MOUNT LUCAS
Ionad Náisiúnta Oiliúna Foirgníochta
National Construction Training Centre

loetb

National Demonstration Park for MMC

Mount Lucas National Construction Training Campus

The story so far

Ireland's First

- Formwork Traineeship
- Scaffolding Apprenticeship
- Water Utilities Traineeship
- NZEB/Retrofit Mobile Skills Rig
- Bespoke Transition Year Green Construction Programme
- Centre of Excellence for nZEB/Retrofit
- National MMC Demonstration Park
- MMC Apprenticeship

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National Demonstration Park for MMC: Vision

National Demonstration Park for MMC Objectives include:

- To provide an accessible ‘flagship’ location for MMC demonstration in Ireland, and in so doing to facilitate the showcasing of innovative MMC products and systems particularly for the housing sector.
- To raise awareness, and to disseminate the knowledge and understanding of MMC innovation throughout Ireland by way of such a showcased facility.
- To support a national network around MMC of manufacturers, contractors, clients, designers and policymakers, and to support and contribute to related activities through this network.
- To identify and provide applicable specialist training towards emerging MMC skillset requirements.
- To facilitate experimentation and proof of concept activities, as well as established MMC operational processes.

Photographs courtesy of OCC Construction

Project Oversight

The Project Oversight Group provides inter-departmental oversight of the development of the National Demonstration Park. The Project Oversight Group is co-chaired by SOLAS and LOETB and the members are:

- Department of Housing, Local Government and Heritage,
- Department of Enterprise Trade and Employment,
- Department of Further and Higher Education, Research, Innovation and Science
- SOLAS
- LOETB

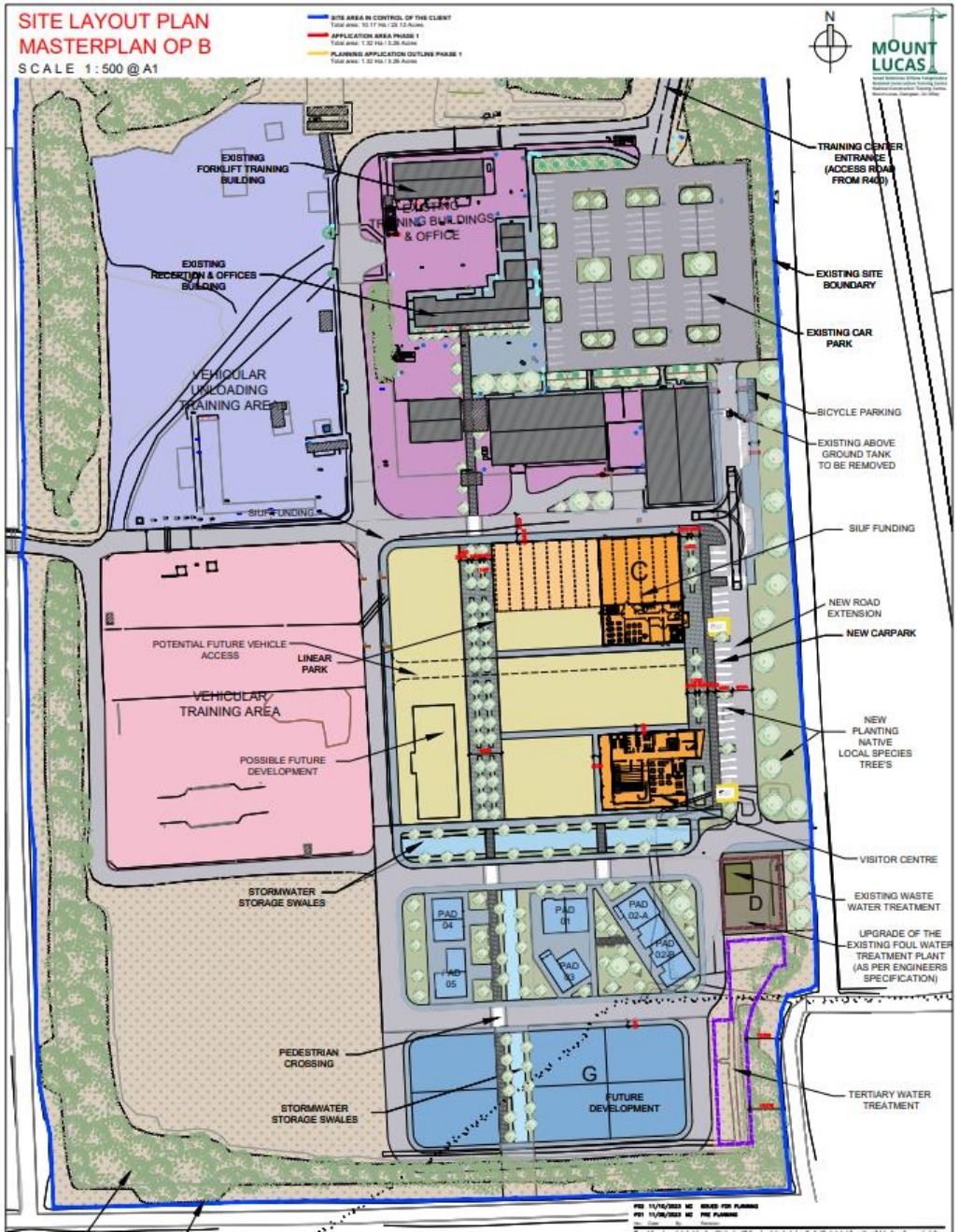
The Group is responsible for:

- Oversight of the design and construction of Phase One
- Oversight of the development of a competitive process to select contractors for the construction of the housing units
- Identifying and engaging the appropriate stakeholders to participate in the Expert Advisory Group for the National Demonstration Park for MMC
- Developing synergies with the wider construction sector ecosystem, mitigating duplication, and providing complementary access to facilities, knowledge and expertise.

National Demonstration Park for MMC

- Milestones
  - Project Management Group (Department of Housing, Local Government and Heritage, Department of Enterprise Trade and Employment, Department of Further and Higher Education, Research, Innovation and Science, SOLAS, LOETB)
  - An Expert Advisory Group was established to advise the Oversight Group on the design of the Park.
  - EOI Phase One Housing Units agreed
  - Appointment of a Project Manager (KSN)
  - Peer Review Report & DT/PM/Engineer Response submitted
  - The consultation process for Phase One was carried out
  - The master plan for the Demonstration Park was agreed
  - The housing units to be delivered in Phase One were selected
  - Expressions of Interest processes to select preferred bidders for the housing units were successfully concluded
  - A planning application was submitted to Offaly County Council, with planning approval received in April

National Demonstration Park for MMC – Phase 1



3 Bed Semi-detached or Terraced

Timber Frame and Steel Frame

1 & 2 Bedroom Volumetric House Types

Affordable House Type

Terraced and Apartment Unit Types

Phase One Housing Units

3 Bed Semi-Detached

	PAD 01 (TYPE A)	
	House A	**House A1**
Space Heating	Low GWP Air Source Heat Pump	Ground Source Heat Pump
Space Cooling	Passive cooling	Cooling loop from heat pump
Hot Water Generation	ASHP	GSHP
Cold Water Services	Central cold water storage tank with rainwater harvesting	Cold water storage tank with Hydroloop
Ventilation & Heat Recovery	Smart MVHR System	Single sided heat recovery ventilation
Renewables	PV only	PV and Solar Thermal
Lighting	High efficiency LED	High efficiency LED
Controls & Metering	Plant linked to occupants smart phone for control and monitoring.	Plant linked to occupants smart phone for control and monitoring.
Fire Alarm & Security	Hard wired system	Hard wired system

	PAD 02-A (TYPE D)		
	Apartment 1 (D1) Central System Passive Cooling **First Floor**	**Apartment 2 (D2)** Modular System Active Cooling **Second Floor**	**Apartment 3 (D3)** Modular System Passive Cooling **Third Floor**
Space Heating	Centralised **Air Source Heat Pump** serving Heat Interface Unit.	**Mono-block** reversable Air Source Heat Pump (ASHP)	**Exhaust Air Heat Pump** (EAHP) serving **U/F heating system**
Space Cooling	Passive Cooling. Low G-value glass	Active Cooling provided via Heat Pump. Fan Coil units with living space and bedroom	Passive Cooling. Low G-value glass
Hot Water Generation	Centralised Air Source Heat Pump serving HIU. Possible W2W HP for high temperatures.	Hot water cylinder within apartment, heated by ASHP.	Hot water cylinder within apartment, heated by EAHP.
Cold Water Services	Central cold water storage tank	Local cold water storage tank	Central cold water storage tank
Ventilation & Heat Recovery	MVHR System with smart controls	MVHR System	Ventilation by EAHP
Renewables	Rooftop PV System serving central Plant	Balcony PV System	Rooftop PV System serving Apartment
Lighting	High efficiency LED	High efficiency LED	High efficiency LED
Controls & Metering	Plant linked to occupants smart phone for control and monitoring. Metering of all plant and water consumption.	Plant linked to occupants smart phone for control and monitoring. Metering of all plant and water consumption.	Plant linked to occupants smart phone for control and monitoring. Metering of all plant and water consumption.
Fire Alarm & Security	Hard wired system	Hard wired system linked to occupant's smart phone.	Hard wired system linked to occupant's smart phone.

Phase One Housing Units

Terraced and Apartment Unit Types

	PAD 02-B		
	2-Storey House (2) Pure Electric (TYPE B)	2-Storey House (1) Heat Pump (TYPE B1)	3-Storey House Smart House (TYPE C)
Space Heating	Electric Heating	Integrated Heat Pump and MVHR System. Skirting heating.	Next generation Heat Pump with low GWP refrigerant. Modular wall emitter.
Space Cooling	Passive- AOV at high level – Stack effect	Active Cooling from MVHR system – heat rejection to hot water	Modular wall emitter
Hot Water Generation	Point of use hot water	Integrated Heat Pump	Solar thermal & integral hot water cylinder. Secondary return on hot water. DW/WM served by hot water.
Cold Water Services	Cold water storage tank	Cold water storage tank c/w rain water harvesting	Cold water storage tank c/w rain water harvesting.
Ventilation & Heat Recovery	Single Sided Heat Recovery	MVHR integrated with heat pump	Smart MVHR System
PV & Solar Thermal	PV (sized accordingly)	PV (sized accordingly)	PV & Solar Thermal, sized accordingly. Battery storage.
Lighting	High efficiency LED	High efficiency LED	High efficiency LED c/w daylighting and circadian rhythm adjustment
Controls & Metering	Plant linked to occupants smart phone for control and monitoring.	Plant linked to occupants smart phone for control and monitoring.	Plant linked to occupants smart phone for control and monitoring.
Fire Alarm & Security	Hard wired system	Hard wired system linked to occupants smart phone	Hard wired system linked to occupants smart phone with enhanced functionality. Keyless access control

Note: Both of these designs have been adjusted to incorporate the minimum design guidance of Department of Housing, Local Government and Heritage publication "Design Manual for Quality Housing" and take account of Part M accessibility requirements.

1 & 2 Bedroom Volumetric House Types

	House Type E
Space Heating	Local electric heaters
Space Cooling	Passive measures
Hot Water Generation	Point of use electric heaters
Cold Water Services	Centralised cold water storage tank
Ventilation & Heat Recovery	Economical MVHR system
Renewables	PV
Lighting	High efficiency LED
Controls & Metering	Plant linked to occupant's smart phone for control and monitoring.
Fire Alarm & Security	Smart System c/w monitoring

Phase One Housing Units

Affordable House Type

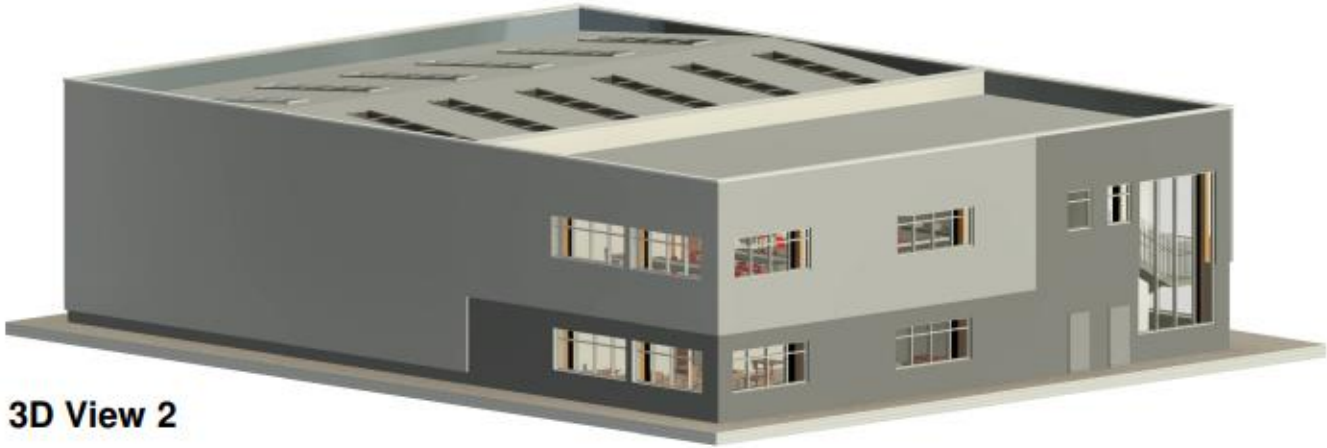
	PAD 04	
	House Type G1	**House Type G2**
Space Heating	Local electric	Budget ASHP connected to skirting heating
Space Cooling	Passive cooling – roof lights	Passive cooling – roof lights
Hot Water Generation	Electric water heater	ASHP
Cold Water Services	Local cold water tank	Local cold water tank
Ventilation & Heat Recovery	Single sided ventilation with heat recovery	Continuous Ventilation Extract System
Renewables	PV – sufficient to meet Part L	PV sufficient to meet Part L
Lighting	LED	LED
Controls & Metering	Plant linked to occupant's smart phone for control and monitoring. Metering of all plant and water consumption.	Plant linked to occupant's smart phone for control and monitoring. Metering of all plant and water consumption.
Fire Alarm & Security	Hard wired system	Hard wired system

Note: Design incorporates the minimum design guidance of Department of Housing, Local Government and Heritage publication "Design Manual for Quality Housing" and take account of Part M accessibility requirements.

Phase Two – Training Facility

3D View

- All latest forms of MMC to be showcased:
  - CLT glue lam timber frame
  - Solar PV cladding systems



3D View 2

(DIGITAL) CONSTRUCTION PATHWAY

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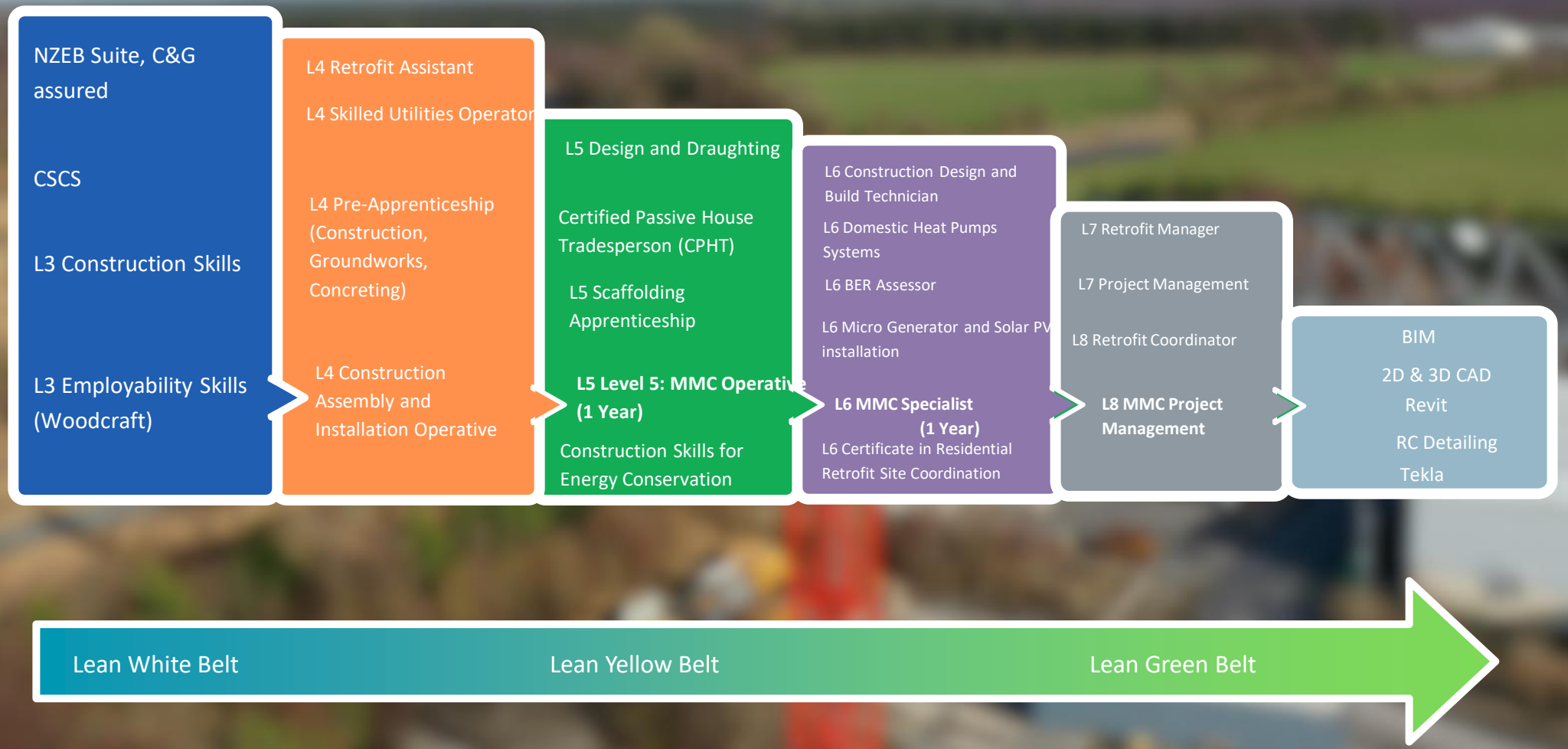


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