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# HOUSING AND DESIGN

HDS315118

Pages: 16

Questions: 4

Answer Sheets: 4

Information Sheet: 1

**Preparation time for this exam:** 15 minutes

**Suggested working time:** 2 hours

## Instructions:

- There are **two (2) sections** to this exam paper.
- You must answer **one (1)** question from each section:
  - **Section A** – answer **one (1) question** on the supplied **Section A Question 1 OR Section A Question 2 Answer Sheets**
  - **Section B** – answer **one (1) question** on the supplied **Section B Question 3 OR Section B Question 4 Answer Sheets**.
- The exam is **two (2) hours** in length. The suggested working time for each section is **approximately 60 minutes**.
- All answers must be written in **English**.
- You **must** make sure your answers address the listed criteria.

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# Guide to Exam Structure

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		Questions available	Questions to answer	Suggested working time	Marks available
Section	<b>A</b>	2	1	60 minutes	All criteria are assessed using extended ratings of A+ to z
Section	<b>B</b>	2	1	60 minutes	
<b>Totals</b>		<b>4</b>	<b>2</b>	<b>120 minutes (2 hours)</b>	

## Criteria

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You **must** make sure your answers address:

- Criterion 3 analyse and apply features and principles which contribute to environmental sustainability within design decisions
- Criterion 4 apply architectural design principles relating to functional use of space.

# Section A

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- Answer **one (1)** question in this section.
  - Answer on the A3 answer sheet labelled either **Section A Question 1 OR Section A Question 2**.
  - The suggested working time for this section is **approximately 60 minutes**.
  - This section assesses **Criterion 3**.
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## Question 1

Sara and Juan own a flat 680 m<sup>2</sup> block of land near Launceston, Tasmania. The site is in a cool temperate climate zone. The prevailing wind is from the west and, during summer, cooling north-westerly breezes are common.

They are planning to build a small one-bedroom house using passive solar design principles. Their goal is to create a home that is energy-efficient, comfortable throughout the year, and has a low environmental impact.

Privacy is a key concern, especially along the northern boundary, which borders a business and its car park. To address this, they want to keep the existing 3-metre-high dense vegetation along the northern edge of the property. To meet the local planning regulations, all new buildings must be set back as shown on the site plan.

Sara and Juan want the design to suit their current needs while remaining comfortable and private. The layout must include:

- one sleeping space
- one bathroom with laundry facilities
- a combined kitchen, living and dining area
- a small outdoor living space (minimum size: 4 m<sup>2</sup>).

This must fit within a single storey building footprint of 60 m<sup>2</sup>.

### Aim

Provide Sara and Juan with design advice on how to include passive solar features in their home while ensuring it is comfortable and private.

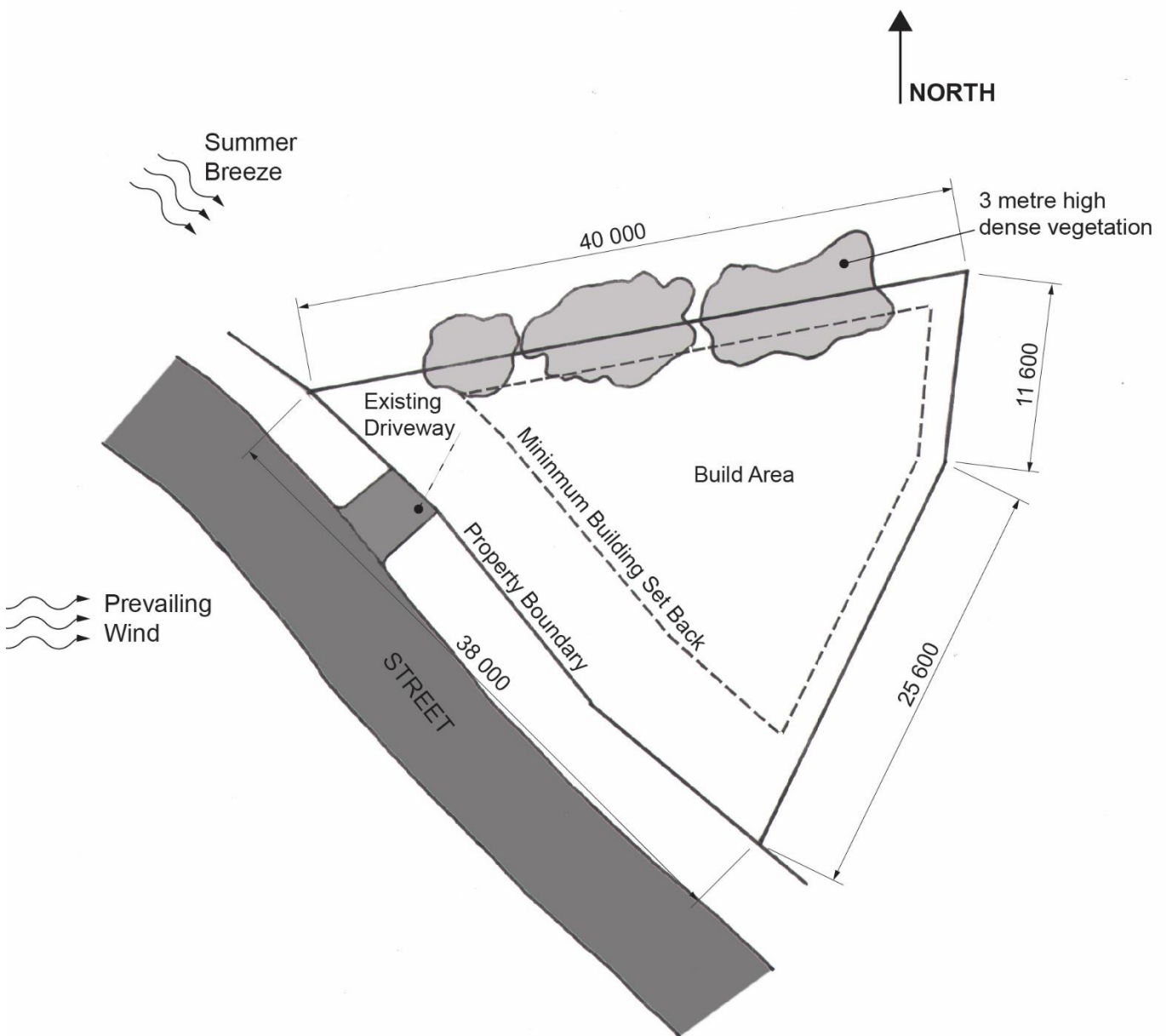
**Question 1 continues**

## Question 1 continued

### Response

Use the provided **A3 Answer Sheet – Section A Question 1** to answer this question. You may use both sides of the answer sheet.

- Using the 1:500 site plan, drawn on the answer sheet, show the position of the building footprint on the site.
- At a scale of 1:100 draw a floor plan of your final design. Show the zones and any passive solar features.
- Clearly annotate your drawings to justify all decisions.
- Draw additional section sketches to illustrate critical heights, angles and details of key features.



Site plan

Drawing is not to scale

## Question 2

Koorin and Jarli own a flat 844 m<sup>2</sup> block of land near Darwin in the Northern Territory. The climate is hot humid tropical, with two main wind patterns. During the wet season (November to April), north-westerly winds blow in from the ocean, in the dry season (May to October), the winds are mostly south-easterly, coming from inland.

They plan to build a one-bedroom home that follows passive solar design principles. This will help reduce the cost of staying cool, lower energy use, and make the house more environmentally friendly.

To meet the local planning regulations, all new buildings must be set back as shown on the site plan. The block has a two-storey house on the south-east boundary, which creates privacy concerns. On the south-west side, the land borders a marina, offering attractive water views and marina access.

Koorin and Jarli want the house design to prioritise thermal comfort, protect their privacy, and take advantage of the views and marina access.

For the design to meet their current needs the layout must include:

- one sleeping area
- one bathroom with laundry facilities
- a combined kitchen, living and dining area
- a small outdoor living space (minimum size: 4 m<sup>2</sup>).

This must fit within a single storey building footprint of 60 m<sup>2</sup>.

### Aim

Provide Koorin and Jarli with design advice on how to include passive solar features in their home while ensuring it is comfortable and private with access to the water and views.

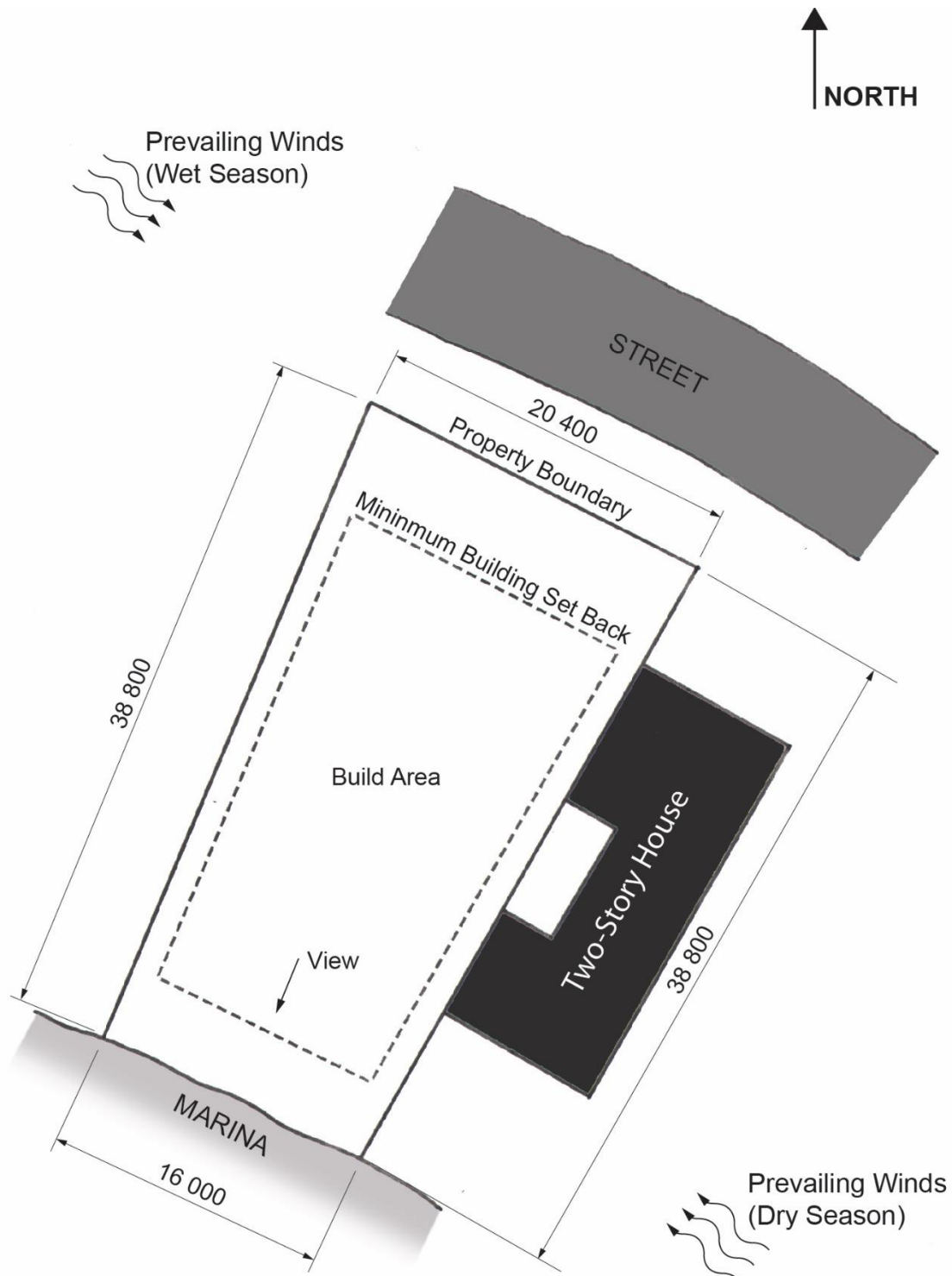
### Response

Use the provided **A3 Answer Sheet – Section A Question 2** to answer this question. You may use both sides of the answer sheet.

- Using the 1:500 site plan, drawn on the answer sheet, show the position of the building footprint on the site.
- At a scale of 1:100 draw a floor plan of your final design. Show the zones and any passive solar features.
- Clearly annotate your drawings to justify all decisions.
- Draw additional section sketches to illustrate critical heights, angles and details of key features.

**Question 2 continues**

Question 2 continued



Site plan

Drawing is not to scale

# Section B

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- Answer **one (1)** question in this section.
  - Answer on the A3 answer sheet labelled either **Section B Question 3 OR Section B Question 4**.
  - The suggested working time for this section is **approximately 60 minutes**.
  - This section assesses **Criterion 4**.
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## Question 3

Andre lives with his family of four. Recently, he was involved in an accident that has made him reliant on a wheelchair for mobility. After some discussion, the family has decided to modify their home to make it universally accessible for Andre. Their home has a second storey used by other members of the family.

Their kitchen, dining and outdoor living space need redesigning to ensure universal access. It is important that all family members can use the kitchen safely and effectively.

The redesigned kitchen/dining area needs to have all the same amenities it currently has, including:

- a two-bowl sink
- a dishwasher
- an induction cooktop, electric oven and microwave
- food storage/pantry and a method of storing kitchen essentials
- a refrigerator and freezer
- a four-seater dining table
- universal access to the outdoor deck.

## Aim

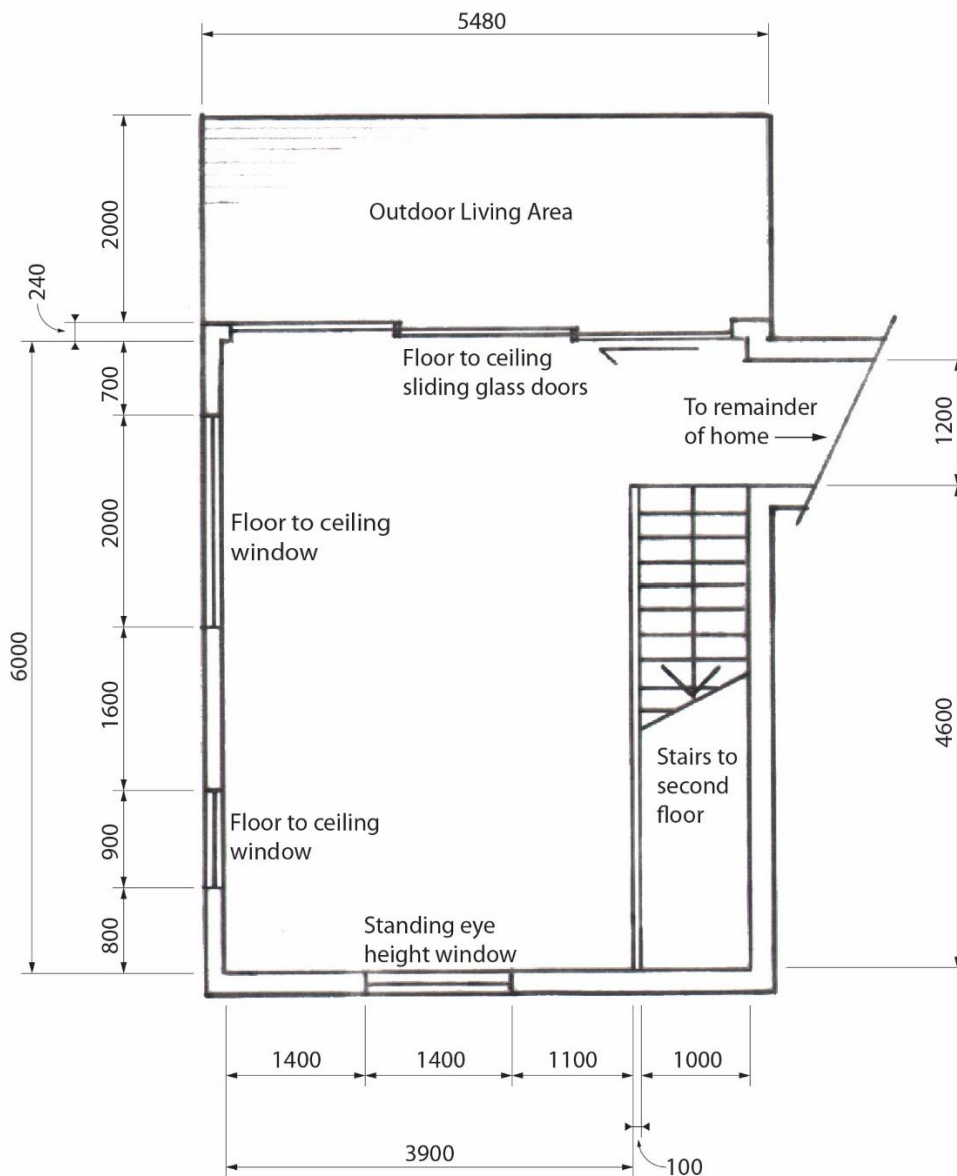
Provide design advice to Andre and his family on how they can make their kitchen, dining and outdoor living spaces universally accessible.

### Question 3 continued

### Response

Use the provided **A3 Answer Sheet – Section B Question 3** to answer this question. You may use both sides of the answer sheet.

- At a scale of 1:50, draw a floor plan of your final design. Show the location and key requirements of the kitchen joinery, appliances, furniture and fittings for the kitchen, dining, and outdoor living areas.
- Clearly annotate your drawings to justify all design decisions and indicate the features and dimensions that make this a functional universal access design.
- Include additional sections and/or joinery elevation sketches to illustrate critical heights and design elements that support universal accessibility.



Kitchen/Dining plan

Drawing is not to scale

## Question 4

Tian and Sam live with their two children, Charlie (13) and Olli (16), in a two-bedroom house. Until now, the children have shared a bedroom. However, Olli now needs more personal space and a room of their own.

The family explored several options and decided that placing a prefabricated unit in their backyard, a short distance from the house, is the best solution. The unit will be connected to electricity but will not have plumbing.

After consulting with the manufacturer and installation team, the family decided to position the unit near the house. It will include a large window to capture the view and a glass sliding door on the adjacent side.

The family would like you to design the interior layout of the unit to make the best use of space and natural light, while maintaining access to the view. They also want Olli to be able to walk easily between the unit and the main house to use the existing amenities.

You are also asked to design a connection from the house to the unit, including a small deck at the front of the unit to create a transition space between the garden and the entrance.

Olli would like the unit to include the following features:

- a double bed sized sleeping area
- a relaxation space
- a study area
- a wardrobe and storage space.

### Aim

To provide advice to Tian and Sam on how they can effectively design the unit to meet their family's needs, including the deck and path to the main house.

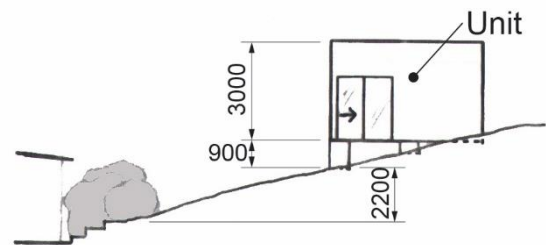
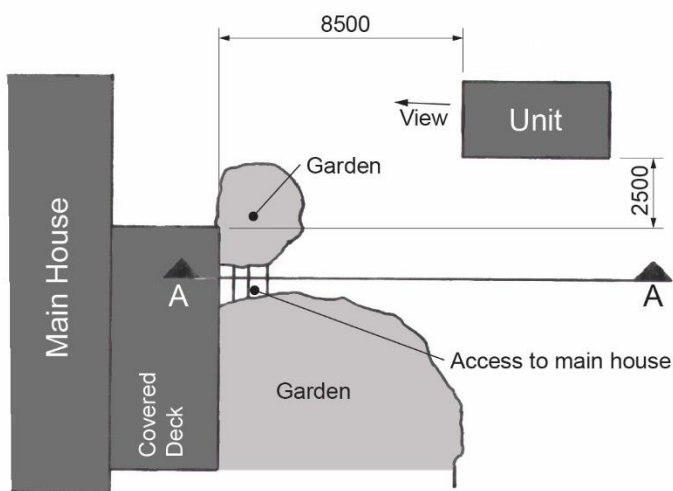
## Question 4 continued

### Response

Use the provided **A3 Answer Sheet – Section B Question 4**, to answer this question.

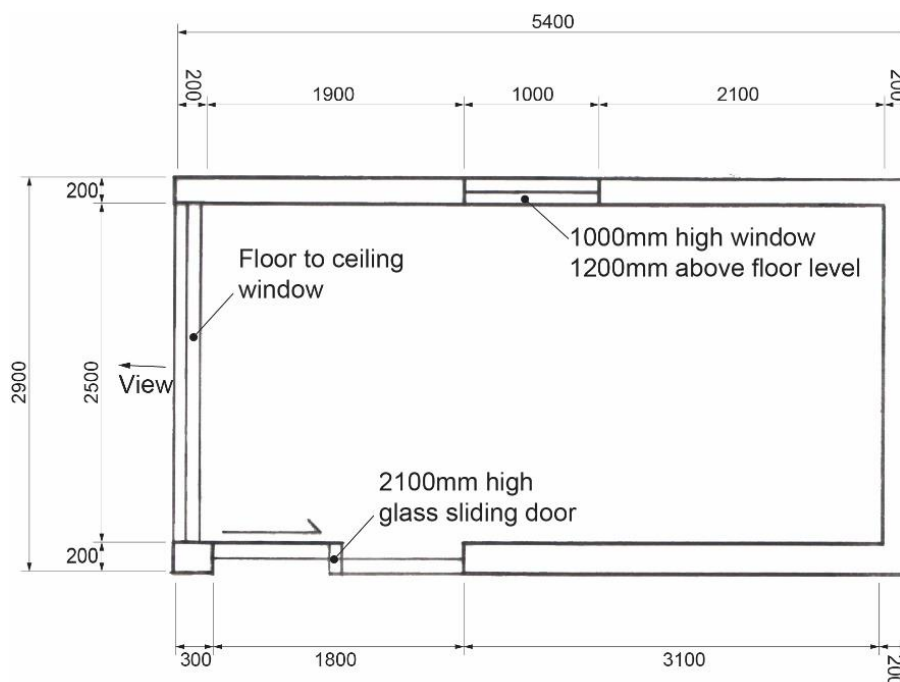
You may use both sides of the answer sheet.

- At a scale of 1:50, draw a floor plan of your final design. Show the location and key features of the unit, the deck, and the path linking the unit to the main house.
- Clearly annotate your drawings to justify your design decisions and indicate all features and dimensions that contribute to a functional design.
- Include additional section and/or elevation sketches to show important heights and design features that support the functionality of the design.



**Section AA**

**Site Plan**



**Unit Plan**

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# HOUSING AND DESIGN

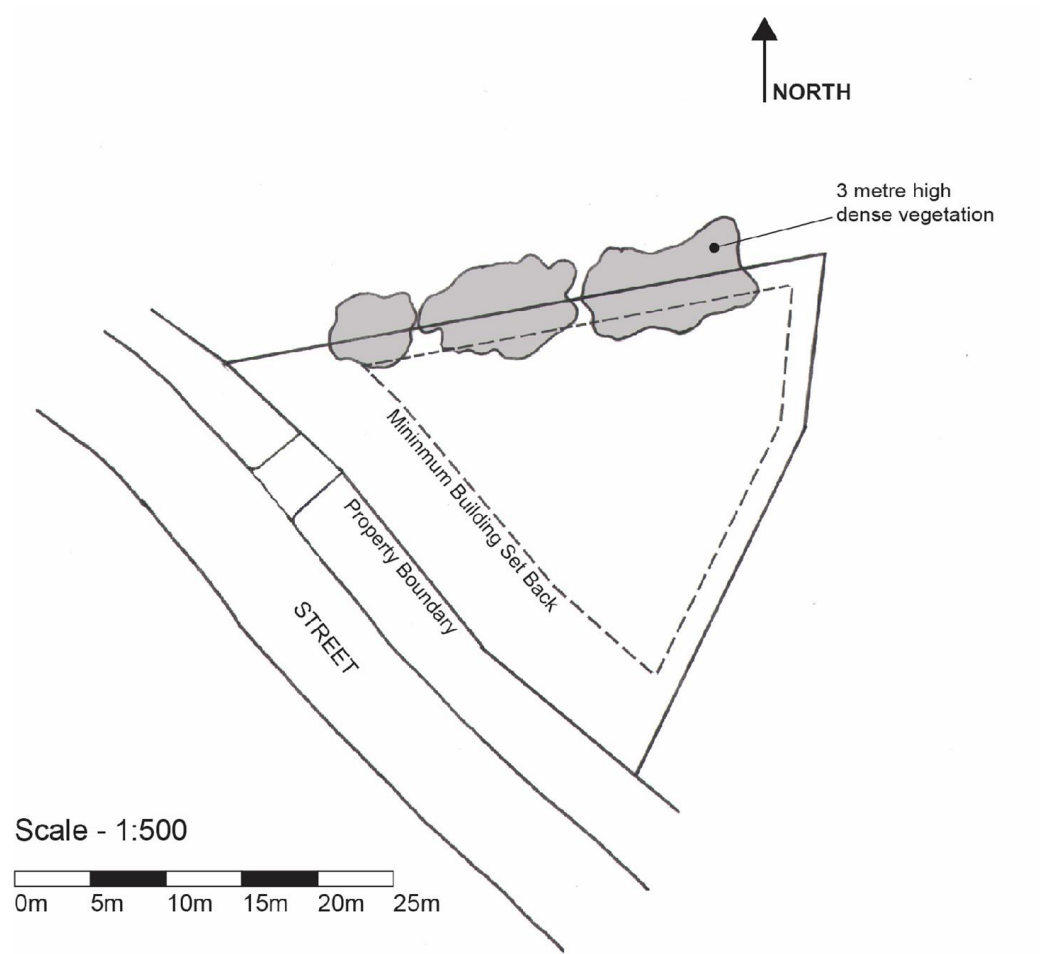
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Section **A** Answer Sheet

## Question 1 – Cool Temperate Passive Solar

### Instructions

- Answer **one (1)** question in **Section A** on **one (1)** of the supplied Section A Answer Sheets.
  - **Either** Section A Question 1 **OR** Section A Question 2.



**Site Plan**

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# HOUSING AND DESIGN

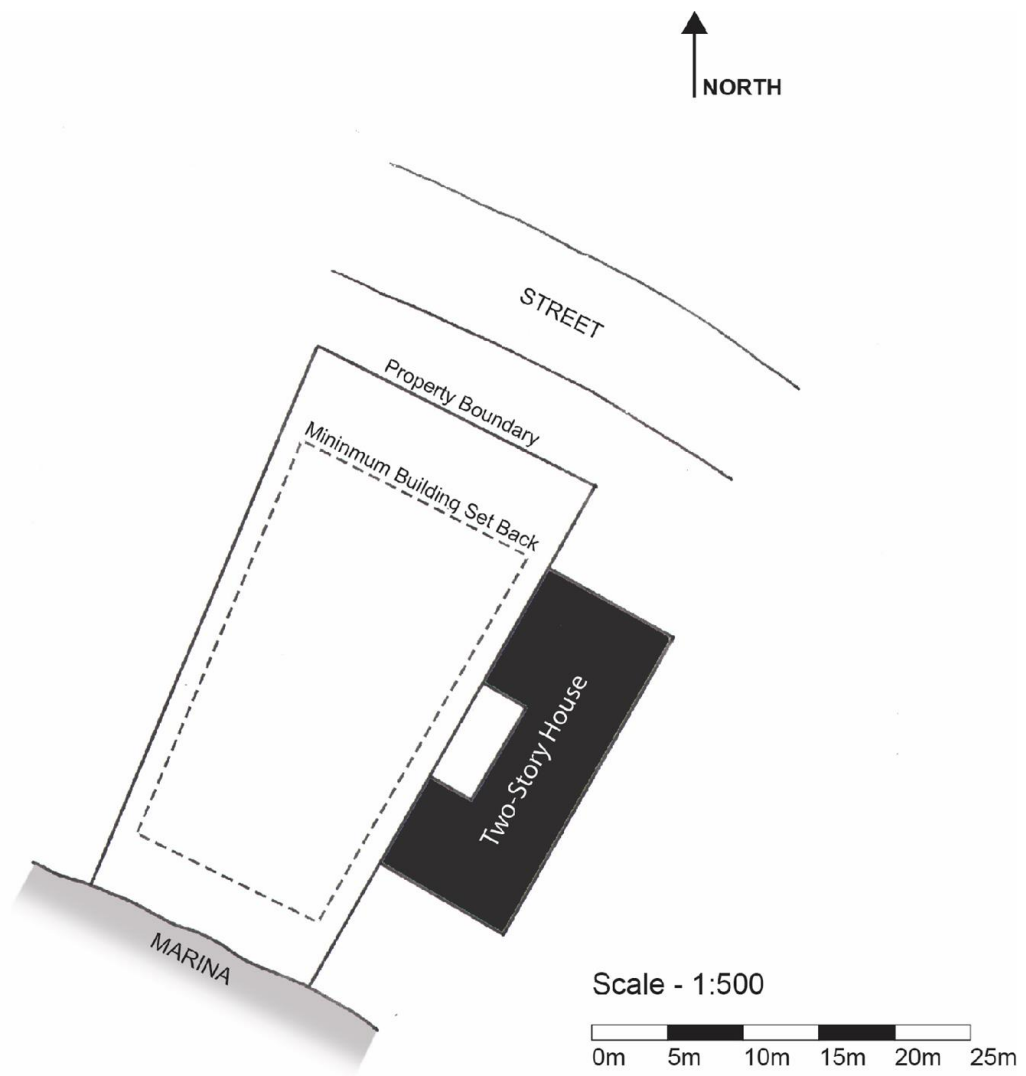
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Section **A** Answer Sheet

## Question 2 – Hot Humid Tropical Passive Solar

### Instructions

- Answer **one (1)** question in **Section A** on **one (1)** of the supplied Section A Answer Sheets.
  - **Either** Section A Question 1 **OR** Section A Question 2.



Scale - 1:500

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**Site Plan**

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# HOUSING AND DESIGN

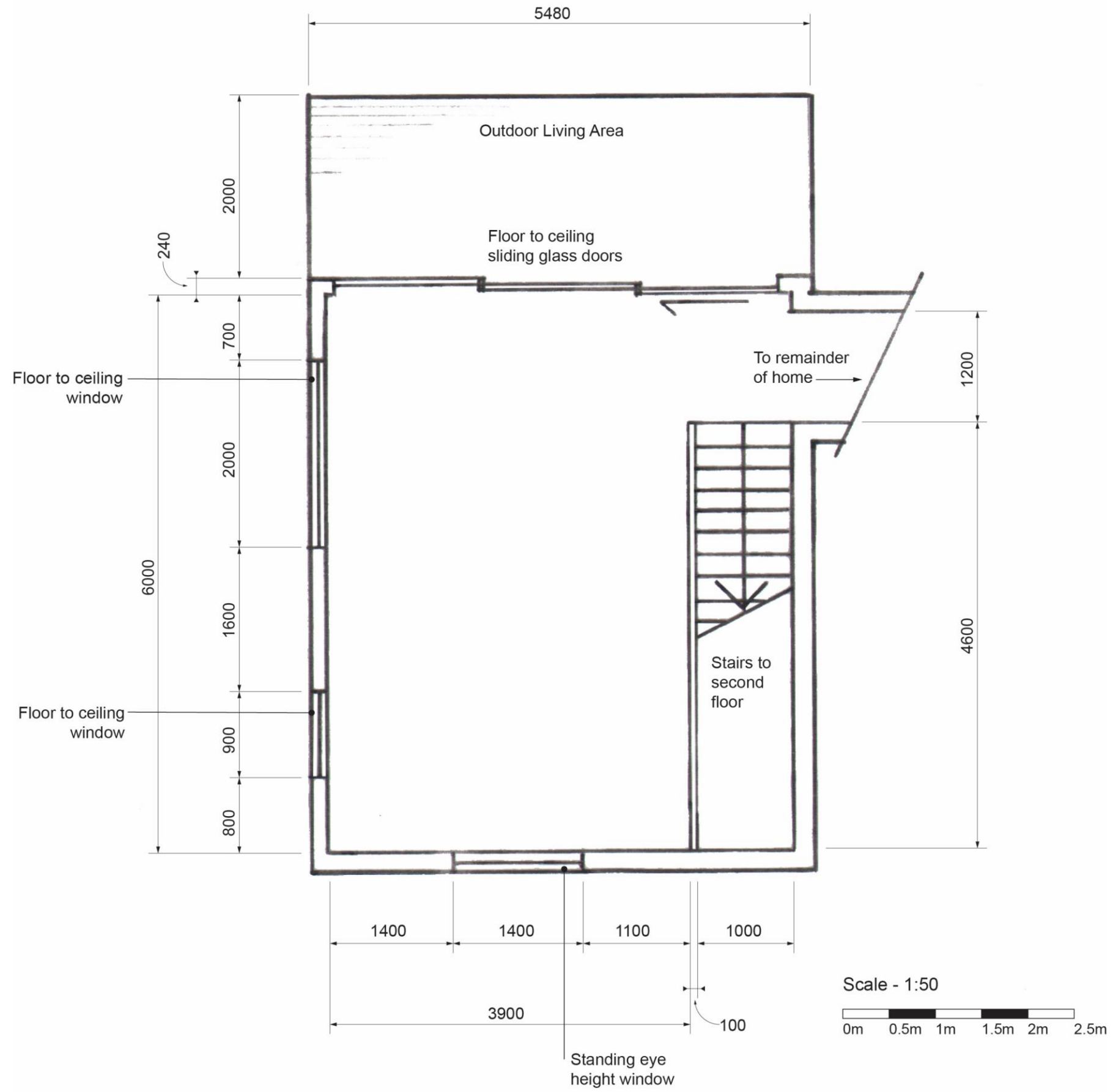
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## Section **B** Answer Sheet

### Question 3 – Universal Access

#### Instructions

- Answer **one (1)** question in **Section B** on **one (1)** of the supplied Section B Answer Sheets.
  - **Either** Section B Question 3 **OR** Section B Question 4.



**Floor Plan**

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# HOUSING AND DESIGN

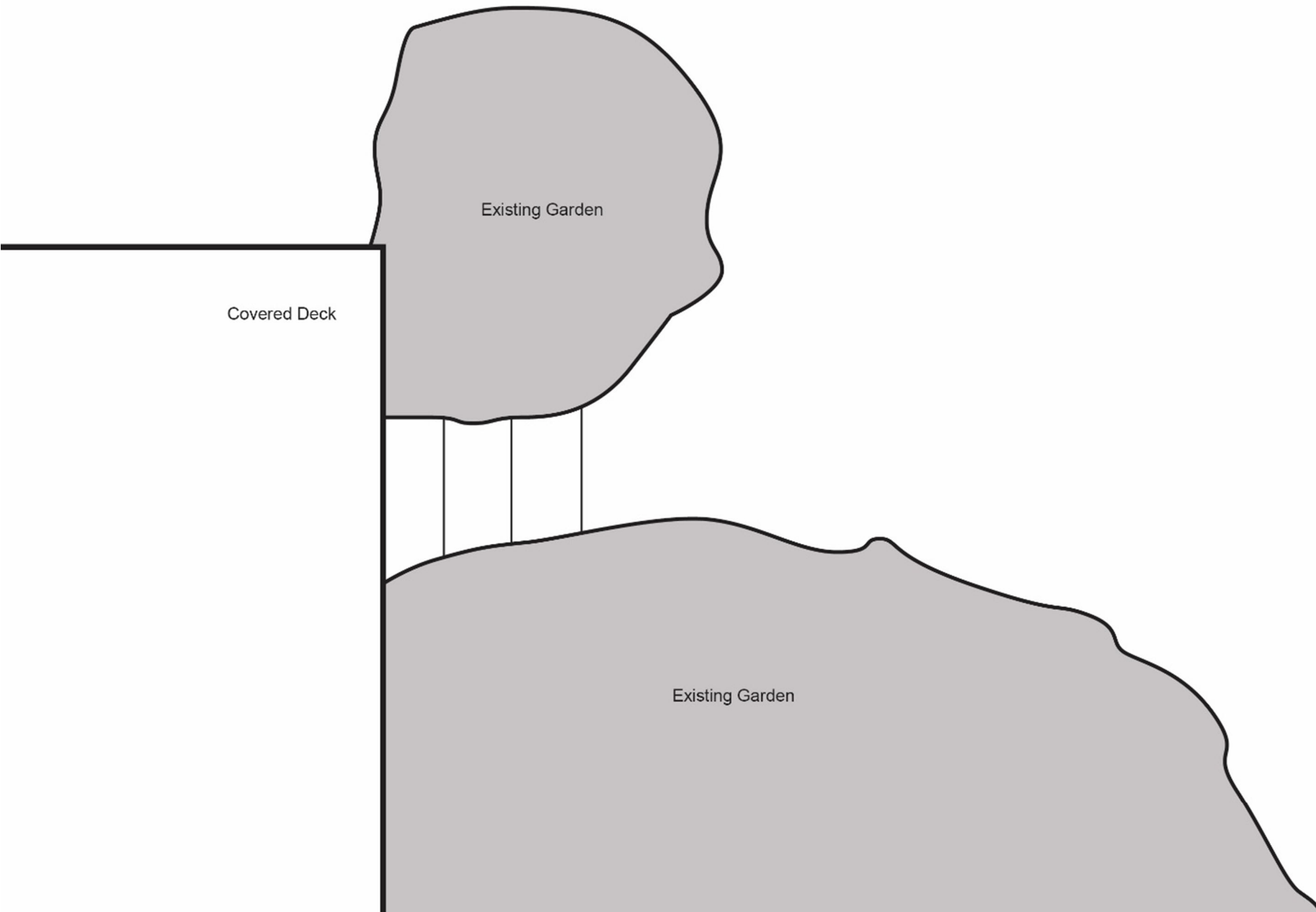
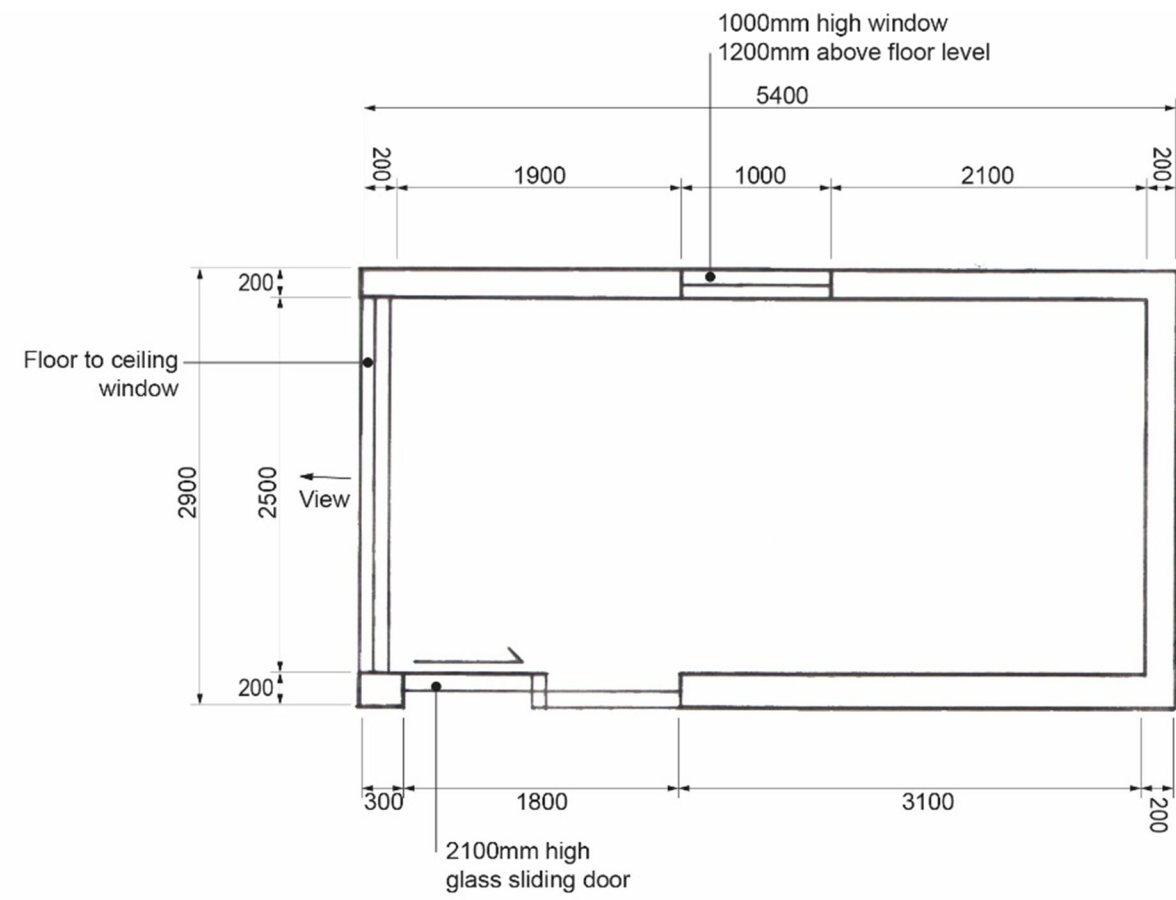
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Section **B** Answer Sheet

## Question 4 – Functional Use of Space

### Instructions

- Answer **one (1)** question in **Section B** on **one (1)** of the supplied Section B Answer Sheets.
  - **Either** Section B Question 3 **OR** Section B Question 4.



### Site and Floor Plan

Scale - 1:50

