

■ ECO-HABITECH

STUDENT QUICK-START

SCENARIO

Your team has been employed to construct a polar research station that will be tested for space, water catchment, wind strength and load bearing properties. The value of materials used and their carbon cost will also be calculated.

AIM

The aim of this full-day activity is to construct a model house that is as profitable as possible to construct. i.e. achieves a high income for doing well in the tests but has a low total cost of materials.

WHAT TO DO

Your team will have a selection of consumable materials available for purchase which will be needed to construct a model house. A small saw, cutting block, ruler and scissors are provided as tools to use for your construction.

Begin by planning the design of your house and the materials required to successfully execute your design. Take note of the pre-test criteria. Before finalising your design, consider the strengths of the materials and how these can be used to maximise the tested capabilities of your house. Additional help may be found in the Tips section (over page).

TIMETABLE

Full Day Activity	
Session 1 (1h 45m)	Following a 5-minute briefing by your Activity Personnel, your team should spend about 10 minutes designing your Eco-Habitech house that you'll build before moving onto construction (1h 30m)
Lunch Break (30m)	
Session 2 (1h 45m)	After the break, your team has approximately 10mins to finalise any purchases and/or claim refunds from the shop. You will have 20mins from the start of Session 2 to finalise your construction. The Pre-Test and Testing Period will start 1 hour and 25 minutes before the end of the session.

RULES

Your team must construct one model house to be tested from only the materials provided. None of the equipment, for example a ruler, may be used to construct the house.

The saw may only be used to cut materials that are securely placed on the cutting block.

The weights may be handled but cannot be placed onto a model house before the testing period.

Once your model has been officially measured in the Pre-Test it cannot be further modified.

At all stages, your team is responsible for placing your model house into the test rig.

The model must be attached to the provided upturned Bio-cane tray. No part of the model may overhang the tray, with guttering being exempt from this rule. The maximum height allowed is 20cm from the underside of the tray to the highest point of the structure.

The model must have a fully enclosed living area inside. There must be one external opening/closing door, with a minimum size of 6cm high and 5cm wide.

An enclosed garage with a roof must be included. This garage must be large enough to fit the all-terrain carrier vehicle, which measures 5cm x 5cm x 8cm long. The garage can be either inside or attached to the house and must have only one external opening with no door.

A helipad must be located on the roof. The minimum size for this helipad is 5cm x 5cm, and it must be strong enough to support weights during testing.

The model must have two windows made from transparent material, not just holes in the walls. Each window must be at least 3cm high and 2.5cm wide.

Teams have access to materials in the shop until it closes, then only refunds of materials can be processed. Once the model has been officially measured in the pre-Finale testing period, no further modifications are allowed.

Official judges will determine if the model meets all requirements. The decisions of the judges are final.

SCORING

The final score is determined by the area of the house's base (including the garage), liveable height of the model, water harvesting efficiency, storm resistance (strength of wind it can withstand), strength of the helipad, penalties for not complying with design rules, the production cost and carbon cost of all materials used. A Clean-Up Bonus will be awarded to teams who have a clean workspace at the end of the task.

Points for the base area and liveable height as well as penalties for failing to meet design briefs will be determined in the Pre-Test. Additional points are awarded during the testing period according to the water harvesting efficiency, storm resistance, helipad strength.

It is critical to read the score sheet and rules to understand how points are awarded.

⚠ Ensure that your Score Sheet is returned to the Activity Personnel.

TIPS

Before you start to build, it is essential that you read the score sheet to determine the test requirements for your house.

In the construction process, focus on stability and structural integrity. Plan for potential vibrations or movement during testing by securing all components thoroughly.

Materials perform differently if they are compressed, stretched or bent.