GENERAL GUIDELINES FOR THE DEPLOYMENT OF THE 50-MAN CAMP

(SPECIAL FOR PROJECT 011/11)

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SAFETY WARNINGS

The following are general safety precautions. These are not related to any specific procedure and therefore do not appear elsewhere in this publication. It is important that these recommended precautions will be understood and adhered to by all personnel during all phases of operation and maintenance.

ELECTRICAL HAZARDS

The electrical system of the 50-man Rio Tinto Camp has been designed for your convenience and safety. All electrical fittings and components are SABS approved and all wiring is done in accordance with SANS 10142.

Only an accredited electrician is allowed to repair or change the system. In the event of a circuit breaker tripping, switch off the main switch and call an electrician.

Care must be taken during setting up that cabling does not unnecessarily traverse access routes. This will reduce the risk of damage to the cabling, and thus the risk of electrical hazards.

MECHANICAL HAZARDS

1.	Safety shoes must be worn at all times while assembling/dismantling is in progress.	
2.	Safety gloves must be worn while assembling/dismantling is in progress.	
3.	A hard hat must be worn while assembling/dismantling is in progress.	
4.	When objects heavier than 15 kg are carried, the task must be carried out by at least two persons.	
5.	Care must be taken not to throw or drop components from great heights.	
6.	All equipment used during assembling/dismantling procedures must be well maintained and inspected on a regular basis, e.g. ladders.	

Pallets carrying loads must be moved by fork lift. Only competent and certified forklift drivers should be allowed to drive this equipment and then only under positive control.

The handling of equipment during the packing and unpacking of equipment from the containers may result in injuries being sustained if stance and ratio is not considered. The body frame to weight ratio should be observed and the proper body posture maintained.

Containers being moved by crane or forklift create the hazard of injuring workers or bystanders who end up under a container or being hit by it.

SCAFFOLDING

1. The height of the Gladiator is such that, in terms of Occupational Health and Safety (OHS) Acts and Regulations, scaffolding must be used when assembling and dismantling the shelter.
2. Refer to the OHS laws and regulations of the country concerned. In South Africa the following references are applicable:
   - Section 44 of the Occupational Health and safety act, 1993(Act no 85 of 1993).
   - Construction Regulations 2003 Regulation 14- Scaffolding - (1) and (2).
   - The SANS standard (SANS 398-3:2005) “Specification for Prefabricated Mobile Access and Working Towers” and the “Code of Practice for the design, erection, use and inspection of prefabricated Aluminium Mobile Scaffolding”.

FIRE HAZARDS

The risk of fire is ever-present in a camp. Modern materials used in the manufacture of the shelters greatly reduce the risk of damage through fire and heat. A cigarette burn in itself will leave only an unsightly scar on, or hole in, a shelter wall. Intense heat and fire, however caused, has the potential of destroying the shelter and the entire camp.

RISK ASSESSMENT

The deployment and dismantling of a camp are construction activities. The necessary and correct personal protection equipment must be worn. It is recommended that a risk assessment be done to determine the appropriate personal protection equipment required.

PREFACE

GENERAL

This document contains the general approach and guidelines to set up and disassemble the 50-Man Rio Tinto Camp.

The proposed layout of the 50-Man Camp is included in this document.

In the context of the 50-Man Rio Tinto Camp system, the following documents are applicable and must be read in conjunction with these guidelines:

- M1-01A: ASSEMBLY INSTRUCTIONS FOR THE WARRIOR SHELTER
- RM1-03A: ASSEMBLY INSTRUCTIONS FOR THE GLADIATOR SHELTER
- RM3-05-011/1: MANUAL FOR THE 50-MAN RIO TINTO CAMP: Potable Water Provisioning Systems Part 1: Manual for the RCS RO 80 Mk 2 Water Purification Plant.
- RM3-05-011/2: MANUAL FOR THE 50-MAN RIO TINTO CAMP: Potable Water Provisioning Systems Part 2: Manual for the Potable Water Reticulation System.
- RM3-06-011: MANUAL FOR THE 50-MAN RIO TINTO CAMP: The Waste Water Reticulation and Treatment System.
- RM3-01/02-011: MANUAL FOR THE 50-MAN RIO TINTO CAMP: The Electrical Generation and Reticulation System

  RM1-01-011/1, /2, /3: Assembly Instructions for the Medical unit, Laundry and Ablutions respectively.

  RM1-03-011/1 and /2: Assembly Instructions for the Recreation and Kitchen/diner/scullery respectively.
- RA1-01--01 Assembly Instructions for the soft shelter floor platform (including the vestibule platform & the joining of floors).

ARRANGEMENT AND LAYOUT

These guidelines comprise three chapters. The information provided in these chapters is presented under the following headings:

Chapter 1: General Description

This chapter contains a general introduction to the 50-Man Rio Tinto Camp.

Chapter 2: Camp Deployment, Operation and Dismantling

This chapter contains information and general guidelines on the deployment, day-to-day management and disassembly of the 50-Man Camp.

Chapter 3: List of Material

This chapter contains the list of camp components.

CONTENTS

CHAPTER 1

GENERAL DESCRIPTION OF THE 50-MAN RIO TINTO CAMP

1. INTRODUCTION

The 50-man camp provides accommodation for 52 personnel (4 senior management, 8 middle management, 32 general labour and 8 female staff) with recreation-, catering-, laundry- and basic medical facilities. Office and general storage facilities are provided as well as refrigerated food storage. Fig 1 is a general view of some of the camp facilities.

All the soft skinned shelters are installed on raised hard floors and are fitted with vestibules at the entrances, providing a hard external door and an internal mosquito door.

The camp is equipped with integrated systems for electrical generation and distribution, water purification, storage and distribution and waste water drainage and treatment.

Every facility is equipped with the necessary furnishings and fittings and its own electrical kit which provides power for lighting, air conditioning and auxiliary purposes or dedicated extensions for specific appliances.

Fig 1: General view of part of the 50-man Camp

1.1 CAMP FACILITIES

The 50-man camp consists of the following functional elements:

1.1.1 Senior Management Accommodation with shared en-suite Ablution Facilities.

1.1.1.1 Two 4.8m x 7.2m Warrior Shelters each provide sleeping accommodation for two persons with shared en-suite ablution facilities (total 4 persons) (Fig 2).

1.1.1.2 The two single accommodation units each have its own external entrance via a vestibule. The ablution facility, fitted with toilet and hand basin unit and shower cubicle, is located in the centre section with hard doors providing access from the bedrooms.

Fig 2: Senior management accommodation (left and centre) and ablutions (installation incomplete)

1.1.2 Middle Management and General Labour Accommodation.

1.1.2.1 Three accommodation blocks, each consisting of three 4.8m x 9.6m Warrior shelters assembled end-to-end with ablution facilities in the centre shelter, are provided for middle management and general labour accommodation (Fig 3).

1.1.2.2 In the accommodation block for middle management each dormitory provides sleeping quarters with individual desks for 4 persons, whilst the four dormitories for general labour accommodates 8 persons each.

1.1.2.3 The ablution facilities in the three accommodation blocks are identical, each comprising four showers, four toilet cubicles, two units with three hand basins each and two urinals (Fig 4). The ablutions are separated from the dormitories on either side with dividers fitted with hard doors.

Fig 3: A Warrior based accommodation block consisting of three 4.8m x 9.6m shelters with ablutions in the center.

Fig 4: Ablution facilities from left to right: Shower cubicle, toilet and washbasin set.

1.1.3 Female Accommodation.

1.1.3.1 One 4.8m x 9.6m Warrior shelter provides sleeping accommodation for eight females.

1.1.3.2 En suite ablution facilities are provided in the form of a 4.8m x 4.8m Warrior shelter attached to the one end of the accommodation shelter. The ablution facilities comprise two showers, two toilet cubicles and two sets of three hand basins each (Fig 5). The ablutions are separated from the dormitory with a divider fitted with a hard door.

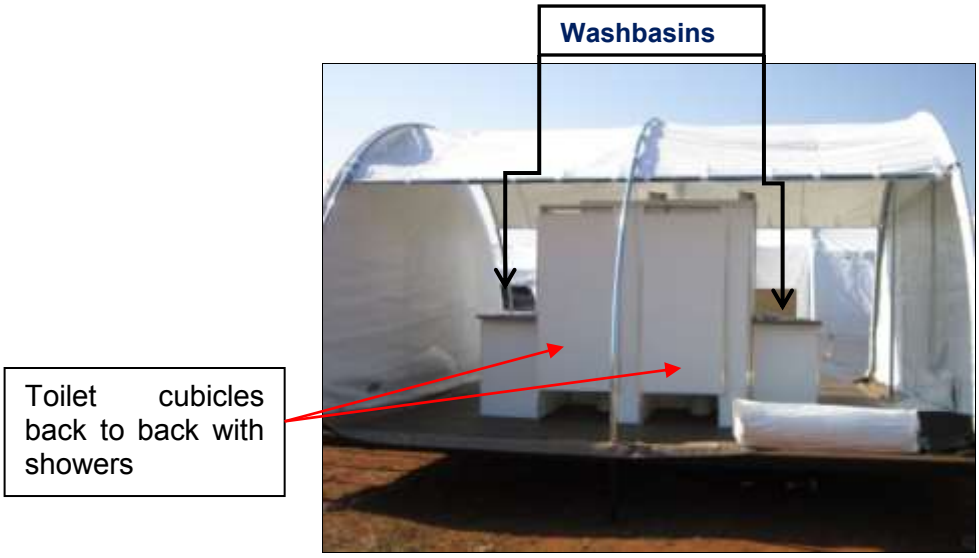


Fig 5: The 4.8m x 4.8m Warrior Female Ablutions

1.1.4 Catering Facilities.

1.1.4.1 The catering facilities consist of a Gladiator shelter 7.9m wide and 13.7m in length that is internally divided into a kitchen and a dining area. A 4.88m X 4.88m Warrior shelter serving as a separate scullery is centrally positioned at right angles to the Gladiator shelter and linked to the latter with a vestibule.

1.1.4.2 The shelters are fitted with a vestibule at each entrance with an external hard door and the complete facility is assembled on a raised hard floor.

1.1.4.3 Fig 6 is an external view of the catering facilities. Fig 7, 8 and 9 are internal views of the Diner, Kitchen and Scullery respectively.

Fig 6: Kitchen/Diner and Scullery Shelters

Fig 7: The Diner

Fig 8: The Kitchen

Fig 9: The Scullery

1.1.5 Medical Unit.

1.1.5.1 One 4.8m x 9.6m Warrior shelter is configured as a medical facility. Internally the shelter is divided into an examination and two bed patient recovery area and an ablution facility. The two areas are separated with a divider fitted with a hard door (Fig 10).

1.1.5.2 The ablution facility consists of a shower, toilet and hand basin and an additional hand basin is provided in the patient area.

Fig 10: The Medical Unit

1.1.6 Recreation Unit.

1.1.6.1 Recreation facilities are provided in a 7.9m x 13.8m Gladiator shelter (Fig 11).

1.1.6.2 The recreation equipment includes two complete home theatre systems and catering appliances for the preparation of light snacks.

Fig 11: The Gladiator housing the Recreation facilities.

1.1.7 Warehouse.

1.1.7.1 One 4.8m x 9.6m Warrior shelter is provided to serve as a warehouse.

1.1.7.2 Other than the electrical installation and air conditioning the warehouse is not fitted out with any furnishings.

1.1.8 Laundry.

1.1.8.1 One 4.8m x 9.6m Warrior shelter serves as laundry.

1.1.8.2 The laundry equipment includes three washing machines, three tumble dryers, three complete ironing stations and a linen press (Fig 12).

Fig 12: The Laundry facility

1.1.9 Offices.

1.1.9.1 Two 4.8m x 9.6m Warrior shelters are configured as offices.

1.1.9.2 Each office unit is equipped with 7 work stations (desk, chair, four drawer- and stationery cupboard) and a boardroom table (Fig 13).

Fig 13: The Office

1.1.10 Dry and Refrigerated Storage.

1.1.10.1 Two 6m shipping containers are provided as dry storage facilities. Other than a floor covering of aluminium chequered plate these are standard Type 1CC containers (Fig 14, left).

Fig 14: 6m shipping containers (left) and a 6m Reefer (right)

1.1.10.2 Two Refrigerated 6m containers (Reefers) are provided for food storage – one for cold storage and one for frozen victuals (Fig 14, right).

1.2 CAMP SERVICES

1.2.1 Power Generation and Distribution.

1.2.1.1 Electrical power is generated by two 150 KVA diesel generators (Fig 15, left) with power management provided by a synchronization and load sharing panel (Fig 15, right).

1.2.1.2 Electrical power is distributed via a Main Low Tension Distribution Board to 5 General Distribution Boards and from there to the end user facilities.

Fig 15: 150 KVA diesel generator (left) and the Synchronisation and load sharing panel (right)

1.2.2 Water Purification and Distribution.

1.2.2.1 A containerized 50-man water purification plant with Reverse Osmosis (RO) capability provides potable water to the camp (Fig 16). The Water Purification Plant is designed to produce 20 000ℓ RO processed water per 24 hour period; or about 800 ℓ/hour. When the RO process is not used the system is capable of producing potable water at a rate of up to 6 000 ℓ/hour or about 140 000ℓ per day.

1.2.2.2 Two 47 000ℓ mesh tanks provide storage capacity for raw and clarified water respectively (Fig 17, left).

Fig 16: The 50-man Water Purification Plant

1.2.2.3 Primary and secondary booster pumps (Fig 17, right) maintain pressure in the distribution system to the kitchen, ablutions, laundry and medical unit. Hot water is provided by 200ℓ geysers, external to the end user facilities.

Fig 17: Mesh tank for water storage (left) and booster pump station (right)

1.2.3 Waste Water Management.

1.2.3.1 Waste water from the kitchen, ablutions, laundry and medical unit drains under gravity to macerator pump stations (Fig 18, left) placed adjacent to the facilities from where it is pumped to a common waste water line discharging in a buffer tank system of two tanks with submersible pumps. In the case of the kitchen an integrated fat trap and macerator pump unit (Fig 18, right) is used to separate fats and greases harmful to the biological treatment process.

1.2.3.2 The purpose of the buffer tanks is to absorb shock loads produced during peak periods and thus regulate the rate at which the waste stream enters the containerised biological waste water treatment plant (Fig 19).

Fig 18: Macerator pump (left) and the integrated fat trap and macerator pump unit (right)

Fig 19: Containerised waste water treatment plant

1.2.4 Fire Protection System

1.2.4.1 The camp fire protection system consists of battery operated smoke detector/alarm units in each shelter and two of each of the following fire specific extinguishers:

- 9ℓ foam 6% AFT.
- 9kg DCP.

1.2.4.2 The foam extinguishers should be placed in the vicinity of the generators and the DCP extinguishers should be centrally placed in the camp at a 'fire station'.

1.2.4.3 It is recommended that the Camp Manager draws up a fire prevention and fire fighting plan including the camp's fire drills. Such a document should include instructions for the correct application of the different types of fire extinguishers and contingency plans.

1.2.5 Camp Fuel System

1.2.5.1 Fuel storage facilities consist of two 20 000ℓ bladders. Two diesel driven skid mounted fuel pump stations complete with flow meters, filter/water separators and hoses with nozzles are provided.

1.2.5.2 The camp equipment includes 100 sand bags and a containment sheet (tarpaulin) to build a spillage containment area within which fuel bladders should be placed.

1.2.5.3 The fuel storage and handling area should be close to the 2 x 150kVA generators and be positioned for access by vehicles to facilitate replenishment.

1.2.5.4 The area around the diesel storage and handling area and generators should be kept clear of any vegetation. The foam fire extinguishers must be placed clear of, but in close proximity to, the diesel storage and handling area.

2. CAMP LAYOUT DIAGRAM AND ASSET LIST

The layout of the 50-man camp as designed is shown in Fig 20 below. Flexibility in the arrangement of shelters and container facilities is limited due to the design of the pre-assembled 'plug-and-play' electrical, potable water and waste water reticulation.

An asset list with details of the material making up the 50-man camp is included in Chapter 3 of this manual.

3. PERFORMANCE CHARACTERISTICS

3.1 CAMP DEPLOYMENT AND COMMISSIONING

3.1.1 Provided the terrain has been prepared in advance, the 50-man camp can be set up and integrated to the operational state (or de-commissioned) by a team of ten persons within 10 days from the time all equipment is delivered on site.

3.1.2 The waste water treatment plant is dependent on the maturing of a biological process and will only reach full functionality after a minimum of 14 days of operation.

3.2 ASSEMBLY

3.2.1 Provided the terrain has been prepared in advance and the equipment delivered on site, the various functional elements of the 50-man camp can be assembled and commissioned by trained personnel in the times indicated in Table 1 below. These figures depend on many factors and are provided as a planning guideline only.

Table 1: Assembly times - Guideline

Functional element/System	Number of personnel	Time to assemble
4.88m x 9.76m Warrior (including floor)	4	5
4.88m x4.88m Warrior (including floor)	4	4
Gladiator shelter (using scaffolding with castors)	10	7
Shelter electrical kit	2	1
Camp electrical reticulation	2	4
Potable water reticulation (water purification plant can be operational within 3 hours)	2	4
Waste water reticulation and treatment plant	2	1

3.3 ENVIRONMENTAL INFORMATION (TERRAIN)

The Camp can be erected on any level surface such as soil, sand, tarred surfaces or concrete surfaces.

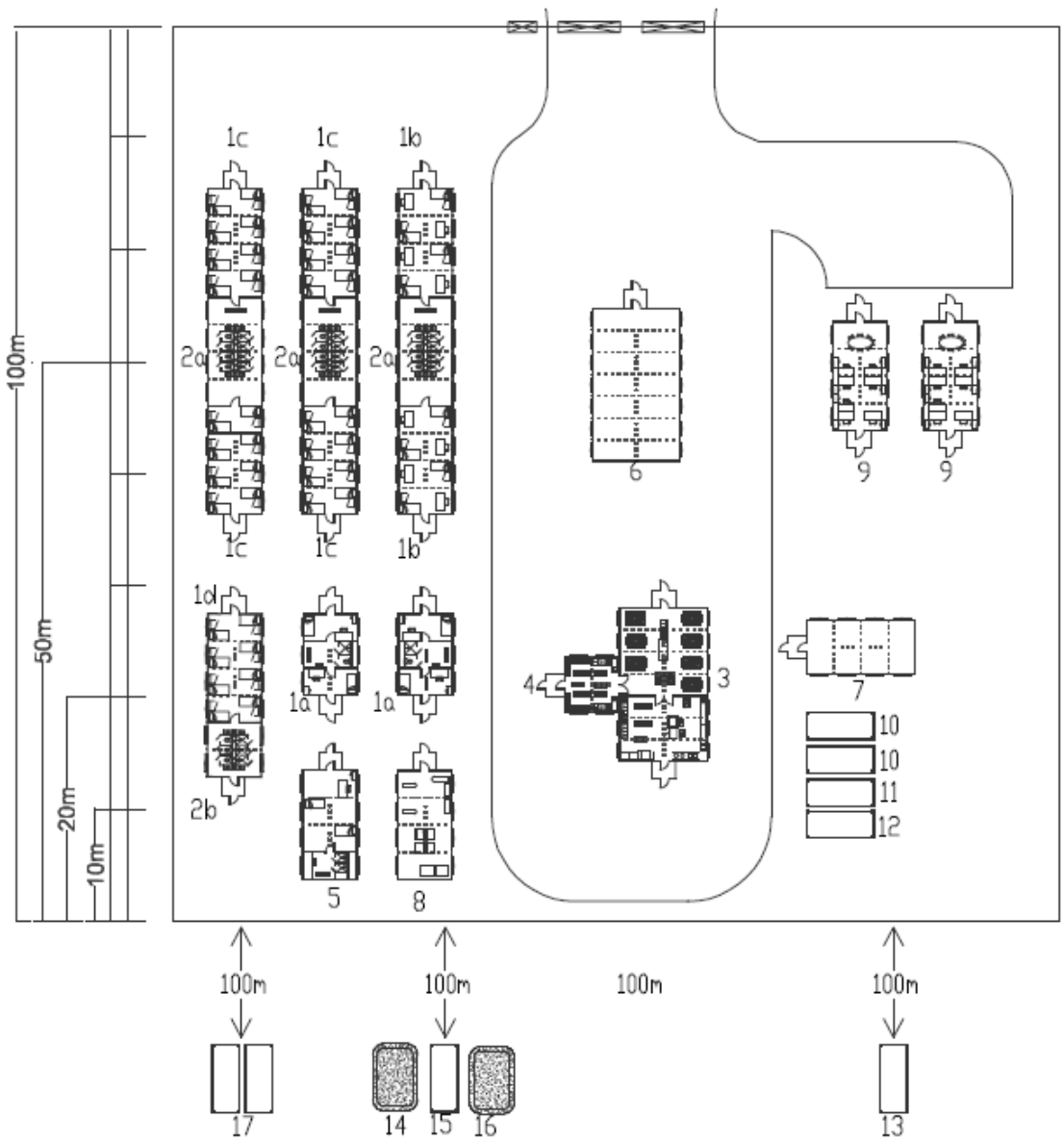
4. PHYSICAL CHARACTERISTICS

The physical characteristics of the functional elements are given in the applicable Assembly Instructions or Manuals listed in the Preface to this Manual.

4.1 TRANSPORTABILITY

4.1.1 The complete 50-Man Rio Tinto Camp is transported in 23 containers, including the container integrated water purification plant and waste water treatment plant and the reefers and storage containers. The latter four containers are also packed with equipment for transportation.

4.1.2 Except for the larger elements the camp equipment is packed in crates or secured onto wooden pallets before being loaded into the shipping containers.



Description	Unit Dimensions:
1 Accommodation	
1.a Senior Management	4.8m x 7.2m
1.b Junior/Mid Management	4.8m x 9.6m
1.c Male Dormitory	4.8m x 9.6m
1.d Female Dormitory	4.8m x 9.6m
2 Ablution	
2.a Male Ablution	4.8m x 9.6m
2.b Female Ablution	4.8m x 4.8m
3 Kitchen and Diner	7.9m x 13.8m
4 Scullery	4.8m x 4.8m
5 Medical unit	4.8m x 9.6m
6 Recreation unit	7.9m x 13.8m

Description	Unit Dimensions:
7 Warehouse	4.8m x 9.6m
8 Laundry	4.8m x 9.6m
9 Offices for General use	4.8m x 9.6m
10 Dry Storage	6m ISO Container
11 Refrigerated Storage	6m ISO REEFER
12 Freezer Storage	6m ISO REEFER
13 Sewage Proccessing Plant	6m Container
14 Raw Water Storage	47 000 liters
15 Water Treatment Plant	6m Container
16 Potable Water Storage	47 000 liters
17 Power Generation Plant	2 x 150kVA units

Fig 20: Layout of the 50–man Camp

CHAPTER 2

CAMP DEPLOYMENT, OPERATION AND DISMANTLING

1. INTRODUCTION

The purpose of this Chapter is to provide general guidelines for the management of the camp and the factors to consider during the different phases of the "deployment life cycle" namely:

- Mobilisation and transportation of the camp to the deployment site.
- Activation and operation of the camp.
- De-activation and re-location of the camp or placing its component parts in storage.

Each of these phases must be properly managed and executed as a mini project to ensure serviceability, life and optimal utilisation of the camp as an asset.

2. MOBILISATION AND TRANSPORTATION TO THE DEPLOYMENT SITE

2.1 MOBILISATION

The mobilisation phase entails:

2.1.1 Checking equipment for completeness and serviceability.

2.1.2 Packing the equipment to withstand the shock and vibration associated with the modes of transport to be used and the roads to be travelled.

2.1.3 Selection and preparation of the deployment site.

2.1.4 Planning for the handling of cargo on site. Packing of the camp equipment has been designed to limit the weight of any 'parcel' to less than 1000kg. Limited material handling equipment may be required on site.

2.2 SITE SELECTION

Ideally the camp site should be selected, the terrain prepared and marked out ("peg and rope/tape" method) before the camp equipment arrives on site. The following factors should be considered when selecting the site:

2.2.1 Wind. Determine the direction of the prevailing winds of the area during the intended deployment cycle. Where possible the wind direction must be over the sides of the tents and not over the ends. Plan the camp lay-out to minimize the effects of dust and odors by placing the generators, waste water treatment plant, solid waste dump site, access routes and parking area downwind from the accommodation (see the sketch diagram for proposed layout of the camp, Chapter 1, Fig 20).

2.2.2 Sun. Consider the direction of the sun when planning the lay-out of the camp. Whenever possible the shelters should be orientated to limit the exposure of the end walls to the sun since these are not lined with insulating material.

2.2.3 Rain. Water run-off must be considered. If rain storms could cause flooding, storm water run-offs must be considered. Natural water courses must be avoided.

2.2.4 Water. As far as practically possible, the campsite should be located in close proximity to a water source (borehole, stream or river) to facilitate raw water

replenishment. Should this not be possible then the access by tanker truck/trailer to the raw water storage facility must be considered.

2.2.5 Local Legislation. Ensure that the site complies with the prescripts of all relevant local legislation which may include the requirement for an environmental impact assessment.

2.2.6 Risk Assessment. Each earmarked site should be subjected to a detailed risk assessment. Important factors that should be considered include the following:

2.2.6.1 Density and movement of local population.

2.2.6.2 Presence of protected fauna and flora.

2.2.6.3 Migration routes of specific animal species – if applicable.

2.2.6.4 Topography – should require no, or minimal, earthworks.

2.2.6.5 Unimpeded access to a suitable water source.

2.2.6.6 Water catchment areas and water courses must be avoided to prevent flooding of the camp.

2.3 TERRAIN LEVELING AND PREPARATION

2.3.1 Area Required. In order to deploy the 50-Man Rio Tinto Camp an area not exceeding 200m x 100m will be required. The actual size (surface area) of the planned camp will, however, depend on the type and nature of the vegetation and the nature of the soil.

2.3.2 Topography and Gradient. Each individual element of the camp should be placed on a level surface The slope is not to exceed a difference in height of more than 300mm over the length of the structure. A greater slope will be beyond the adjustment capability of the floor jacks. If the slope of the site exceed this limit the building of terraces may be required, which could imply major civil works.

2.3.3 Trenches. Apart from run-offs for storm water drainage no trenches are required for the camp infrastructure. All services (electrical and water reticulation) are deployed above ground. However, where a cable or water hose crosses a road it must be appropriately protected.

2.3.4 Clearing of Vegetation. The requirement for clearing the site of vegetation is as follows:

2.3.4.1 All areas, where tents are to be deployed, must be cleared of all growth. Since the soft skinned shelters are deployed on raised floors surface preparation is not critical. Sharp objects should however be cleared from the assembly areas to prevent damage to the PVC during construction.

2.3.4.2 Footpaths and roadways must be cleared, to facilitate ease of movement.

2.3.4.3 Depending on the circumstances, the clearing of fire breaks should be considered.

3. LAYOUT OF THE 50-MAN CAMP

3.1 GENERAL PRINCIPLES

3.1.1 Conduct a proper reconnaissance of the selected area and mark the position of the shelters and other facilities. Take cognisance of the lengths of the various water hoses and electrical cables available to optimise the layout of the camp on the terrain available.

3.1.2 Depending on the terrain available, the optimal layout of the camp should be a rectangle of approximately but not exceeding 100m x 200m.

3.1.3 Mark the layout of the shelters and main equipment and plan where to offload the various 6m shipping containers containing the crated and palette camp equipment, shelters and other components to avoid unnecessary carrying of equipment and also to ensure that, once unpacked, the shipping containers with the empty crates and palettes can be moved to a stacking area without crossing any camp reticulation.

3.1.4 Group the services in the same area with the shelters in one area, the water purification and waste water treatment systems in another area and the power generation system as far as possible from the shelters.

3.1.5 The shelters should be positioned at the up-wind side of the rectangle with the power generation system at the down-wind side of the rectangle. Place the accommodation as far as possible away from the generators to mitigate noise and also upwind of the kitchen facilities and waste water treatment plant.

3.1.6 The raw water storage and generators must be easily accessible to service vehicles.

3.1.7 Minimize the vehicle crossing of reticulation systems (electrical cables and water hoses).

3.1.8 Minimize the crossing of reticulation and the lines of human traffic.

3.2 PROPOSED LAYOUT

The designed layout of the 50-Man Rio Tinto Camp is shown in Chapter 1, Fig 20.

3.2.1 The layout of the 50-Man Rio Tinto Camp is largely pre-determined. Adjustments to the layout may be made as required by the camp manager or as dictated by local circumstances – but in all cases the layout will be governed by the length of the electrical cables and the water reticulation hoses.

3.2.2 Provision is made for a pedestrian and vehicle entrance at the one end of the camp, to ensure that the movement of vehicles does not cause any disturbance or damage to the water and electricity reticulation systems and that the impact on the latter by the movement of personnel is minimized.

4. DEPLOYING THE CAMP

4.1 GENERAL APPROACH

4.1.1 As indicated above, the layout of the camp should be measured out and the position of the various units marked before starting setting up. The relative positions of the various facilities are flexible but subject to the length of the electrical cabling and the water reticulation hoses.

4.1.2 The dimensions, as designed, of the 50-Man Rio Tinto Camp construction site are approximately but not to exceed 100m x 200m.

4.1.3 All equipment and accessories are packed in marked wooden crates or secured onto palettes and placed into 6m shipping containers.

4.2 CONSTRUCTION OF THE FACILITIES

4.2.1 The recommended positioning of these facilities is as shown in the designed layout in Chapter 1, Fig 20.

4.2.2 The instructions for the construction or assembly of the various facilities are covered in detail in the specific manuals compiled for each of these facilities as indicated in the Preface to this manual.

4.3 SEQUENCE OF ASSEMBLY OF THE FACILITIES

The recommended sequence of assembly of the various facilities is as follows:

4.3.1 Once the camp site has been marked out, start assembling the shelters. To avoid obstructing access to the unit(s) under construction it is best to start with the shelters the furthest away from the transportation containers.

4.3.2 Assembly of a shelter should be fully completed and the electrical kit installed before moving in the furniture. Note that, as described in the relevant manual, there are cases where equipment must be installed before fitting the barrel covers of the shelter such as the ablution amenities and the extraction canopy and heavy appliances of the kitchen.

4.3.3 Complete the installation of the internal potable water distribution and waste water drainage systems in the kitchen, scullery, medical unit and the various ablutions up the interface with the camp potable water distribution and waste water drainage systems.

4.3.4 Lay out and connect the camp potable water distribution and the camp waste water drainage systems.

4.3.5 The electrical distribution should be the last camp system to be installed. Start by placing the distribution boards in position and then lay out and connect the cables working upstream towards the Main Low Tension DB in order to keep cable runs straight in the vicinity of the shelters. Any surplus lengths of cable must be flaked out and not coiled.

5. CAMP MANAGEMENT

5.1 'OPERATING' THE CAMP

The "operation" of the camp is to be understood to be the day-to-day running and routine maintenance of the camp ie camp management. The following aspects require the daily attention of the person designated as camp manager.

5.1.1 Waste Management. Waste is an unavoidable burden of camp management. Waste present problems for hygiene, appearance and may present a fire risk.

5.1.1.1 Solid Waste. Solid waste from dining, recreation and kitchen areas must regularly and unfailingly be disposed of. Dumping and littering not only tarnish the appearance of the camp, but are a fire and health risk.

5.1.1.2 Medical Waste. Medical waste from the medical unit is to be disposed of in accordance with the Health regulations of the country where the camp is to be deployed. Prescribed disposal bins must be used for the disposal of medical waste.

5.1.1.3 General. Waste from possible "workshop activities" such as oily rags and grease are to be disposed of in accordance with local legislation.

5.1.2 Storm Water Management. Make provision for the running off of storm water, through trenches that will drain the water away from the tented and service units. During the first occasion of heavy downpour, inspect the culverts and adjust as necessary.

5.1.3 Camp Hygiene. Poor hygiene dramatically heightens the risks of contagious diseases spreading in the camp. Establish a procedure for the cleaning of the ablution units, the kitchen/dining facility and cutlery and crockery. Carry out spot checks on the cleanliness of eating utensils.

5.1.4 Camp Appearance. While the outward appearance of the camp can play an important role in the maintenance of morale it is included here for the sake of

preventative maintenance of the camp. A slack and sagging tent will not withstand a gust of wind and will, additionally, place strain on the structure and accelerate deterioration of the material.

5.1.5 Dust Management. Dust not only makes for unpleasant living conditions, but can harm sensitive equipment and jeopardise food safety as well. It could be worthwhile to reroute vehicle access downwind in the event of a long term wind direction forecast or observation. Regular wetting of routes and paths is a standard dust reducing option that should be considered when sufficient water supplies are available.

5.1.6 Fire Prevention

5.1.6.1 Materials. Modern materials used in the manufacture of the tented shelters greatly reduce the risk of damage through fire and heat. A local burn will only result in an unsightly scar or a hole in a PVC tent wall but intense heat and fire can destroy the camp.

5.1.6.2 Smoking. Smoking should not be allowed in any of the functional units. Smoking areas should be designated and, without exception, be used. Receptacles for discarded smoking materials, such as containers filled with sand, should be placed at these locations. It is, furthermore, recommended that these areas be cleaned daily and kept spotless.

5.1.6.3 Fire Breaks. It is recommended that fire breaks be made and be kept clear of litter, waste and vegetation.

5.1.6.4 Solid waste. Waste material in a camp is a fire hazard. Cleanliness of the camp and strict control of solid waste dumps and waste disposal are important fire prevention measures.

5.1.7 Power Generation and Reticulation. Check electrical cables and wiring for wear and tear. Slack wiring in a tent is to be taken up and tied properly. Do not allow cabling to cross a footpath or access route. However, if this is unavoidable, protect the wiring or cable with sand bags. Air conditioners releasing excess condensation water will cause mud patches or morass conditions if left unattended.

5.1.8 Water Management. Water is supplied to the kitchen/scullery, medical unit and the ablution units. Routinely check for leaks and for the raw and clarified water reserve in the reservoirs. It is recommended that water consumption be monitored routinely to establish trends and ensure timely action for the replenishment of water.

5.1.9 Fuel Storage. Any leakages from the fuel storage bladders, generator tanks or fuel hoses must be repaired without delay. Care must be taken to prevent any spillage during fuel transfer operations and if such should occur it should be cleaned up immediately. Leakage and spillage is not only a potential fire hazard but also wastage and an environmental hazard.

5.1.10 Daily Routine Inspection. The following should be inspected daily:

5.1.10.1 Leaks at fuel, sewage and water connections.

5.1.10.2 State of electrical cables and pipes, especially across paths.

5.1.10.3 Fire hazards.

5.1.10.4 Cleanliness of kitchen and ablutions, rubbish bins and smoking areas.

5.1.10.5 Air conditioner condensation water drip pipes.

5.1.10.6 Tent stays.

5.1.10.7 Storm water drainage trenches.

5.2 CAMP MAINTENANCE

5.2.1 Day-to-day maintenance, as described in par 6.1 above, is required in any camp and it is recommended that the 50-man Rio Tinto Camp Manager draw up a plan of these routine tasks to ensure proper upkeep of the camp.

5.2.2 The following tools and test equipment are provided for the maintenance of the camp:

5.2.2.1 Electrical Toolbox.

5.2.2.2 Tool set for Shelter Installation.

5.2.2.3 Earth Resistance Tester.

5.2.2.4 Water Quality TDS meter.

5.2.2.5 Chemical water tester.

5.2.2.6 Ladders, 1.5m and 1.8m.

5.2.2.7 Scaffolding.

6. DEMOBILIZATION FOR RE-LOCATION OR STORAGE

6.1 GENERAL PRINCIPLES

6.1.1 It must be stressed that the careful planning and management of the demobilization phase is just as important as during the deployment phase.

6.1.2 Losses and damage can easily occur during this phase and carelessness in packing can result in significant damage during subsequent transportation and/or storage.

6.1.3 Local legislation may prescribe certain camp site rehabilitation requirements be met. Rehabilitation of the camp area will be subject to the deployment conditions and the laws and regulations of the host country.

6.1.4 The general rule is to return the site to its original state as was the case prior to deployment.

6.2 DISMANTLING INSTRUCTIONS

6.2.1 Before dismantling any shelters ensure that all equipment, electrical kits and any plumbing have been removed and stowed. Refer to the relevant Manuals or Assembly Instructions as required.

6.2.2 All Camp equipment must be properly cleaned and completely dried prior to transportation. Neglect of this basic maintenance procedure will result in unsatisfactory redeployment.

6.2.3 Check that all parts and components are accounted for, clean and serviceable before packing. It is sound practice to list any defects for repair or replacement at the earliest opportunity.

7. PACKING AND TRANSPORTATION INSTRUCTIONS

Ensure that all equipment is securely packed and secured for transport. Special attention must be given to prevent equipment rubbing against each other during transportation as this can quickly damage equipment.

As far as possible use the same packaging with which the camp and its various components was deployed.

It is suggested that if bad roads are to be travelled, additional packing material be used to prevent scuffing.

CHAPTER 3

LIST OF MATERIAL

1. ACCOMMODATION

Table 1: Senior Management Accommodation with en-suite ablutions: 4 persons (2 persons per shelter)

DESCRIPTION	QUANTITY
4.8 x 7.2m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap and soft floors	2
Distribution boards with outlets for: • two (2) power harnesses with four (4) single walls sockets each. • two (2) auxiliary outlets. • 2 x 1.2m vapour-proof lights. • Two (2) bulkhead outside lights. • One (1) power harness for emergency lighting. • Power harness 2 is extended for the lights in the second section	2
Emergency lights for en-suite bathrooms	2
Brackets for emergency lights for en-suite bathrooms and one EXIT light not fitted on the DB	4
EXIT lights	4
EXIT light signs	4
12,000 BTU split unit Air Conditioners with flexible piping • Cross frame for air conditioners • Stands for outside air conditioner split units (compressors) attached to floor frame to keep the unit off the ground	4 4 4
Lockable hard-doors with frames	8
Mosquito screen doors	4
Divider with frame	4
Hard floors with powder-coated steel frames (300mm high with adjustable jacks), step (width of step to be 125% of door width) and PVC interlocking tiles ($35m^2$).	4
Vestibule for entrance with hard raised floor consisting of powder coated steel frame, step and PVC interlocking tiles.	4
Powder coated chequered plate for connection between vestibule and shelter	4
En-suite ablution facility consisting of a shower, toilet, hand washbasin, shower curtain, mirror, towel rails, soap dish and toilet roll holder	2
100l geyser with stand	2
Whirly bird with frame	2
Fire extinguisher 4.5kg BSF complete with packaging for hazardous material as required by BIVAC	2
Smoke detectors 2 per unit included.	4

DESCRIPTION	QUANTITY
Furniture and Linen: • Headboard and pedestal • Base and mattress ¾ • Bedside table lamp • Desk with 3 drawer pedestal • Swivel chair • Wardrobe with hanging rails and shelves • Mini bin 5l • Duvet cover (2 per person) • Pillow (2 per person) • Pillow case (2 per person) • Fitted sheet ¾ (2 per person) • Flat sheet ¾ (2 per person) • Towel hand (1 per person) • Towel bath (2 per person) • Blanket (1 per person) • Night frill ¾ (1 per bed)	4 of each except the linen where 2 per person are supplied totaling 8
Reinforced concrete blocks for the jacks	40

Table 2: Middle Management Accommodation: Male 8 persons (4 persons per shelter)

DESCRIPTION	QUANTITY
4.8 x 9.6m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap, end panels and soft floors	2
Distribution boards with outlets for: • two (2) power harnesses with four (4) single walls sockets each. • two (2) auxiliary outlets. • 2 x 1.2m vapour-proof lights. • One (1) bulkhead outside lights.	2
Emergency lights for the bathrooms only	2
Brackets for emergency lights	2
EXIT lights (fitted onto the DB)	2
EXIT light signs	2
24,000 BTU split unit Air Conditioners with flexible piping • Cross frame for air conditioners • Stands for outside air conditioner split units (compressors) attached to floor frame to keep the unit off the ground	4 4 4
Lockable hard-doors with frames	4
Mosquito screen doors	2
Connection kit	2
Hard floors with powder-coated steel frames (300mm high with adjustable jacks), step (width of step to be 125% of door width) and PVC interlocking tiles (50m^2).	2
Vestibule for entrance with hard raised floor consisting of powder coated steel	2

DESCRIPTION	QUANTITY
frame, step (width of step to be 125% of the door width) and PVC interlocking tiles.	
Powder coated chequered plate for connection between vestibule and shelter	4
Smoke detectors 2 included.	2
Reinforced concrete blocks for jacks	38

Table 3: General Labour Accommodation: Male 32 persons (8 persons per shelter)

DESCRIPTION	QUANTITY
4.8 x 9.6m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap (four each side), end panels and soft floors	4
Distribution boards with outlets for: • two (2) power harnesses with four (4) single walls sockets each. • two (2) auxiliary outlets. • 2 x 1.2m vapour-proof lights. • One (1) bulkhead outside lights.	4
Emergency lights	4
Brackets for emergency lights	4
EXIT lights	4
EXIT light signs	4
2 x 24,000 BTU split unit Air Conditioners with flexible piping • Cross frame for air conditioners • Stands for outside air conditioner split units (compressors) attached to floor frame to keep the unit of the ground	8 8 8
Lockable hard-doors with frames	8
Mosquito screen doors	4
Connection kit	4
Hard floors with powder-coated steel frames (300mm high with adjustable jacks), step (width of step to be 125% of door width) and PVC interlocking tiles ($50m^2$).	4
Vestibule for entrance with hard raised floor consisting of powder coated steel frame, step and PVC interlocking tiles.	4
Powder coated chequered plate for connection between vestibule and shelter	8
Smoke detectors 4 included.	4
Reinforced concrete blocks for the jacks	76

Table 4: Dormitory Style Accommodation: Female (8 persons per shelter)

DESCRIPTION	QUANTITY
4.8 x 9.6m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap (four on each side), end panels and soft floors	1

DESCRIPTION	QUANTITY
Distribution board with outlets for: • two (2) power harnesses with four (4) single walls sockets each. • two (2) auxiliary outlets. • 2 x 1.2m vapour-proof lights. • One (1) bulkhead outside light.	1
Emergency lights.	2
Brackets for emergency lights	5
EXIT lights	2
EXIT light signs	2
24,000 BTU split unit Air Conditioners with flexible piping • Cross frame for air conditioners • Stands for outside air conditioner split units (compressors) attached to floor frame to keep the unit of the ground	2 2 2
Lockable hard-doors with frames	3
Mosquito screen doors	2
Connection kit	1
Hard floors with powder-coated steel frames (300mm high with adjustable jacks), step (width of step to be 125% of door width) and PVC interlocking tiles (50m^2).	1
Vestibule for entrance with hard raised floor consisting of powder coated steel frame, step and PVC interlocking tiles.	2
Powder coated chequered plate for connection between vestibule and shelter	4
Smoke detectors 1 included.	1
Reinforced concrete blocks for the jacks	23

Table 5: Furniture and Equipment (middle management, general labour and female staff

DESCRIPTION	QUANTITY
Beds straight leg w/tubular head and foot end – removable steel tubular head and foot end – bed size 915 x 1900 x 405mm, welded mesh 50 x 50 x 3.15mm	48
Mattress foam 100mm C40 density	48
Reading lamp	48
Desk with 3 drawer pedestal 1800 x 750mm	8
Swivel chair	8
Collapsible cupboard with hanging rails and shelves	48
Fire extinguishers 4.5kg with packaging for hazardous material as required by BIVAC	7

Table 6: Linen sets (middle management, general labour and female staff)

DESCRIPTION	QUANTITY
Duvet covers (2 per person)	96
Duvet inner (1 per person)	48
Flat sheet (2 per person)	96
Pillow (2 per person)	96
Pillow case (2 per person)	96
Towel hand (1 per person)	48
Towel bath (2 per person)	96
Blanket (1 per person)	48

2. ABLUTIONS

Table 7: Ablution unit: male

DESCRIPTION	QUANTITY
4.8 x 9.6m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap (four on each side), end panels and soft floors	3
Electrical Kit: Distribution boards (DBs) with outlets for: • 2 x Neoprene geyser harnesses • 2 x auxiliary outlets • 2 x 1.2m vapour proof lights • 1 x bulkhead outside light	3
Hard floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC inter-locking tiles (50m^2)	3
Reinforced concrete blocks for jacks (15 per floor)	45
Ablutions with 4 x showers, 4 x toilets, 2 x 3 wash basins vanity units (mirrors, towel rails, soap holders), drainage harness and box, urinal panel, whirly bird with frame per unit.	3
Geyser 200l with stand.	6
Fire extinguisher 4.5kg with packaging for hazardous material as required by BIVAC	3
Smoke detectors 3 included	3

Table 8: Ablution unit: female

DESCRIPTION	QUANTITY
4.8 x 4.8m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap (two on each side), end panels and soft floor	1
Electrical Kit: Distribution board (DB) with outlets for: • 2 x Neoprene geyser harnesses • 2 x auxiliary outlets	1

DESCRIPTION	QUANTITY
• 2 x 1.2m vapour proof lights • 1 x bulkhead outside light	
Hard floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC inter-locking tiles (25m^2)	1
Reinforced concrete blocks for jacks (15 per floor)	15
Ablutions with 2 x showers, 2 x toilets, 2 x 3 wash basins vanity units (mirrors, towel rails, soap holders), drainage harness and box, whirly bird with frame per unit.	1
Geyser 200l with stand.	1
Fire extinguisher 4.5kg complete with packaging for hazardous material as required by BIVAC	1
Smoke detectors 3 included	1

3. KITCHEN/DINER AND FOOD PREPARATION

Table 9: Kitchen/Diner and Food Preparation Equipment and Appliances

DESCRIPTION	QUANTITY
RCS Soft Shelter	
7.9 x 13.7 x 4.5m Gladiator Soft Shelter complete with barrel covers with insulation, frame, windows with clear PVC, mosquito gauze, outer storm flap (seven on each side), end panels and soft floors	1
Electrical Kit: Distribution board (DB) with outlets for: • Six (6) power harnesses with four (4) single walls sockets each. • One (1) power harness for extraction canopy. • Two (2) power harnesses for stoves. • Four (4) power harnesses for electrical poles. • Two (2) auxiliary outlets for pumps. • 6 x 1.2m vapour-proof lights. • Two (2) bulkhead outside lights.	1
Electrical pole ducting for power distribution	4
Emergency lights	12
Brackets for emergency lights	12
Exit light	3
Exit light sign	3
Air Conditioning	
24,000 BTU split unit with flexible piping	4
Stand for outside air conditioner split unit (compressor) attached to floor frame to keep unit off the ground	4
Doors and Frames	
Double lockable hard doors with frame	2

DESCRIPTION	QUANTITY
Single mosquito screen door	2
Lockable hard door with frame	2
Divider (end panel)	1
Extraction	
Extractor canopy	1
Stand for extractor canopy and fan	1
Smoke detector (included)	1
Hard Floor	
Powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC interlocking tiles (110m^2)	1
Reinforced concrete blocks for jacks (42 per floor)	42
Entrance Vestibule	
Vestibule for entrance with hard raised floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC interlocking tiles (6m^2).	2
Reinforced concrete blocks for jacks (4 per floor)	8
Powder coated chequered plate for connection between vestibule and shelter (1400 x 500mm)	4
Health and Safety Equipment	
First aid kit	2
Bug zapper	1
Rofo GT 700 fat trap	1
Fire extinguisher 4.5kg complete with packaging for hazardous material (fire extinguisher) as required by BIVAC	1
Fire blanket	1
Food Preparation Equipment	
Stainless steel table with shelf 1100mm	2
Stainless steel table with shelf 2300mm	2
Double bowl sink 1600mm x 650mm x 900mm	2
Potato peeler 12kg – no timer	1
Stainless steel dump table	2
4 tier pot rack 1200mm	1
Convection oven Prima Pro (grill & bake)	1
Floor standing fryer	1

DESCRIPTION	QUANTITY
RE3 electric solid plate stove with oven 1000mm x 820mm x 900mm	1
Floor standing flat top griller	1
Microwave oven 31ℓ	2
Shelving system 4 tier wire shelving 1510mm x 455mm x 1830mm	2
Urn electrical 12ℓ	1
Urn electrical 30ℓ	1
Food Storage	
Chest freezer 530ℓ	2
Upright beverage cooler 1140mm x 2020mm x 635mm	1
Hygiene/Cleaning/Waste Disposal	
Black bin 90ℓ	4
Kitchen Smalls	
Toaster/sandwich Panini Deluxe	1
Large Chef knife 300mm	2
Carving knife 190mm	2
Bread knife 200mm	2
Tongs grill/braai 400mm	2
Tongs utility 400mm	2
Multi-purpose bowl plastic utility buckets 20ℓ	2
Salad bowls medium	5
Baking trays / roasting dish 419mm x 285mm x 75mm	4
Nylon chopping board 500mm x 380mm x 13mm	4
Stainless steel colander 380mm	2
Grater 6-sided	2
Slotted egg lifter	2
Solid serving spoon 330mm	8
Perforated serving spoon 330mm	8
Wooden spoon 330mm	6
Wooden spoon 400mm	6
Wooden spoon 500mm	6

DESCRIPTION	QUANTITY
Heavy duty stainless steel mixing bowl 400mm	2
Stainless steel heavy duty cooking pot 12ℓ	2
Stainless steel heavy duty cooking pot 20ℓ	2
Stainless steel heavy duty cooking pot 30ℓ	2
Aluminium frying pan 240mm non-stick	2
Aluminium frying pan 320mm non-stick	2
Ladle box 177mℓ	3
Ladle box 225mℓ	3
Industrial can opener	1
Potato chipper complete with bridge 12mm	1
Dining Hall Furniture	
Tables 6' folding 1800mm x 900mm x 750mm	9
Chair plastic stackable	50
Server	
Bain-marie, 5 division, table model 1820mm x 700mm x 370mm	1
Refrigerated polar top with stand 1140mm x 750mm x 100mm	1
Electrical pole ducting for power distribution	2
Inserts stainless steel full 150mm deep	10
Inserts stainless steel full lids	10
Tables collapsible trestle heavy duty 1800mm x 770mm	2
Neutral counter no doors 1850mm x 900mm	1
Urn 16ℓ	1
Dinner plates 255mm	50
Side plates 180mm	50
Soup bowls 230mm	50
Dessert / cereal bowls 182mm	50
Tea cup 236mℓ	50
Tea saucer 145mm	50
Coffee mug 354mℓ	50
Table knives	50

DESCRIPTION	QUANTITY
Table forks	50
Soup spoons	50
Dessert spoons	50
Teaspoons	50
Hi ball glasses 240mℓ	50
Pluto glasses 225mℓ	50
Water jugs 1.3ℓ	9
Waste paper basket 90ℓ	4
Scullery / Wash Area and Equipment	
RCS Soft Shelter	
4.8m x 4.8m Warrior Soft Shelter complete with barrel cover with insulation, frame, windows with clear PVC, mosquito gauze and outer storm flap (2 on each side) with end panel and soft floor	1
Electrical Kit (Standard)	
Electrical Kit: Distribution board (DB) with outlets for: • Two (2) power harnesses with four (4) single wall sockets each. • Two (2) auxiliary outlets for pumps. • 2 x 1.2m vapour-proof lights. • One (1) bulkhead outside lights. • One (1) power harness for geyser. • One (1) power harness for emergency lights • Emergency lights • Bracket for emergency lights • Exit light • Exit light sign	1 2 2 2 1 1 1 1 2 1 1
Hard Floor	
Powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of the door width) and PVC inter-locking tiles (25m^2)	1
Reinforced concrete blocks for jacks (9 per floor)	9
Lockable hard door with frame	3
Mosquito screen door	1
Entrance Vestibule	
2.1m x 2.4m vestibule with soft floor	1
Hard raised floor powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of the door width) and PVC inter-locking tiles (6m^2)	1
Reinforced concrete blocks for jacks (4 per floor)	4
Powder coated chequered plate for connection between shelter and vestibule (1400mm x 500mm)	2

DESCRIPTION	QUANTITY
Geyser 200ℓ with stand	1
F180 hood type dishwasher	1
Stainless steel dump table complete with scrape hole and rubber bung 1700mm x 700mm x 900mm	1
Stainless steel double bowl pot sink 2250mm x 650mm x 950mm	2
Stainless steel mobile crockery rack 1130mm x 600mm x 1680mm	3
4 tier stainless steel shelving 850mm x 500mm x1900mm	3
4 tier stainless steel shelving 1150mm x 500mm x 1900mm	3
Dish clearing trolley	2
Black bin with lid 90ℓ	2
Fire extinguisher 4.5kg complete with packaging for hazardous material (fire extinguisher) as required by BIVAC	1
Smoke detector included	1

4. WAREHOUSE

Table 10: Warehouse shelter and Equipment

DESCRIPTION	QUANTITY
RCS Soft Shelter	
4.8m x 9.6m Warrior soft shelter complete with barrel cover with insulation, frame, windows with clear PVC, mosquito gauze and outer storm flap (4 on each side), end panels and soft floor	1
Double lockable hard door with frame	2
Double mosquito screen door	1
Electrical Kit (Standard)	
Distribution board with outlets for: • Two (2) power harnesses with 4 single wall sockets each • Two (2) auxiliary outlets • Two (2) 1.2m vapour proof lights • One (1) bulkhead outside light	1 2 2 2 1
Air Conditioning	
24,000 BTU split unit with flexible piping	2
Cross frame for air conditioner	1
Stand for outside air conditioner (compressor) attached to the floor frame to keep the unit off the ground	2
Fire Protection	
Fire extinguisher 4.5kg complete with packaging for hazardous material (fire extinguisher) as required by BIVAC	1

DESCRIPTION	QUANTITY
Smoke detector included	1
Hard Floor	
Powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of the door width) and PVC inter-locking tiles (50m^2)	1
Reinforced concrete blocks for jacks (15 per floor)	15
Vestibule / Passage	
2.1m x 2.4m soft floor	1
Hard raised floor: powder coated steel frame, (300mm high with adjustable jacks), step (with width 125% of the door width) and PVC inter-locking tiles (6m^2)	1
Reinforced concrete blocks for the jacks (4 per floor)	4
Powder coated chequered plate for connection between the shelter and the vestibule (1400mm x 500mm)	2

5. MEDICAL UNIT

Table 11: Medical Unit Shelter, Furniture and Equipment

DESCRIPTION	QUANTITY
4.8m x 9.6m RCS Soft Shelter	
4.8 x 9.6m Warrior Soft Shelters complete with barrel covers with insulation, frames, windows with clear PVC, mosquito gauze, outer storm flap (four on each side), end panels and soft floors	1
Electrical Kit (Partitioned)	
Electrical Kit: Distribution boards (DBs) with outlets for: • 2 x power harnesses with four single wall sockets • 2 x auxiliary outlets • 2 x 1.2m vapour proof lights • 2 x bulkhead outside light • 1 x extension for 2nd air conditioner • Power harness 2 is extended for lights in 2nd section	1
Air Conditioning	
12,000 BTU split unit air conditioner with flexible piping	2
Cross frame for air conditioner	2
Stand for outside air conditioner split unit (compressor) attached to the floor frame to keep the unit off the ground	2
Doors and Frames	
Lockable hard door with frame	3
Mosquito screen door	1
Divider with frame	1

DESCRIPTION	QUANTITY
Hard Floor	
Hard floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC inter-locking tiles (50m^2)	1
Reinforced concrete blocks for jacks (15 per floor)	15
Vestibule/Passage	
Vestibule/passage (2.1 x 2.4m soft floor)	1
Hard raised floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC inter-locking tiles (6m^2)	1
Reinforced concrete blocks for the jacks of the vestibule/passage (4 per floor)	4
Powder coated chequered plate for connection between shelter and vestibule	2
En-suite Ablution	
En-suite ablution with 1 x shower, 1 x hand wash basin, shower curtain, mirror, towel rails, soap dish and toilet roll holder	1
Whirly bird with frame for the en-suite ablution	1
100l geyser with stand	1
Hand wash basin (elbow operated) with in-line water heater and stand (for medical staff)	1
Soap dispenser and bracket attached to the hand wash basin stand	1
Paper towel dispenser and bracket attached to the hand wash basin stand	1
Bin, waste pedal operated metal with plastic insert	1
Fire Protection	
Fire extinguisher 4.5kg complete with packaging for hazardous material as required by BIVAC	1
Smoke detector included	1
Furniture and Equipment	
Desk with 3 drawers	1
Chair, office	1
Bin, waste, pedal operated, metal with plastic insert	1
Beds, straight leg w/tubular head and foot end – removable steel tubular head and foot end – bed size 915 x 1900 x 405mm, welded mesh: 50 x 50 x 3.15mm	2
Mattress foam 100mm C40 density	2
Medical examination table on castors	1
Cabinet, metal, lockable, 2 door with 4 adjustable shelves	1
Drug cabinet utility trolley	1

DESCRIPTION	QUANTITY
Drip stand	1
Stretcher	1
Linen Sets	
Duvet cover – 2 per person	4
Duvet inner – 1 per person	2
Flat sheet – 2 per person	4
Pillow – 2 per person	4
Pillow case – 2 per person	4
Towel hand – 1 per person	2
Towel bath – 2 per person	4
Blanket – 1 per person	2

6. RECREATION UNIT

Table 12: Recreation Unit Shelter, Furnishing and Equipment

DESCRIPTION	QUANTITY
RCS Soft Shelter	
7.9 x 13.7 x 4.5m Gladiator Soft Shelter complete with barrel covers with insulation, frame, windows with clear PVC, mosquito gauze, outer storm flap (seven on each side), end panels and soft floors	1
Electric Kit	
Electrical Kit: Distribution boards (DBs) with outlets for: • 2 x power harnesses with four single wall sockets each • 2 x auxiliary outlets • 6 x 1.2m vapour proof lights • 2 x bulkhead outside light	1
Air Conditioning	
24,000 BTU split unit air conditioner with flexible piping	4
Stand for outside air conditioner split unit (compressor) attached to the floor frame to keep the unit off the ground	4
Doors and Frames	
Lockable hard door with frame	2
Mosquito screen door	2
Hard Floor	
Hard floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC inter-locking tiles (110m^2)	1

DESCRIPTION	QUANTITY
Reinforced concrete blocks for jacks (42 per floor)	42
Vestibule/Passage	
Vestibule/passage (2.1 x 2.4m soft floor)	2
Hard raised floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width of step will be 125% of door width) and PVC inter-locking tiles (6m^2)	2
Reinforced concrete blocks for the jacks of the vestibule/passage (4 per floor)	8
Powder coated chequered plate for connection between shelter and vestibule (1400 x 500mm)	4
Fire Protection	
Fire extinguisher 4.5kg complete with packaging for hazardous material as required by BIVAC	2
Smoke detector included	1
Recreation Equipment	
Tables 6' folding 1800 x 750mm	2
TV cabinet	2
74cm flat screen TV	2
90cm satellite dish (client to purchase decoder in country)	2
Pole for dish with concrete base	2
Co-ax cable (100m roll)	1
Home theatre and DVD combo system	2
Dartboard cabinet complete with set of darts	2
Frame for tent/shelter dartboard installation	2
Extra dart sets	4
Fridge 350ℓ	2
Chair plastic	50
Waste paper basket	4
Stationery cupboard	2
Soccer ball	4
Urn 16ℓ	2
Microwave 26ℓ	4
Water cooler	2

7. LAUNDRY

Table 13: Laundry Shelter, Appliances and Equipment

DESCRIPTION	QUANTITY
RCS Soft Shelter	
4.8 x 9.6m Warrior Soft Shelters complete with barrel cover with insulation, frame, windows with clear PVC, mosquito gauze, outer storm flap (four on each side), end panels and soft floors	1
Lockable hard door with frame	1
Mosquito screen door	1
Extractor fan	1
Electrical Kit (Standard)	
Distribution Board with outlets for: • Two (2) power harnesses with 4 wall sockets each • Two (2) auxiliary outlets • Two (2) 1.2m vapour proof lights • One (1) bulkhead outside light • Electrical pole ducting for power distribution	1 2 2 2 1 2
Hard Floor	
Powder coated steel frame (300mm high with adjustable jacks), step (width will be 125% of the door width) and PVC inter-locking tiles ($50m^2$)	1
Reinforced concrete blocks for jacks (15 per floor)	15
Vestibule / Passage	
2.1m x 2.4m soft floor	1
Hard raised floor consisting of powder coated steel frame (300mm high with adjustable jacks), step (width will be 125% of the door width) and PVC inter-locking tiles ($6m^2$)	1
Reinforced concrete blocks for the jacks (4 per floor)	4
Powder coated chequered plate for connection between the vestibule and the shelter (1400mm x 500mm)	2
Fire Protection	
Fire extinguisher 4.5kg complete with packaging for hazardous material (fire extinguisher) as required by BIVAC	1
Smoke detector included	1
Laundry and Ironing Equipment and Appliances	
Washing machines 7.5kg	3
Tumble dryers 8.2kg	3
Ironing tables	3
Irons	3
Linen press	1

DESCRIPTION	QUANTITY
Clothing racks	2
Ironing trolley	2
Laundry bags	50

8. OFFICES FOR GENERAL USE

Table 14: Offices Shelter, Furniture and Equipment

DESCRIPTION	QUANTITY
RCS Soft Shelter	
4.8 x 9.6m Warrior Soft Shelters complete with barrel cover with insulation, frame, windows with clear PVC, mosquito gauze, outer storm flap (four on each side), end panels and soft floors	2
Lockable hard door with frame	4
Mosquito screen door	4
Electrical Kit (Standard)	
Distribution Board (DB) with outlets per DB for: • Two (2) power harnesses with 4 Schuko wall sockets each • Two (2) auxiliary outlets • Two (2) 1.2m vapour proof lights • One (1) bulkhead outside light • Two (2) emergency lights • Four (4) brackets for emergency lights • Four (4) Exit light • Four (4) Exit light sign	3 6 6 6 3 6 12 12 12
Fire Protection	
Fire extinguisher 4.5kg complete with packaging for hazardous material (fire extinguisher) as required by BIVAC	2
Smoke detector included	2
Furniture and Equipment	
Two drawer desk	14
Four drawer cabinet	14
Typist chair	14
Visitor chair	28
Stationery cupboard	14
Oval boardroom table	2

9. FOOD STORAGE

Table 15: Cold Room Reefer with Equipment

DESCRIPTION	QUANTITY
20' (6m) Cold Room Reefer	1
Stainless steel shelving for cold room reefers, forming 4 tier modular shelving, 1150mm x 500mm	32
Stainless steel shelving for cold room reefers forming 4 tier modular shelving 850mm x 500mm	8
Uprights for all shelving	24
20' (6m) Freezer Room Reefer	1
Stainless steel shelving for cold room reefers, forming 4 tier modular shelving, 1150mm x 500mm	32
Stainless steel shelving for cold room reefers forming 4 tier modular shelving 850mm x 500mm	8
Uprights for all shelving	24
Dry Storage	
6m ISO refurbished container with chequered plate flooring and electricity	2
Galvanized shelving (4 tier chrome wire shelving unit 1200mm x 455mm x 1830mm	8

10. WATER PROVISIONING SYSTEM

Table 16: Water Purification Plant

DESCRIPTION	QUANTITY
Containerized ROPU Water Purification Plant	
Containerized nominal 1000l per hour ROPU Water Purification Plant complete with the following: • S 600 sand filter • S 600 activated carbon filter • Filter pump • Reverse osmosis system • Re-mineralization unit included	1
Water Storage	
Raw water: 47 000ℓ mesh dam with tarps and support sets	1
Clarified water: 47 000ℓ mesh dam with tarps and support sets (5 day reserve at 180ℓ plus per man per day)	1
Water Reticulation	
Main feeder pump station (5 cu/m/h)	1
Secondary booster pump station (3 cu/m/h)	1
50mm lay flat (10 Bar)	345m

DESCRIPTION	QUANTITY
40mm delivery hose	55m
25mm delivery hose	80m
Suction hose	15m
Ball cock lever valves and adaptor sets	20
Camlock male and female sets 50mm	38
Camlock Y and T sets50mm	15
Clamps 50mm	140
Miscellaneous fittings	1
Plumbing tools including water and sewage	1

11. WASTE WATER SYSTEM

Table 17: Waste water Treatment Plant

DESCRIPTION	QUANTITY
Containerized waste Water Treatment Plant	
Biological waste water treatment plant with the capacity to serve 50 persons	1
2500ℓ tanks between the kitchen, laundry and treatment plant	2
6m ISO refurbished container with chequered plate flooring and electricity	1
Waste water reticulation	
Macerator pumps 2800ℓ/h	6
50mm lay flat (10 Bar)	380m
Suction hose 50mm	30m
Camlock Y and T sets 50mm	18
Camlock male and female connector 50mm	38
Non-return valve and adaptor sets 50mm	6
PVC fittings and vent valve sets	6
Miscellaneous fittings	1
PVC inspection eyes	20
Ball cock lever valves and adaptor sets	20
Solid Waste Management	
Wheely bins 240ℓ	10

12. ELECTRICAL SYSTEM

Table 18: Electrical System

DESCRIPTION	QUANTITY
Power Generation	
150 KVA (prime) 3-phase diesel	2
Silent weather proof canopy	2
AMF / ATS with engine pre-heat	2
Dessert air-filter system	1
Automated Synchronized change over panel	1
Commissioning of generators	2
1.2m x 1.2m x 70mm^2 bare copper earth mat	1
Supply cable (185mm^2 4-core) between generators and sync panel (per meter) 1200A	8
Electrical Reticulation	
Main standby Distribution Board (DB) complete with all bolts, nuts, gland plates labels and accessories (supply, commissioning and fitment)	1
General DBs complete with bolts, nuts, gland plates, labels and accessories (supply, commissioning and fitment)	5
Cables various (measures and cut) • 16mm^2 3-core cable • 16mm^2 5-core cable • 32mm^2 5-core cable • 50mm^2 5-core cable • Earth conductor 70mm^2 BCEW • Labels for supply cables	 193m 176m 166m 720m 204m 1 set
Plug and play / conventional • 5-pin male industrial 125A plug comply with IP66 specification • 5-pin female industrial 125A plug comply with IP66 specification • 5-pin male industrial 32A plug comply with IP66 specification • 5-pin female industrial 32A plug comply with IP66 specification • 5-pin male industrial 63A plug comply with IP66 specification • 5-pin female industrial 63A plug comply with IP66 specification • 3-pin male industrial 63A plug comply with IP66 specification • 3-pin female industrial 63A plug comply with IP66 specification	 20 20 4 4 22 22 33 33

13. FUEL PROVISION

Table 19: Fuel Provision

DESCRIPTION	QUANTITY
Diesel engine complete with 40mm fill-rite meter, 25mm by-pass, 1" 1 x 6mm hose with ball valve and auto nozzle complete with VFS filter / water separator mounted on a semi-skid	1
• 2 pumps, 2 filters and 2 x 20,000ℓ bladders	
• Containment / spillage area (tarp)	1

DESCRIPTION	QUANTITY
• Sandbags to build the containment	100

14. FIRE PROTECTION

Table 20: Fire Protection

DESCRIPTION	QUANTITY
Fire extinguisher 9ℓ foam 6% AFT	2
Fire extinguisher 9kg DCP	2
Packaging for hazardous material (fire extinguishers) as required by BIVAC	2

15. PACKAGING SUITABLE FOR IN-COUNTRY TRANSPORT

Table 21: Packaging Suitable for In-Country Transport

DESCRIPTION	QUANTITY
Packaging material – bubble wrap	10 rolls
Carton boxes	100
Tie-down ratchet assembly 50mm x 9m	150

GLOSSARY

1. ABBREVIATIONS

AFT	Advanced Fire-fighting Technology
BIVAC	Bureau Veritas Inspection, Valuation, Assessment and Control
BTU	British Thermal Unit
CB	Circuit Breaker
DB	Distribution Board
DCP	Dry Chemical Powder
HDPE	High Density Polyethylene
Hz	Hertz
ISO	International Standards Organisation
kW	Kilowatt
ℓ	Litre
LLDPE	Linear low density polyethylene
m	Meter
MCB	Main Circuit Breaker
mm	Millimetre
OHS	Occupational health and Safety
PVC	Poly Vinyl Chloride
RO	Reverse Osmosis
SABS	South African Bureau of Standards
SANS	South African National Standard
TV	Television
V	Volt
VA	Volt Ampere