

# Climate Action Roadmap

Public Sector Climate Action Mandate - PSCAM

Q4 2024 / Q1 2025

“ Buildings have long lifetimes. Therefore, it is important that decisions made by public bodies now consider the long-term viability of building portfolios, and of specific buildings, in the context of progressively more restrictive carbon constraints in the 2030s and 2040s. Public bodies should critically review their building portfolios in the context of the targets and their long-term accommodation needs. This should inform a strategic approach to managing their portfolios over the next decade, and beyond. Public bodies should only retain buildings that can meet their accommodation needs in a carbon-constrained environment. Public bodies must adopt an energy service culture. Identifying what accommodation is required to provide the service will firstly require challenging the need for the service and whether a building is needed to provide it, and if required, what is the minimum energy needed to provide the service.” *(Public Sector Climate Action Strategy 2023-25; p.23)*

Climate Action Roadmap – City of Dublin Education & Training Board

Iteration	Date	Board Approval
1	Q4/24-Q1/25	16/01/2025

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## Executive Summary

As of our latest reported data over 99% of City of Dublin ETB's CO2 emissions relate directly to our buildings and the manner in which we heat and power these building to deliver an extensive range of educational and community services.

City of Dublin ETB has undertaken a detailed exercise to quantify and analyse the existing energy and emissions profile of our diverse built estate and this analytical exercise underpins the roadmap to achieving those targets that is presented here.

The road is not without widely acknowledged challenges. Significant investments will be required and these investments will need to be strategically considered and directed.

As a foundation for those strategic decisions and investments the roadmap presented here has modelled an ambitious estate-wide energy management / reduction program that maps almost 30% of the road. City of Dublin ETB will resource the Training, Green Teams and Structures that will be required to deliver those reductions over the coming years and build on the progress already made.

The remaining 70% that has been modelled is partly illustrative, dependent as it is on external stakeholder funding. Live and large scale active building / refurbishment projects have been modelled. Active Minor building and refurbishment projects have been modelled and these minor projects have been further leveraged within the model to demonstrate further reductions.

The significant remaining reductions required are modelled for the purposes of identifying and emphasizing the significant level of fossil fuel energy demand that needs to be eliminated or transitioned to an appropriate renewable heating regime.

On the School side, which is subject to a separate mandate, the road map identifies large energy consumption profiles where investments will be needed to achieve required fossil fuel energy demand reduction.

On the Further Education side, the intent of the roadmap is to inform further iterations of City of Dublin ETB's developing FET Estate Strategy as it seeks to refine that strategy, in partnership with all stakeholders, to define an ideal built estate that aligns with the ambition to remain world leaders in this sector, while recognising the realities of a "carbon constrained environment".

# 1 Introduction

## 1.1 Organisational Context

City of Dublin ETB was established on 1st July 2013 under the Education and Training Boards Act, 2013. We are the state education and training authority for Dublin with over 3,000 staff who provide education and training opportunities for over 50,000 people across Dublin city.

We do this through running Community National Schools, Community Special Schools, Community Hospital Schools and 11 Community Colleges across the city. Our City of Dublin FET College operates across four campuses in the city providing PLC, apprenticeships, traineeships and a range of further education and training opportunities for adults.

We are also responsible for SUSI, the national awarding authority for student grants in Ireland., City of Dublin ETB supports the provision, coordination, administration and assessment of Youth Services in Dublin city and is the lead partner in Music Generation Dublin City.

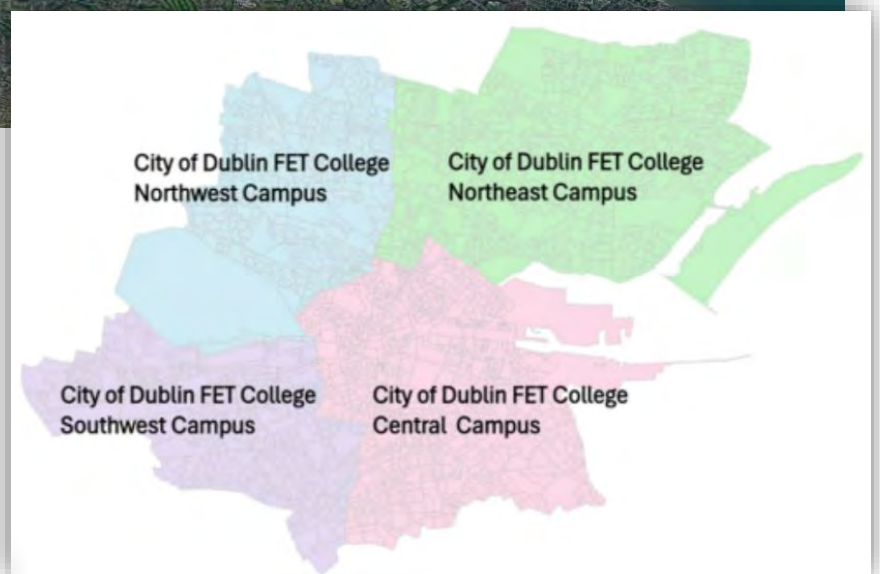
This provision is supported by a range of services including a psychological service, a curriculum development unit, a buildings maintenance unit and the Head Office administrative staff in Ballsbridge.



Above shows the geographic spread of selected buildings within the limits of Dublin's M50.

- FET Buildings
- School Buildings
- Admin & Support Buildings

**To the Right shows the Estate Strategy shift to a campus model of provision within the Further Education Sector**



## 2 Our People – Leadership and Governance

### 2.1 Senior Management Commitment

While recognising significant challenges ahead, City of Dublin ETB's Senior Management Team are committed to meeting their obligations under the Public Sector Climate Action Mandate (PSCAM).

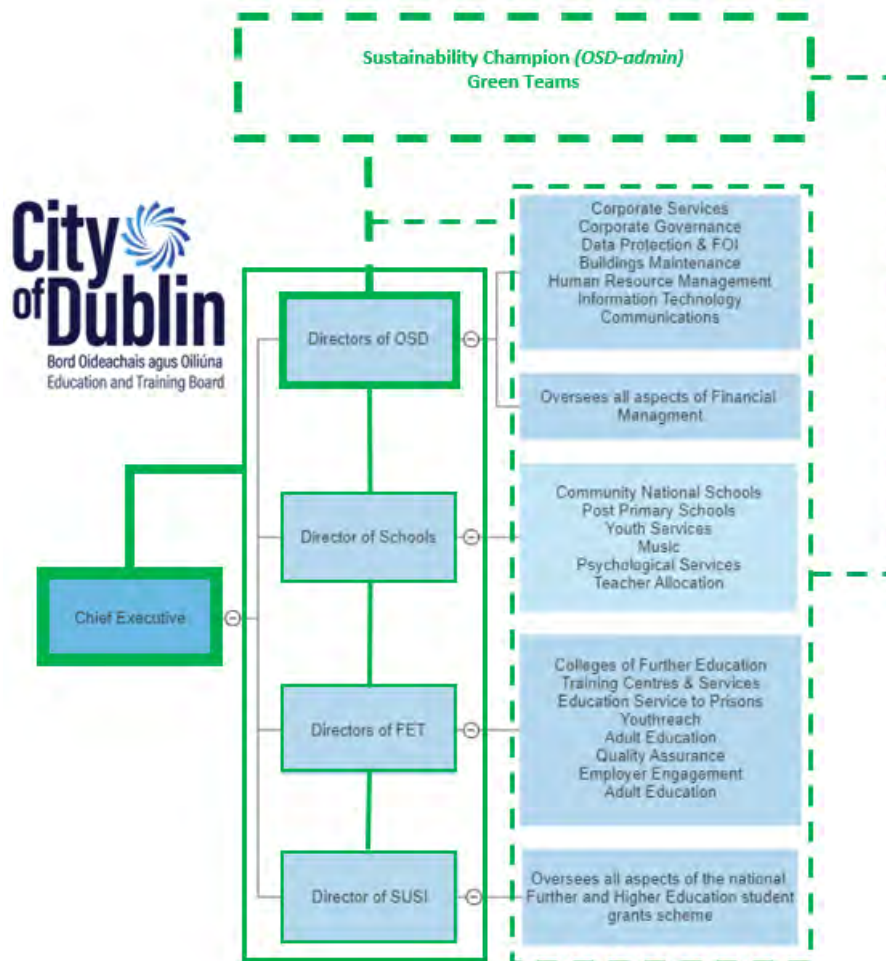
City of Dublin ETB have signed a partnership agreement with the Sustainable Energy Authority of Ireland (SEAI) committing to:

- Working with SEAI to achieve our 2030 and 2050 energy decarbonisation targets and deliver on the wider Public Sector Mandate.
- Embedding an energy management programme appropriate to the size of our organisation
- Developing a project pipeline towards 2030 energy decarbonisation targets and plan strategically towards achieving net zero by 2050.
- Reporting annually on our organisation and building stock energy performance.
- Working with SEAI to undertake an annual review of our energy management and energy decarbonisation actions.
- Reporting our energy efficiency and greenhouse gas emission reductions progress annually to SEAI.
- Considering energy efficiency and greenhouse gas emission reductions when procuring and designing equipment and facilities.
- Collaborating with SEAI to communicate the benefits of energy-related climate action.

### 2.2 Nominated Climate and Sustainability Champion

As mandated, City of Dublin ETB have nominated a member of the Senior Leadership Team as "Climate and Sustainability Champion". The Director of Organisation Support and Development (*OSD-admin*), as Champion, is working closely with the Senior Leadership Team, Buildings Team, and wider organisation, leveraging both in-house and external expertise to ensure that the significant challenges associated with the mandate are disseminated and understood across the organisation and to ensure that our working practices evolve and develop in alignment with the broad aims of the Climate Action Mandate.

## 2.3 Governance structure



## 2.4 Staff Training and Engagement

A broad range of training has been offered and undertaken by staff across the organization. Training includes , Energy in Education, Energy Map, Climate Action Certification, NZEB Fundamentals, SI 426 Audits...

City of Dublin ETB have developed a program at level 3 in climate justice and action. This has been made available to all ETBs to encourage a national approach. The handbook for the program was developed by City of Dublin ETB to support the tutors delivering the program.

In 2022 staff went on an Erasmus mobility to look at how SDGs are embedded into the FET centres and curriculum. A committee was established to develop a cohesive approach across the organisation.

## 2.5 Senior Leadership Training

Members of the Senior leadership Team have undertaken a range of training. Assisted by ETBI and IPA it is intended that all members of the Senior Leadership Team will undergo the “LA CARO” type Climate Action training by the end of Q1 2025.

## 2.6 Green Teams

The structure of Energy / Green teams are under review with a view to formalizing a charter that will underpin the implementation of the aims of the Climate Action Mandate. The initial focus will be directed towards an ambitious program of Energy Management across the organization that will be the foundation for future strategic decisions and investment required to meet the specific targets mandated

## 2.7 Staff Workshops

A series of staff workshops will be organised during the course of 2025 to ensure that the implications of the mandate’s specific emissions reduction and energy efficiency improvement targets are disseminated and understood across the organization as well as to ensure that the broader objectives of the mandate are embedded across the organisation.

# 3 Our Ways of Working

## 3.1 Energy and Environmental Management Systems and Accreditation.

City of Dublin ETB does not fall within the definition of a Large Public Body and as such does not require formal certification in environmental or energy management systems. However we are in the process of strengthening energy managements systems across the organisation and are working, on a sectoral level with ETBI and wider stakeholders, to leverage and strengthen resources to assist in that task.

## 3.2 Paper Based Processes

City of Dublin ETB maintains paper based processes under constant review.

In the last 2 years City of Dublin ETB has been successful in transitioning our Payroll, Human Resources, and Ordering and Invoicing management systems, from paper based processes to online cloud based systems.

## 3.3 Green Public Procurement

City of Dublin ETB includes environmental criteria in all major Tenders for Goods and Services.

City of Dublin ETB has a number of large scale Building Projects at development stage that will be realised over the next number of years. The requirements of Green public Procurement as it relates to Building Projects and in particular low carbon construction methods and the inclusion of low carbon cement will be followed where applicable.

## 3.4 Our vehicles

City of Dublin ETB’s reported transport emissions represent less than 1% of our total reported CO2 emissions. The emissions are from a number of maintenance support vehicles and school mini buses. In this iteration of the roadmap we have modelled an 80% reduction in the fossil fuel emissions associated with this transport.



## 4 CO2 Emissions – Target (kgCO2)

### 4.1 CO2 -Target reductions

Under the Public Sector Climate Action Mandate, City of Dublin ETB is required, by the year 2030, to reduce our CO2 Emissions by 51% from a fixed baseline of our average annual CO2 emissions for the years 2016-2018. This target must be achieved in the context of the longer term ambition of achieving a decarbonised building stock by 2050.

As of our latest 2022 data, approximately 99% of these CO2 emissions relate directly to our buildings and the manner in which we heat and power these buildings to support and deliver an extensive range of services. The remaining 1% of reported CO2 emissions relate to transport which was reported, as required to the M&R database for the first time in 2022.

City of Dublin ETB’s baseline CO2 emissions are our average annual emissions for the years 2016 to 2018. It is a fixed baseline from which a 51% reduction is required to be achieved by 2030 irrespective of how the organisation may grow and develop over the coming years.

Our baseline and target CO2 emission numbers are set out below showing a split into what are termed scope 1 (on-site fossil/transport) and scope 2 (grid electricity) emissions along with a corresponding total.

Baseline Emissions (average for years 2016-2018)			Target Emissions
Type	Source	kgCO2	(51% Reduction by 2030)
SCOPE 1 Emissions	On-Site (fossil) Thermal & Transport	2,274,827	1,114,665
SCOPE 2 Emissions	Grid Electricity	3,283,690	1,609,008
TOTALS		5,558,517	2,723,673

#### 4.1.1 Scope 1 & Scope 2 Emissions

Scope 1 refers to CO2 emissions that occur directly on-site and transport , (i.e. boiler houses or transport vehicles).

Scope 2 emissions occur off site at the power stations where the electricity is generated.

The distinction between Scope 1 and Scope 2 Emissions is important.

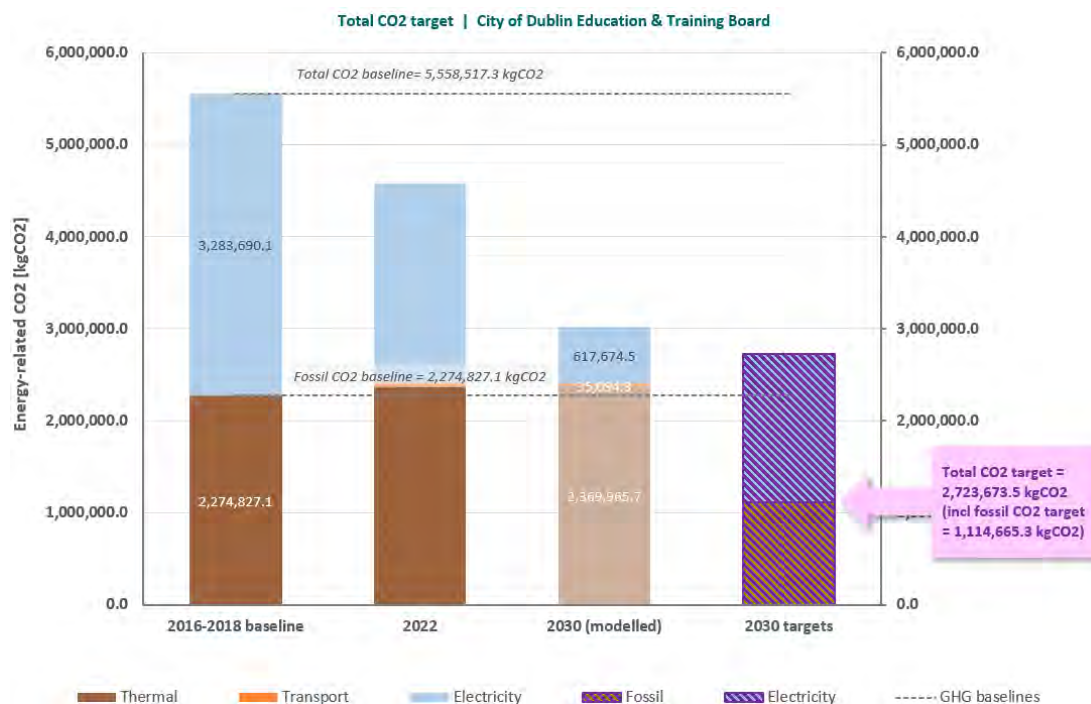
#### 4.1.2 Scope 2 Emissions - Assumptions and Business as Usual (BAU)

Built into the SEAI Gap to Target Tool (GTT) is an assumption that our SCOPE 2 (electrical) emissions will benefit significantly from the continued decarbonisation of Ireland’s Electricity Supply grid.

The assumed and modelled benefit from the supply side decarbonisation of Ireland’s Electricity grid is set out in the table below and would equate to an approximate 78% reduction in our scope 2 CO2 emissions.

Baseline Emissions (average for years 2016-2018)			Scope 2 Supply side Assumptions to 2030
Type	Source	kgCO2	kgCO2
SCOPE 2	Grid Electricity	3,283,690	617,674

### 4.1.3 Scope 2 Emissions – Gap to Target Tool and Business as Usual (BAU)



A graphical extract from the SEAI Gap to Target tool is set out above, progressively showing our baseline position, progress at 2022 (latest data<sup>1</sup>), a business as usual scenario (with scope 2 supply-side assumption) and finally our mandated target position.

In the Business as usual scenario the Scope 2 (electrical emissions) target has been reached and exceeded. This leaves potential for appropriately<sup>2</sup> considered growth in these Scope 2 emissions in parallel with charting a roadmap to 2030 to achieve our scope 1 (fossil fuel) emissions target.

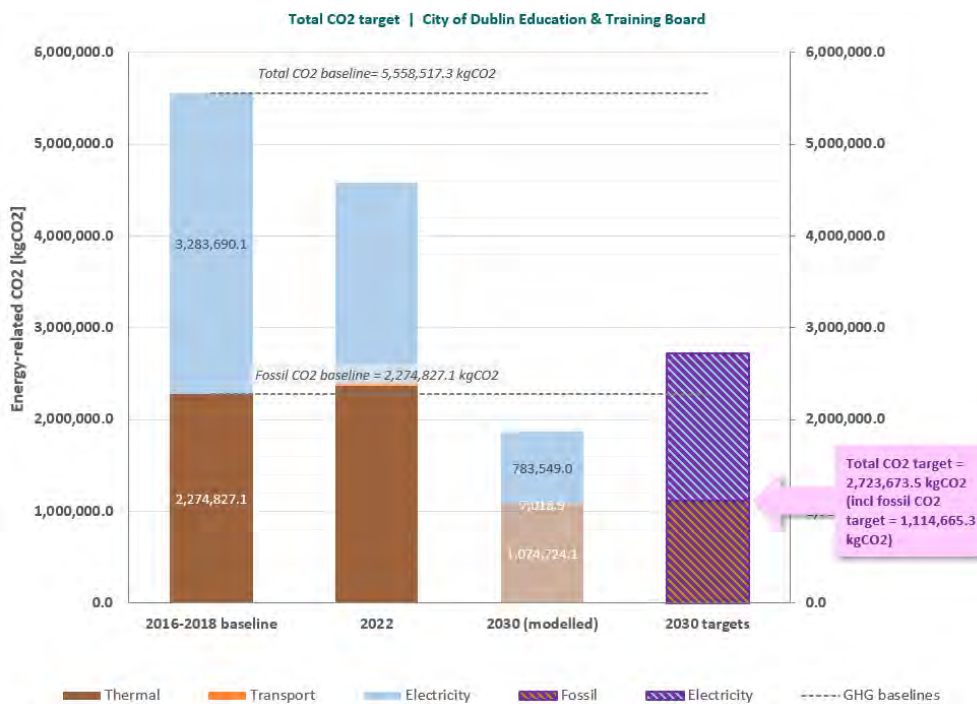
As set out in the following section and associated appendices, City of Dublin ETB has mapped the road to the Scope 1 emissions target and, in parallel, has recorded and charted the accompanying change in the Scope 2 emissions profile of our built estate.

<sup>1</sup> Note Data for 2023 from the Monitoring & Reporting Database has recently been received and is under review for integration into future iterations of the roadmap

<sup>2</sup> While keeping in mind the 2050 ambition for a decarbonised building stock.

## 4.2 CO2 Emissions – Modelled Roadmap (kgCO2)

### 4.2.1 CO2 Emissions Target - Modelled Overview (Totals)



The graphical extract above, taken from the SEAI gap to target tool, shows an overview of City of Dublin ETB’s modelled roadmap to achieving the mandated 51% reduction in Scope 1 and 2 CO2 Emissions.

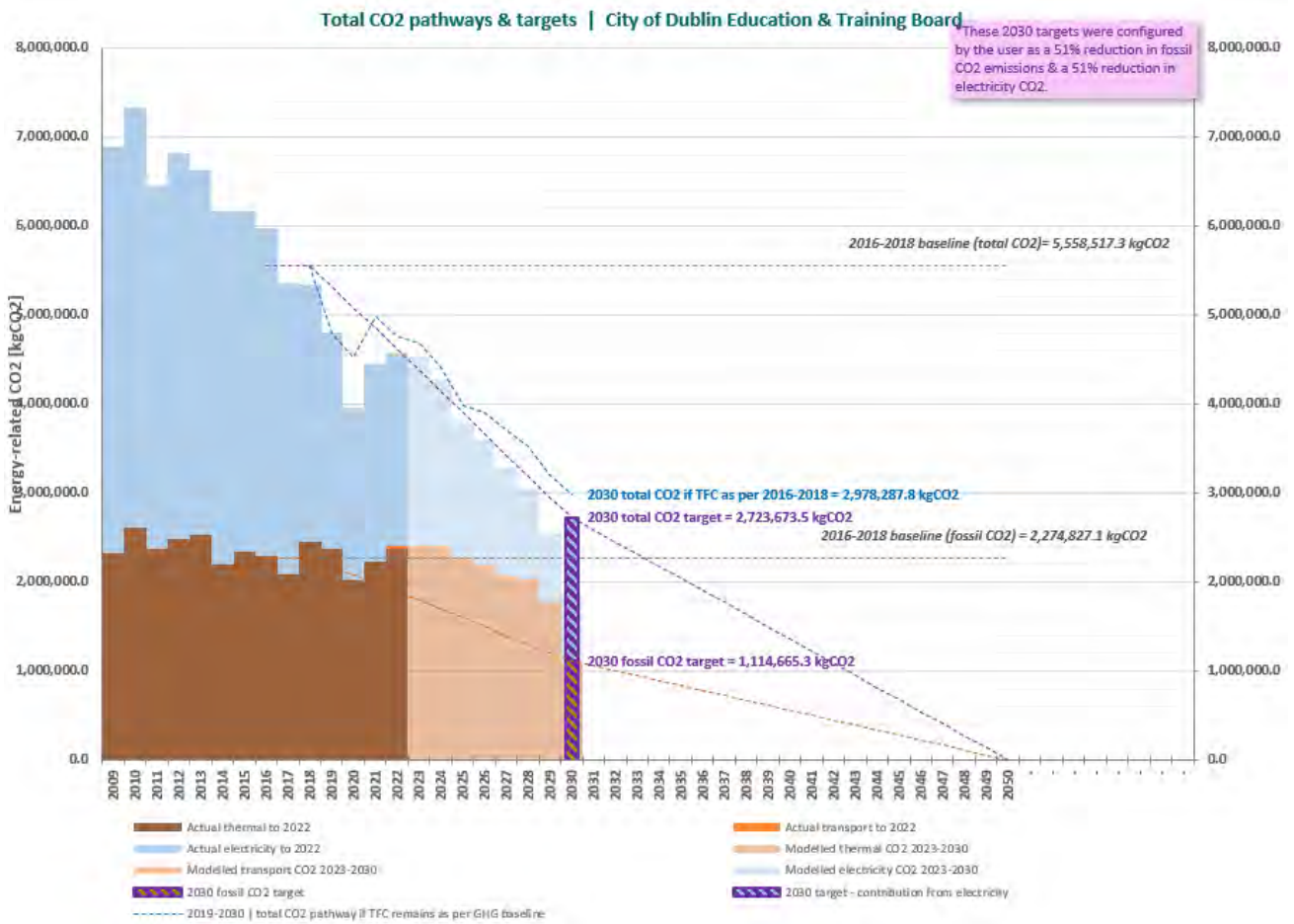
The extract progressively shows our baseline position, progress at 2022 (latest data<sup>3</sup>), our modelled scenario to 2030 with targets achieved and finally our mandated target position.

The table below shows the Scope 1 & Scope 2 figures extracted and set against the mandated target figures.

Modelled Scenario with Targets achieved			Target Emissions
Type	Source	kgCO2	(51% Reduction by 2030)
SCOPE 1 Emissions	On-Site (fossil) Thermal & Transport	1,081,761	1,114,665
SCOPE 2 Emissions	Grid Electricity	783,549	1,609,008
TOTALS		1,865,310	2,723,673

<sup>3</sup> Note Data for 2023 from the Monitoring & Reporting Database has recently been received and is under review for integration into future iterations of the roadmap

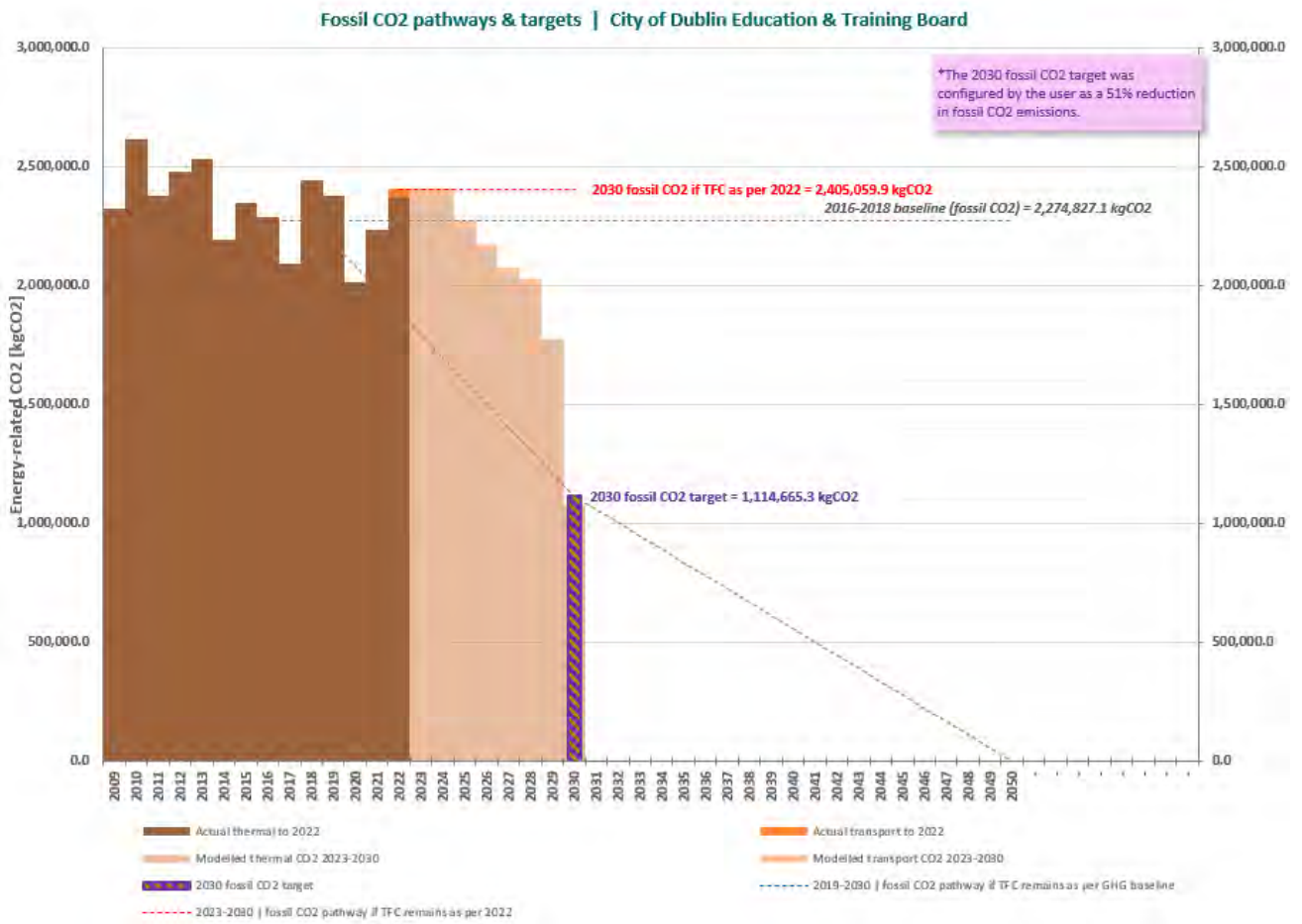
#### 4.2.2 CO2 Emissions Target – Total CO2 Pathways - Modelled Scenario



The graphical extract above, taken from the SEAI gap to target tool, shows an overview of City of Dublin ETB’s modelled pathways to achieving the mandated 51% reduction in Scope 1 and Scope 2 CO2 Emissions. The modelled pathways are set against historical reported data and also set against the mandated targets.

The tabulated data associated with the pathways for Scope 1 (Fossil) and Scope 2 Electricity (MPRN) consumption is set out in appendices A & B.

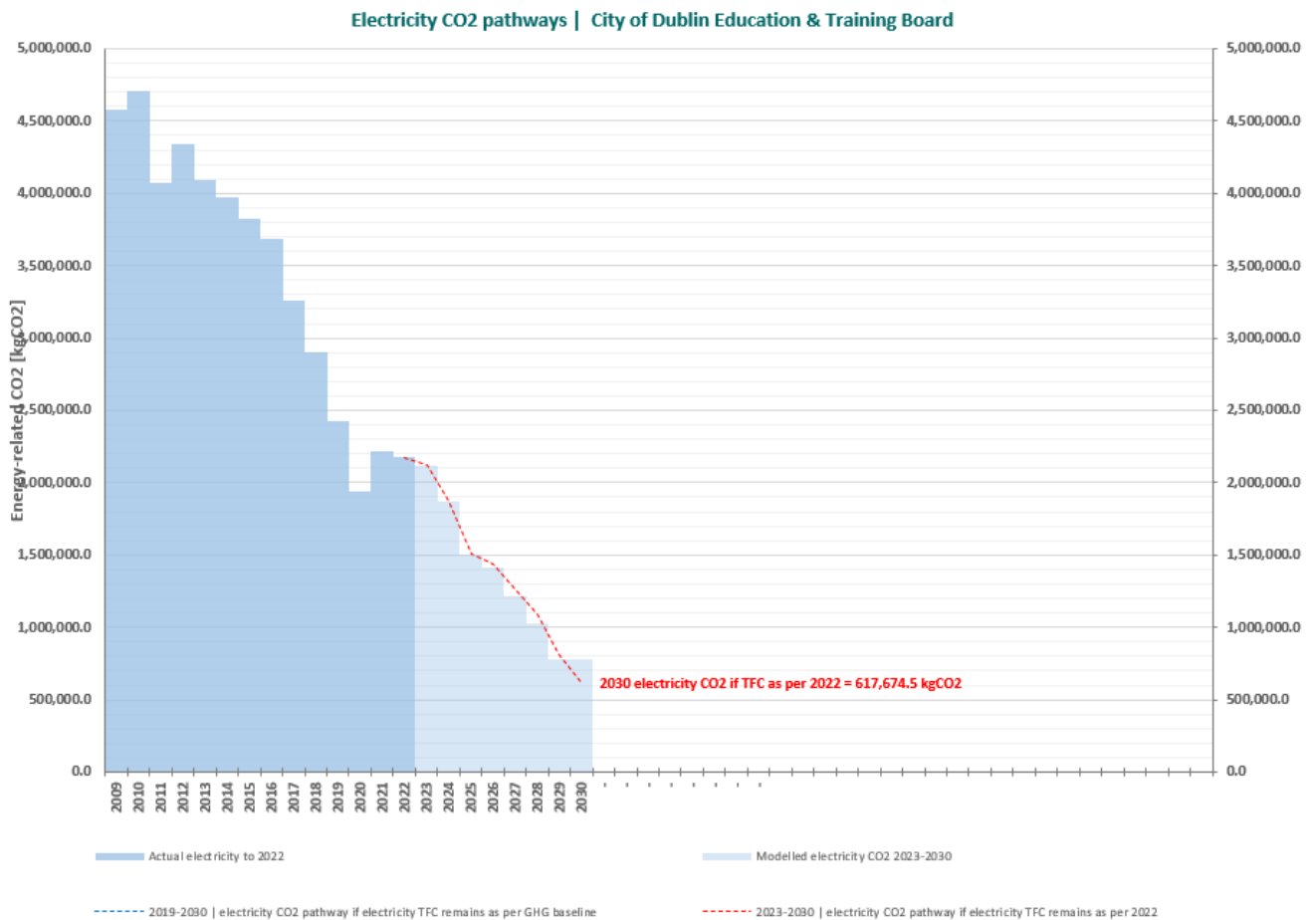
### 4.2.3 CO2 Emissions Target – Scope 1 (FOSSIL) CO2 Pathway - Modelled Scenario



The graphical extract above, taken from the SEAI gap to target tool, shows an overview of City of Dublin ETB’s modelled pathways to achieving the mandated 51% reduction in Scope 1 (Fossil) Emissions. The modelled pathway is set against historical reported data and also set against the mandated Scope 1 target.

The tabulated data associated with the pathway for Scope 1 (Fossil) consumption is set out in appendix A.

#### 4.2.4 CO2 Emissions Target – Scope 2 (ELECTRICITY) CO2 Pathway - Modelled Scenario



The graphical extract above, taken from the SEAI gap to target tool, shows an overview of City of Dublin ETB’s modelled pathways to achieving the mandated 51% reduction in Scope 2 (Electricity) Emissions. The modelled pathway is set against historical reported data

The tabulated data associated with the pathway for Scope 2 Electricity (MPRN) consumption is set out in appendix B.

### 4.3 CO2 Emissions Reductions -Data Modelling Approach

The approach taken to populate the SEAI gap to target tool is set out in the following project descriptions and the data associated with each type is tabulated in the appendices. A snippet of appendix A is included below.

- **Recently Vacated Buildings.**  
Depending on the energy consumption profile of the vacated building, the contribution of the modelled reductions in CO2 can be significant. Refer to tabulated data set out in appendices A & B.
- **In House Energy Management.**  
City of Dublin ETB have modelled, over the period 2025-2027, an annual 5% reduction in fossil fuel energy with a further 2.5% reduction modelled for the year 2028. In parallel an annual 2.5% reduction in electricity use has been modelled for the years 2025-2028. The contribution that this would make to the 2030 targets when set beside the reductions available through investments required for new build and retrofit projects emphasises the importance of a structured approach to in-house Energy Management to build on the progress already made. Refer to Appendices C for the data set associated with the Scope 1 (GPRN) Energy Management data.
- **Minor works - active projects.**  
These are active projects at varying stages of development. They involve identified works to individual or combined fabric elements of a building, such as roof and glazing retrofitting. These measures will deliver important but modest CO2 reductions. All of the projects have been leveraged (*further investment required*) within the model with further retrofit measures and 80% of the residual heating demand is transitioned to electric heating. All involve a parallel and associated modelling of changes in the profile of our Scope 2 (electric) CO2 emissions.

For the purposes of this roadmap these projects have been modelled in the following 4 step sequence and a typical and associated data set is included at **appendix D**.

▪ Scope 1 CO2 reductions from retrofitting 2 combined fabric elements of a building. (modelled as a 17-28% reduction in Fossil fuel demand).
▪ Scope 1 CO2 reductions available through leveraging an active project with further fabric and airtightness improvements to achieve a 40-60% reduction in the original fossil fuel heating demand.
▪ Scope 1 CO2 reductions available through transitioning the residual heating demand to a 20/80% split between fossil fuel heating and high efficiency electric heating.
▪ A further step, on the Scope 2 side of the model, records the additional Scope 2 CO2 emissions from electricity.

- **Large scale - active projects**

These are active projects at varying stages of development. They involve, in varying measure, demolition of buildings, vacation of buildings, addition of buildings, extension of buildings, and retrofit of buildings. All involve a required and associated modelling of changes in the profile of our Scope 2 (electric) CO2 emissions. Scope 2 CO2 Emissions from additional buildings have been modelled at the appropriate time, but the associated model has been grouped together in order that the net position at 2030 for a particular project can be gauged. Refer to appendices A & B.

- **Further projects.**

The decarbonisation model is dynamic and our long term Estate Strategy is subject to further development. These further projects are modelled purpose of identifying and, more importantly, emphasising the significant level of reduction in demand for fossil fuel energy that will be required in order that the target reduction in fossil fuel CO2 emissions can be met.

This demand reduction will be achieved on the same principles that have been detailed and modelled for the projects outlined above and will include, in varying measure, consolidation of provision, vacation of buildings, replacement of buildings, large scale projects, retrofit projects, and transition to an appropriate renewable heating regime. Refer to appendices A&B.

A snippet of the Appendix A data is shown below, showing the general structure of the approach taken and showing the range of data calculated and input into the SEAI Gap to Target tool....

			kgCO2					
AVG (2016-18) Baseline Thermal CO2			2,274,827					
PROGRESS As Per 2022								
2022 Rptd Increase in Thermal CO2			95,139					
Transport Emissions (Rptd for 2022)			35,094		cumulative			
PROGRESS TO 2030					kgCO2		% to Target	
	kWh (NCV)	kgCO2/kWh	Fuel					cumulative %
<b>FET/DOE - VACATED BUILDINGS</b>								
1f	a	438,607.42	-0.20474 Gas	-89,801	2,315,259	6.96%	6.96%	C - Vacated Bld (2 h
	b	10,169.00	-0.26387 oil	-2,683	2,312,575	0.21%	7.17%	C - Vacated Bld (1 h
<b>WHOLE ESTATE - ENERGY MANAGEMENT</b>								
2f	a	489,646.14	-0.20474 Gas	-100,251	2,212,325	7.77%	14.94%	Energy Manage -5%
	b	465,163.84	-0.20474 Gas	-95,238	2,117,087	7.38%	22.32%	Energy Manage -5%
	c	441,905.65	-0.20474 Gas	-90,476	2,026,610	7.01%	29.33%	Energy Manage -5%
	d	209,905.18	-0.20474 Gas	-42,976	1,983,634	3.33%	32.66%	Energy Manage -2.!
	e	51,629.55	-0.26387 oil	-13,623	1,970,011	1.06%	33.71%	Energy Manage -5%
	f	49,048.07	-0.26387 oil	-12,942	1,957,069	1.00%	34.72%	Energy Manage -5%
	g	44,568.62	-0.26387 oil	-11,760	1,945,308	0.91%	35.63%	Energy Manage -5%
	h	22,131.97	-0.26387 oil	-5,840	1,939,468	0.45%	36.08%	Energy Manage -2.!
<b>FET MINOR WKS - LEVERAGED</b>								
3f	a	41,439.81	-0.20474 Gas	-8,484	1,930,984	0.66%	36.74%	Stage 1 Retrofit (-1
	b	104,818.35	-0.20474 Gas	-21,461	1,909,523	1.66%	38.40%	Stage 2 Retrofit (to
	c	78,004.35	-0.20474 Gas	-15,971	1,893,553	1.24%	39.64%	Stage 2 Retrofit (to
<b>FET MINOR WKS LEVERAGED</b>								
4f	a	56,240.58	-0.20474 Gas	-11,515	1,882,038	0.89%	40.53%	Stage 1 Retrofit (-2
	b	64,274.94	-0.20474 Gas	-13,160	1,868,878	1.02%	41.55%	Stage 2 Retrofit (to
	c	64,274.94	-0.20474 Gas	-13,160	1,855,718	1.02%	42.57%	Stage 2 Retrofit (to
<b>FET MINOR WKS LEVERAGED</b>								
5f	a	21,119.89	-0.26387 oil	-5,573	1,850,146	0.43%	43.00%	Stage 1 Retrofit (-1
	b	53,420.91	-0.26387 oil	-14,096	1,836,049	1.09%	44.10%	Stage 2 Retrofit (to
	c	39,755.09	-0.26387 oil	-10,490	1,825,559	0.81%	44.91%	Stage 2 Retrofit (to



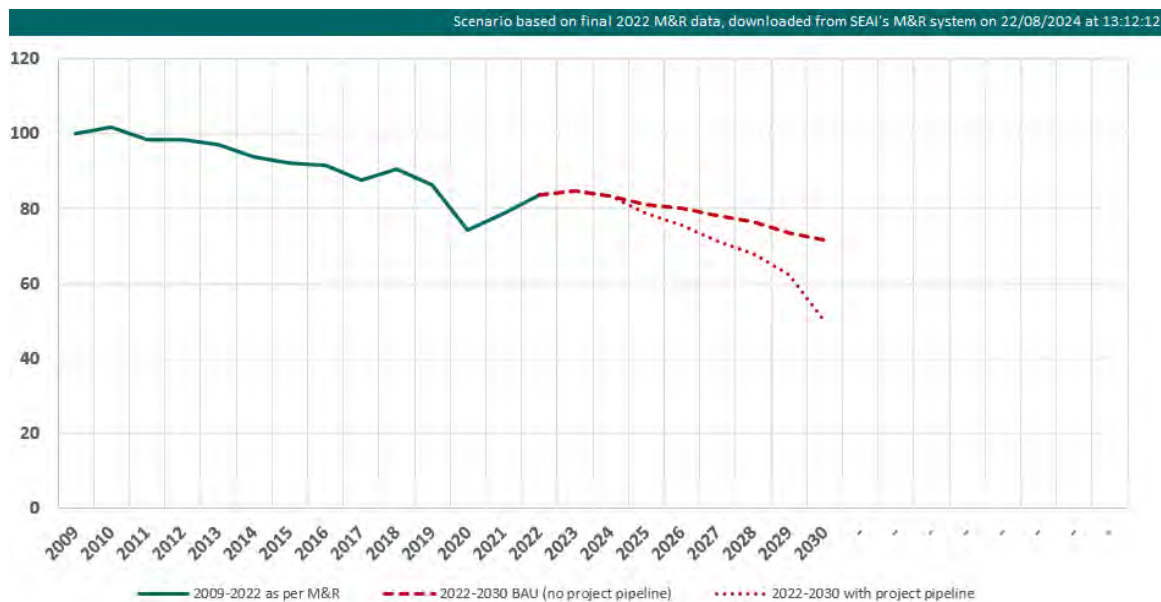
## 5 Energy Efficiency Target (kWh/m<sup>2</sup>)

City of Dublin ETB’s present Energy Efficiency metric measures Energy use (kWh) per square meter (m<sup>2</sup>) of the floor area of our buildings (kWh/m<sup>2</sup>). It is derived from the Total Primary Energy Requirement (TPER) as reported to The SEAI’s Monitoring and Reporting Database (M&R).

Our baseline and latest available Energy Efficiency data is set out in the table below. The last row sets out the mandated 50% improvement in Energy Efficiency required by 2030.

	kWh/m <sup>2</sup>	normalised %
2009 Energy efficiency (Baseline):	156.13	100
2022 Energy efficiency (Latest M&R Data):	131.53	84.24
2030 Target & Modelled Scenario	78.01	50

The demand reduction required to achieve this improvement has been modelled within the SEAI “gap to target tool” and the graphical extract below (*normalised*) demonstrates the achievement of the target (*red dotted line*).



The modelled Energy Efficiency scenario represented above traces the exact same path as that modelled for the required CO<sub>2</sub> reductions. These measures are tabulated in Appendix A for Scope 1 emissions and in appendix B for Scope 2 emissions.

It should be noted that having modelled the scenarios set out clearly in the 2 appendices, a significant gap to the efficiency target remained to be bridged. This remaining gap was quantified and modelled as a package of combined further demand reduction and the quantified and modelled efficiency scenario is set out in **appendix E**.

## 6 Conclusion

From quantifying and tabulating a roadmap to achieving both the mandated CO2 Emissions reductions target and Energy Efficiency improvement target, it is clear that the achievement of those targets represents a significant challenge for City of Dublin ETB. The challenges are multi-fold and are not unique to City of Dublin ETB and are widely acknowledged across both the public and private sectors.

City of Dublin ETB is not a self funded organisation. The capital investments required to achieve the mandated targets will be substantial and these investments will need to be strategically considered and directed. City of Dublin ETB will work with our partner stakeholders to both, refine and share available data and progress and develop a long term estate strategy that aligns with our mission to be world leaders in education and our obligation to define an ideal built estate in the context of a “carbon constrained environment”.

The objectives of this 1<sup>st</sup> iteration of City of Dublin ETB’s Climate Action Roadmap are twofold.

The first objective is to fulfil an obligation to our stakeholders to set out a clear roadmap within which the objectives of the Public Sector Climate Action Mandate (PSCAM) will be further embedded across our organisation.

The second objective is to clearly quantify for our own organisation the implications of the two specific numerical targets that are set out in the mandate relating to both Carbon Emissions and Energy Efficiency. The targets are numerical and it only in the context a clear quantification of the implication those numbers that a map to achieving those targets can be fully understood.

The resulting challenges direct a particular focus on the quantified and ambitious Energy management numbers that map almost 30% of the road that needs to be travelled.

City of Dublin ETB will resource the training, Green Teams and structures needed to ensure that part of the road will be travelled. It is intended that this in-house Energy Management program will be the foundation for the strategic decisions and investments that will be required over the coming years.

## 7 Afterword and note on data

The calculations underpinning this roadmap are derived from data that has been submitted to the SEAI monitoring and reporting database (M&R). Latest figures for 2023 have recently been received from the SEAI and this data is presently under review. City of Dublin ETB has a large built estate and work to refine data associated with that estate is subject to ongoing review to ensure that all relevant data has been correctly captured. Present levels of confidence in the available data is high and would be above 90%. As further iterations of our roadmap are completed this level of confidence will increase.



**APPENDIX A -SCOPE 1 EMISSIONS – TABULATED ROADMAP**

Tabulating the steps modelled in The SEAI Gap to Target tool to illustrate roadmap to 51% reduction in Scope 1 Emissions

# Tabulated Road Map: SCOPE 1 - FOSSIL FUEL EMISSIONS

		kgCO2		Target CO2 Emissions		1,114,665		Funding Visibility					
Data Set		AVG (2016-18) Baseline Thermal CO2		2,274,827									
Data Sub Set		PROGRESS As Per 2022		95,139		35,094							
		2022 Rptd Increase in Thermal CO2											
		Transport Emissions (Rptd for 2022)											
		PROGRESS TO 2030											
		kWh (NCV)	kgCO2/kWh	Fuel		cumulative kgCO2	% to Target	% cumulative	Type of Project	Yr Modelled	Transition to Electric		
1f	a	438,607.42	-0.20474	Gas		2,315,259	6.96%	6.96%	C - Vacated Bid (2 No) - FET	23		Kilester CFE & Cabra Youth Reach	Yes
	b	10,169.00	-0.26387	oil		2,312,575	0.21%	7.17%	C - Vacated Bid (1 No) - DOE	23		Gaa Club (Temp capacity issue during works)	Yes
		<b>WHOLE ESTATE - ENERGY MANAGEMENT</b>											
	a	489,646.14	-0.20474	Gas		2,212,325	7.77%	14.94%	Energy Manage -5%	24		Whole Estate	Yes
	b	465,163.84	-0.20474	Gas		2,117,087	7.38%	22.32%	Energy Manage -5%	25		Whole Estate	Yes
	c	441,905.65	-0.20474	Gas		2,026,610	7.01%	29.33%	Energy Manage -5%	26		Whole Estate	Yes
	d	209,905.18	-0.20474	Gas		1,983,634	3.33%	32.66%	Energy Manage -2.5%	27		Whole Estate	Yes
	e	51,629.55	-0.26387	oil		1,970,011	1.06%	33.71%	Energy Manage -5%	24		Whole Estate	Yes
	f	49,048.07	-0.26387	oil		1,957,069	1.00%	34.72%	Energy Manage -5%	25		Whole Estate	Yes
	g	44,568.62	-0.26387	oil		1,945,308	0.91%	35.63%	Energy Manage -5%	26		Whole Estate	Yes
	h	22,131.97	-0.26387	oil		1,939,468	0.45%	36.08%	Energy Manage -2.5%	27		Whole Estate	Yes
		<b>FET MINOR WKS - LEVERAGED</b>											
	a	41,439.81	-0.20474	Gas		1,930,984	0.66%	36.74%	Stage 1 Retrofit (-17%) Roof & Glazing (Part)	28		Inchicore CFE Roof & Glazing (Part)	Yes
	b	104,818.35	-0.20474	Gas		1,909,523	1.66%	38.40%	Stage 2 Retrofit (to -60%) above + further measures	28		Leveraged Roof & Glazing (Part) +Further Measures	Yes
	c	78,004.35	-0.20474	Gas		1,893,553	1.24%	39.64%	Stage 2 Retrofit (to -60%) above + 80% residual demand to electricity	28	T-E	Leveraged - 80% of Residual Consumption to Electric	Yes
		<b>FET MINOR WKS LEVERAGED</b>											
	a	56,240.58	-0.20474	Gas		1,882,038	0.89%	40.53%	Stage 1 Retrofit (-28%) Roof & Glazing (Part)	28		Dhulaigh CFE Greendale - Roof & Glazing (Part)	Yes
	b	64,274.94	-0.20474	Gas		1,868,878	1.02%	41.55%	Stage 2 Retrofit (to -60%) above + further measures	28		Leveraged Roof & Glazing (Part) +Further Measures	Yes
	c	64,274.94	-0.20474	Gas		1,855,718	1.02%	42.57%	Stage 2 Retrofit (to -60%) above + 80% residual demand to electricity	28	T-E	Leveraged - 80% of Residual Consumption to Electric	Yes
		<b>FET MINOR WKS LEVERAGED</b>											
	a	21,119.89	-0.26387	oil		1,850,146	0.43%	43.00%	Stage 1 Retrofit (-17%) Roof & Glazing (Part)	28		Dhulaigh CFE Coolock - Roof & Glazing (Part)	EOI
	b	53,420.91	-0.26387	oil		1,836,049	1.09%	44.10%	Stage 2 Retrofit (to -60%) above + further measures	28		Leveraged Roof & Glazing (Part) +Further Measures	Yes
	c	39,755.09	-0.26387	oil		1,825,559	0.81%	44.91%	Stage 2 Retrofit (to -60%) above + 80% residual demand to electricity	28	T-E	Leveraged - 80% of Residual Consumption to Electric	Yes
		<b>FET MINOR WKS - LEVERAGED</b>											
	a	14,042.68	-0.26387	oil		1,821,854	0.29%	45.20%	Stage 1 Retrofit (-17%) Roof & Glazing (Part)	28		Liberties CFE Marks Alley Roof & Glazing (Part)	EOI
	b	35,519.72	-0.26387	oil		1,812,481	0.73%	45.92%	Stage 2 Retrofit (to -60%) above + further measures	28		Leveraged Roof & Glazing (Part) +Further Measures	Yes
	c	26,433.28	-0.26387	oil		1,805,507	0.54%	46.46%	Stage 2 Retrofit (to -60%) above + 80% residual demand to electricity	28	T-E	Leveraged - 80% of Residual Consumption to Electric	Yes
		<b>DOE EXTENSION - LEVERAGED TO MAIN SCHOOL</b>											
	a	90574.00	-0.20	Gas		1,786,962	1.44%	47.90%	Sch Ext leveraged to School -60% Demand Reduction	28		Cabra CC	Yes
	b	48306.40	-0.20	Gas		1,777,072	0.77%	48.67%	above + 80% residual demand to electricity	28	T-E	Cabra CC	Yes
		<b>DOE EXTENSION - LEVERAGED TO MAIN SCHOOL</b>											
	a	131,199.21	-0.20474	Gas		1,750,210	2.08%	50.75%	Sch Ext leveraged to School -60% Demand Reduction	28		Presentation PP	Yes
	b	69,972.91	-0.20474	Gas		1,735,884	1.11%	51.86%	above + 80% residual demand to electricity	28	T-E	Presentation PP	Yes
		<b>FET PATHFINDER</b>											
	a	90,963.13	-0.20474	Gas		1,717,260	1.44%	53.30%	Potential SEAL Pathfinder- Protected St - 30% Demand Reduction	28		Liberties CFE Bull Alley Protected Structure	Yes

tallys wit gap to target tool



Appendix A

FET FURTHER DEMAND REDUCTION (Identified Building-Interchangeable / Estates Strategy)												
20f	a	54,829.51	-0.26387	oil	-14,468	1,220,858	1.12%	91.77%	Further demand reduction -30%	29	Yr Ballymun	Yes
	b	14,304.11	-0.26387	oil	-3,774	1,217,084	0.29%	92.06%	Further demand reduction -30%	29	Winstead	YES
	c	9,966.08	-0.26387	oil	-2,630	1,214,454	0.20%	92.27%	Further demand reduction -30%	29	CDU Marlborough	YES
FET FURTHER DEMAND REDUCTION (Identified Building-Interchangeable / Estates Strategy)												
21f	a	38,143.23	-0.20474	Gas	-7,809	1,206,644	0.61%	92.87%	Further demand reduction -20%	29	Rathmines CFE	Yes
	b	101,205.56	-0.20474	Gas	-20,721	1,185,923	1.61%	94.48%	Further demand reduction -20%	29	Ballyfermot CFE	Yes
FET FURTHER DEMAND REDUCTION (Identified Building-Interchangeable / Estates Strategy)												
22f	a	138,144.40	-0.20474	Gas	-28,284	1,157,640	2.19%	96.67%	Further demand reduction -30%	29	greendale main	Yes
FET FURTHER DEMAND REDUCTION (Identified Building-Interchangeable / Estates Strategy)												
23f	a	163,488.54	-0.20474	Gas	-33,473	1,124,167	2.59%	99.26%	Further demand reduction -100%	29	Identified Building (interchangeable/ Estates Strategy)	Yes
24f	a	207,210.55	-0.20474	Gas	-42,425	1,081,742	3.29%	102.55%	To District Heating	29	Ringsend CC	Yes
Progress to Target kgCO2					1,081,742							
Gap to Target kgCO2					-32,923				negative value indicates target reached and surpassed			

Notes

All Calculations derived from reported M&R data

- Shading indicates some funding visibility
- EOI Funding expression of interest submitted
- T-E Indicates a transition to electric heating

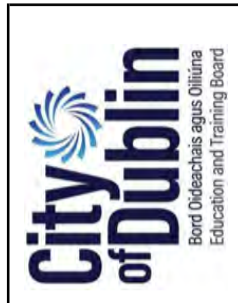
**APPENDIX B - SCOPE 2 EMISSIONS – TABULATED ROADMAP**

Tabulating the steps modelled in The SEAI Gap to Target tool to illustrate the corresponding change in the Profile of our Scope 2 Emissions

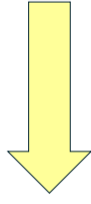


Appendix B

# Tabulated Road Map: SCOPE 2 - ELECTRICITY EMISSIONS



Assumed BAU Scope 2 emissions as of 2030 - (refer to section 4.1.1.2)



Talys With Gapt to Target Tool

Yr Modelled in GTT

	PROGRESS TO 2030	kgCO2					
	kWh	kgCO2/kWh	Energy Type				
1e	136,162.00	-0.09293	Electricity	605,021	C - Vacated Bld (2 No)	23	yes
<b>FET VACATED BUILDING</b>							
<b>ENERGY MANAGEMENT</b>							
2e a	162,757.77	-0.09293	Electricity	589,895	Energy Manage -2.5%	24	yes
2e b	158,688.83	-0.09293	Electricity	575,148	Energy Manage -2.5%	25	yes
2e c	154,721.61	-0.09293	Electricity	560,769	Energy Manage -2.5%	26	yes
2e d	150,853.57	-0.09293	Electricity	546,750	Energy Manage -2.5%	27	yes
<b>FET MINOR WKS - LEVERAGED-80% Residual Consumption To Elec</b>							
3e	18,201.02	0.09293	Electricity	1,691.47	Stage 2 Retrofit (-17%) + lvgd to -60%	28	yes
4e	14,997.49	0.09293	Electricity	1,393.76	Stage 2 Retrofit (-28%)+ lvgd to -60%	28	yes
5e	9,276.19	0.09293	Electricity	862.06	Stage 2 Retrofit (-17%)+ lvgd to -60%	28	yes
6e	6,167.77	0.09293	Electricity	551,270	Stage 2 Retrofit (-17%)+ lvgd to -60%	28	yes
<b>DOE SCHOOL EXTENSION - LEVERAGED to Main School 80% Residual Consumption To Elec</b>							
7e	11,271.49	0.09293	Electricity	1,047.49	Retrofit (to -60%) Leveraged to Main School - Cabra	28	yes
8e	16,327.01	0.09293	Electricity	1,517.31	Retrofit (to -60%) Leveraged to Main School - Presentation	28	yes
<b>DOE / FET LARGE SCALE PROJECT</b>							
10e a	40,000.00	0.09293	Electricity	3,717.31	Add An Cosan (Temp 2024) - Estimate	24	yes
10e b	40,000.00	0.09293	Electricity	3,717.31	Add An Cosan(Temp 2025) - Estimate	25	yes
10e c	80,000.00	-0.09293	Electricity	-7,434.61	Remove AN Cosan above (2029) -Estimate	29	yes
10e d	504,802.03	-0.09293	Electricity	-46,912.60	remove plunk/clontk/white/Ellen	29	yes
10e e	238,903.30	0.09293	Electricity	22,201.92	Add AN Cosan New Build	29	yes
10e f	555,520.00	0.09293	Electricity	51,625.96	Add Clonturk New Build	29	yes
10e g	555,520.00	0.09293	Electricity	51,625.96	Add Ellenfield New Build	29	yes
10e h	457,333.30	0.09293	Electricity	42,501.21	Add Fet New Build (Plunkett / Whitehall)	29	yes
<b>DOE EXPANSION</b>							
11e	40,000.00	0.09293	Electricity	3,717.31	Add DOE SCCNS - St Endas - Estimate	24	yes
<b>FET LARGE SCALE PROJECT (PBC - Cathal Brugha)</b>							
12e a	260,639.86	-0.09293	Electricity	-24,221.96	PBC Vacated Buildings	29	yes
12e b	33,086.03	0.09293	Electricity	3,074.77	Transition 1 parnell sq & NGGS to Elec heating	29	yes
12e c	221,559.00	0.09293	Electricity	20,590.07	Add Marlborough 1990s - Estimate	29	yes
12e d	14,860.00	0.09293	Electricity	1,380.98	Add Cathal Brugha 60s Elec Heat Pump - retro-fit	29	yes
12e e	84,702.00	0.09293	Electricity	7,871.58	Add Cathal Brugha 60s Elec @57kwh/m2 - retro-fit	29	yes
12e f	448,797.00	0.09293	Electricity	41,707.91	Add Cathal brugha 30s elec & Elec heat - retro-fit	29	yes
12e g	27,487.62	0.09293	Electricity	2,554.50	Marl' 1990s retrofit -40% & 80% residual to elec - retrofit	29	yes
12e h	202,533.33	0.09293	Electricity	18,821.96	New Build NCRR - Sean Mc Dermot St (heat & Plug)	29	yes
<b>FET FURTHER DEMAND REDUCTION (Identified Building-Interchangeable / Estates Strategy)</b>							
13e	32,173.36	0.09293	Electricity	2,989.96	Retro-fit Connolly- Residual Heat Demand to Electric		yes



# APPENDIX C - SCOPE 1 Energy Management (GPRN) Data.

Modelled data for Estate wide Energy Management Program for Scope 1 (GPRN) Emissions.

APPENDIX C

**SCOPE 1 (FOSSIL)- ENERGY MANAGEMENT - NATURAL GAS - (WHOLE ESTATE) - DATA SET(s) - 2a, 2b,2c,2d,**

Attributable Consumption (kWh) - all GPRNs			2a	2b	2c	2d
GPRN	Unit	2022	2025	2026	2027	2028
			-5%	-5%	-5%	-2.5%
<b>SCHOOLS DOE</b>						
26750	kWh (Gross)	0	0	0	0	0
961333	kWh (Gross)	783,538	744361.10	707143.05	671785.89	654991.25
89311	kWh (Gross)	322	305.90	290.61	276.07	269.17
89312	kWh (Gross)	23	21.85	20.76	19.72	19.23
245344	kWh (Gross)	492,915	468269.25	444855.79	422613.00	412047.67
85319	kWh (Gross)	620	589.00	559.55	531.57	518.28
1182823	kWh (Gross)	199,584	189604.80	180124.56	171118.33	166840.37
571374	kWh (Gross)	421,707	400621.65	380590.57	361561.04	352522.01
37489	kWh (Gross)	23	21.85	20.76	19.72	19.23
245478	kWh (Gross)	338,841	321898.95	305804.00	290513.80	283250.96
1184861	kWh (Gross)	167,008	158657.60	150724.72	143188.48	139608.77
144092	kWh (Gross)	0	0.00	0.00	0.00	0.00
13287	kWh (Gross)	0	0.00	0.00	0.00	0.00
13288	kWh (Gross)	1,203	1142.85	1085.71	1031.42	1005.64
13289	kWh (Gross)	518,067	492163.65	467555.47	444177.69	433073.25
224811	kWh (Gross)	174,765	166026.75	157725.41	149839.14	146093.16
26366	kWh (Gross)	274,807	261066.65	248013.32	235612.65	229722.34
143494	kWh (Gross)	194	184.30	175.09	166.33	162.17
143799	kWh (Gross)	19,569	18590.55	17661.02	16777.97	16358.52
816263	kWh (Gross)	270,237	256725.15	243888.89	231694.45	225902.09
<b>CENTRAL FET CAMPUS</b>						
1031588	kWh (Gross)	380,975	361926.25	343829.94	326638.44	318472.48
110704	kWh (Gross)	0	0.00	0.00	0.00	0.00
110705	kWh (Gross)	0	0.00	0.00	0.00	0.00
161997	kWh (Gross)	216,823	205981.85	195682.76	185898.62	181251.15
24124	kWh (Gross)	402,126	382019.70	362918.72	344772.78	336153.46
314418	kWh (Gross)	30,432	28910.40	27464.88	26091.64	25439.35
5293823	kWh (Gross)	207,636	197254.20	187391.49	178021.92	173571.37
124335	kWh (Gross)	14,865	14121.75	13415.66	12744.88	12426.26
<b>SOUTHWEST FET CAMPUS</b>						
89308	kWh (Gross)	1,205,571	1145292.45	1088027.83	1033626.44	1007785.78
1187038	kWh (Gross)	253,427	240755.65	228717.87	217281.97	211849.92
10483	kWh (Gross)	273,008	259357.60	246389.72	234070.23	228218.48
904205	kWh (Gross)	144,673	137439.35	130567.38	124039.01	120938.04
57745	kWh (Gross)	0	0.00	0.00	0.00	0.00
977614	kWh (Gross)	28,825	27383.75	26014.56	24713.83	24095.99
237376	kWh (Gross)	294,461	279737.95	265751.05	252463.50	246151.91
37490	kWh (Gross)	-4,610	-4379.50	-4160.53	-3952.50	-3853.69
37492	kWh (Gross)	57	54.15	51.44	48.87	47.65

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46731	kWh (Gross)	302,610	287479.50	273105.53	259450.25	252963.99
161070	kWh (Gross)	193,949	184251.55	175038.97	166287.02	162129.85
<b>NORTH EAST FET CAMPUS</b>						
1126839	kWh (Gross)	179,975	170976.25	162427.44	154306.07	150448.41
141389	kWh (Gross)	8,966	8517.70	8091.82	7687.22	7495.04
141390	kWh (Gross)	0	0.00	0.00	0.00	0.00
5397182	kWh (Gross)	165,841	157548.95	149671.50	142187.93	138633.23
71628	kWh (Gross)	266,385	253065.75	240412.46	228391.84	222682.04
71629	kWh (Gross)	610,703	580167.85	551159.46	523601.48	510511.45
71630	kWh (Gross)	0	0.00	0.00	0.00	0.00
1628	kWh (Gross)	37,982	36082.90	34278.76	32564.82	31750.70
<b>NORTHWEST CAMPUS</b>						
554999	kWh (Gross)	832,042	790439.90	750917.91	713372.01	695537.71
27325	kWh (Gross)	3,100	2945.00	2797.75	2657.86	2591.42
82157	kWh (Gross)	695,284	660519.80	627493.81	596119.12	581216.14
<b>ADULT ED FET</b>						
116357	kWh (Gross)	0	0.00	0.00	0.00	0.00
116358	kWh (Gross)	24,462	23238.90	22076.96	20973.11	20448.78
132444	kWh (Gross)	13,672	12988.40	12338.98	11722.03	11428.98
<b>YOUTHREACH FET</b>						
946238	kWh (Gross)	173,093	164438.35	156216.43	148405.61	144695.47
135531	kWh (Gross)	11	10.45	9.93	9.43	9.20
1024542	kWh (Gross)	121,631	115549.45	109771.98	104283.38	101676.29
110595	kWh (Gross)	32,080	30476.00	28952.20	27504.59	26816.98
<b>ADMIN SUPPORT DOE</b>						
135097	kWh (Gross)	16,576	15747.20	14959.84	14211.85	13856.55
26465	kWh (Gross)	19,088	18133.60	17226.92	16365.57	15956.43
118291	kWh (Gross)	30,268	28754.60	27316.87	25951.03	25302.25
871437	kWh (Gross)	17,489	16614.55	15783.82	14994.63	14619.77
Totals for year		10,856,899	<b>kWh (Gross)</b> 10314054.05	9798351.35	9308433.78	9075722.94
Gross savings expected from previous year			<b>kWh (Gross)</b> 542844.95	515702.70	489917.57	232710.84
			<b>NCV factor</b> 0.902	0.902	0.902	0.902
			<b>kWh net</b> 489,646.14	465,163.84	441,905.65	209,905.18
Carbon Intensity of Natural Gas			<b>kgCO2/kWh</b> 0.20474	0.20474	0.20474	0.20474
<b>CO2 Savings from previous year</b>			<b>kgCO2</b>	<b>100,250.69</b>	<b>95,238.15</b>	<b>90,476.25</b>
					<b>42,976.22</b>	

**Notes**

All above figures are based and derived from Total Final Consumption (TFC) as reported on M&R

Locations identified by GPRN No and shadings signify a centre or an individual building

The savings shown per year are based off the M&R reported figures for 2022 as later figures are not yet available

## Appendix D – Typ Deep Retrofit Data approach

High level approach to data and calculation associated with a typical Deep Retrofit Project and transition to a high efficiency electric heating regime.

APPENDIX D

		data set	3f a, b, c & 3e-a	
Attributable Consumption (kWh) all GPRNs				
GPRN Location				
<b>SOUTH WEST FET CAMPUS</b>			<b>Unit</b>	<b>2028</b>
57745	Inchicore CFE Emmet Road Inchicore		kWh (Gross)	0.00
977614	Inchicore CFE		kWh (Gross)	24,095.99
237376	Inchicore CFE Emmet Road Inchicore		kWh (Gross)	246,151.91
Total Consumption (Gross)			kWh (Gross)	270,247.90
			NCV Factor	0.902
<b>Total Consumption (NET)</b>			<b>kWh (NCV)</b>	<b>243,763.61</b>
17% Energy Saving (Minor Works-Roof/Glazing-Part) - Net			kWh (NCV)	41,439.81
Carbon intensity of Natural Gas Grid			kgCO2/kWh	0.204741
<b>kg CO2 Reduction / Saving</b>			<b>3f-a</b>	<b>kgCO2</b>
				<b>8,484.43</b>
Leveraged to 60% Energy Savings			kWh (NCV)	146,258.16
Already Saved			kWh (NCV)	41,439.81
Leveraged - Balance to 60%			kWh (NCV)	104,818.35
Carbon intensity of Natural Gas Grid			kgCO2/kWh	0.204741
<b>Leveraged CO2 Reduction</b>			<b>3f-b</b>	<b>kgCO2</b>
				<b>21,460.62</b>
Residual Consumption			kWh (NCV)	97,505.44
Residual Consumption 80% to Transition to Electric			kWh (NCV)	78,004.35
Carbon intensity of Natural Gas Grid			kgCO2/kWh	0.204741
<b>Leveraged CO2 - Reduction - Residual - 80% TRANSITION to E</b>			<b>3f-c</b>	<b>kgCO2</b>
				<b>15,970.70</b>
<b>ADDITIONAL CO2 - Transition To Electric</b>				
Residual Consumption 80% to Transition to Electric			kWh (NCV)	78,004.35
Residual Demand to Transition @ 70% Efficiency			kWh (NCV)	54,603.05
Residual Demand to Transition @ 300% Efficiency - TRANSITION to E			kWh	18,201.02
Carbon intensity of Electricity Grid - (SEAI 2030)			kgCO2/kWh	0.092933
<b>lv - Leveraged Additional CO2 - - Residual - TRANSITION to E</b>			<b>3e-a</b>	<b>kgCO2</b>
				<b>1,691.47</b>

Notes

<b>SHADING</b>	Scope 2 (electric)	Scope 1 (Fossil)
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All above figures are based and derived from Total Final Consumption (TFC) as reported on M&R

Locations identified by GPRN No and shadings signify a centre or an individual building

The savings shown per year are based off the M&R reported figures for 2022 as later figures are not yet available

**Above included as sample high level calculation of potential CO2 savings associated with Deep Retrofit**

# Appendix E – Further Demand reduction highlighted / Energy Efficiency

Energy Efficiency – Highlighting the level of further Energy Demand reduction required to meet the 50% Efficiency improvement Target.



APPENDIX E

Project details		Project categorisation				Energy savings in year after implementation [see note for explanation how to enter RE & CHP savings]				
Project name	Location	Type	Sub-type	Project scale	Project readiness	EE or RE or CHP?	Grid electricity [kWh TFC]	Thermal [kWh TFC]	Transport [kWh TFC]	Total [kWh TFC]
[-]	[-]	[-]	[-]	[-]	[-]	[-]				
Combined 2024		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	-2,639,230	622,857,110	0.000	620,217,880
combined 2025		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	118,688,830	460,091,910	0.000	578,780,740
combined 2026		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	154,721,610	486,474,270	0.000	641,195,880
combined 2027		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	150,853,570	232,037,150	0.000	382,890,720
combined 2028		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	-119,965,760	1,423,801,000	109,312,000	1,413,147,240
combined 2029		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	-2,086,548,000	2,921,062,000	0.000	834,514,000
Combined additional needed-2029		Combination/other	Deep energy retrofit	4 Asset renewal project	1 Concept	EE	1,450,000,000	1,450,000,000	0.000	2,900,000,000

Notes

Extract above from SEAI Gap to Target Tool (Energy Efficiency Project Tab)

Outlined in RED is level of demand reduction (additional to Projects modelled to achieve CO2 Reduction Target) in order for the 50% improvement in Energy Efficiency to be achieved