



OFFICE OF TASMANIAN
ASSESSMENT, STANDARDS
& CERTIFICATION

Tasmanian Certificate of Education
External Assessment 2016

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HOUSING and DESIGN

(HDS315113)

Time allowed for this paper

- Working time: 2 hours
- Plus 15 minutes recommended reading time

Pages:	12
Questions:	4
Attachments:	Answer Sheet for Section A (Question 1 and 2) Answer Sheet for Section B (Question 3 and 4)

Candidate Instructions

1. You **MUST** make sure that your responses to the questions in this examination paper will show your achievement in the criteria being assessed.
2. There are **TWO** sections to this paper.
3. You must answer:
 - **ONE** question from **Section A** - on the A3 answer sheet for that section.
 - **ONE** question from **Section B** - on the A3 answer sheet for that section.
4. All written responses must be in English.

On the basis of your performance in this examination, the examiners will provide results on each of the following criteria taken from the course statement:

Criterion 3 Apply features and principles which will contribute to environmental sustainability within design decisions.

Criterion 4 Understands and applies architectural design principles relating to the functional use of space.

SECTION A

Answer **ONE** question from this section.

Your answer should be on the A3 answer sheet provided for this section.

This section assesses **Criterion 3**.

Question 1

Refer to drawings opposite.

Jemima and Ed's parents have invited their adult children to locate a beach shack on a little island they inherited off the coast of Broome, Western Australia (hot humid/tropical climate). It can be reached by private boat or helicopter, but there is no dedicated transport to the island.

Due to these restrictions, Jemima and Ed are keen to transport a prefabricated 'shipping container' shack to the island that will need to generate its own electricity, collect rainwater and incorporate a composting toilet.

They have sent you a copy of a plan that they found on the internet and they believe it would be suitable to use (see Figure 1.1). The bedroom/bathroom unit pops out from inside the shipping container, shown as hatched in the drawing opposite. Once it is transported and positioned on site the pop out will be fixed outside of the container.

Their idea is to buy **two** containers which can be modified in terms of openings and site them together, so that it could cater for two couples, or a family of four. The prevailing winds are from the west in summer and the west and south in the winter (see Figure 1.2). The shipping container is 6000 mm long, 2500 mm wide and 3000 mm high.

Aim

To provide Jemima and Ed with advice about what design considerations would need to be modified or added to enable thermal comfort including:

- the orientation and siting of the two containers
- rainwater tank(s)
- a shared deck for outdoor eating
- the position for an energy collection

Response

- On the answer sheet, draw and orientate the plan of the two containers and fixtures on the site (not to scale) to demonstrate the principles of climatic design. Use a scale of 1:100.
- Draw a cross-section of the plan opposite, and identify five key features and/or principles of climatic design that will assist Jemima and Ed in creating a thermally comfortable environment. Use a scale of 1:100.

Use the **answer sheet** provided for Section A to answer this question.

Section A continues.

Section A (continued)

Figure 1.1

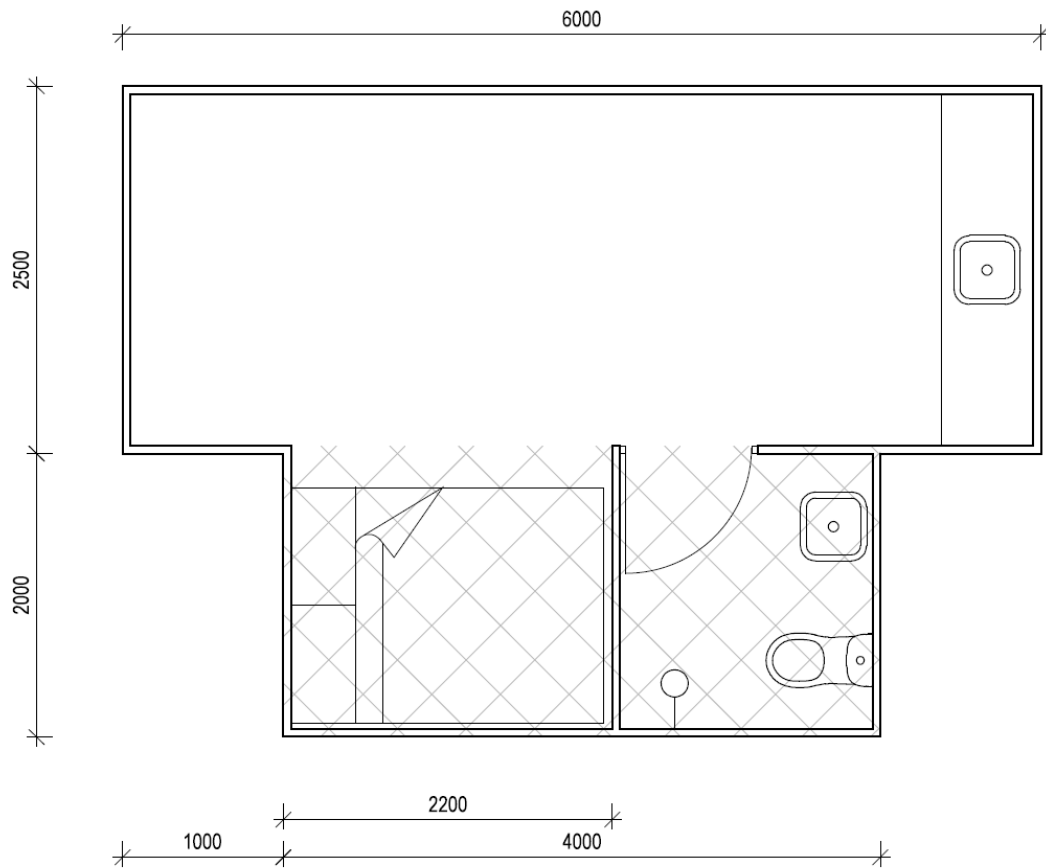
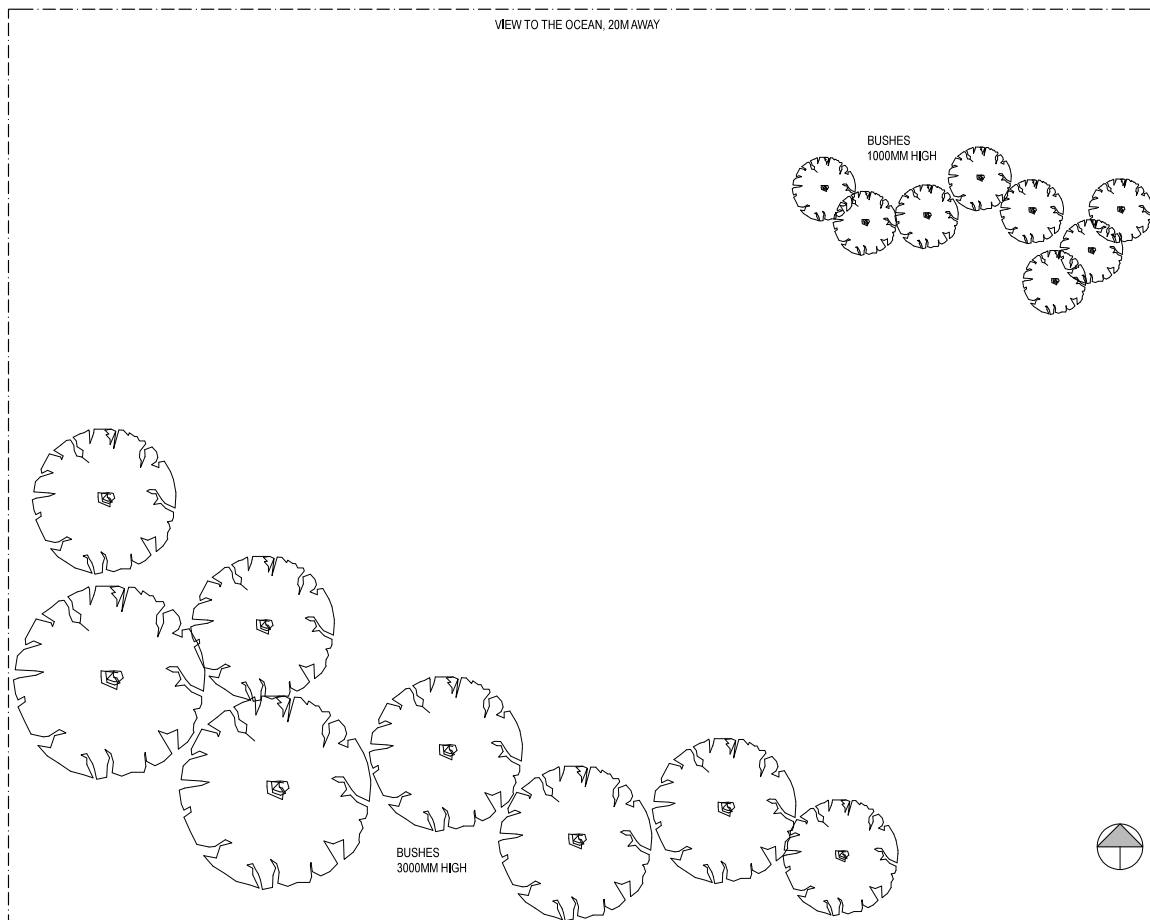


Figure 1.2



Section A continues.

Section A (continued)

Question 2

Refer to drawings opposite.

Abdul has recently acquired a rural property outside Canberra (cool temperate climate) in the mountains with the aim of placing a 'shipping container' shack to work and live in as a writer. The property has access to the electricity grid and a small running creek.

The 'shipping container' design can be modified in terms of openings and the location of zones within the design (see Figure 2.1). Abdul wants to buy and use **two** of these shipping containers, as he would like to occasionally invite his family and friends up to stay. The prevailing winds on this site (see Figure 2.2) come from the west in summer and the west to southwest in the winter.

The shipping container is 6000 mm long, 2500 mm wide and 3000 mm high.

Aim

To provide Abdul with advice about the features and principles that will maximise thermal comfort in this climate using the shipping container 'design'. As well as advice on the appropriate positioning of the two containers including:

- a wood heater
- a small outdoor deck
- a rainwater collection tank.

Response

- On the answer sheet, draw and orientate two shipping containers (Figure 2.1) on Abdul's site (not to scale) to demonstrate the principles of climatic design. Use a scale of 1:100.
- Draw a cross-section of the plan below, and identify five key features and/or principles of climatic design that will assist Abdul in creating a thermally comfortable environment. Use a scale of 1:100.

Use the **answer sheet** provided for Section A to answer this question.

Section A continues.

Section A (continued)

Figure 2.1

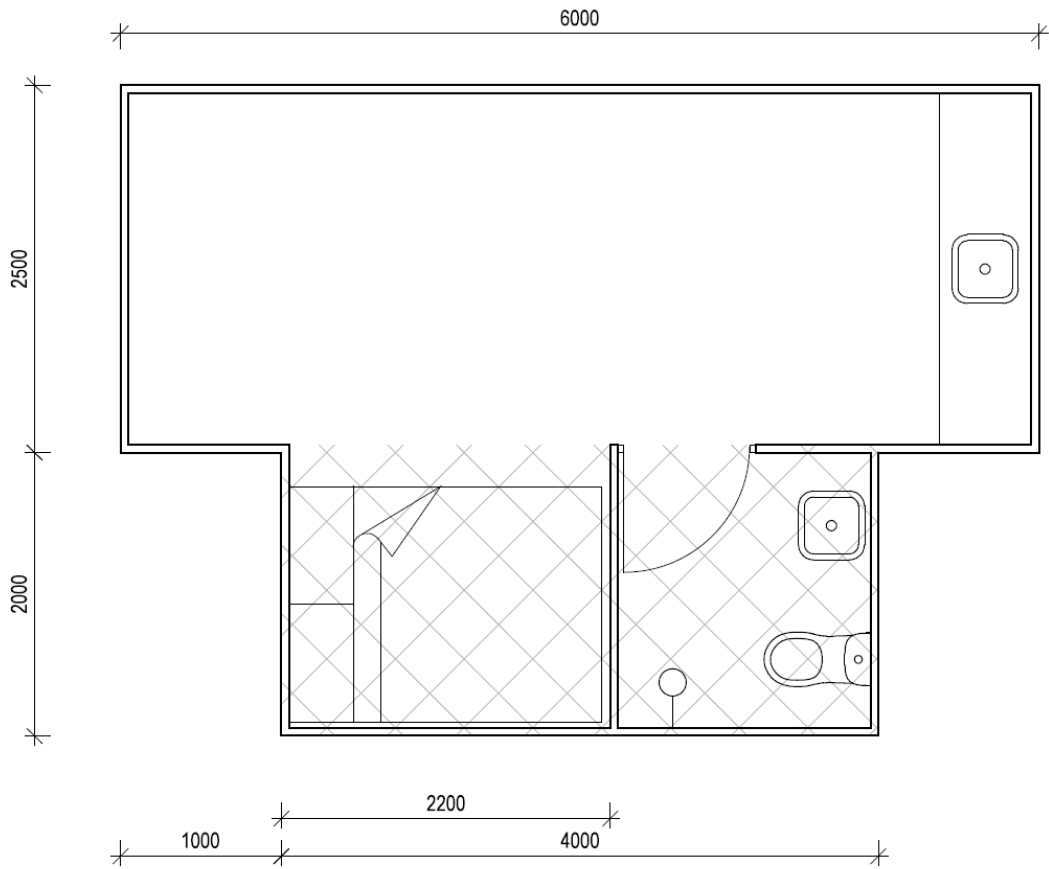
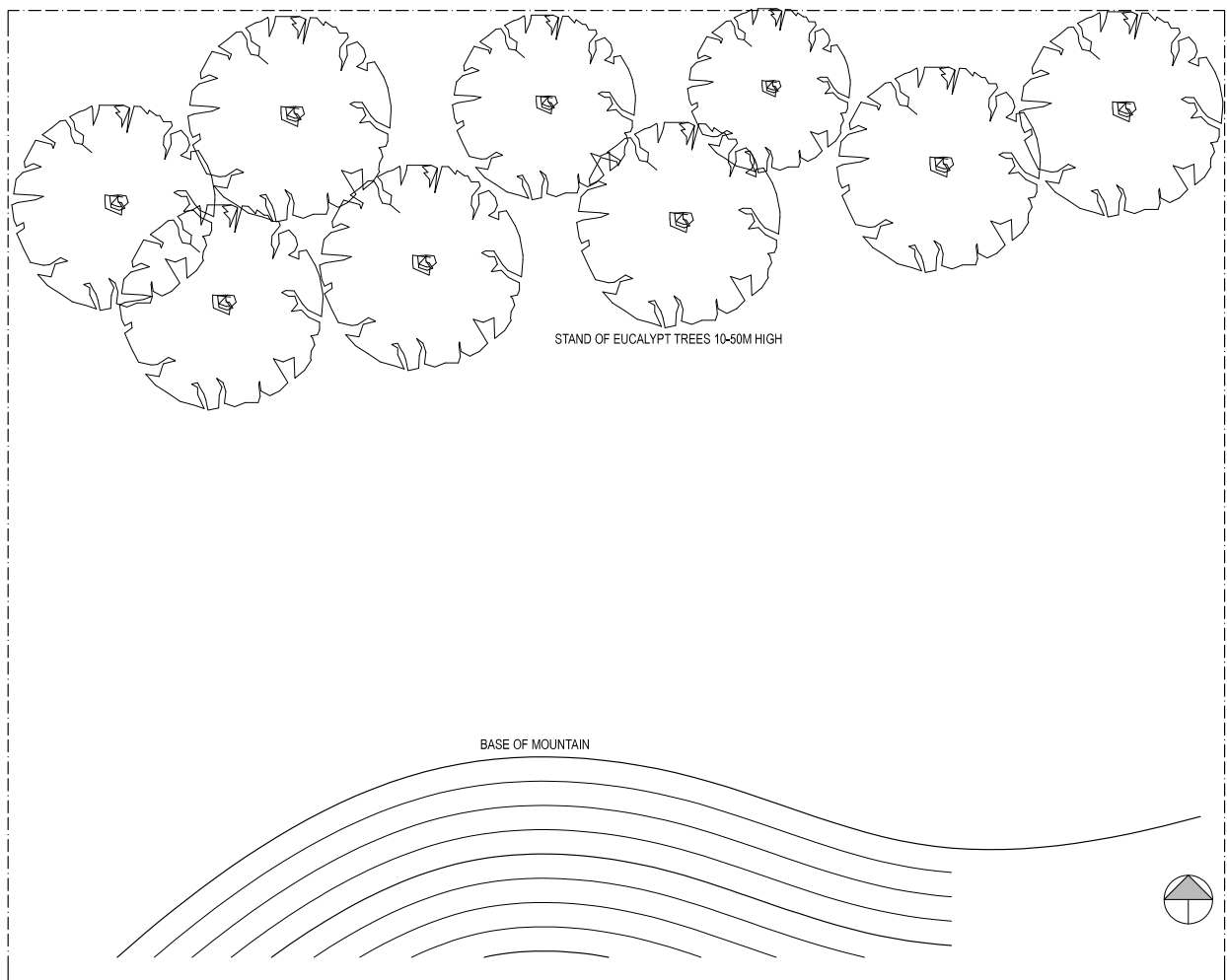


Figure 2.2



SECTION B

Answer **ONE** question from this section.

Your answer should be on the A3 answer sheet provided for this section.

This section assesses **Criterion 4**.

Question 3

Refer to the drawing opposite.

Andrea has bought an existing two-storey beach house in Tasmania that requires some renovations to suit her needs. Andrea works as a banker in Melbourne and has decided to relocate to the beach house where she will work from home.

As Andrea is in a wheelchair, the renovations required on the ground floor include:

- a new bedroom
- a new bathroom
- a new kitchen
- a flexible space for living, dining and working.

The existing position of the stairs on the floor plan cannot be changed as the first floor is for Bronwyn, Andrea's live-in carer.

The main window faces the ocean view and receives natural light. The site is very private and there is only one adjacent neighbour (see figure 3.1). There are no restrictions in terms of servicing, placing new walls within the existing ground floor plan or new openings with the outside walls.

Aim

To make design recommendations for Andrea's requirements.

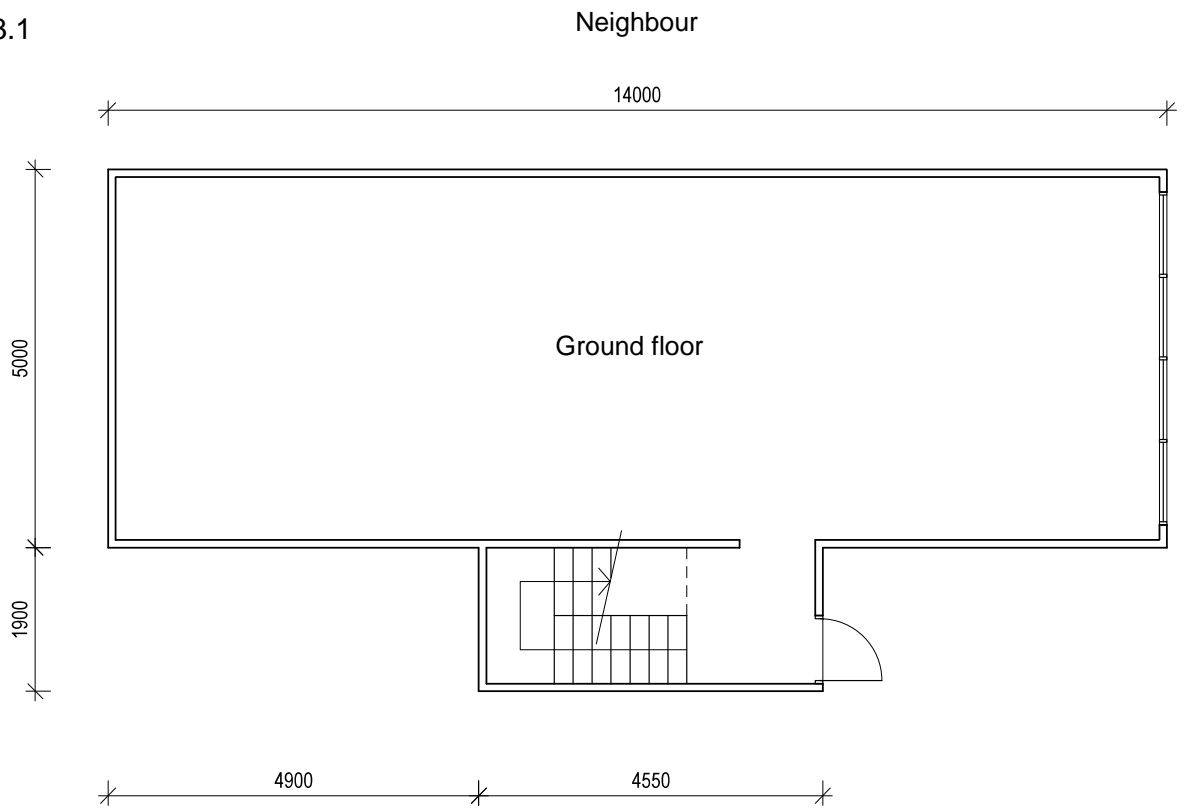
Response

- Show the design layout of the new bedroom, bathroom and kitchen, including the furniture and fittings, and outline the flexible living, dining and working space on your floor plan.
- On the answer sheet provided for **Section B**, draw the plan at scale 1:100 and add annotations to justify your design decisions.

Section B continues.

Section B (continued)

Figure 3.1



Section B (continued)

Question 4

Refer to the drawing opposite.

Chenghao and Esther have just bought off the plan two apartments that are side by side in an existing building in the middle of Launceston. As they have bought off the plan it is possible for them to re-design the space as though it was one large apartment.

Their requirements include:

- a galley kitchen
- dining space for 6
- sitting space
- master bedroom
- a bathroom
- a study that can be used as another sleeping space for friends or family staying.

They do not have a particular style but in general want to access as much light and air as possible and not to feel as though the space is cramped. The windows face northeast and northwest directions. The position of the entry door can be placed anywhere along the same internal wall where it is currently shown.

Aim

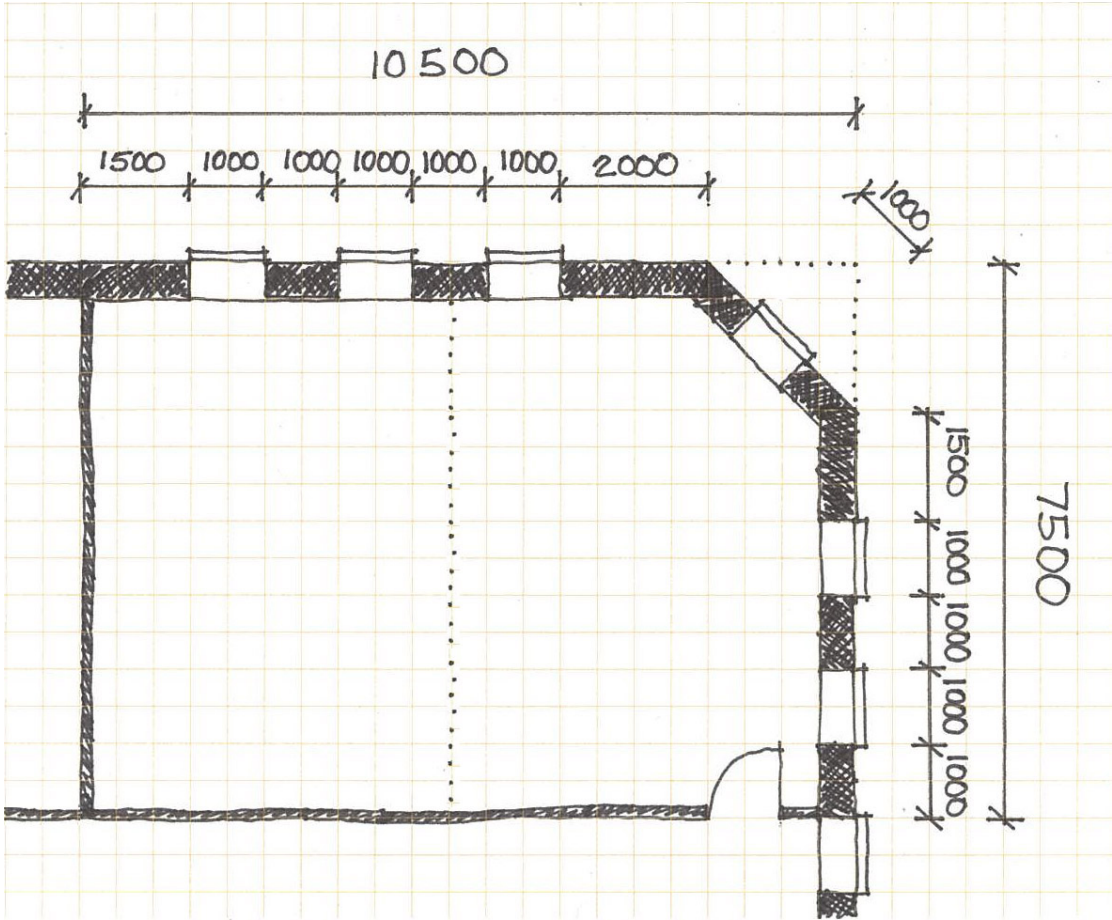
You have to make design recommendations for Chenghao and Esther about spaces that best meet their requirements.

Response

- Design the new layout of one larger apartment for Chenghao and Esther that shows the different spaces, furniture and fittings.
- On the answer sheet provided for **Section B**, draw the plan at scale 1:50 within the outline of the apartment boundaries and add annotations to explain your design decisions.

Section B (continued)

Figure 4.1 - The outline of the two apartment spaces bought to be designed as one apartment



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