

HUT PROCUREMENT MANUAL

PART D

FIRE SAFETY

FOR BACKCOUNTRY HUTS

QD code VC1414

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Department of Conservation
Te Papa Atawhai

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Section D1: Introduction

1.1 Purpose

This part of the manual provides specific means of compliance with the fire safety provisions of the building code for backcountry huts.

The solutions included identify what is required for code compliance and DOC may choose to exceed these solutions to meet its own higher service standards or for other reasons.

1.2 Scope

This part is limited in its application to backcountry huts that meet the following criteria:

1. is of single storey construction,
2. has no hallway between multiple rooms,
3. has no connections to, or services received from, a network utility operator, and
4. does not include loose upholstered furniture, drapes, carpets, and similar flammable items or materials.

For these backcountry huts the following features are permitted:

- may be either single room (open plan) or multiple room in layout. Multiple room huts shall provide rooms for either cooking/living or sleeping use only. Store rooms, hallways, cupboards and the like are not permitted, except that entrance lobbies are permitted.
- may contain *fire sources* comprising cooking benches (with or without fitted LPG fuelled cooking appliances), and space heaters (either solid fuel, LPG fuelled or electrical appliances).
- may contain 12V electrical services for hut specific services such as radios, staff hut lighting, staff hut appliances and space heating.
- Staff huts may provide sleeping capacity for up to four staff, may include ancillary rooms such as store rooms, storage cupboards, bathrooms and workshops, and entrance lobbies, but hallways are not permitted.
- Staff huts may contain *fire sources* comprising cooking benches (with or without fitted LPG fuelled cooking appliances), other LPG gas fuelled appliances (e.g. fridge, stove, hob top, hot water califont), and space heaters (either solid fuel, LPG fuelled or electrical appliances).

1.3 Solutions

Typical backcountry hut plans complying with these solutions are provided in section D3. The annotations identify how compliance has been achieved. These are not the only layouts of backcountry huts that will comply with this part, but serve to demonstrate the application of this solution.

Section D2: Solutions

Section D2.1 Definitions

2.1.2 Interpretation

Definitions included in the building code handbook, the building code and the Building Act have not been repeated except for 'backcountry hut' and 'backcountry hut sleeping area'. Only those words and phrases particular to this part and the Department of Conservation have been included below.

Alpine huts

Backcountry huts where design is dictated by extremes of wind and snow loading. Generally these huts are sited at altitudes above 1,200m and/or are subject to snow loads of 2kPa or more. Occasionally it would be extended to include huts below 1,200m where similar conditions are experienced.

Backcountry hut

A building that:

- a) is located on land that is administered by the Department of Conservation for conservation, recreational, scientific, or other related purposes, including any land administered under any of the following:
 - (i) the Conservation Act 1987:
 - (ii) the National Parks Act 1980:
 - (iii) the Reserves Act 1977; and
- b) is intended to provide overnight shelter to any person who may visit and who carries his or her own food, bedding, clothing, and outdoor equipment; and
- c) contains only basic facilities, which may include (but are not limited to) any or all of the following:
 - (i) sleeping platforms or bunks:
 - (ii) mattresses:
 - (iii) food preparation surfaces:
 - (iv) appliances for heating:
 - (v) appliances for cooking:
 - (vi) toilets; and
- d) has been certified by the Director-General as being in a location that wheelchair users are unlikely to be able to visit; and
- e) is intended to be able to sleep—
 - (i) no more than 20 people in its backcountry hut sleeping area; and
 - (ii) no more than 40 people in total; and
- f) does not contain any connection, except by radiocommunications, to a network utility operator

Bunkroom

A fully enclosed room with sleeping platforms, bunks and/or beds.

Fire partition

An internal wall, full height from floor to ceiling, between bunkrooms and any other space except staff quarters.

Fire Source

Built-in sources of fire danger. These are:

- cooking benches (with or without fitted LPG fuelled cooking appliances),
- space heaters (either solid fuel, LPG fuelled or electrical appliances), and
- LPG fuelled appliances (e.g. fridge, stove, hob top, hot water califont).

Fire Source hut

A hut containing any fire sources.

Fire Source room

A room within a backcountry hut containing any fire sources.

Mixed hut

A hut containing both fire sources and backcountry hut sleeping areas.

Room

An area of a hut that is separated from the rest of the hut by a full height partition that in plan length is more than 75% of the area width (e.g. if the area is 4.8m in width a room is created if the partition is more than 3.6m in length). NOTE: An entrance lobby (or lobbies where there is more than one exterior door), not containing any fire sources, not used for sleeping, and only used for such purposes as gear storage and firewood storage, is not considered to be a room.

Comment: Even if a door is not provided, a full height partition with this coverage is considered to be the equivalent of a full width partition with a door in it in terms of its effect on separation of spaces.

Backcountry hut sleeping area

The area of a backcountry hut that contains sleeping platforms, bunks, or beds that are —

- (a) within the same room as a food preparation or eating area; or
- (b) in a fully enclosed room that is separate from any food preparation or eating area and has—
 - (i) internal walls that limit the spread of fire; and
 - (ii) the means of direct egress to outside the hut

Sleeping capacity

Counted as one person per 750mm on a communal sleeping platform or as individual beds or bunks where provided.

Sleeping hut

A hut containing a backcountry hut sleeping area but no Fire Sources.

Staff quarters

A room or rooms, that form part of a backcountry hut, that provides accommodation for the use of Department of Conservation staff separated from the rest of the backcountry hut with a fire-rated wall having a FRR of 30/30/30.

Section D2.2 Means of Escape

2.2.1 Open Paths and Final Exits – general requirements

- i) All escape routes for *backcountry huts* are *Open Paths*.
- ii) The maximum *travel distance* and the number of *final exits* provided for *backcountry hut sleeping areas* shall be in accordance with Table D1. Refer also to paragraphs 2.2.3 and 2.3.2 for additional requirements for specific situations in *backcountry huts*.

Table D1 – Travel distance and final exits		
<i>Sleeping Capacity</i> ⁽¹⁾⁽²⁾	Maximum travel distance to closest final exit/furthest final exit	No. of means of escape provided from each space
up to 12	15m	1
13 - 20	15m/15m	2
21 or more	15m/25m	2

Notes : (1) For a hut containing no sleeping areas, such as a cooking/dining hut, this shall be the number of people accommodated by sleeping areas in other huts which that cooking/dining hut supports.

(2) Where a staff quarters has a door connecting directly to the backcountry hut, then the staff quarters capacity shall be counted as part of this number.

- iii) Where there are multiple huts on site a hut with a sleeping capacity of up to 12 will require two means of escape unless the separation distance from other huts is at least double that required by Table D2.

2.2.2 Open Paths and Final Exits – specific requirements

- i) In all huts with multiple rooms, every room (other than ancillary rooms for *staff quarters*) shall be provided with a *final exit* direct to the exterior.
- ii) *Staff quarters* that have a door connecting directly to a *backcountry hut* shall also have a *final exit* directly to the exterior.
Staff quarters with access separate from a *backcountry hut* shall be provided with means of escape in accordance with Table D1.
- iii) A window in accordance with 2.2.4.v) may be provided as the final exit in the following situations:
 - a) from *bunkrooms* where the *sleeping capacity* within that room is no more than twelve.
 - b) from *staff quarters* that have a door connecting directly to a *backcountry hut*.

2.2.3 Travel distance

- i) The length of the escape route shall be measured from the front edge of the bunk or sleeping platform, to the *final exit* from the *backcountry hut*. Where sleeping platforms are accessed by ladder the ladder shall be included in the escape route and the distance measured from the top of the ladder.
- ii) Ladders are permitted to be part of the escape route only where they are used to access bunks or sleeping platforms. The travel distance of a ladder shall be calculated at 4.8m.
- iii) Where stairs form part of the escape route their length shall be calculated at 1.5 times their vertical height.
- iv) Where the escape route outside the building is restricted by handrails or other construction, and travel occurs parallel to and within 3m of the exterior wall, that portion of the escape route shall be included in the travel distance with the final exit being the bottom of the stairs.
- v) Where the escape route crosses a deck that is less than 1m above ground level, the final exit can be taken as the exterior door of the hut.

Comment: The final exit is the point at which an escape route terminates at a safe place. Where a deck is 1m or more above ground level barriers are required to the edge of the deck thereby restricting the route of the means of escape. Otherwise a person can step off the edge of the deck wherever they choose.

2.2.4 Features of escape routes

- i) Within a *backcountry hut*, at least one *final exit* shall either be located between the *backcountry hut sleeping area* and any *fire source*, or the escape route to at least one *final exit* shall be useable without passing within 900mm of a *fire source*. Where *fire sources* are separated by at least 1500mm, then the separation distance need apply to only one of the *fire sources*.

Comment: It is likely that only one fire source will be on fire and escape can be effected by travelling closer to the other fire source.

- ii) In *staff quarters*, where LPG gas cooking appliances are installed, the 900mm zone shall extend from the appliances and not the bench.

Comment: Staff will use the gas appliances rather than provide and use liquid fuel appliances. In backcountry huts, even with fitted gas fuelled cooking appliances, it is still likely that liquid fuel cookers will regularly be used by the public.

- iii) Within *backcountry huts* with a *sleeping capacity* of four or less, or within a *staff quarters* the 900mm *fire source* zone from a cooking bench or a gas appliance on a cooking bench may overlap bunks and/or sleeping platforms if the bench is separated from them by at least 300mm.

Comment: In backcountry huts and staff quarters where sleeping capacity is four or less, the occupants can be expected to be a single party and they can be responsible for their own safety to a greater extent than where other parties are occupying the hut. The separation distance avoids the likelihood of liquid fuels spilling onto personal gear, which would create a fire hazard on the bunks and/or sleeping platform

- iv) Where doors are on the escape route or are the *final exit* they shall be provided as follows:

- 1) have a leaf of a minimum size 1980mm high and 810mm wide, except that a 610mm wide door shall be permitted in 2 bunk huts

Comment: 2 bunk huts have a wall height of 1680mm and a 610mm wide door is practically the widest door that can be installed. It is adequate for the number of occupants.

- 2) for huts with a sleeping capacity of up to 20 doors may open either inwards or outwards, and open at least 90 degrees except that exterior doors shall open inwards for:

- a) any *Alpine hut*, or
b) any *backcountry hut* where snow lies on the ground for more than 1 month a year.

- 3) for huts with a capacity of greater than 20 and where the door is expected to be used by more than 20 occupants open at least 90 degrees in the direction of travel, except that exterior doors shall open inwards for:

- a) any *Alpine hut*, or
b) any *backcountry hut* where snow lies on the ground for more than 1 month a year.

- v) Where windows are provided as an alternative *final exit*, they shall be provided as follows:

- 1) A clear opening size of at least 900mm high and 700mm wide.

Comment: For standard aluminium joinery, a window of nominal size 1000mm high and 800mm wide will provide this clear opening.

- 2) The sash opens at least 90 degrees in the direction of travel and remains in the open position without user assistance,

- 3) The sill is no more than 1500mm above external ground level or any external deck with stairs leading to the ground.

- 4) The sill is no more than 900mm above the floor, bench, seat or other adjacent internal construction used to gain access to the window.
 - 5) Any *fire source*, such as a LPG gas cooker, shall be located clear of the route through the opening sash.
- vi) All final exits shall be openable from the inside at all times.
 - vii) Spiral stairs shall not form part of any escape route.
 - viii) Where sleeping platforms or bunks higher than 1.2m above the adjacent floor are provided then an access ladder shall be provided at the ratio of one ladder per eight people accommodated on the bunk or sleeping platform.

2.2.5 Signs

- i) Above all final exits other than the main entry door a sign reading
“EXIT”
shall be displayed with capital lettering at least 50mm high.
- ii) The sign shall be rectangular with a background of safety green, and white text placed centrally on the background. The background shall be displayed over no less than 50% of the sign face and extend at least 15mm beyond the lettering. The thickness of the lettering shall be between 15% and 30% of the height of the letter.

Section D2.3 Spread of Fire:

2.3.1 Sleeping Capacity

- i) The maximum *sleeping capacity* of a *backcountry hut sleeping area* or *bunkroom* shall be 20 persons.
- ii) The maximum *sleeping capacity* of a *backcountry hut*, regardless of the configuration of *bunkrooms* and *sleeping areas*, is 40.
- iii) Where *Staff quarters* are provided within a *backcountry hut* they shall be separated from the rest of the *backcountry hut* by *fire separations* having a FRR of 30/30/30. When there is no connecting door between staff quarters and the hut the *sleeping capacity* of the *staff quarters* is not counted in the maximum *sleeping capacity* of the *backcountry hut*.

Comment: The effect of this is that where the sleeping capacity of a backcountry hut is intended to be more than 40, then two buildings separated in accordance with table D2 are required. This allows a backcountry hut to provide cooking/dining facilities for more than 40 people in one building but sleeping must occur in two buildings.

2.3.2 Isolation distances

- i) A sleeping hut or another hut containing a *fire source* shall be separated from other huts by the minimum distances in Table D2.

Table D2: Separation Distances	
Facing width of fire source hut	Separation distance to sleeping hut or another fire source hut
4m	2m
8m	3m
12m	3.5m
16m	4m

- ii) Where there are multiple huts on site a hut with a sleeping capacity of up to 12 will require two means of escape unless the separation distance from other huts is at least double that required by Table D2.
- iii) Providing a roof between huts is acceptable provided that:
 - 1) two means of escape are provided from the sleeping hut and at least one means of escape opens onto an area that is not covered by the roof, and
 - 2) the roof design/material allows for venting.

- iv) Roof venting shall be provided by:
- 1) An area of exposed roof framing (i.e. with no soffit lining) of a minimum width of 1m located no more than 300mm from, parallel to, and for the full facing width of the fire source hut, and
 - 2) Roofing over the exposed framing area to be either:
 - Laserlite 2000 polycarbonate roofing, or
 - Other roofing that has a softening/melt temperature less than 150°C similar to polycarbonate.

2.3.3 Interior Surface Finishes

- i) The interior surface finishes for walls and ceilings of huts shall be plywood or other wood-based products either left natural or finished with a water-based coating.

Where other materials are used their surface finish shall provide:

- 1) **SFI not greater than 9**, and
 - 2) **SDI not greater than 8**.
- ii) Any cooking bench shall be clad with stainless steel with a minimum upstand against any adjacent wall of 300mm and with an anti-spill finish to other edges.

2.3.4 Cooking bench separation

- i) A cooking bench shall be separated by at least 300mm from any adjacent bunk or sleeping platform.

2.3.5 Fire partitions

- i) Where a bunkroom has a *sleeping capacity* of up to 20 persons, the *bunkroom* shall be separated from any other rooms by a *fire partition*.
- ii) *Fire partitions* shall be constructed of either:
- 1) minimum 9mm plywood lining on both sides of 90 x 45mm timber framing with studs at 600mm centres maximum and dwangs at 800mm centres maximum. All plywood joints are located over timber framing, or
 - 2) for non-loadbearing walls only, minimum 9mm plywood lining on both sides of 0.5mm minimum BMT steel stud system with studs at 600mm centres maximum. All plywood joints are located over framing, or
 - 3) solid timber panels at least 20mm thick, or
 - 4) other construction with a FRR of 15/15/15.

- iii) Doors in *fire partitions* shall be:
 - 1) 1980mm high x 810mm wide minimum,
 - 2) solid timber 38mm minimum thickness with a Georgian-wired glazed vision panel of 300mm x 300mm minimum and 600mm high x 400mm wide maximum,
 - 3) self-closing (utilising Lockwood 724 closer, door spring or equivalent) and self-latching, (Note: spring hinges are not acceptable) and
 - 4) hung in a frame of minimum 30mm solid timber with minimum 30mm x 20mm or 40mm x 15mm stops located on both sides and top, and
 - 5) frame finished to wall linings either with solid timber architraves of 10mm minimum thickness, or rebated.

- iv) Windows in *fire partitions* shall be:
 - 1) Georgian wire glazing,
 - 2) fixed in solid timber framing of minimum 30mm thickness, with glazing beads of minimum 25mm thickness both sides,
 - 3) with solid timber architraves of 10mm minimum thickness to wall linings.
 - 4) Steel window frames can be substituted.

2.3.6 Staff quarters

- i) Where a *staff quarters* has a door opening into the *backcountry hut*, then the *backcountry hut* shall be considered to be a *multiple room* hut. The *fire sources* the *staff quarters* may contain shall be limited to a cooking bench (with or without a cooking appliance).
- ii) Where a *staff quarters* has no door opening into the *backcountry hut*, the staff quarters shall either:
 - 1) be a separate building treated as a *fire source hut* and separated from any *backcountry hut* with a *sleeping area* by the minimum distances in Table D2, or
 - 2) have any common wall to a *backcountry hut* with a *sleeping area* constructed to provide a FRR rating of no less than 30/30/30.

SECTION D3: Examples of Complying Hut Plans

3.1 2 bunk hut

3.1.1 Notes

- This plan is of a typical 2 bunk hut derived from the base plan in the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.

- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.

- Travel length calculation from bunk:

Final Exit is door as deck less than 1m above ground

2m (floor) = 2m total.

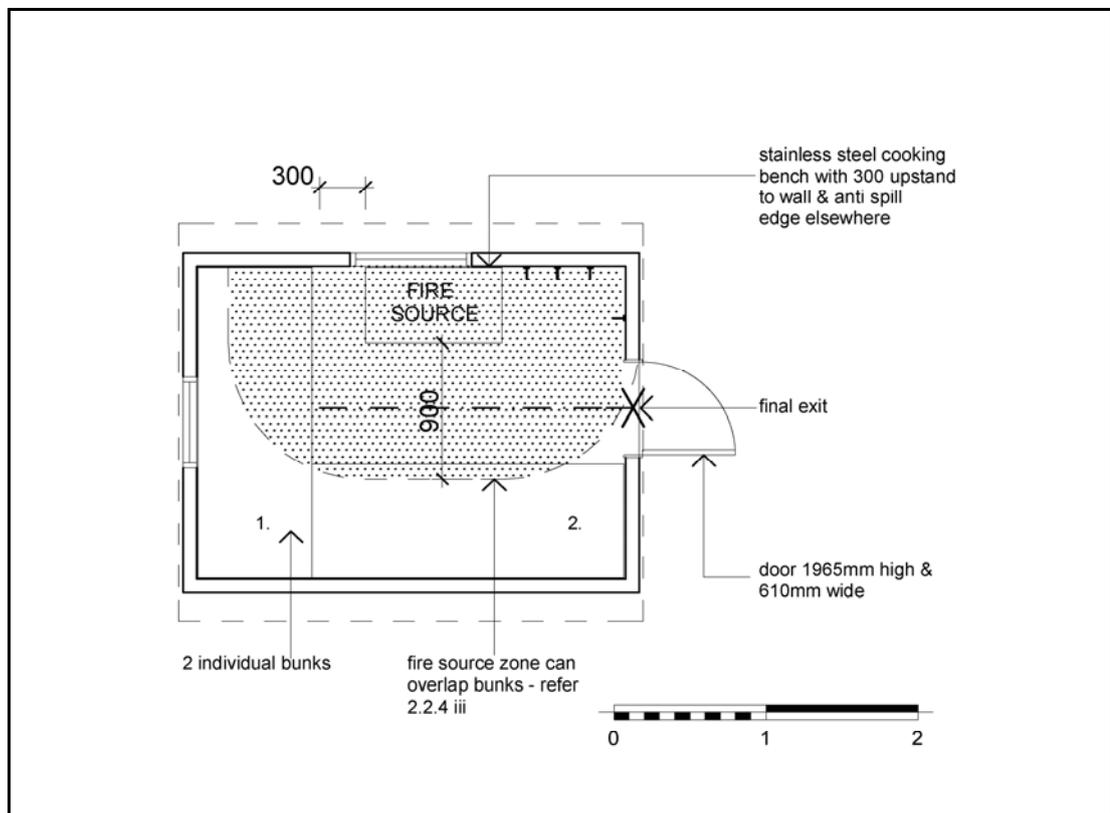


Figure 3.1: 2 bunk hut

3.2 4 bunk hut

3.2.1 Notes

- This plan is of a typical 4 bunk hut derived from the base plan in the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk:
Final Exit is door as deck less than 1m above ground
 $4.8\text{m (ladder)} + 2\text{m (floor)} = 6.8\text{m}.$

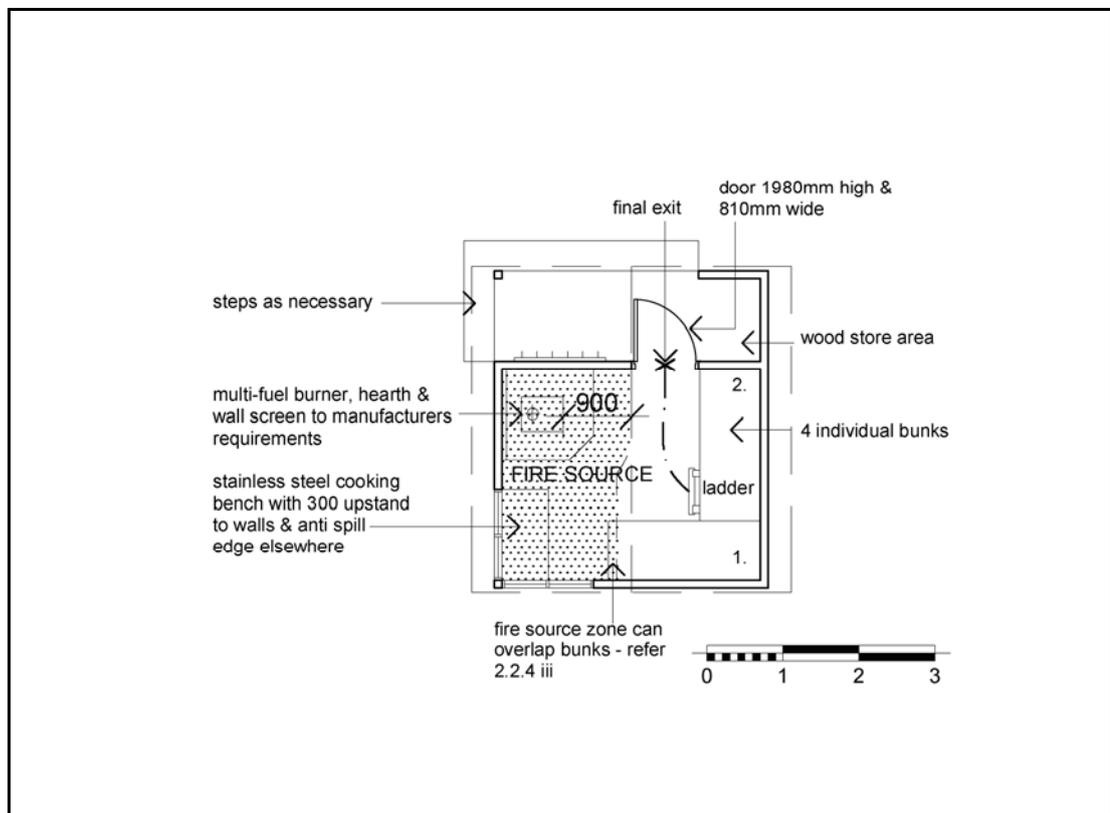


Figure 3.2: 4 bunk hut

3.3 6 bunk hut

3.3.1 Notes

- This plan is of a typical 6 bunk hut derived from the base plan in the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.

- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.

- Travel length calculation from bunk:

Final Exit is bottom of stairs as deck more than 1m above ground

4.8m (ladder) + 4m (floor) + 1.2m (deck) + 2m (1.5 x stair height) = 12m.

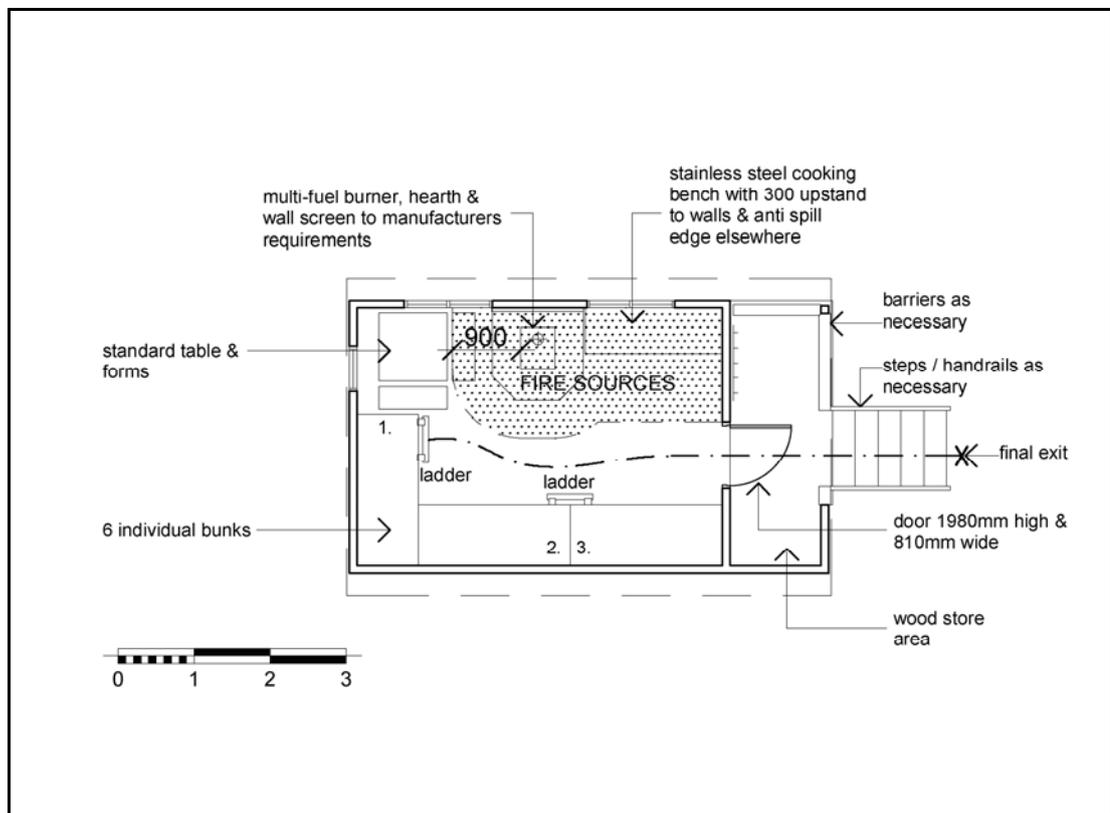


Figure 3.3: 6 bunk hut

3.4 10 bunk hut

3.4.1 Notes

- This plan is of a typical 10 bunk hut derived from the base plan in the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.

- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.

- Travel length calculation from bunk:

Final Exit is bottom of stairs as deck more than 1m above ground

4.8m (ladder) + 3m (floor) + 2m (deck) + 2m (1.5 x stair height) = 11.8m.

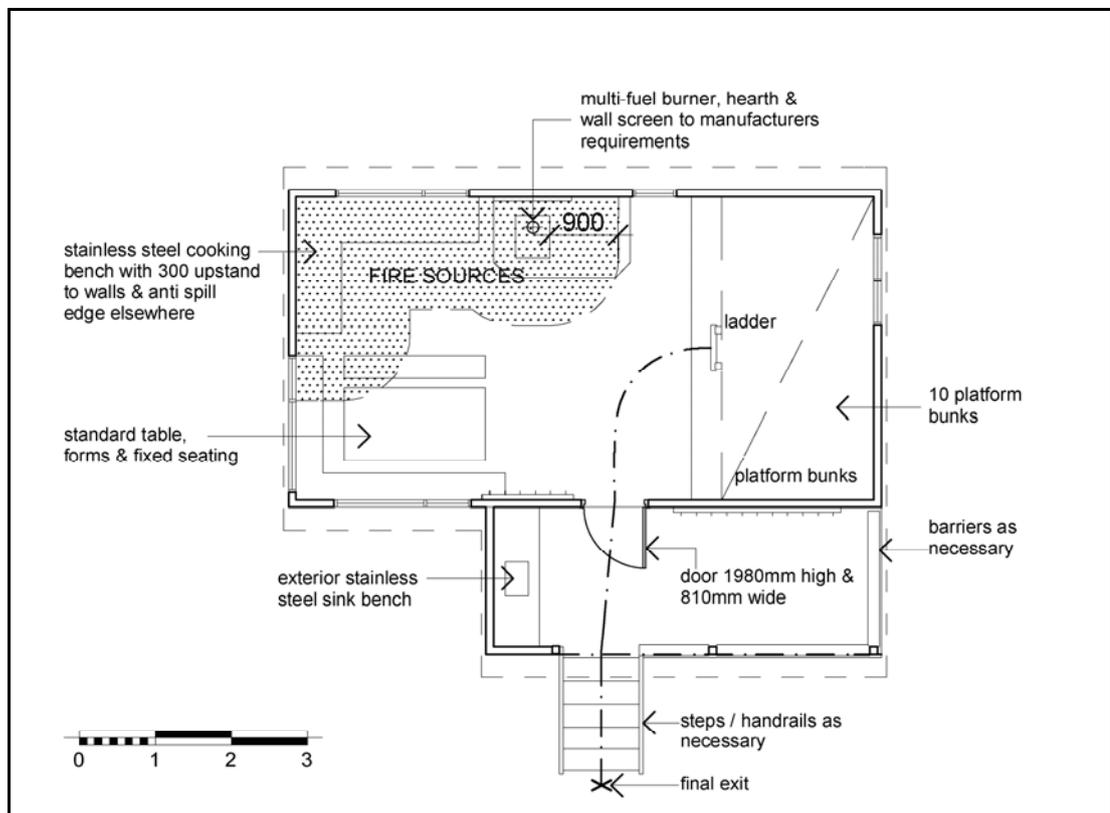


Figure 3.4: 10 bunk hut

3.5 12 bunk hut

3.5.1 Notes

- This plan is of a typical 12 bunk hut derived from the base plan in the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk:
Final Exit is door as deck less than 1m above ground
 $4.8\text{m (ladder)} + 3\text{m (floor)} = 7.8\text{m}$.

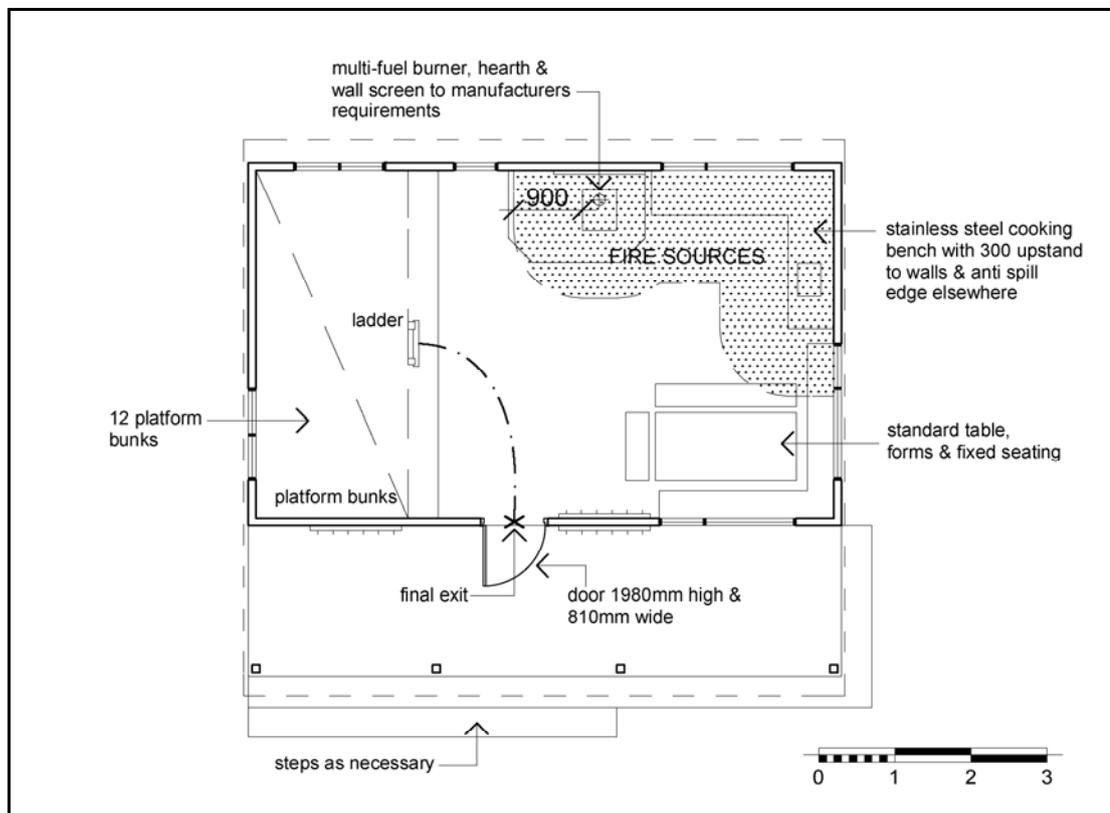


Figure 3.5: 12 bunk hut

3.6 20 bunk hut multiple rooms

3.6.1 Notes

- This plan is of a typical 20 bunk hut with multiple rooms derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the exterior door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk in bunk room 1:
 - Exit 1 - 4.8m (ladder) + 4m (floor) + 1.5m (deck) = 10.3m.
 - Exit 4 - 4.8m (ladder) + 3.5m (floor) = 8.3m.
- Travel lengths from bunkroom 2 similar.

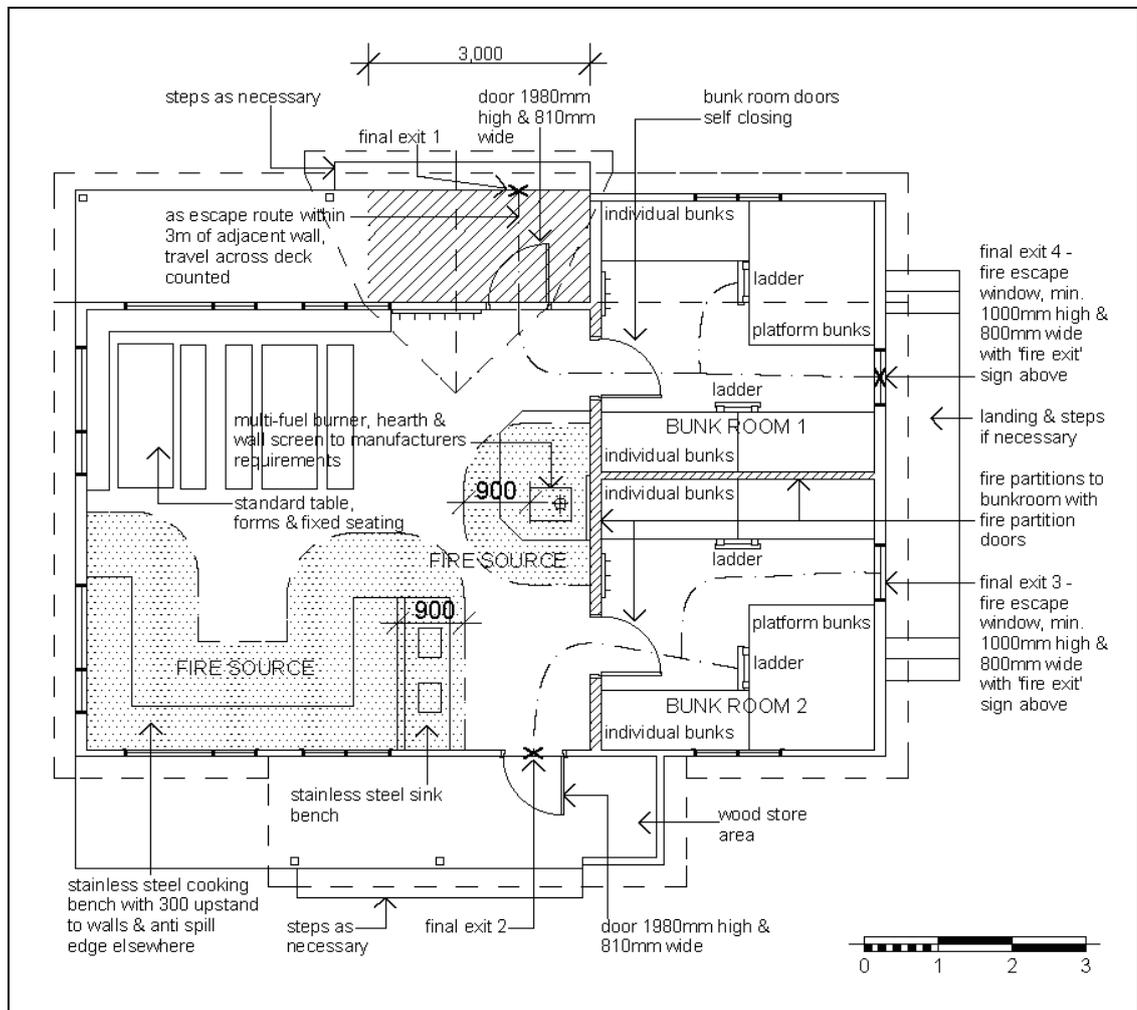


Figure 3.6: 20 bunk hut

3.7 20 bunk hut open plan

3.7.1 Notes

- This plan is of a typical 20 bunk open plan hut derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk:
 - Exit 1 - 4.8m (ladder) + 4.5m (floor) + 1.5m (deck) = 10.3m.
 - Exit 2 - 4.8m (ladder) + 7.5m (floor) = 12.3m.

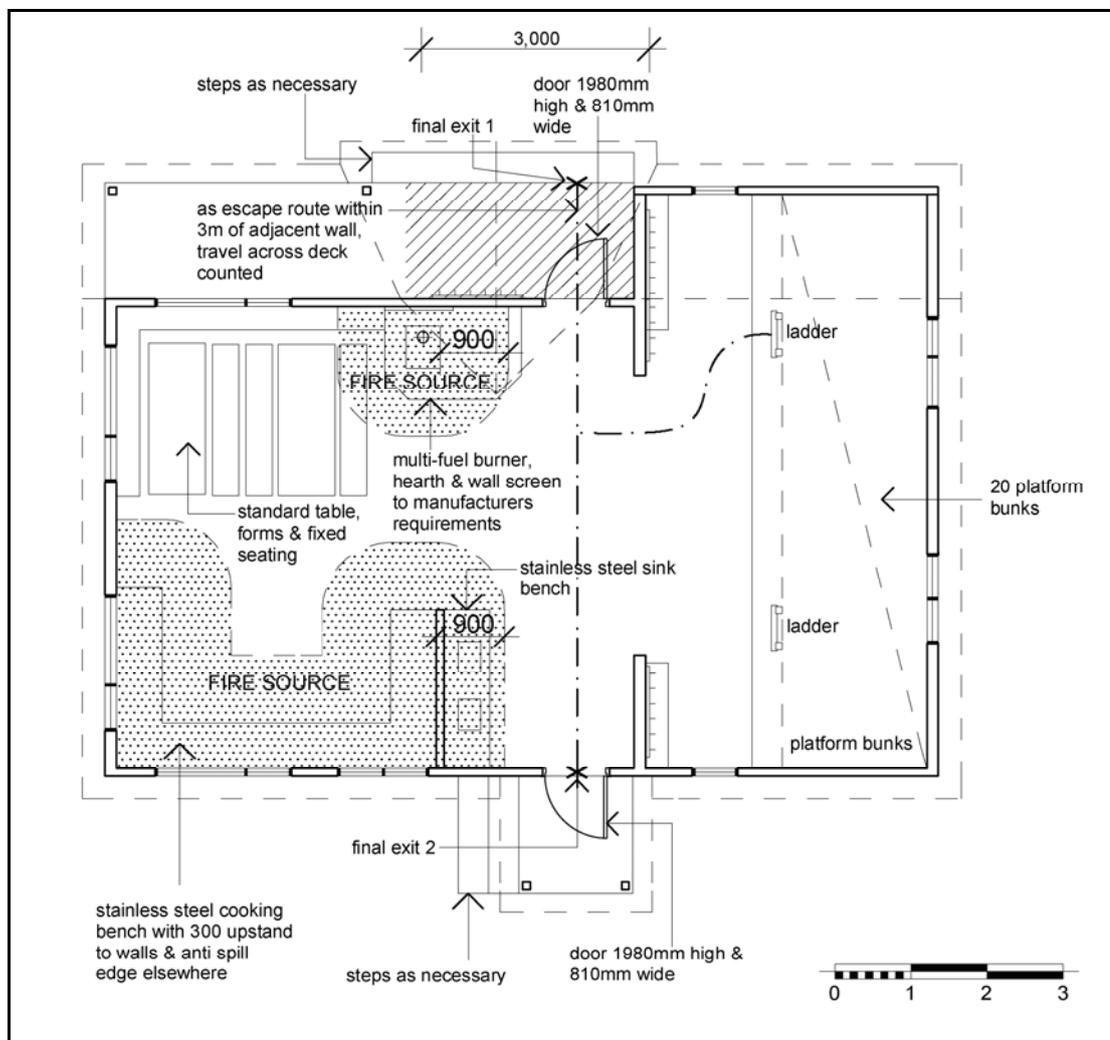


Figure 3.7: 20 bunk hut

3.8 Large hut with multiple rooms

3.8.1 Notes

- This plan is of a typical large hut with multiple rooms and a sleeping capacity of up to 40 derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the external door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from ladder 1 in 20 person bunkroom:
 - Exit 2 - 4.8m (ladder) + 4m (floor) + 3m (porch) = 11.8m.
 - Exit 3 - 4.8m (ladder) + 5m (floor) = 9m.
- Travel length calculation from ladder in 12 person bunkroom:
 - Exit 1 via window - 4.8m (ladder) + 2m (floor) + 3m (deck) + 2m (1.5 x stair height) = 11.8m.
 - Exit 2 - 4.8m (ladder) + 6.5m (floor) + 3m (porch) = 14.3m.

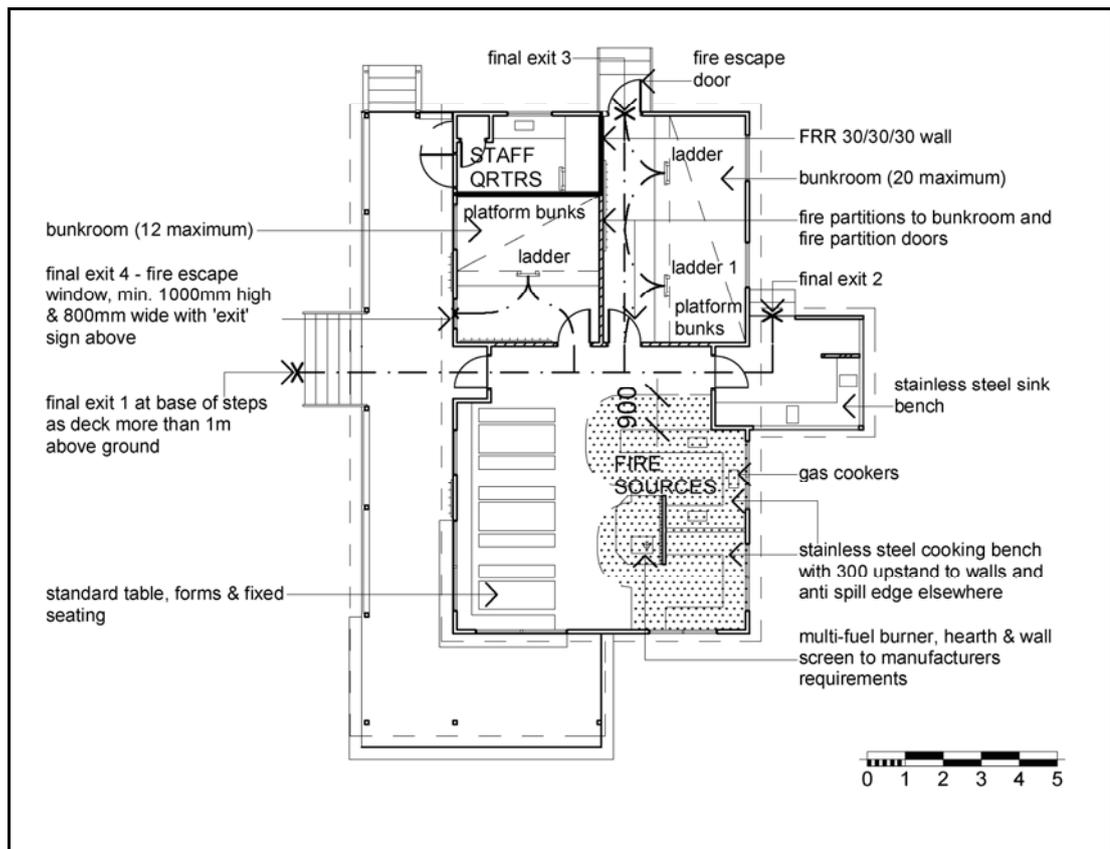


Figure 3.8: large hut with sleeping capacity up to 40

3.9 Multiple huts with sleeping capacity of more than 40

3.9.1 Notes

- This plan is of a typical large hut with multiple rooms and a sleeping capacity of more than 40 derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the exterior door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from corner table in cooking/dining room:
 - Exit 1 – 11m (floor) + 3m (porch) + 2m (stairs) = 16m.
 - Exit 3 – 2m (floor) + 5.5m (deck/ground) = 7.5m.
- Travel length calculation from ladder 1 in bunkroom 1:
 - Exit 2 - 4.8m (ladder) + 4m (floor) + 3m (porch) = 11.8m.
 - Exit 3 - 4.8m (ladder) + 5m (floor) = 9m.

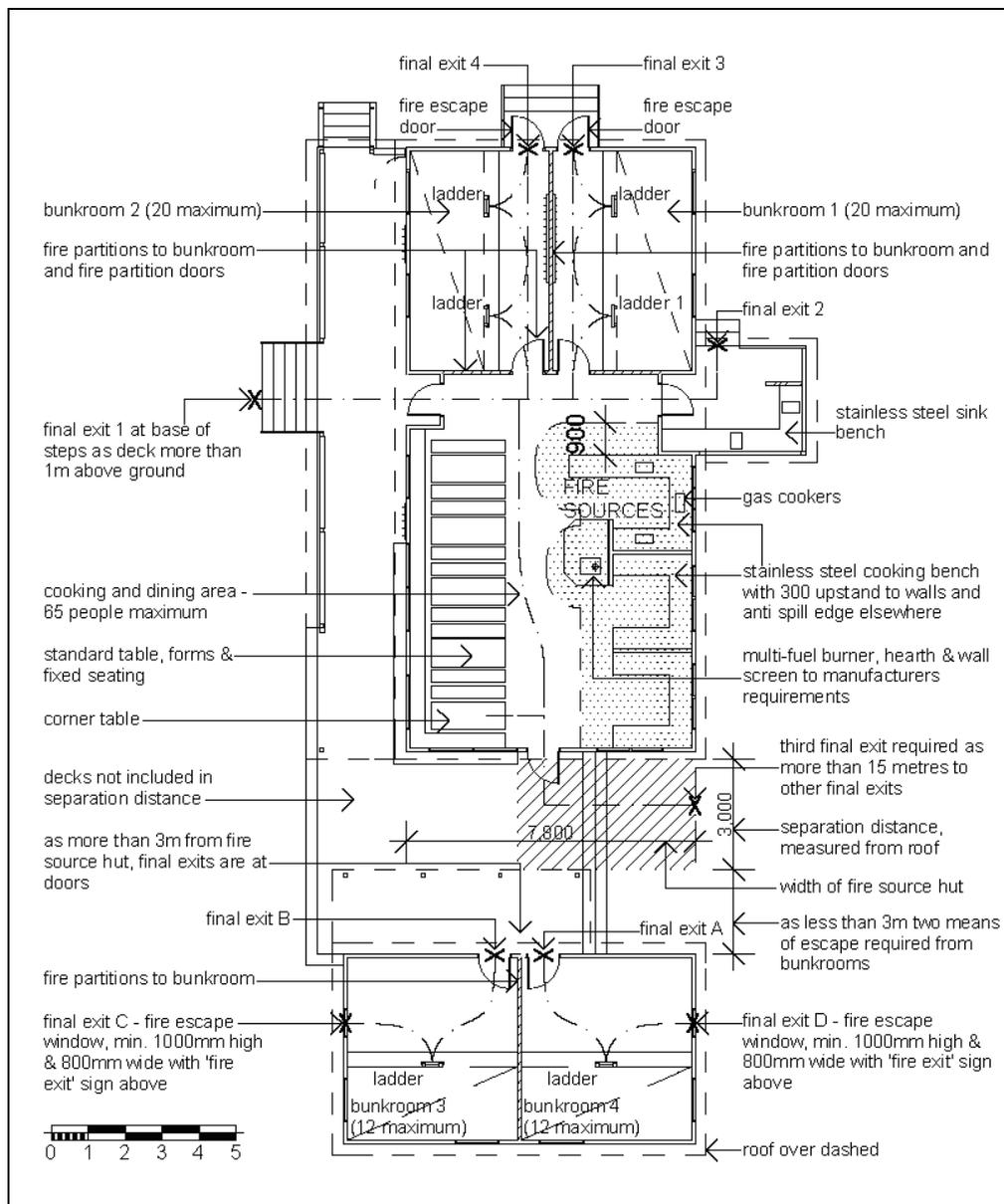


Figure 3.9: large hut with sleeping capacity of more than 40

3.10 Alpine hut

- This plan is of a typical alpine hut derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- the door opens inwards to avoid snow obstructing egress.
- Travel length calculation from bunk:
 - Exit 1 – 4.8m (ladder) + 5m (floor) + 2m (deck) = 11.8m.
 - Exit 2 – 4.8m (ladder) + 6m (floor) + 3.5m (deck) = 14.3m.

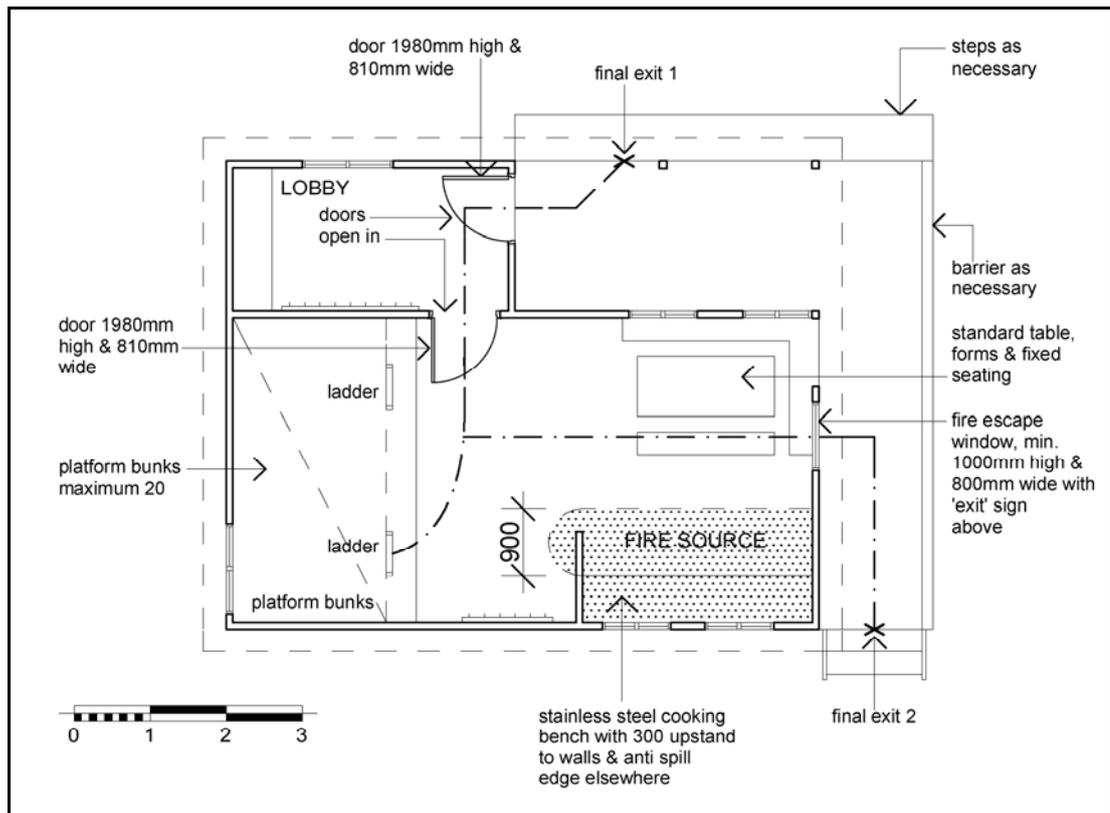


Figure 3.10: Alpine hut

3.11 Staff quarters with common wall (single room)

- This plan is of a typical staff quarters derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk: 4.8m (ladder) + 4m (floor) = 8.8m.

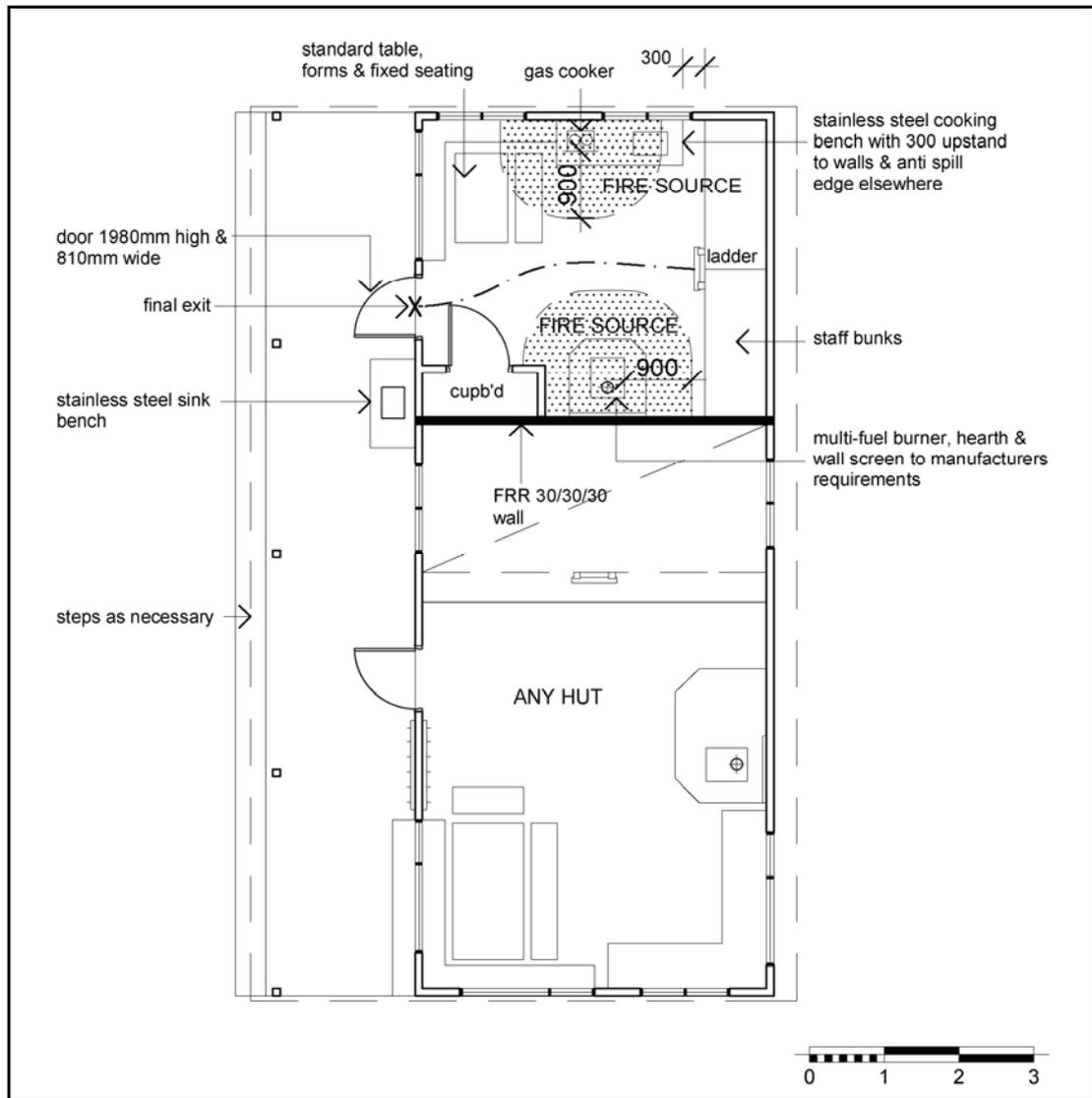


Figure 3.11: Staff quarters – single room

3.12 Staff quarters with common wall (multiple rooms)

- This plan is of a typical staff quarters with multiple rooms derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk: 4.8m (ladder) + 2m (floor) + 3.5m (deck) + 2m (1.5 x stair height) = 12.3m.

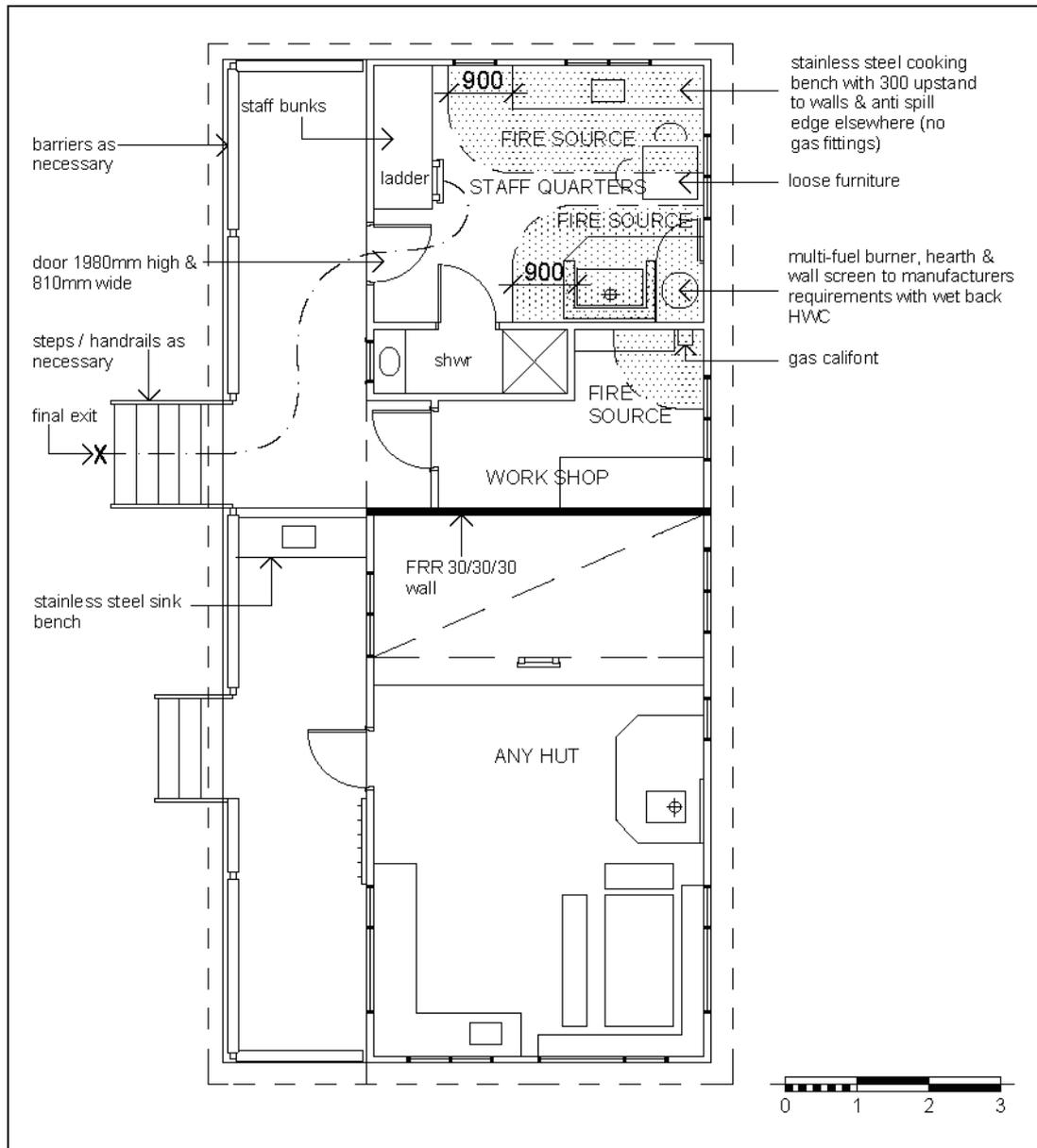


Figure 3.12: Staff quarters – multiple rooms

3.13 Staff quarters with connecting door

- This plan is of a typical staff quarters with a connecting door derived from the Hut Procurement Manual. The layout of any actual hut may vary from this plan in various ways and still comply with this part of the manual provided the principles of the solution identified by the annotations apply.
- In alpine huts or where snow lies on the ground for more than one month the exterior door shall open inwards to avoid snow obstructing egress.
- Travel length calculation from bunk:
 - Exit 1 – 4.8m (ladder) + 5.5m (floor) + 1.5m (deck) = 11.8m.
 - Exit 3 – 4.8m (ladder) + 1.5m (floor) = 6.3m.

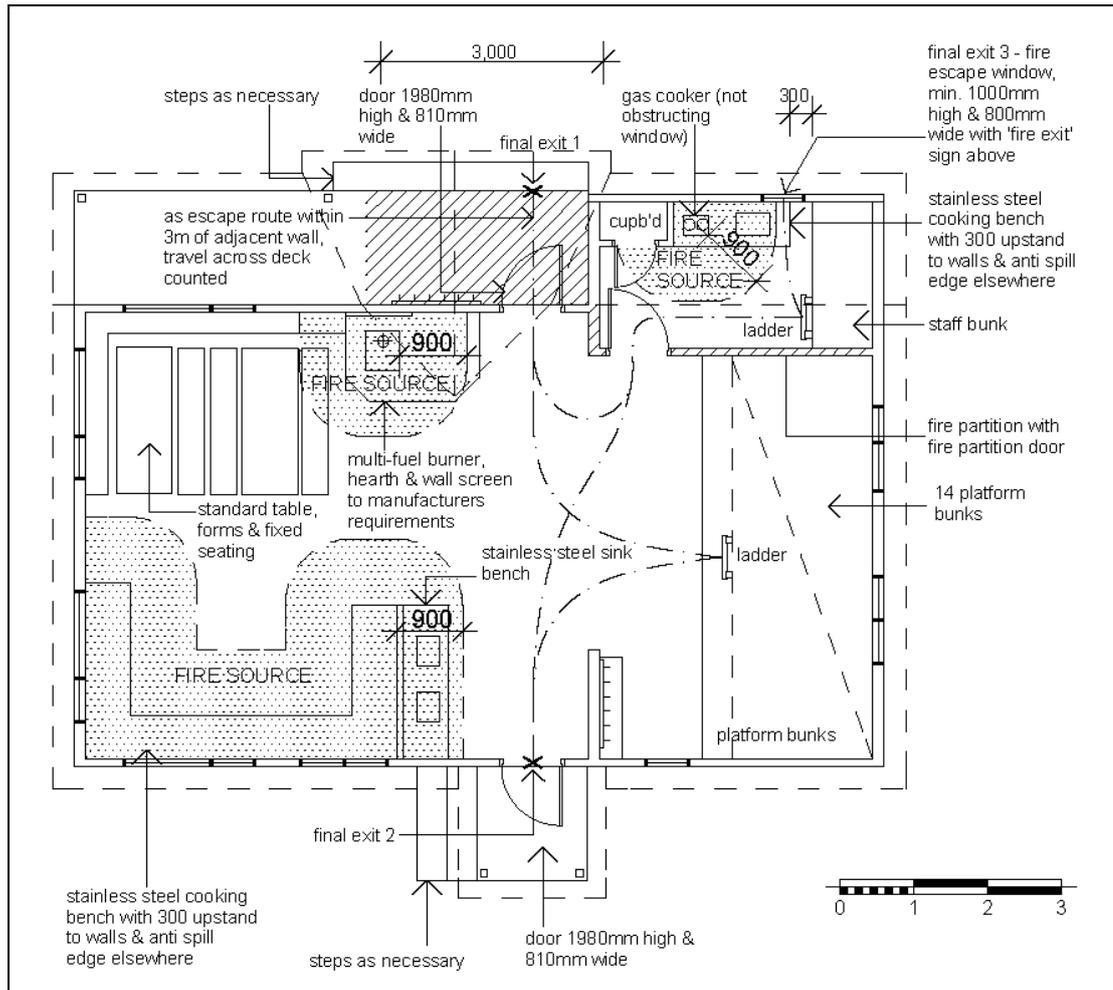


Figure 3.13: Staff quarters with connecting door