

# Home For Learning

The Environmentally  
Friendly Demonstration  
Home & Education  
Centre.

Scotland's Student Challenge



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## The Environmentally Friendly Demonstration Home & Education Centre.

### INTRODUCTION

MOBIE, Construction Scotland Innovation Centre and the City of Glasgow College are inviting the Young People of Scotland to work together to imagine ingenious ways our homes could help solve environmental challenges.

Our homes are one of the largest consumers of energy. They are not only inefficient in the way they operate and conserve energy, but also in their fabric and the way they are built. On top of this, the traditional forms of energy used to power our homes are carbon intensive and devastating to the natural environment. We need radical improvement to meet the net-zero emissions targets that will stop climate change.

Our homes should be beautiful, efficient and reduce energy in use, and energy embodied in their fabric. We need homes that are designed around renewable local energy sources and are flexible and easy to adapt or recycle in future if necessary. They should also care for local habitats and support wildlife, plants and trees. Alongside this, we must retrofit our existing homes to the same standards. Energy Efficient Scotland estimates that 1.58 million homes in Scotland will need retrofitting to meet their carbon free, energy efficient targets.

To achieve these ambitions, we need to adopt new approaches to the way our homes are designed, built, used and re-used. Advances in manufacturing provide new methods of construction that improve efficiency and building performance. This means we can build homes

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that consume less energy and resources. We term these processes Modern Methods of Construction (MMC) and they often employ Offsite Construction techniques. These techniques provide precision made high-quality homes that are fabricated in purpose-built facilities that minimise waste and environmental impact.

## THE DESIGN CHALLENGE

**Your challenge is to design a sustainable and energy efficient family home that can be used as a showcase and education space for renewable energy, low carbon technologies and new construction methods.** Your designs must consider the planet. It must be a net zero carbon proposal and sustainable to re-locate, re-build, extend and run. Its construction must use sustainable materials, which could include recycled materials and building methods that minimise waste. It must also offer low running costs, efficient energy and water use. Think about how the design and specification of the house can reduce the need for materials and energy, and how you could power it through renewable resources.

## HOME FOR LEARNING

The home you design should reflect the lifestyle and requirements that a multigenerational family will require in the years ahead. It should also have the dual use of being an innovative and futuristic demonstration space for learning. The home should show how renewable energy systems, technology and new construction methods work both for the future of our planet and the lifestyles of the people who will live in it. Visiting students need to see and learn about net zero homes and building technologies with opportunities for practical hands-on engagement. Therefore, the space should be designed to accommodate small groups visiting.

You should visibly display the technology in the home for visiting students to see and learn from. For instance, the home could feature smart or intelligent glass. This technology can adjust privacy / light transmission on demand,

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adjusting the opacity of the glass from clear to translucent. You might include these panels or a similar technology to reveal the workings of the home to visitors. The demonstration home you design should be an Active Building, completely energy efficient, with innovative ways of controlling, storing and releasing energy. It should also be able to trade energy too.

Alongside Modern Methods of Construction some technologies you should explore could include: Capturing heat and electricity from the sun for storage through photovoltaics, wind and hydro turbines, ground and air source heating systems, various insulation materials and methods with low embodied energy, rainwater collection and harvesting techniques. Also, think about reductions in waste and waste water treatments. Another precious resource that is vital to our lives is water. On average each person in Scotland uses around 165 litres of water a day and we use energy to heat 50% of that. So, think about not just ways to reduce water consumption but at the same time save on the energy that heats it. Your design should also consider outside space for growing, planting and encouraging wildlife and biodiversity. To achieve the above, you will need to research and investigate the latest advances in renewable energy, low carbon materials and construction methods and creatively incorporate them into your home design.

## THE SITE

You might want to learn about the chosen site where the home and centre will be built and the surrounding area. You can look at the site on a map, the drone video or from old photographs and, if possible, research about it on the internet. If it's safe to do so, you can visit the site and take photographs, make sketches and rough plans, take measurements of key distances.

## LANDSCAPE, NATURE & ENVIRONMENTAL CONDITIONS

If you visit the site, you could carry out a site survey. Check out the 'lie of the land' and the setting of the site and surrounding landscape. Ask yourself

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some key questions, like how big is the site? Are there changes in levels? How is the site accessed? Is it a quiet place or noisy? Where/ who are the neighbours? Where does the sun rise and set? Note any obstructions to the development such as trees, overhead cables, historic buildings. What plants and creatures currently call the site home? How much wildlife is already here, might there be any protected species? Is there an opportunity to create more green space and wildlife habitat in redeveloping the site?

## MEETING FUTURE NEEDS

Show us how the home will consider the health and wellbeing of the people who live in it, as well as those in the surrounding community.

Consider what new and digital technologies the occupants might need and enjoy. Your new home should be beautiful to look at, as well as beautiful to live in. Finally, how well will your design last into the future – i.e. Will it be flexible for future adaptations to future lifestyles?

## SUBMISSION DETAILS

There are 3 submission age categories: 11 - 15, 16 - 18 and 19 plus years

You can submit a physical or digital entry. Please provide something like:

- Maximum of 2 x storyboards.
- Your site research and findings.
- You will probably want to make a model; you only need to submit photos of your model (but keep your model safe as we may want to display it later in the exhibition)

Also, if you or your college or school would like to arrange an online meeting to discuss any details or answer questions about the competition please contact Gerry Ruffles [gerry@mobie.org.uk](mailto:gerry@mobie.org.uk) . You can also visit our websites [www.mobie.org.uk](http://www.mobie.org.uk) and/or [www.offsiteready.com](http://www.offsiteready.com)

Submission date for your entries is: **8th June 2022**

All digital entries: [home@mobie.org.uk](mailto:home@mobie.org.uk)

All physical entries: City of Glasgow College, City Campus, 190 Cathedral Street, G4 0RF

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