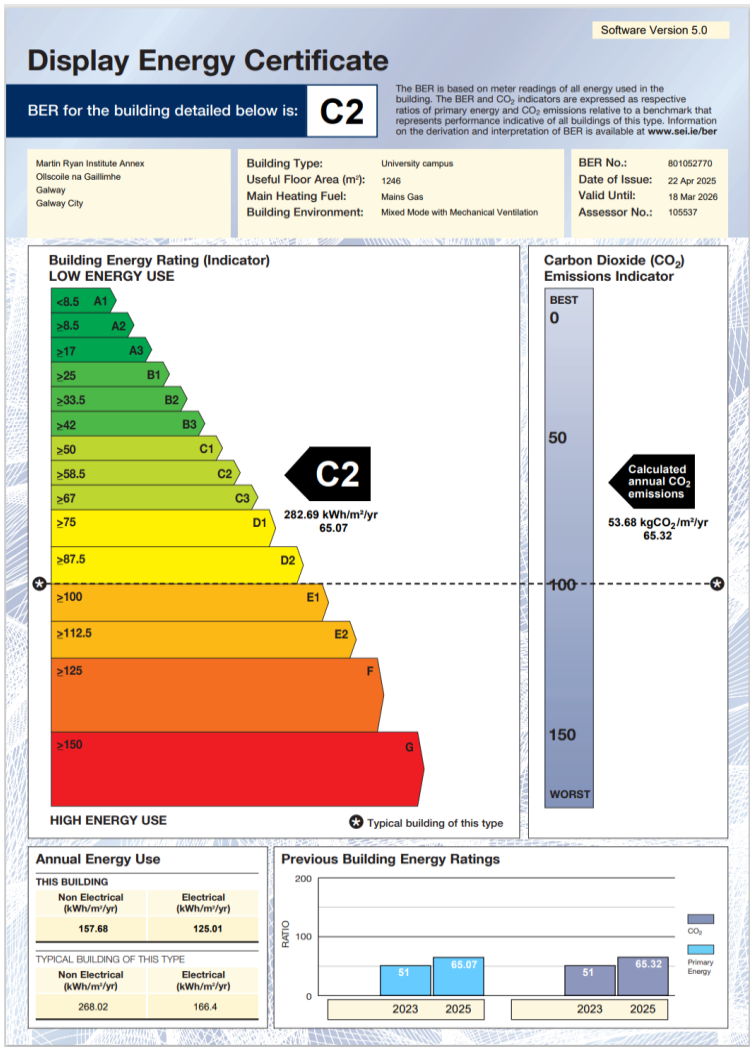
Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
448.76	544.13

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
255.52	682.24

Previous Building Energy Ratings

RATIO: 200, 100, 0
CO_2: 105, 104
Primary Energy: 105.88, 104.69
2023 2025 2023 2025



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **C2**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Martin Ryan Institute Annex
Ollscoile na Gaillimhe
Galway
Galway City

Building Type:	University campus
Useful Floor Area (m^2):	1246
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801052770
Date of Issue:	22 Apr 2025
Valid Until:	18 Mar 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

Carbon Dioxide (CO_2) Emissions Indicator

Annual Energy Use

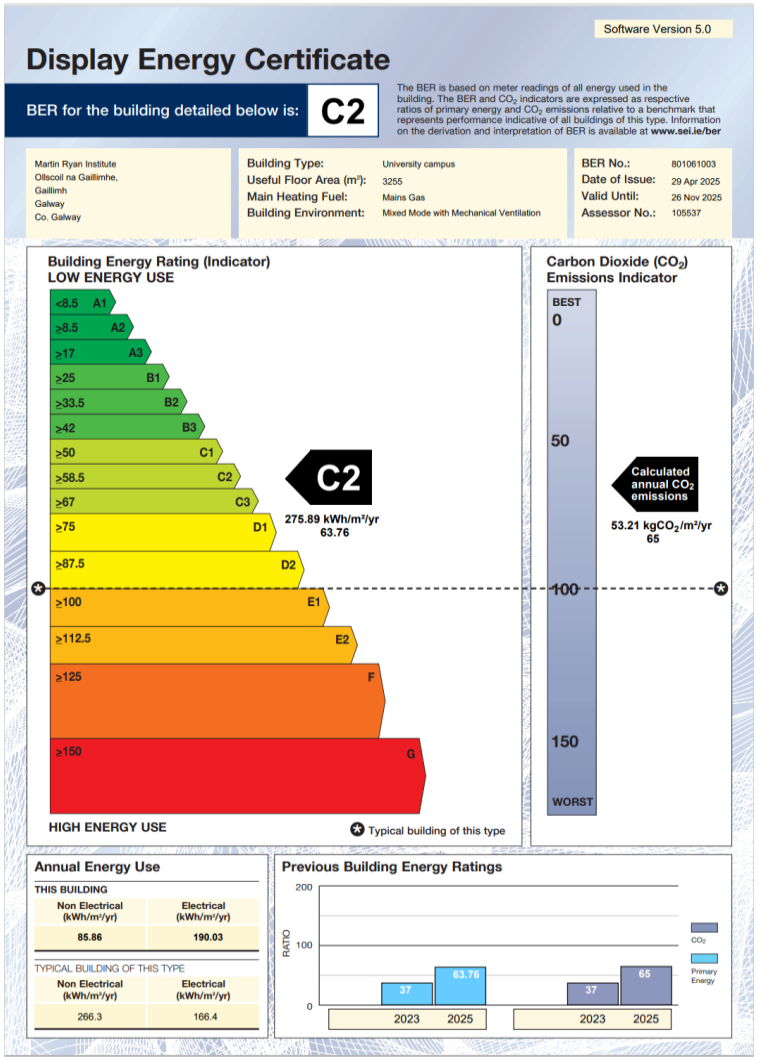
THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
157.68	125.01

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
268.02	166.4

Previous Building Energy Ratings



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **C2**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Martin Ryan Institute
Ollscoil na Gaillimhe,
Gaillimh
Galway
Co. Galway

Building Type:	University campus
Useful Floor Area (m^2):	3255
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801061003
Date of Issue:	29 Apr 2025
Valid Until:	26 Nov 2025
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

Carbon Dioxide (CO_2) Emissions Indicator

Annual Energy Use

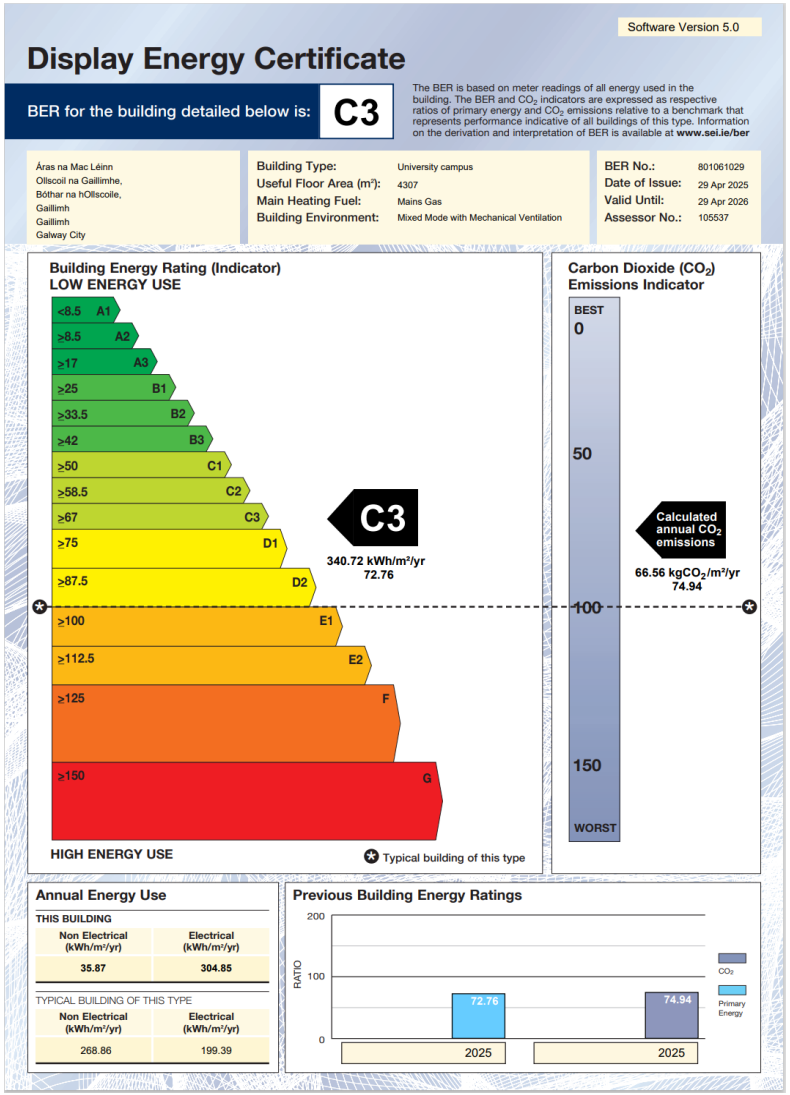
THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
85.86	190.03

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
266.3	166.4

Previous Building Energy Ratings



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **C3**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Áras na Mac Léinn
Ollscoil na Gaillimhe,
Bóthar na hOllscoile,
Gaillimh
Gaillimh
Galway City

Building Type:	University campus
Useful Floor Area (m^2):	4307
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801061029
Date of Issue:	29 Apr 2025
Valid Until:	29 Apr 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

Carbon Dioxide (CO_2) Emissions Indicator

Annual Energy Use

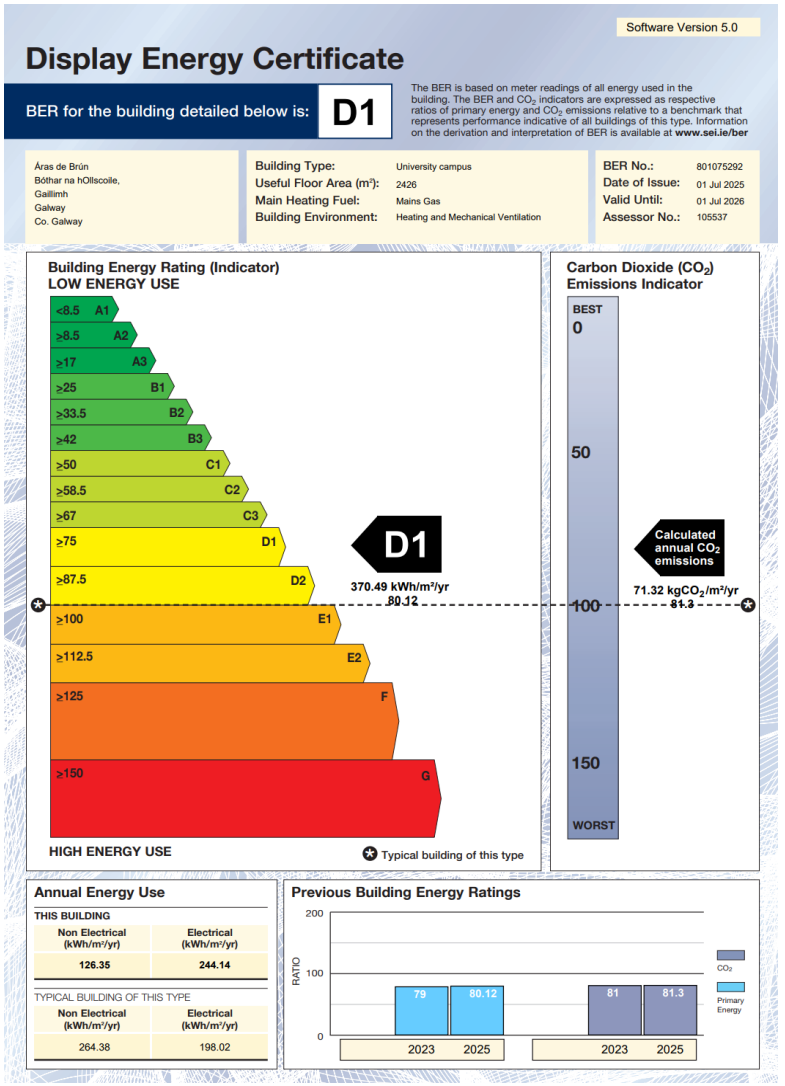
THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
35.87	304.85

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
268.86	199.39

Previous Building Energy Ratings



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **D1**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Áras de Brún
Bóthar na hOllscoile,
Gaillimh
Galway
Co. Galway

Building Type:	University campus
Useful Floor Area (m^2):	2426
Main Heating Fuel:	Mains Gas
Building Environment:	Heating and Mechanical Ventilation

BER No.:	801075292
Date of Issue:	01 Jul 2025
Valid Until:	01 Jul 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

Carbon Dioxide (CO_2) Emissions Indicator

Annual Energy Use

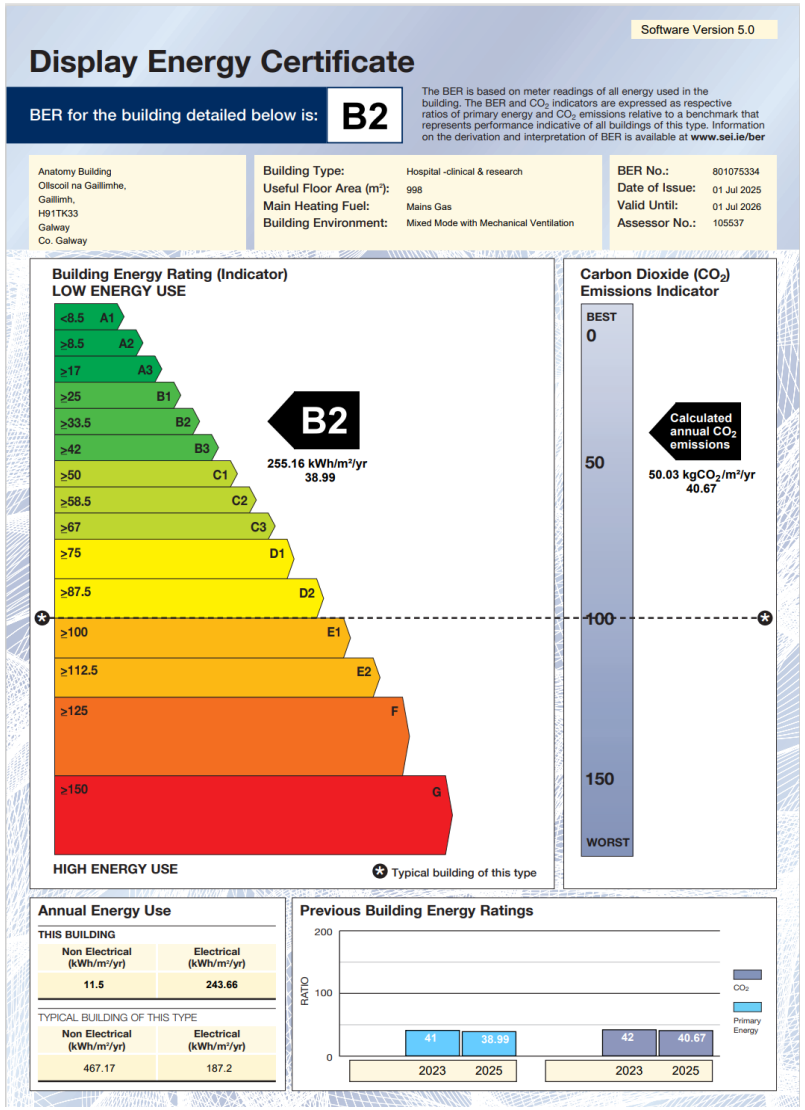
THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
126.35	244.14

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
264.38	198.02

Previous Building Energy Ratings



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **B2**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Anatomy Building
Ollscoil na Gaillimhe,
Gaillimh,
H91TK33
Galway
Co. Galway

Building Type:	Hospital -clinical & research
Useful Floor Area (m^2):	998
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801075334
Date of Issue:	01 Jul 2025
Valid Until:	01 Jul 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

<8.5 A1
≥8.5 A2
≥17 A3
≥25 B1
≥33.5 B2
≥42 B3
≥50 C1
≥58.5 C2
≥67 C3
≥75 D1
≥87.5 D2
≥100 E1
≥112.5 E2
≥125 F
≥150 G

B2
255.16 kWh/m²/yr
38.99

HIGH ENERGY USE

Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

BEST 0
50
100
150
WORST

Calculated annual CO_2 emissions
50.03 kgCO_2/m²/yr
40.67

Annual Energy Use

THIS BUILDING

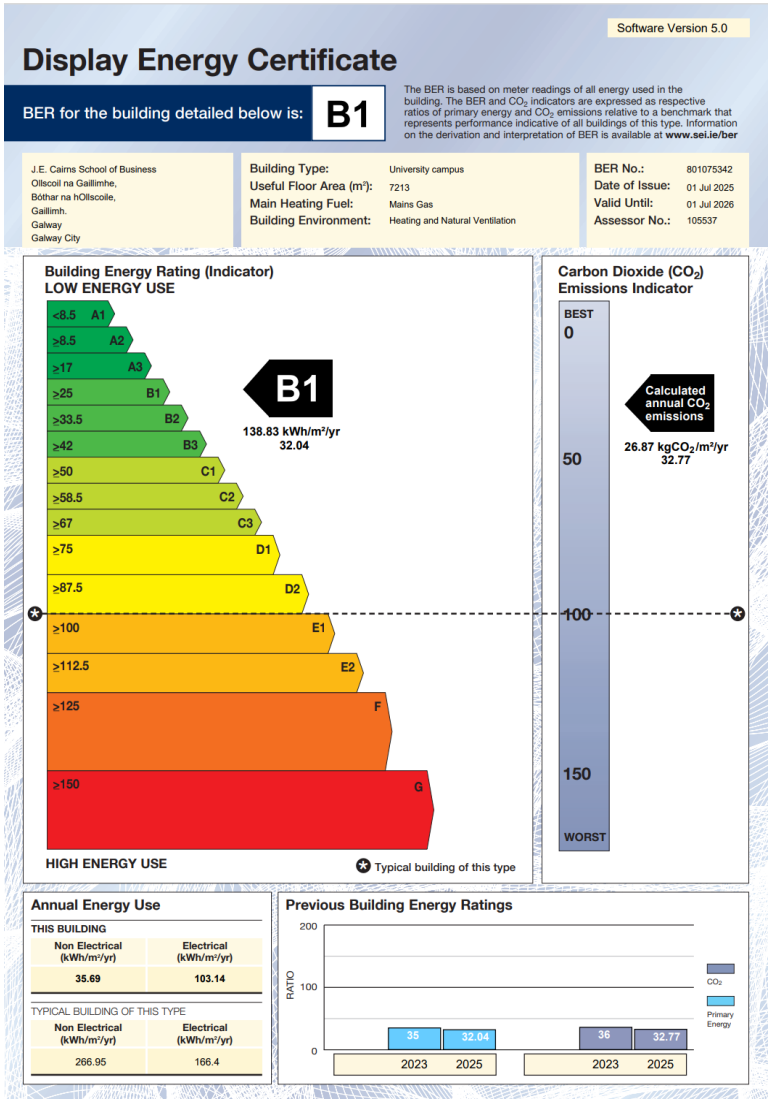
Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
11.5	243.66

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
467.17	187.2

Previous Building Energy Ratings

RATIO: 200, 100, 0
2023: 41, 38.99
2025: 42, 40.67
CO_2
Primary Energy



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **B1**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

J.E. Cairns School of Business
Ollscoil na Gaillimhe,
Bóthar na hOllscoile,
Gaillimh.
Galway
Galway City

Building Type:	University campus
Useful Floor Area (m^2):	7213
Main Heating Fuel:	Mains Gas
Building Environment:	Heating and Natural Ventilation

BER No.:	801075342
Date of Issue:	01 Jul 2025
Valid Until:	01 Jul 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

<8.5 A1
≥8.5 A2
≥17 A3
≥25 B1
≥33.5 B2
≥42 B3
≥50 C1
≥58.5 C2
≥67 C3
≥75 D1
≥87.5 D2
≥100 E1
≥112.5 E2
≥125 F
≥150 G

B1
138.83 kWh/m²/yr
32.04

HIGH ENERGY USE

Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

BEST 0
50
100
150
WORST

Calculated annual CO_2 emissions
26.87 kgCO_2/m²/yr
32.77

Annual Energy Use

THIS BUILDING

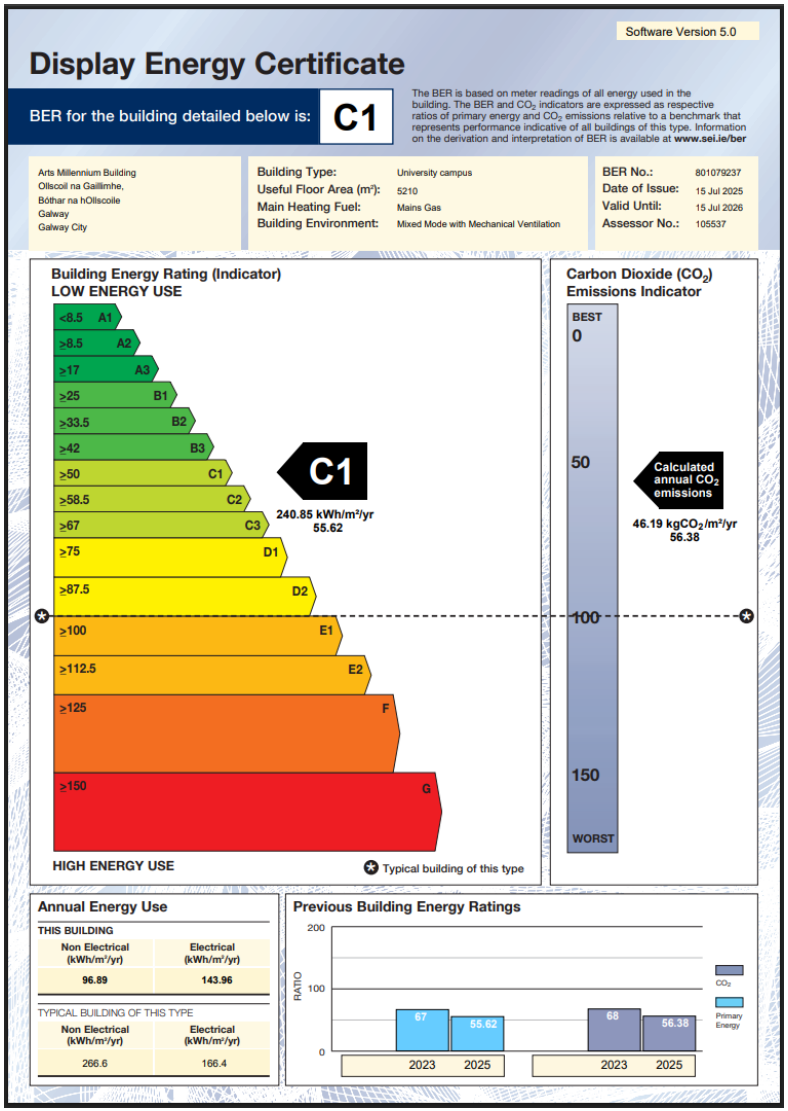
Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
35.69	103.14

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
266.95	166.4

Previous Building Energy Ratings

RATIO: 200, 100, 0
2023: 35, 32.04
2025: 36, 32.77
CO_2
Primary Energy



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **C1**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Arts Millennium Building
Ollscoil na Gaillimhe,
Bóthar na hOllscoile
Galway
Galway City

Building Type:	University campus
Useful Floor Area (m^2):	5210
Main Heating Fuel:	Mains Gas
Building Environment:	Mixed Mode with Mechanical Ventilation

BER No.:	801079237
Date of Issue:	15 Jul 2025
Valid Until:	15 Jul 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

HIGH ENERGY USE

Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

Annual Energy Use

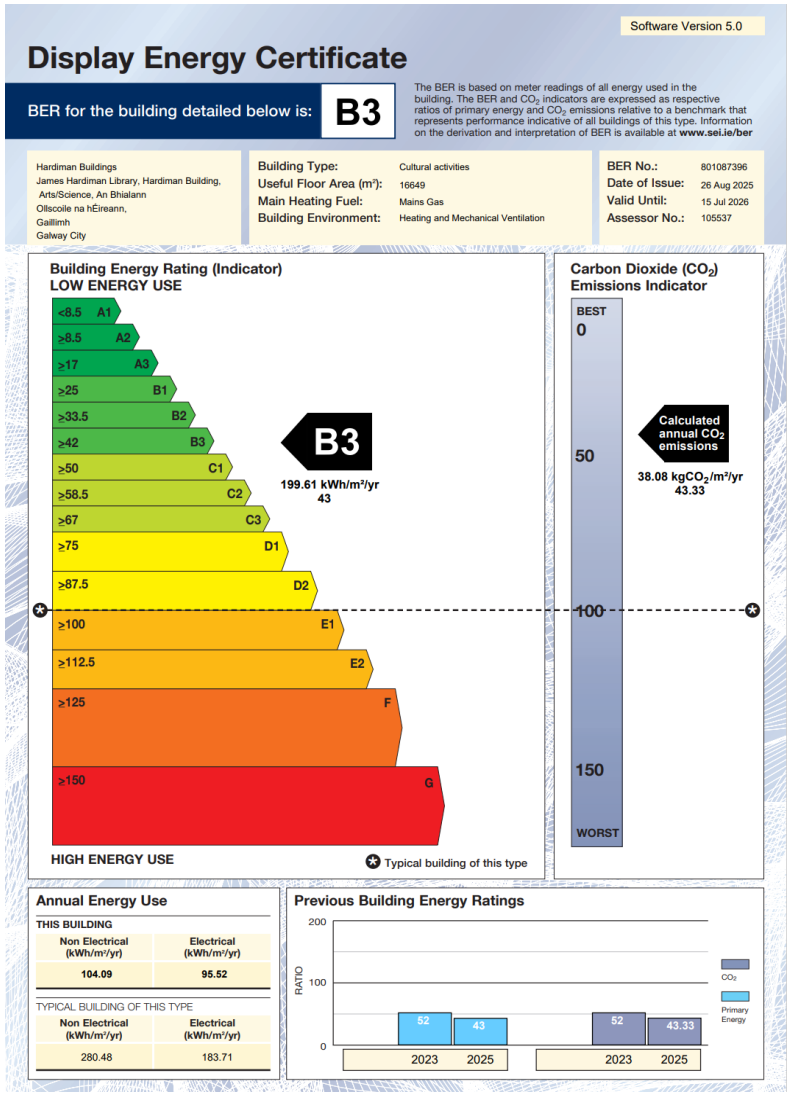
THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
96.89	143.96

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
266.6	166.4

Previous Building Energy Ratings



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **B3**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Hardiman Buildings
James Hardiman Library, Hardiman Building,
Arts/Science, An Bhialann
Ollscoile na hÉireann,
Gaillimh
Galway City

Building Type:	Cultural activities
Useful Floor Area (m^2):	16649
Main Heating Fuel:	Mains Gas
Building Environment:	Heating and Mechanical Ventilation

BER No.:	801087396
Date of Issue:	26 Aug 2025
Valid Until:	15 Jul 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

HIGH ENERGY USE

Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

Annual Energy Use

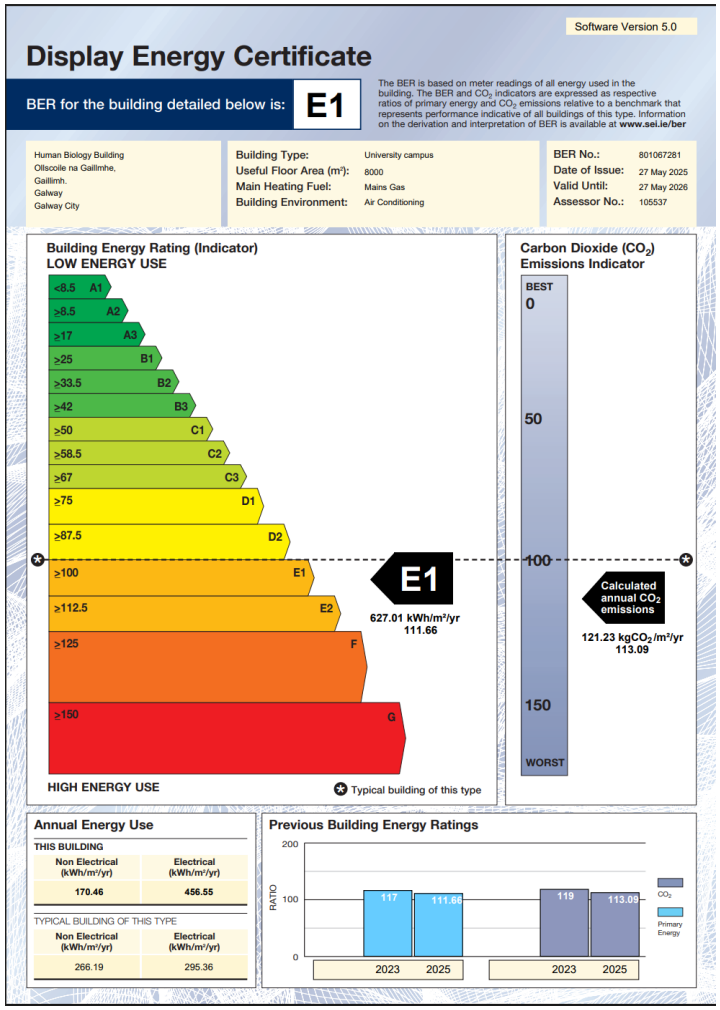
THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
104.09	95.52

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
280.48	183.71

Previous Building Energy Ratings



Software Version 5.0

Display Energy Certificate

BER for the building detailed below is: **E1**

The BER is based on meter readings of all energy used in the building. The BER and CO_2 indicators are expressed as respective ratios of primary energy and CO_2 emissions relative to a benchmark that represents performance indicative of all buildings of this type. Information on the derivation and interpretation of BER is available at **www.sei.ie/ber**

Human Biology Building
Ollscoile na Gaillimhe,
Gaillimh.
Galway
Galway City

Building Type:	University campus
Useful Floor Area (m^2):	8000
Main Heating Fuel:	Mains Gas
Building Environment:	Air Conditioning

BER No.:	801067281
Date of Issue:	27 May 2025
Valid Until:	27 May 2026
Assessor No.:	105537

Building Energy Rating (Indicator)
LOW ENERGY USE

<8.5 A1
≥8.5 A2
≥17 A3
≥25 B1
≥33.5 B2
≥42 B3
≥50 C1
≥58.5 C2
≥67 C3
≥75 D1
≥87.5 D2
≥100 E1
≥112.5 E2
≥125 F
≥150 G

HIGH ENERGY USE

E1
627.01 kWh/m²/yr
111.66

Typical building of this type

Carbon Dioxide (CO_2) Emissions Indicator

BEST
0
50
100
150
WORST

Calculated annual CO_2 emissions
121.23 kgCO_2/m²/yr
113.09

Annual Energy Use

THIS BUILDING

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
170.46	456.55

TYPICAL BUILDING OF THIS TYPE

Non Electrical (kWh/m²/yr)	Electrical (kWh/m²/yr)
266.19	295.36

Previous Building Energy Ratings

Appendix D: Hosted the Annual Public Sector Conference – 15th May 2025

seai Sustainable Energy Authority of Ireland

Rialtas na hÉireann
Government of Ireland

Public Sector
Energy Conference

Thursday, 15th May, 2025
University of Galway

UPSCALING BUILDING DECARBONISATION

CONFERENCE FORMAT

THIS FREE EVENT FOR PUBLIC SECTOR ENERGY LEADERS INCLUDES:

Plenary Opening Session

- Opening addresses.
- Panel discussion on what is required to upscale the delivery of projects to achieve the targets, at government level.
- Panel discussion on the practical application of this vision within key sectoral building portfolio areas.

Afternoon Sectoral Breakout Sessions

Focusing on sectoral plans for building stock and what each public body needs to do to achieve the 2030 targets.

Indoor Exhibitor Area

Exhibitors include:

- OPW's Optimising Power @ Work;
- Office of Government Procurement;
- Local Government Operational Procurement Centre;
- Energy Suppliers under the Energy Efficiency Obligation Scheme (EEOS);
- SEAI programmes and support teams.

AGENDA

09:30 – 10:30	**Registration, Networking & Refreshments**
10:30 – 12:30	**Plenary session**
12:30 – 13:45	**Networking Lunch**
13:45 – 15:45	**Sectoral Breakout Sessions**
16:00	**Conference Close**

PLENARY SESSION

Ministerial Address:
Darragh O'Brien, Minister for Transport, Environment and Energy

Conference Opening:
William Walsh, CEO, SEAI

2 PANEL DISCUSSIONS

Panel 1 includes:

Departmental Officials from the Department of the Environment, Climate and Communications and William Walsh, SEAI.

Panel 2 includes:

- **Declan Meally**, Director of Business, Public Sector and Transport, SEAI;
- **Brian O'Connell,** National Director, Head of Strategic Health Infrastructure and Capital Delivery, HSE;
- **Hubert Loftus**, Assistant Sec Gen, Department of Education;
- **Speaker, OPW** (TBC);
- **Paul Lemass**, Assistant Sec Gen, Department of Further and Higher Education, Research, Innovation and Science;
- **Robert Burns**, CE, Monaghan County Council.

FACILITATOR:
Kathriona Devereux
Science Communicator and Broadcaster

Kathriona Devereux is an award winning broadcaster, science communicator and columnist. Kathriona has twenty years' experience in front of and behind the camera presenting and producing a range of factual programming for RTÉ, Virgin Media Television, BBC and ARTE.

AFTERNOON SECTORAL BREAKOUT SESSIONS

7 BREAKOUT SESSIONS

There will be 7 breakout sessions to choose from.

The first 5 are sectoral based and attendees will hear in more detail the strategic plans for that sector and the role and responsibility of each public body to achieve the goal.

The latter 2 will focus more on the 'approach' to building decarbonisation – i.e. leased offices will focus on low/no cost measures & negotiating with landlords, while owned offices will focus on retrofit solutions.

Some public bodies from the key sectors may wish to bring additional representatives to attend the latter 2 sessions also.

The afternoon breakout sessions are:

- **Health Sector**
- **OPW/Central Government**
- **Local Authorities**
- **3rd Level Education Sector (under DFHERIS)**
- **Commercial Semi-States (designated to NewERA)**
- **Government Agencies in owned buildings (focus on buildings that need to be retrofit to a high level & solutions to achieve this)**
- **Government Agencies in leased buildings (focus on predominantly no/low cost measures in a leased building situation)**

WHY SHOULD YOU ATTEND?

The Public Sector Energy Conference has become the largest and most important networking event for those involved in public sector energy management. It is aimed at leadership level and focuses on strategic planning, sharing, learning and networking.

The key aims and objectives of the conference are:

- To provide a forum for key policymakers, planners and practitioners to discuss their vision for and experience of decarbonising the public sector building stock.
- To recognise those sectors who are actively planning roadmaps and delivering projects towards the 2030 targets and beyond.
- To inspire others by highlighting success stories, potential solutions and key actions which are helping Ireland deliver on it's ambitious targets.
- To motivate all public bodies to take responsibility for their own organisations individual targets and roadmap.
- To encourage public bodies to learn from each other, think bigger and actively collaborate to develop the pathways, solutions and funding to achieve the carbon and energy efficiency targets.

We are particularly interested in inviting:

- Chief Executives of public bodies.
- Energy Performance Officers at Departmental level and nominated by public bodies.
- Energy managers or those responsible for energy management in public bodies.
- Estate managers or those responsible for the retrofit of building stock.
- Key members of energy project teams within public bodies, those responsible for M&R and those interested in energy management or energy saving opportunities within public bodies* are also welcome to attend

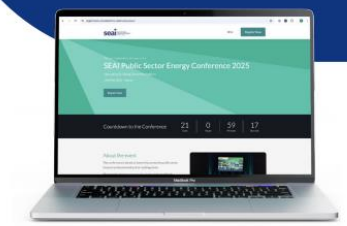
* *Note that this event is for public sector personnel only, or for those invited by public bodies to attend on their behalf. Only public sector personnel can attend the sectoral breakout sessions.*

HOW TO REGISTER

All those attending the conference must register in advance.

Attendees must choose their afternoon breakout session at time of registering.

CLICK TO REGISTER



GETTING THERE

The University of Galway is holding a number of rooms in their newest campus accommodation for delegates who wish to travel up the night before.

The accommodation rate for Dunlin Village is €87.50 per room per night, based on single occupancy. To reserve a room please click the button below:

RESERVE A ROOM

Those travelling on the day of the conference have a number of public transport options via rail or bus. SEAI also plans to run a number of commuter coaches from key locations. Please indicate your interest in reserving a seat on a coach at time of registration.

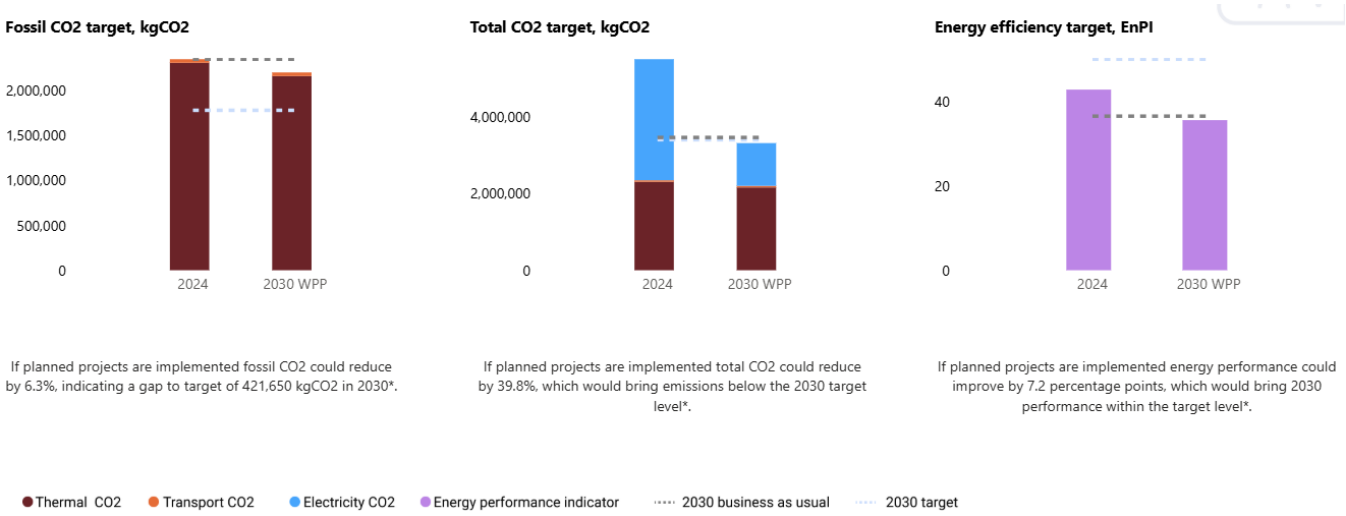
To view the sustainable travel plan click here.

Contact **publicsector@seai.ie** with any queries.

seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Rialtas na hÉireann
Government of Ireland

Appendix E: Fossil, CO2 and EE target, EnPI



Appendix F Supplementary Energy usage information - 2024

Fuel	2024			Additional Information
	Quantity [kWh]	Spend (Est.)	CO2 Emissions (kg.)	
Electricity Imports	12,021,330	€3,005,333	3,971,847	AUP 25c per kWh e
Electricity Generated on-site from PV	294,481	-€73,620	-97,297	397,475 kWh (generated Year to date - 2025)
Gas Imports	11,700,212	€1,287,023	2,373,973	AUP 11 c per kWh(th)
LPG	490,681	€64,917	112,513	AUP 5.35c per kWh (th) @ a rate of 7.1 kWh per Litre - Set to double during 2023
Gasoil - Kerosene & Heating	153,348	€16,831	38,628	AUP 11c per kWh @ a rate of 10.1 kWh per Litre
Wood pellets	777,600	€62,208	0	162 Tonnes @ €0.384 per kg. Quad Biomass Boiler
Solar Thermal	75,000	-€7,500	-18,893	Negative cost @ say 10c /kWh
Road Diesel	12,420	€1,379	3,278	AUP 10.35 kWh/Lt 1,200 Lt
Biofuel -HVO	10,350	€1,071	0	AUP 10.35 kWh/Lt 1,000 Lt
Total	**25,535,422**	**€4,438,762**	**6,500,240**	
Total Primary Energy Requirement	35,951,434			From M&R
Total Primary Energy Requirement - CO2 emissions			5,531,756	From M&R

Appendix G: SEAI Conversion Factors 2024

Energy conversion and emission facto 2024

Unless otherwise stated, all values are based on net calorific value (NCV).

Liquid	Energy content			Emission factor				Density	Specific vol.	PE factor	Note	Year
	toe/t	MJ/kg	MJ/l	gCO2/kWh	gCO2/MJ	kgCO2/kg	kgCO2/l	kg/m^3	l/t	-		
Petroleum												
Crude oil	1.023	42.81	40.13	264.0	73.33	3.140	2.943	937	1,067	-		2024
Gasoline / petrol (100% petroleum	1.065	44.59	33.03	251.9	69.96	3.119	2.311	741	1,350	1.1		2024
Kerosene	1.056	44.20	35.36	257.0	71.39	3.155	2.524	800	1,250	1.1		2024
Jet Kerosene	1.053	44.10	35.28	257.0	71.39	3.148	2.519	800	1,250	1.1		2024
Diesel / gasoil (100% petroleum)	1.034	43.31	36.60	263.9	73.30	3.174	2.682	845	1,183	1.1		2024
Residual fuel oil / fuel oil	0.985	41.24	38.83	273.6	76.01	3.134	2.951	942	1,062	1.1		2024
LPG	1.126	47.16	24.62	229.3	63.69	3.003	1.568	522	1,915	1.1	Assumes a mixture of 70% propane & 30% butane by mass	2024
Biofuel / bioliquid												
Biodiesel HVO	1.051	44.00	34.00	-	-	-	-	773	1,294	1.1	Hydrotreated vegetable oil	2024
Biomass												
Wood pellets & briquettes	0.413	17.28		-	-	-				1.1		2024
Wood logs & chips	0.313	13.11		-	-	-				1.1	Assumes 25% moisture content	2024

Gas	Energy content		Emission factor			PE factor	Note	Year
	MJ/m^3		gCO2/kWh	gCO2/MJ	kgCO2/m^3	-		
Natural gas (GCV)	39.03		183.9	51.07	1.993	1.1	GCV updated for 2024.	2024
Natural gas (NCV)	35.20		203.8	56.62	1.993	1.1	NCV updated for 2024.	2024

Electricity	Emission factor		PE factor	Note	Year
	gCO2/kWh	gCO2/MJ	-		
Electricity consumption	226.3	62.85	1.785		2024
Gross electricity supply	204.3	56.76	1.619		2024

Accessed on the WWW on 30th September 2025