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Nebo Accommodation Village
Basis of design

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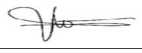
Prepared by:	Janus Abihay	13 August 2024	
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Glossary

µm	Micrometer
4WD	Four-Wheel Drive
AC	Asphaltic Concrete
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ALCAM	Australian Level Crossing Assessment Model
AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
BCA	Building Code of Australia
CASA	Civil Aviation Safety Authority Australia
CBR	California Bearing Ratio
CCTV	Closed-Circuit Television
CoP	Code of Practice
DB	Distribution Board
DICL	Ductile iron cement lined (pipe)
GPS	Global Positioning System
HAZOP	Hazard and Operability
HDPE	High Density Polyethylene
HV	High Voltage
IAS	Initial Advice Statement
IEEE	Institute of Electrical and Electronics Engineers
IMS	Integrated Management System
ISO	International Organization for Standardisation
kVA	Kilo Volt Amperes
L/s	Litres per second
LAN	Local Area Network
LPG	Liquefied Petroleum Gas
LV	Low Voltage
MCC	Motor Control Centre
MGA	Map Grid of Australia
ML/yr	Mega litres per year
MVA	Mega Volt Amperes

NCC	National Construction Code
PE	Polyethylene (pipe)
PED	Personal emergency device
PLC	Programmable logic controller
PTO	Power take-off
PVC	Polyvinyl chloride
PWD	Persons with a disability
QLD	Queensland
QR	Queensland Rail
RCS	Remote Controlled Signalling
RIM	Rail Infrastructure Manager
RL	Reduced Level
RMU	Ring Main Unit
SMDD	Standard Maximum Dry Density
SWL	Safe Working Load
T/O	Turn-out
ToR	Terms of Reference
TOS	Toe of Switch
TSS	Total Suspended Solids
UPS	Uninterruptible Power Supply
VoIP	Voice Over Internet Protocol
WAN	Wide Area Network
WBS	Work Breakdown Structure
XLPE	Cross Linked Polyethylene

1 Introduction

1.1 Project background

Pacific National (PN) proposes to develop a workers' accommodation village near Nebo township to support their Train Support Facility (TSF), which is used for maintenance, provisioning, and train crew operations on the Goonyella and Newlands lines. The site is located approximately 90 km southwest of Mackay in Central Queensland, within the Isaac Regional Council local government area (refer to Figure 1.1 for the locality plan). The area is accessible via the Peak Downs Highway to the north, the Oxford Downs Sarina Road to the south, and Braeside Road to the east, with site access provided off Braeside Road.

The project involves the design and construction of a permanent accommodation village adjacent to the Nebo TSF, located 1.2 km north of the intersection with Oxford Downs Sarina Road, off Braeside Road. The site is bordered by the existing Goonyella railway line to the south and the corridor/property boundary to the north.

The village is to be constructed in three stages with a total number of 166 prefabricated accommodation modular units. The number of accommodation units for each stage are as follows:

- 68 units in Stage 1
- 48 units in Stage 2
- 50 units in Stage 3.

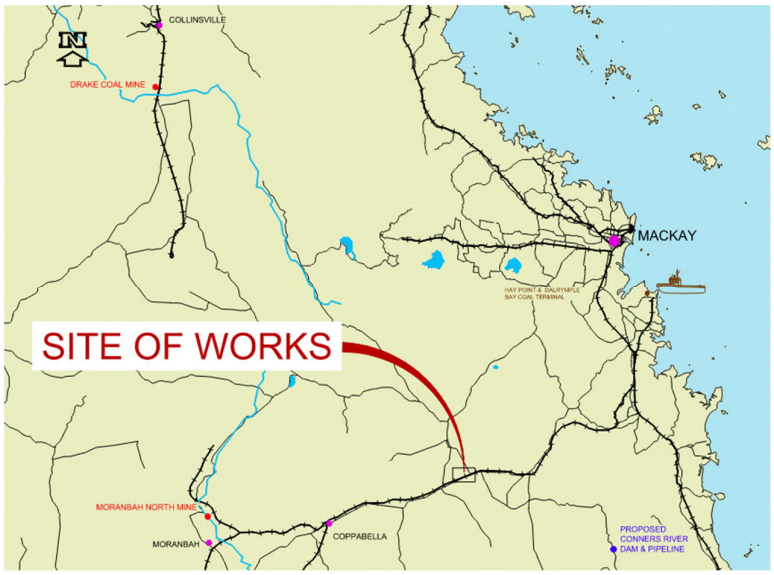

Figure 1.1 Nebo Accommodation Village site location

1.2 Purpose of this document

The purpose of this document is to set out the design criteria, parameters, assumptions and operational requirements for the accommodation village.

2 Operational requirements

2.1 Village operations

- The Train Support Facility (TSF), which is used for maintenance, provisioning, and train crew operations on the Goonyella and Newlands lines will operate 24 hours per day, 7 days per week
- Administration functions will operate for 12 hours per day, 7 days per week
- Maintenance functions will operate 24 hours per day, 7 days per week
- Village guests are intended to use the village to rest between shifts
- Village Staff are 100% FIFO.

3 Codes, standards, specification and statutory requirements

3.1 General

The design of all components of the accommodation village shall comply with the latest revisions of all national and state statutory requirements including all PN internal policy documentation. The order of precedence applying for the use of the codes, standards, specifications and statutory requirements for the project is as follows:

- Statutory requirements
- Australian Standards
- Project specific requirements and standards
- International standards
- Service authority standards.

In the event of an inconsistency, conflict or discrepancy between any of the standards, specifications and statutory requirements, the most stringent and safest requirement applicable to the project shall prevail to the extent of the inconsistency, conflict or discrepancy. Any inconsistencies critical to the design shall be brought to the attention of Pacific National.

3.2 Specifications

The minimum applicable construction specifications that are applicable are listed below in Table 3.1. All these documents are attached as Appendix A – except for the NCC documents which are available on-line.

Table 3.1 Specifications

Document number	Description
Structural/buildings	
NCC 2022	National Construction Code (NCC)
Civil / Site Works	
PS215740-SPC-GEN-1010	General construction specification
PS215740-SPC-CIV-2110	General earthworks
PS215740-SPC-CIV-2510	Unbound pavements
PS215740-SPC-CIV-2520	Bituminous surfacing
PS215740-SPC-CIV-2540	Kerb and channel
PS215740-SPC-CIV-2550	Road furniture
PS215740-SPC-CIV-2610	Rock Filled Mattresses, Gabions and Rock Protection
PS215740-SPC-CIV-2620	Geotextiles under rock filled mattresses, gabions and rock protection
PS215740-SPC-CIV-2630	Reinforced concrete culverts

Document number	Description
PS215740-SPC-CIV-2640	Fencing
PS215740-SPC-CIV-2720	Conduits
PS215740-SPC-CIV-2810	Excavation, Bedding, Backfill Pipe Trenches
PS215740-SPC-CIV-3100	Supply and delivery of ready mixed concrete
PS215740-SPC-CIV-3101	Concrete placement
PS215740-SPC-CIV-3102	Precast concrete
Dry Services	
PS215740-SPC-ELE-1001	Electrical installation
PS215740-SPC-ELE-1002	Electrical commissioning
PS215740-SPC-ELE-1003	Metal clad switchboards and enclosures
PS215740-SPC-ELE-1004	Backbone fibre and structural cabling
PS215740-SPC-ELE-1005	Fire systems
PS215740-SPC-ELE-1007	Security and CCTV
PS215740-SPC-ELE-1008	Gigabit passive optical network
PS215740-SPC-ELE-1009	Low voltage generator
Wet Services	
PS215740-SPC-ELE-1010	Low voltage electric motors
PS215740-SPC-MEC-4001	General mechanical works
PS215740-SPC-MEC-4002	Steel protective coatings
PS215740-SPC-MEC-4003	Fire detection – fire protection
PS215740-SPC-MEC-4004	Valves
PS215740-SPC-MEC-4005	Class 2 centrifugal pumps for water services
PS215740-SPC-MEC-4006	Supply & installation of water pressure pipelines
PS215740-SPC-MEC-4007	Sewer reticulation

3.3 Statutory requirements

All aspects of the project shall comply with the requirements of the latest revisions of all relevant Australian statutory requirements. Specific attention is drawn to the requirements stipulated in the legislation detailed in Table 3.2.

Table 3.2 Statutory requirements

Act title
Work Health and Safety Act (Qld)
Work Health and Safety Regulations (Qld)
Environmental Protection Act (Qld)

Act title
Environmental Protection Regulations (Qld)
Clean Waters Act
Water Act (Qld)
Water Supply (Safety and Reliability) Act (Qld)
Australian Electrical Safety Act
Australian Electrical Safety Regulation
Electricity Act (Qld)
Qld Electricity (Licensing) Regulations
Qld Electricity Regulations Part VIII
Relevant Australian, British or American standards and codes in that order of precedence. For Mechanical systems, the American Society of Mechanical Engineers (ASME) standards will take precedence over the British.
The Building Code of Australia (BCA)
Fire and Emergency Services Act
Fire and Rescue Service Act Requisition (No. 1)
AA TS 108 001 Structural Integrity Standard
National Construction Code (NCC)

3.4 Codes and standards

Wherever possible, all aspects of the project shall comply with the requirements of the latest revision of the relevant Australian codes and standards. Where applicable Australian Standards do not exist or cannot be applied, other industry recognised international standards and recommended practices, such as those from the American Petroleum Institute (API) may be used. If alternative standards are proposed, these shall be specifically stated at the commencement of design and be subject to approval by PN.

3.5 Other applicable reference documentation

The following reference documentation shall be read in conjunction with the design criteria.

- The Capricorn Municipal Development Guidelines (CMDG) including Standard Drawings and Specification, Construction Specification and Procedures, Design Specification and Purchase Specifications
- Queensland Department of Transport and Main Roads – Design Standards and Specifications
- All Australian Standards relevant to engineering matters including, but not limited to:
  - Construction
  - Quality, inspection and testing of materials
  - Car parking (AS2890)
  - Access requirements (AS1428)
  - Stormwater management and control (AS3500)

  - Overhead line design (AS7000)
- All relevant Austroads documentation relating to design, construction and maintenance of road related infrastructure
- Infrastructure related documentation published by Queensland Department of Transport & Main Roads where relevant areas of road related infrastructure not contained or otherwise specified in CMDG of Council policy documents
- Current version of the Building Code of Australia
- Current version of the Sewerage Code of Australia
- Current version of the Water Supply Code of Australia
- Current version of the Australian Rainfall and Runoff: A Guide to Flood Estimation
- Best Practice Erosion and Sediment Control (International Erosion Control Association, Australia)
- Community Development and Justice Standing Committee Report 2 ‘ENOUGH IS ENOUGH’ Sexual harassment against women in the FIFO mining industry, June 2022.

4 General design parameters

4.1 Design life

The design life of the accommodation village is 20 years.

The design life of the various infrastructure elements within the village shall be as listed in Table 4.1.

Table 4.1 Design Life

Design element	Design life
Structures	20 years
Tanks, pipe works and electrical equipment	20 years
Pump casings and mechanical equipment	20 years
Pump impellers and shafts (replaceable components)	10 years
Roads	20 years
All other items unless specified otherwise	20 years

4.2 Survey

All survey data used in the design shall be in the GDA94 Zone 55 projection. Vertical coordinates are based on the Australian Height Datum (AHD).

4.3 Temperature

Temperature data provided in Table 4.2 has been obtained from the BOM for Moranbah Water Treatment Plant (site number 034038), located approximately 74 km south-east of the accommodation village location.

Table 4.2 Design temperature variables to be applied

Temperature reference	Design temperature
Mean maximum temperature	29.7°C
Mean minimum temperature	16.7°C
Maximum design temperature	45°C
Minimum design temperature	5°C

Note: design temperature for the infrastructure (including fluids) may vary to account for thermal mass, burial and solar radiation.

4.4 Equipment

All equipment shall be designed and selected to be suitable for continuous, reliable operation 24 hours per day, 365 days per year in the conditions specified unless clearly identified for intermittent duty.

4.5 Geotechnical

A geotechnical report (Document No. 2135587J-GEO-RPT-001 dated November 2013) attached as Appendix B, was prepared for a previous proposed accommodation village development. The design parameters recommended in this report may be assumed for the accommodation village design (subject to confirmation that additional geotechnical investigations are not required).

4.6 Wind

The design wind loads for buildings and structures are to be based on requirements of AS 1170.2.

4.7 Earthquake

The design earthquake loads for buildings and structures are to be based on the requirements of AS 1170.4.

4.8 Rainfall

Design rainfall data for location Lat. -21.787, Long. 148.737 was downloaded from the Australia Bureau of Meteorology (BOM) to be used for stormwater drainage design.

Table 4.3 IFD design rainfall intensity (mm/hr)

Duration	63.2% AEP	50% AEP	20% AEP	10% AEP	5% AEP	2% AEP	1% AEP
1 min	137	156	210	244	275	314	342
2 min	118	134	181	211	238	271	293
3 min	111	126	170	198	223	254	276
4 min	105	120	162	188	212	242	263
5 min	101	114	155	180	203	232	252
10 min	84	95.2	128	149	168	192	209
15 min	72.4	82	110	128	144	165	179
20 min	63.8	72.2	97.1	113	127	145	158
25 min	57.2	64.7	87.1	101	114	130	141
30 min	51.9	58.8	79.1	91.9	104	118	129
45 min	40.9	46.4	62.6	72.9	82.4	94.1	103
1 hour	33.9	38.6	52.3	61	69.1	79.2	86.4
1.5 hour	25.6	29.2	39.9	46.8	53.3	61.4	67.2
2 hour	20.7	23.7	32.7	38.5	44	51	56.1
3 hour	15.2	17.5	24.5	29.1	33.5	39.2	43.5
4.5 hour	11	12.8	18.3	21.9	25.5	30.3	33.9
6 hour	8.8	10.2	14.8	18	21.1	25.3	28.5

Duration	63.2% AEP	50% AEP	20% AEP	10% AEP	5% AEP	2% AEP	1% AEP
9 hour	6.41	7.51	11.1	13.7	16.2	19.8	22.6
12 hour	5.14	6.05	9.08	11.3	13.6	16.7	19.2
18 hour	3.78	4.48	6.87	8.68	10.6	13.2	15.4
24 hour	3.06	3.64	5.66	7.23	8.93	11.2	13.2
30 hour	2.6	3.1	4.88	6.28	7.82	9.91	11.7
36 hour	2.28	2.73	4.32	5.59	7.01	8.92	10.5
48 hour	1.86	2.22	3.56	4.65	5.88	7.52	8.91
72 hour	1.38	1.66	2.68	3.54	4.52	5.79	6.87
96 hour	1.11	1.34	2.17	2.87	3.68	4.7	5.58
120 hour	0.929	1.12	1.82	2.41	3.08	3.94	4.65
144 hour	0.797	0.962	1.57	2.07	2.64	3.35	3.96
168 hour	0.695	0.84	1.37	1.8	2.28	2.9	3.41

4.9 Pacific National accommodation village guiding principles

The following are PN's guiding principles for the Nebo Accommodation Village:

- A worker's experience is central to the design and operation of the accommodation village.
- All workers are entitled to safe and secure accommodation whilst residing in a PN accommodation village.
- Employees and contractors are entitled to the same standard of amenity and safety.
- Village experience is a key driver of attraction and retention.

5 Village layout and size

Table 5.1 Layout design criteria

Parameter	Requirement	Notes/comments
Layout design	The layout of the village shall take the following into consideration: — Local environmental aspects (including wind direction, rainfall, sun orientation, natural slope, soil conditions, existing vegetation) — Logical paths of travel for residents and safe, efficient access to all areas for the village management and caretaking personnel. Path widths to accommodate a golf cart and person passing as a minimum. — The location of the sewage tanks to minimise odour control and noise to accommodation buildings. — The location of water storage tanks, distribution pumps and treatment facilities to be away from accommodation buildings to minimise noise impact. — Maintenance access to be provided to all accommodation buildings, either via village roads or unsealed access corridors — The proposed location of transformers for incoming power to be closest to the larger load demands at the village — Layout to minimise travel distances from accommodation buildings to hub facilities as much as reasonably possible — Segregation of delivery vehicles and light vehicles and pedestrians — Dedicated entry and exit roads for car parking areas — Layout to minimise travel distances from car parking to accommodation buildings as much as reasonably possible — Provide a buffer (nominally 14m) from the hub facilities to the accommodation rooms to reduce noise impacts.	
Pedestrian access	— Covered concrete pathway internal pedestrian access to and between all hub buildings	

Parameter	Requirement	Notes/comments
	— Uncovered asphalt pathways from the hub facilities to the accommodation buildings,all other facilities and the carparks. — 2.5m wide pathways — Gradient of paths to be acceptable for use by golf carts	
Village location	— All building finished floor levels will be located above the 1% AEP flood level — All pads and roads to achieve a 5% AEP flood immunity	
Village access in wet weather	— The village access road will have 5% AEP flood immunity	
Cleaning and maintenance	— Method of village operation to be confirmed. — Nominal time to clean a room is 20 minutes	

Village size	— Total required accommodation units is 166, with the following breakdown per stage:
	  — 68 for Stage 1
	  — 48 for Stage 2
	  — 50 for Stage 3
	— Wherever reasonably possible, the workforce will be allocated the same room each time they come to site. “Motelling” is not preferred.
	— Provide dedicated female rooms.	

Village staff	Village staff assigned a permanent room	

6 Civil works

Table 6.1 Earthworks and drainage design criteria

Parameter	Requirement	Notes/comments
Finished surfaces	— All finished surfaces shall be free draining. — Finished grades shall be 1% preferred. — Where design circumstances permit, 5% absolute maximum may be used.	
Cut and fill batters	— 3H:1V (4H:1V where roadway is adjacent to avoid requirement for guardrail) — Fill batters may be steepened to 1.5H:1V where geotechnical conditions are suitable	
Flood immunity	— 1% AEP (1 in 100-year ARI) to all buildings — 5% AEP (1 in 20-year ARI) to all pads and roads	
Major open channels and culverts	5% AEP (1 in 20-year ARI)	
Minor drainage Clean water runoff	Not required. Just let minor flows sheet across the surface. — Runoff from building roofs, sealed car park areas, and unsealed and unvegetated areas is to be discharged to the stormwater drainage system. — Rainwater from building roofs will not be harvested. — The stormwater drainage system shall include 2 sedimentation dams – one located east of the village, and another located west of the village.	
Runoff from areas potentially contaminated with hydrocarbons	Runoff from areas potentially contaminated with hydrocarbons shall drain via a silt trap and/or oily water separation system to the stormwater drainage system.	

Table 6.2 Roads and parking design criteria

Parameter	Requirement	Notes/comments
Internal roads and car parking	Internal road and vehicular access provided in accordance with AS2890 and the following: — Mix of one way and two-way traffic access roads depending on function and safety — Typical design vehicle – short rigid vehicles (9 m service vehicle) — Maximum design vehicle – medium rigid vehicles (12.5 m single unit truck or bus) — Minimum 40 km/h posted speed on the village access road. Design speed higher than this in accordance with standard practices — Car park posted speed 10 km/h — Minimum longitudinal grade of open drains to be 0.5% absolute and 1.0% desirable in accordance with Austroads guidelines — Maximum road longitudinal grade 5% — Minimum curve radius in accordance with Austroads guidelines — Large vehicles are permitted to cross the centre line of the road at internal road intersections and manoeuvring areas — 24-hour vehicle movements — 7 m formation, 6 m traffic lanes, 0.5 m sealed shoulder, 4H:1V batters in accordance with Austroads guidelines. If 3H:1V batters used, guardrail must be included. — 3% cross fall — Roads may have one-way crossfall if required — 2 coat bituminous seal.	
Parking and road hierarchy	Parking and road layout shall take the following into considerations: — Safe transport paths that minimise the interaction of pedestrian and medium/light vehicles — Parking for cars and medium sized vehicles — Access for delivery vehicles to storage areas for the kitchen and linen store shall be provided and clearly indicated	

Parameter	Requirement	Notes/comments
	— Consideration of the configuration of delivery and maintenance vehicles servicing the village, and appropriate design of delivery areas, turnarounds, parking laybys, and hitching areas — Waste and recyclables collection (waste management area)	

Light/medium vehicle parking	— Unless noted otherwise, to be designed in accordance with AS2890 (parking facilities), and
	— Car park class – Type 3, short to medium-term parking
	— Car park capacity to be:
	  — 38 for Stage 1
	  — 72 for Stage 2
	  — 114 for Stage 3
	— Minimum light vehicle carpark bay dimensions to be 2.6 m wide x 5.4 m long
	— Car parking areas at ends of village preferred rather than spreading car parking throughout the village
	— 2 coat bituminous seal	

Deliveries area	— 40m x 40m area adjacent to kitchen and store for delivery of food and consumables — Sized to suit a 19m long semi-trailer that will reverse into the dock at the back of the store room — AC seal to manage risk of wear and tear due to turning movements	

Table 6.3 Landscaping design criteria

PARAMETER	REQUIREMENT	NOTES/COMMENTS
Landscaping and irrigation	— A well-established, controlled and landscaped environment will be included to complement the built environment. — All landscaping will include local native indigenous species. Plant selection should consider the seasonal nature of Nebo to minimise watering. — Also consider mosquito management in the selection of plants. That is, plants that do not attract mosquitoes or have standing water. In general, no standing water in the landscaping. — Fully irrigated landscaped gardens, plantings and grassed areas as shown on the layout plan. — Fully integrate any landscaping with the designs for the stormwater overland flow paths to ensure that the landscaping is not scoured out by rainfall events. — Incorporate garden edging between landscaped garden beds and grassed areas and stake and secure all trees and shrubs. — Irrigation services to be controlled by a fully programmable multi-zoned system, incorporating a 365-day time clock with independent battery backup, rain fall sensors, pop-up and drip irrigation heads as appropriate for the various planted zones, to provide comprehensive year-round system. — Water supplies for the irrigation system will be secured from the Village potable water storage tanks. — Irrigation lines to be protected from blockages using appropriately sized in-line filters. All irrigation supply lines to be fitted with reduced pressure zone (RPZ) valves.	
Noise	— 10m wide buffer zone provided for noise mitigation.	

7 Accommodation buildings

Table 7.1 Accommodation buildings design criteria

Parameter	Requirement	Notes/comments
Design	— Accommodation buildings shall be modular design, utilising transportable units fabricated off-site and requiring minimum on-site installation and finishing works — There are 2x layouts proposed. Guests have 1x room per module and Village staff have 4x rooms per module. — Guest module size to be 3m wide x 9.8m long. Staff module to be 3.3m wide x 14.4m long. — Buildings can be either ground mounted or raised slightly above ground level (e.g. 600mm) at contractor's discretion, provided that if ground mounted, there is a means of ensuring that surface water runoff does not enter the buildings. Single storey for all buildings. — 2.5m wide covered reinforced concrete walkway in front of / between accommodation modules	
Structure	— Modularised buildings — Buildings must be permanently affixed to the site by footings with cyclone tie downs. — Fully welded steel sections must be used for building frames and chassis (i.e. no wooden structural members). — Members within wall and ceiling frame panels shall be fully welded, however the individual panels may be bolted to each other.	
Main room	— Guest rooms to have Double bed ensemble with lockable castors. Staff rooms to have King singles with lockable castors. — Bedside table (Bedside table to have GPO, USB charger and light master switch (double switched with switch just inside door frame) — Work desk and bookshelf above — Cupboard/wardrobe with two separate lockable segments (to allow for back-to-back use of the room) — Bar fridge (plugged into power socket outlet) — Solid entry door with exterior security screen door, opens outwards with peep hole.	

Parameter	Requirement	Notes/comments
	— Entry door to have weather strip to fully block light, to include deeper door jamb — Latch mechanism for entry door to allow it to be latched in the open position — Workstation chair — Outdoor chair — Ceiling fans not provided — 1,200H x 1,500W window (non-openable)	
Ensuite bathroom	— Shower (minimum size 1,200 mm x 900 mm), with openable glass screen (not shower curtain) — Shower head with hose to be provided — Dual flush toilet — Basin with vanity cupboard underneath (minimum 350 mm x 600 mm). 700mm wide preferred if possible. — Mirror and shelf above basin, with GPO and shaver dual socket power outlet — Exhaust fan to operate when bathroom light is on automatically	
Room access	— Entry via key FOB access. In event of power outage, all rooms to default to unlocked state — FOB will not operate lights/ AC, such that all lights and A/C automatically turn off when worker departs room with FOB — All doors to open outwards — All doors to have 180-degree peep hole to allow the room occupant to see who is at the door — Door hinges shall be internal (i.e. not possible to tamper with from the outside) — Doors to be self-closing — Security chain on all doors — Latch mechanism for entry door to allow it to be latched in the open position — Physical master swipe card system to allow access to all rooms in emergency.	
Room size	— Refer to drawings for example of typical modularised accommodation room. — All rooms are to be the same size.	
Air conditioning	— Systems shall comply with the requirements AS1668.2 for air quality and contaminant control	

Parameter	Requirement	Notes/comments
	— All rooms will be air conditioned (split system) with reverse cycle capability — Temperature to be locked at minimum of 21 deg Celsius. Can be increased above this temperature if needed. — All external air-conditioning units to be located on reinforced concrete slab at ground level on back walls of the buildings to facilitate maintenance access.	
External finishes	Refer Table 9.1 and Table 9.10	
Internal finishes	Refer Table 9.2 and Table 9.3	
Building drainage	Stormwater shall be discharged away from all buildings into drainage channels.	
Floors	Refer Table 9.2	
Wall and ceiling linings	— Wall and ceiling linings to be as per demountable building typical standard offering from vendors. — Walls and ceilings shall comply with all requirements of NCC/BCA. — Wallpaper on one wall of the room with an image of natural landscape (optional item)	
Ceiling height	Minimum ceiling height of 2,400 mm.	
Splashbacks	Waterproof splashbacks in wet areas.	
Insulation	— Thermal insulation for all buildings in accordance with NCC/BCA requirements. — Insulation for sound suppression shall be installed to all walls and ceilings in accordance with NCC/BCA requirements. — Vendors to price optional extra for additional noise insulation as part of D&C tender.	
Windows	— Double glazed — Windows to be non-openable, fresh air to be provided through sound baffle (subject to this being acceptable for NCC/ BCA requirements)	
Curtains	— Block-out curtains shall be installed in all accommodation rooms	

Parameter	Requirement	Notes/comments
Plumbing	— All plumbing and sanitary drainage shall comply with AS/NZS 3500 — Include plumbing and sanitary fittings — Externally mounted water taps shall be supplied for all buildings/ modules, spaced to provide coverage to all external veranda or breezeway areas for wash-down purposes. Key lockable to prevent use by village guests.	
Televisions	— Smart flat screen televisions with remote control (nominally 32 inches) will be provided. TV connected to ethernet. — Television plugged into socket outlet. — Residents will be able to access re-broadcast free-to air television and radio services. — Foxtel package not required. Foxtel only in the tavern, beer garden and recreation room. — 50Mbps internet/ Wi-Fi coverage across the whole village site to allow guests to stream their own content to smart television. — Hardware to allow for traffic shaping per device.	

Power, electrical and communications	— External lighting is required to all buildings, with photoelectric cell control in accordance with relevant standards
	— Low energy LED internal lighting is required with diffuser shades and local switches
	— Socket outlets should be provided sufficient to eliminate the need for power boards. Minimum:
	  — 2 x double outlets at desk, 100 mm above desk surface to suit chargers
	  — Dedicated outlets for the TV and fridge to suit the room layout
	  — 1 double outlet 100mm above the bedside table
	  — 1 additional double outlet another wall, 200mm above floor, appropriately positioned
	  — 1 double outlet at bathroom sink
	— Distribution boards on each accommodation module shall be locked.
	— Smoke detectors, emergency evacuation and FIPs as required
	— An appropriately sized reading light or overhead light provided at the work desk and bed head end. Target lighting level is minimum of 320 lux.	

Parameter	Requirement	Notes/comments
	— Mobile phones to be used as a means to call security for assistance. No landline in the rooms. — Earth leakage circuit-breakers (safety switch) AS3000 — TV point and ethernet points.	
Hot water systems	— Hot water systems shall be electric — Hot water systems installed externally at ground level and shall be weatherproof, secured adequately and mounted on a freely draining reinforced concrete slab that extends a minimum 50 mm around the base of the unit in all directions. — Top of slab to me minimum 100mm above surrounding ground level to prevent water damage and corrosion of the base — Insulation shall be applied to all pipework, and ductwork protected against the effects of weather, sunlight and able to withstand the temperatures of the fluid being handled — All hard-wired hot water systems shall be installed with a pad lockable isolation switch for maintenance purposes — Hot water systems (excluding kitchen systems) shall be set to limit the outlet water temperature to 60°C.	
Accessibility	The rooms shall comply with the accessibility requirements of the NCC/BCA but are not required to comply with the requirements of the Disability Discrimination Act and AS 1428 for access by disabled persons as per the advice of PN.	

8 Hub and support facilities

Sufficient quality facilities need to be provided to attract and retain a competent, committed workforce. The level of amenity needs to be balanced with the cost and time required to set-up facilities.

Table 8.1 Hub and support facilities design criteria

Parameter	Requirement	Notes/comments
Overview	The central hub area facilities will include the following: — Guest laundry — Commercial laundry — Amenities — Wet mess — Dining and kitchen — Ice room — Village Administration — Waste management area — Reefer storage — Deliveries — Gym Light industrial area facilities: — Sewage storage — Water storage — Gas bottle storage — Light/medium vehicle parking — Generator set and fuel storage — Electrical switchroom The support facilities located west of the accommodation village include: — Train Support Facility (TSF) — Administration Building	
Structure	— Modularised buildings, unless specifically noted otherwise — Nominally raised 600mm above ground level or as approved otherwise by Pacific National and subject to NCC/BCA compliance — Buildings must be permanently affixed to the site by footings with cyclone tie downs.	

Parameter	Requirement	Notes/comments
	— Steel sections must be used for building frames and chassis (i.e. no wooden structural members). — Building chassis will utilise fully welded steel members. — Members within wall and ceiling frame panels will be fully welded, however the individual panels may be bolted to each other.	

Dining and kitchen	— Dining to have “interesting/lively” colour scheme for chairs and other features. Avoid bland colours such as whites, creams, greys where reasonably possible.
	— Kitchen and preparation area nominally 12m x 12m, Modular building.
	— Dining room and servery nominally 12m x 12m, Modular building.
	  — Tables and seating for 96 people (~64% of village capacity)
	  — Provide a range of seating options. For example, the inclusion of round tables, and high tables for casual dining.
	  — Entry air locks and access zone
	  — Nearby male and female amenities (separate building).
	  — Use mobile food stations to break up the seating areas, rather than having one large seating area.
	  — Grab-n-go station/fridge to be provided on one wall along with vending machine, dessert station and drinks station (tea, coffee, juice, cordial etc)
	  — Dining room to have PA system
	  — Coffee station (with bean coffee)
	— General flow of dining area:
	  — Bag rack area with coat hooks and hand wash troughs outside on covered verandah
	  — Then entry doors
	  — Then air lock with air curtain
	  — Then hand wash troughs
	  — Then another air lock with air curtain	

Parameter	Requirement	Notes/comments
	— Then turnstiles with swipe card access – two sets of turnstiles – one set leading to the dining room and one set leading to the crib — Then dining area and crib area. — Additional air curtains at access points from the dining room to the kitchen and crib areas. — The design and construction of the facility shall comply with requirements and principles of the Food Standards Code: Standard 3.2.3 – Food Premises and Equipment and Safe Food Australia's A Guide to the Food Safety Standards — All equipment shall be of commercial grade and proven reliability. — Wall mounted TVs (minimum of 2) — Separating thoroughfares, such as main pathways from the access doors to the servery area, etc., from seating zones. Half-height wall partitions can be used.	
Kitchen	— The kitchen shall include the following areas: — Food preparation and cooking areas — Pot washing and dishwashing — Washing machine and dryer — Kitchen to include the following: — Pot wash sink — Dishwashers — Ovens — Hotplates — Brat pans — Deep fryers — Chillers — Exhaust systems to suit the above — Food preparation areas — Air curtains — High spec floors in compliance with Food Standards	
Kitchen store	— Store room nominally 6m x 12m. Modular building.	

Parameter	Requirement	Notes/comments
	— 2 off 2.6m x 4m storage rooms.Storage rooms to include a mix of dry stores, cold stores and freezers — Hardstand space to be provided adjacent to kitchen stores for additional reefer containers. These should only be used to provide extra buffer storage for cyclones and extreme weather events. The main kitchen store shall be sufficiently sized for normal operations to avoid kitchen staff needing to access the containers on a regular basis.	
Deliveries receivable area / loading dock	— Semi-trailer delivery truck to reverse into deliveries area — Single person battery operated pallet jack to unload goods from truck and deliver to frozen/ cold/ dry storages and drop pallets. — Suitable flooring for loading to be provided —	
Reefer Storage	2x refrigerated storage containers (Reefers)	
Administration buildings Commercial laundry and linen store	— Nominally 3m x 12m Modularised building. — Clear and welcoming external signage — Reception: — Seating area — Reception desk with workstation and storage shelving — Key storage peg-board or smart key registration and validation point — External after-hours key drop off box. — Village manager's office with workstation, two visitors' chairs and filing cabinet (3m x 3m) — Communications / IT room (3m x 3m) with dry fire suppression system — Printer area — Offices to have two double GPOs and two data points at the workstations. Additional double GPO to be provided on opposite wall at low height. — Nominally 12m x 12m building.	

Parameter	Requirement	Notes/comments
	— Steel portal-framed shed with slab on ground. — Linen to be washed on site — Facility to include the following: — Two (2) commercial washers — Two (2) commercial dryers — Dirty linen store — Clean linen store — Consumables store — Office with desk, phone and data connections. — 6m x 3m lunch room with kitchenette for cleaning staff — Radio charging station with minimum of 4 double socket outlets — Dirty and clean linen rooms require air conditioning to assist with mildew control — Door widths sized for pallet trolley access, and floors designed for pallet trolley loads — Wide breezeway along the front of the building (adjacent to clean and dirty linen stores) to facilitate undercover pick-up and drop off of linen. The breezeway should be trafficable, and support columns arranged to allow drive-through access.	
Guest Laundry	— Dimensions nominally as per example in gs. Modularised buildings. — Fit out as per the example provided in drawings. Double stack washing machines and dryers to fit more in the building. — Minimum ratio of 1 laundry per 50 people but provide more than this if needed to minimise travel distances from rooms to laundries. — External drying area (clothes lines) with gravel seal adjacent to laundry buildings. — Laundries must have a minimum of two entry/exit points. — Water fountain in each laundry. — Minimum 6 washing machines per laundry, unless approved otherwise.	

Parameter	Requirement	Notes/comments
Ice room	— To be located in 6m x 3m modularised building adjacent to dining room. — Contain at least two high-capacity ice machines, with output and storage capacity of 600 kg/day and a high-capacity chilled water unit.	

Gym	— Nominally 12m x 12m. Modularised building. Refer to drawings for example.
	— Nominally divided into 3 areas as follows:
	  — Cardio zone with cardio equipment such as treadmills, bikes, rowers, cross trainers.
	  — Weights
	  — A space for group fitness classes (e.g. cross fit, yoga).
	— Wall mounted TVs in each area.
	— PA system to allow for music to be played.
	— Office for use by Health and Lifestyle officer for administration, fitness consultations and assessments.
	— Equipment should be durable and robust to minimise down-time
	— Boxing station with speed balls, floor to ceiling balls, punch/kick bags and mitts/kick shields. This equipment can also be used in group fitness classes
	— Free-weights areas with a range of bar bells, dumb-bells and benches. Building flooring should be reinforced in this area to withstand dropped weights, and rubber mats provided for shock absorption
	— Cable weight machine area for conditioning specific body areas (such as leg, shoulder and chest presses, lat pull-downs, abdominal rollers, dips and curls stations). Multi-station units can be used to reduce the footprint, provided that they are designed so that more than one station can be used simultaneously
	— Stretch, core and cool down area with floor mats, fit balls (including storage racks), medicine balls. Industrial carpet is recommended for the floor in this area. If possible, providing glass sliding doors from	

Parameter	Requirement	Notes/comments
	the internal area to an undercover outdoor stretch/meditation area can be useful — General facilities such as toilets (may be external, shared with other sports facilities), storage pigeon-holes, chilled water fountains, towel service (optional), music system, block mounted posters (stretching, heart rate training zones, fit ball exercises, etc.)	
Amenities	— Two separate 6m x 3m modularised amenities buildings to be provided as follows: — Male with 3 toilets, 3 urinals and washbasins — Female with 6 toilets and washbasins — The number of pans, urinals and basins in each building shall be designed for a population ratio of 75% males and 25% females with some contingency. Size based on capacity of dining room (150 seat capacity). — Located within close access to dining room, and wet mess. — Exhaust fans.	
Waste management area	— Wastes and recyclables will be disposed off-site by a licensed waste contractor. Recyclable materials will as far as practical be segregated from waste streams for separate collection and re-use — The site layout shall include an area for storage and sorting of waste and recyclable streams and loading onto vehicles for off-site disposal. Nominally 10m x 10m area. — The recyclable storage / sorting area shall nominally be in the vicinity of the village maintenance depot. — An undercover dry area is required for storage of paper and cardboard products. — Three phase power outlets are required at this location for paper balers and glass crushers (equipment by to be provided by village operator).	
Fencing and security	— Appropriate fencing and security to be provided to control access and prevent	

Parameter	Requirement	Notes/comments
	unauthorised access, with vehicle and personnel gates at required access points. Personnel gates also to be provided at each corner of the overall fenced area to allow for egress in an emergency. — Reception access doors shall be automatic from 6am to 6pm and shall be locked with swipe card access outside of these hours — All other external doors and offices shall be key lockable using a hierarchical master keying system. A minimum of three copies of each key shall be provided — Refer to Table 10.4.	
General requirements – hub buildings		
Building floor height	— Buildings can be either ground mounted or raised slightly above ground level (e.g. 600mm or as approved otherwise by Pacific National and subject to NCC/BCA compliance) at contractor's discretion, provided that if ground mounted, there is a means of ensuring that surface water runoff does not enter the buildings.	
Air conditioning	— Systems shall comply with the requirements AS1668.2 for air quality and contaminant control — All buildings will be air conditioned with remote control (reverse cycle split system) — System shall be suitable for continuous operation all year round	
Verandahs, balconies, access landings and breezeway structures	— Each building must have a covered/sheltered entry. — All buildings must have ramp access (to assist with providing ergonomic access for village staff). Stair access may also be provided, but stair only access (with no ramp) is not acceptable.	
External and internal finishes	— Selected to provide a cohesive appearance across the entire site — Building cladding to be eucalypt green or approved alternative colour — Walls and floor colours shall take into consideration the red earth environment in the area (i.e. white is not a good colour)	

Parameter	Requirement	Notes/comments
	— Reflective cladding is not permitted.	
Custom building structures	— Steel portal framed buildings — Monosloped roofs.	
Modularised structures	— Steel sections will be used for building frames and chassis (i.e. no wooden structural members). — Building chassis will utilise fully welded steel members. — Members within wall and ceiling frame panels will be fully welded, however the individual panels may be bolted to each other.	
Floors	— Vinyl flooring throughout or approved alternative — Floor shall comply with all requirements of NCC/BCA.	
Building drainage	Stormwater shall be discharged away from all buildings into the stormwater drainage system.	
Wall and ceiling linings	— Wall and ceiling linings to be as per demountable building typical standard offering from vendors. — Walls and ceilings shall comply with all requirements of NCC/BCA.	
Ceiling height	— Minimum ceiling height of 2,400 mm minimum.	Optional tender item to increase ceiling height to 2,700mm
Splashbacks	Full-length stainless-steel splashbacks in wet areas. (not tiled)	
Insulation	Thermal insulation for all buildings in accordance with NCC/BCA requirements.	
Windows	Double glazed openable windows with fly screens, except in accommodation modules as noted above, where the windows will not be openable.	
Curtains	Blinds shall be installed in all hub facility rooms. No curtains.	
Plumbing	— All plumbing and sanitary drainage shall comply with AS/NZS 3500 — Scope to include plumbing and sanitary fittings — Externally mounted water taps shall be supplied for all buildings, spaced to provide	

Parameter	Requirement	Notes/comments
	coverage to all external veranda or breezeway areas for wash-down purposes.	
Power, electrical and communications	— All lighting to be LED — External lighting is required to all buildings, with photoelectric cell control — Low energy LED internal lighting is required with diffuser shades and local switches — Socket outlets should be provided sufficient to eliminate the need for power boards. Vendor shall provide electrical fit out plans to Pacific National for review and approval prior to commencement of fabrication of the buildings. — In accordance with AS/NZS 3000 Cl 2.10.2.3 (a) and 2.3.3.4 (a), to facilitate rapid isolation in the event of an emergency such as fire, distribution boards shall not be locked. — Smoke detectors, emergency evacuation and FIPs as required — Data outlets wired on site to a campus distributer — No telephones in rooms – mobile phone coverage to be provided — Earth leakage circuit-breakers (safety switch) AS3000 — TV point and co-axial cable points in the office, retail outlet, meeting room/training room, dining hall, tavern, beer garden, rec room and gymnasium. — A Wi-Fi internet service with full coverage of the village. — Hardware to allow for traffic shaping per device.	
Accessibility	The rooms shall comply with the accessibility requirements of the NCC/BCA but are not required to comply with the requirements of the Disability Discrimination Act and AS 1428 for access by disabled persons as per the advice of PN.	

9 Schedule of external finishes and fixtures

This schedule is to be read in conjunction with the relevant specification.

9.1 Cladding schedule

Table 9.1 Cladding schedule

Item	Description
Location	Roof and external walls
Product type	Contractor to provide proposal, or Colorbond roof and wall cladding
Product finish	Contractor to provide proposal, or Colorbond
Material	Contractor to provide proposal, or Colorbond steel
Profile	Contractor to provide proposal, or Trimdek
Thickness (mm)	Contractor to provide proposal, or 0.48 BMT
Fixing	Contractor to provide proposal, or To manufacturer's recommendations
Flashings	Contractor to provide proposal, or Colorbond finish
Gutters, sumps and downpipes	Contractor to provide proposal, or Colorbond finish
Other	Roof safety mesh over purlins

9.2 Flooring schedule

Table 9.2 Flooring schedule

Item	Description
Dry areas	Contractor to provide proposal, or 19mm aquatite, termite treated, or Vinyl flooring with coving up the wall (no skirting boards)

Item	Description
Wet areas	Contractor to provide proposal , or 1.9mm aquatite, termite treated and 2mm slip resistant vinyl floor finish c/w 100mm high covering

9.3 Internal wall finishes

Table 9.3 Internal wall finishes

Item	Description
Insulation	In accordance with the BCA.
Buildings	Contractor to provide proposal Minimum Rw+C 42 and Rw+Ctr 42 (AS/NZS ISO 717.1 2004) noise rated walls for office and meeting room walls only, 13 mm plasterboard, or 70mm steel stud c/w 3.6mm pre-finished plyboard, painted

9.4 Door schedule

Table 9.4 Door Schedule

Item	Description
General	All single doors shall have a minimum clear opening width of 800 mm. All exit doors shall swing in the direction of egress. All door handle and latch hardware shall be located between 900 mm and 1100 mm above the floor and be able to be opened without a key from the side facing a person seeking egress. All external doors and passageway doors shall have an eye level window incorporated into the doors to reduce injury hazard.

9.5 Window schedule

Table 9.5 Windows schedule

Item	Description
Buildings	Windows shall be as per drawings (unless approved otherwise by PN) with coloured powder coated aluminium frame. Windows to BCA Section J standards to control the amount of heat energy entering or leaving a building through glazing. All windows shall be slidable with security fly screens to the open side. All windows shall have venetian style louvres.

9.6 Ceilings

Table 9.6 Ceilings

Item	Description
Wet areas	Contractor to provide proposal

Item	Description
Dry areas including the muster area/walkways	Contractor to provide proposal
Buildings	13 mm plasterboard, or 3.6mm mirage pearl ply lining
Other	Minimum indoor room ceiling height shall be 2.7 m. UNO
Insulation	Roof / ceiling in accordance with the BCA ,or R2.5 Acoustic-Therm between ceiling joist and 6.5mm E-Therm under roof sheets

9.7 Plumbing fixtures

Table 9.7 Plumbing Fixtures

Item	Description
Ratings	All shower and tap fittings shall be AAA rated.
Wash basins	Stainless steel basin to Principal's specifications, chrome gooseneck spouts
Sinks	Stainless steel single drainer
Water coolers	Chilled non-reticulated (bottle) water coolers shall be installed.
Male amenities	Wall basins – Stainless steel basins located on a laminated surface bench top, with 450 mm high lamipanel splashback and stainless steel supporting legs Closet pans – Caroma Caravelle 2000 Smartflush toilet suite with Caravelle commercial toilet seat or similar Urinal – Urinal shall be stainless steel stand with back and side plates, lift up standing grid and pull chain flush in complete installation Tapware – Raymor, surgeon lever or similar
Female amenities	Wall basins – Stainless steel basins located on a laminated surface bench top, with 450 mm high lamipanel splashback and stainless-steel supporting legs Closet pans – Caroma Caravelle 2000 Smartflush toilet suite with Caravelle commercial toilet seat or similar Tapware – Raymor, surgeon lever or similar approved

9.8 Fire systems schedule

Table 9.8 Fire systems

Item	Description
Fire system	As required by the BCA and Australian Standards.
Fire extinguishers	Wall mounted fire extinguishers in accordance with Australian Standards and Building Code of Australia. Refer Fire protection Specification for details.

9.9 Other fixtures

Table 9.9 Other fixtures

Item	Description
Emergency lighting	As required by the BCA and Australian Standards
Exit signs	Illuminated exit signs shall be provided and located above all exit doors. They shall incorporate a battery backup and shall be in accordance with BCA and Australian standards.
Exit directional signs	Illuminated direction signs shall be provided to indicate egress direction. They shall incorporate a battery backup and shall be in accordance with BCA and Australian standards.
Emergency Lighting testing	A selector switch, test timer, and contactor shall be provided in each distribution board to perform automatic testing of all illuminated emergency lights, exit signs and directional exit signs.
Security lighting control	An "Auto-Off-Normal selector switch, PE cell and contactor shall be provided for each security lighting circuit to control the operation of external security lights.
Signage	Male, female, signs shall be installed on the outside of all amenities.
Air conditioners	Air conditioning units shall be supplied as required All air conditioners shall be reverse cycle and compressors shall be external to the building. Design internal operating temperatures shall be 22 degree Celsius for summer and 25 degrees Celsius for winter. Programmable start and stop times function is required. Design outdoor temperature range is -2 to 42 degrees Celsius. Air conditioning performance to comply with Section J of the BCA.
Mechanical ventilation	Roof or wall mounted, electric motor driven extractor fans shall be installed in all ablutions rooms.

9.10 Building colour scheme

Table 9.10 Building colour scheme

Item	Description
Roofing and Doors	Contractor to provide proposal
Gutters/Trims and Verandah Posts	Contractor to provide proposal
External walls and down pipes – upper tone	Contractor to provide proposal
External walls and down pipes – lower tone	Contractor to provide proposal
Exposed Steel Columns and general steel work	Contractor to provide proposal
Handrails, posts and kickboards	Contractor to provide proposal
Timber battens to under-croft perimeter	Contractor to provide proposal

Item	Description
Walkways, landings and decks	Contractor to provide proposal
Internal finishes	Contractor to provide proposal

10 Utilities

This section provides the requirements for the water, sewerage, electrical reticulation and communications.

Table 10.1 Water and wastewater design criteria

Parameter	Requirement	Notes/comments
Water and sewerage overview	— Potable, fire/raw water will be sourced externally and stored in separate water tanks. — The location of water storage tanks, distribution pumps and sewage tanks shall be away from accommodation units to minimise noise impact. — A potable water reticulation system will distribute the potable water throughout the village for human consumption, washing, cleaning etc. Potable water will not be used for irrigation. — A combined fire/raw water reticulation system will be used to provide water to firefighting fixtures (e.g. fire hoses, fire hydrants) and to provide water for irrigation. — A sewerage system will collect sewage from the village and store it in tanks for removal off site.	
Potable water	— Potable water to be stored in 2 potable water storage tanks. Tanks sized to store a 7 day supply. — Potable water usage to be 250L/person/day for village residents and 70L/person/day for other demands. — Tanks to be provided with connection points to allow for trucked in potable water. — Potable water storage tanks, pumps and pipes to be sized for future stages of the village. — Potable water is to be pumped from the tanks and reticulated to all fittings and buildings within the village — Potable water is required to be supplied at 25 degrees Celsius for showers.	
Grey water	A grey water system will not be provided. All grey water will be classed as sewage.	

Parameter	Requirement	Notes/comments
Wastewater and sewage	— Sewerage will gravity flow from the building battery limits to collection wells via a buried pipe. Sewerage will be removed from the collection wells via pumps and will be directed to storage tanks. — Estimated wastewater generation – 250L/person/day (assume no losses from potable water to be conservative) — Tanks and collection pipework to be sized to allow for future stages of the village. — Allow additional 10kL/day (nominal value of 10%) for treatment of wastewater generated during the potable water treatment process — Collection wells to provide 24-hour buffer storage.	
Fire/raw water	— Fire water storage and firefighting equipment in accordance with the relevant Australian Standards. — Pumps and pipes to be sized for future stages of the village. — Stored in a minimum of 2 steel panel tanks. — Raw water pump outlets to be above the minimum fire water storage volume. — Assume irrigation of 20mm, 3 days per week = 20 L/m²/day on average — Allow for 2 days storage in the tanks — Buried RW/FW pipework system within the village (separate to PW pipework)	

Table 10.2 Electrical design criteria

Parameter	Requirement	Notes/comments
Incoming power supply	Assumed to be via the Ergon 11kV overhead power line located north of the property boundary.	
Substation	It is anticipated that Ergon will supply a new point of supply consisting of a new pad-mounted substation. PN will connect to the low voltage terminals and will be a low volage customer.	

Parameter	Requirement	Notes/comments
Backup power supply	Essential services that require backup power supply include: — Administration building — Train support facility — All pumping equipment in the accommodation village — Central hub — Communications tower	
Power demand	— Assumed demand of 3kVA per person — Allow 20% contingency	
Main switchboard	Switchboard, in an air conditioned switchroom, adjacent to the kiosk substation	
Security	Substation and switchboard to be located in a pad lockable fenced area with vehicle access gates	
Area lighting	Building mounted lighting to be used where possible Fixed pole mounted lights to be used in the following areas: — Internal roads — Pedestrian walkways — Car parks — Delivery areas — Plant areas (e.g. substation) Location of light poles to consider ambient lighting for elevated platforms (e.g. top of tanks) Further to the above, all areas of the village with CCTV coverage, duress alarm locations need to be well-lit. Selected lighting design lux levels to suit the CCTV minimum lighting requirements. Constant, uniform lighting shall be installed along pathways and corridors throughout the accommodation area. At night, the entire pathway or corridor needs to be illuminated to ensure that there are no dark spots.	

Table 10.3 Communications design criteria

Parameter	Requirement	Notes/comments
Incoming communications connection	To be advised by Pacific National	
Location of main communications rack for the village	In village office building communications/IT room	
Wi-Fi	— Wi-Fi within all areas of the village — Hardware to allow for traffic shaping per device.	
Mobile phones	Mobile phone coverage within all areas of the village	
Communications backbone	— Fibre optic cables reticulated in communications conduits and LV cable pits along routes throughout the village service corridors and via galvanised cable ladders in buildings. — Fibre optic cabling will be reticulated to all hub buildings and facilities — Cabling and communication rack sized to suit future expansion of the village by 20%. — Fibre optic cabling will not be reticulated to all the accommodation modules. Internet connection will rely upon the village Wi-Fi network. — Fibre optic cabling will be reticulated to the Wi-Fi interfaces throughout the village. — Fibre optic patch panels with LC connections. — Data management racks as required. — 48 RU, 1.2m deep racks (air conditioned as required). Minimum 7kVa A/C. — Routers and switches (provided by Pacific National). — Fire suppression is to be provided. — UPS and backup generator to be provided.	
Cabling	— Copper cabling for local devices (to Cat 6A standard) copper patch panels to match cabling standard.	

Table 10.4 Fire and security design criteria

Parameter	Requirement	Notes/comments
Fire system		
Location of fire indicator panel	In reception area of village administration building	
Fire detection system	— AS1670 – Automatic fire detection and alarm systems: — Centralised fire indicator panel (FIP) located in the office building — The FIP will have a phone connection to emergency services. — Smoke and thermal detectors in general buildings and facilities including the accommodation rooms. — Aspirating smoke detection systems in IT/communications areas of the office building. Detection systems shall be automatic and shall raise an alarm in both the workshop supervisor's office and the administration building reception area. The suppression system is to be manually activated. — VESDA is required for the main switchboard. — A flame detection system at the utility facilities. — Warning systems: ▪ Speakers in office and hub buildings and facility and accommodation buildings that integrate with a PA system to ensure evacuation messages are activated in the event of a fire alarm. — Ensure locks to office default to open in the event of alarm — Villages shall provide mobile visual fire alarm beacons to any residents who are hearing impaired to be utilized in their accommodation room. These devices are not fixed to any one room and can be given to an individual to take to their room as the need requires.	
Security system		

Parameter	Requirement	Notes/comments
Requirements - general	— Signage clearly demarcating emergency exits and emergency assembly areas — Emergency exits and lighting in all public areas — Contact numbers and details for emergency personnel, including security, available in all rooms. Additionally, where practicable, contact information for Security, EAP and Helpline should be included on the back of access badges and/or room keys. — An escort service shall be made available for those uncomfortable walking alone to their rooms. Consideration shall be made where feasible for alternate options including site security, female escorts or buddy systems.	
Requirements - fencing	— The village is to be fully fenced. — Accommodation should be not less than 6m from the perimeter fencing.	
Requirements - doors	— Unless specifically noted otherwise, the doors in all buildings and facilities are to be swipe card operated. There shall be no key lockable doors. — Refer to Table 7.1 for accommodation building access requirements. — All swipe card access areas to default to open in the event of a fire alarm or loss of power — Fenced areas shall be key lockable but with push bar system to open gates from the inside without the need for a key. Protective panel to be provided to prevent push bar from being operated by reaching through fence from outside.	
CCTV	CCTV to monitor the following areas: — All pedestrian walkways, both within the main hub and accommodation module areas. Continuous CCTV surveillance shall be in place covering all accommodation pathways, corridors and hallways within the accommodation areas, room entry doors, building surroundings, laundries and utility blocks.	

Parameter	Requirement	Notes/comments
	— All access points/gates through the perimeter fence — High value areas including the kitchen store — Loading dock — Reception/office area — Light vehicle car park — Dining room — Gym — Water storage and pumping station — Sewage storage tanks — Electrical substation — Sedimentation dams — The location of all duress alarm buttons, if not covered by the above CCTV coverage requirements. Camera feeds to connect back to the village administration office. CCTV surveillance shall be monitored 24/7 through a control room, able to coordinate and dispatch an immediate response, if required. CCTV cameras will be either fixed or PTZ network cameras depending on the type needed to achieve the required coverage. Cameras will utilise PoE powering service. Camera types must be Axis high definition (1280 x 720 minimum resolution with minimum 15fps) connected to Flir Lattitude video management system. Security console (standard PC with security viewing software) in the village office CCTV server in village office IT/comms room Storage server in village office IT/comms room	
Access points	All controlled access points shall default to open from the inside in the event of an emergency	

Parameter	Requirement	Notes/comments
	(for egress) without the need for a key or swipe card	
Response capability	A response capability, able to immediately react to a threat or actual event impacting on an individual's safety and security, shall be maintained. Security patrols shall regularly patrol through the accommodation areas.	
Duress alarms	— Emergency 'flip-cover' alarm buttons which can be activated in the event of a safety and/or security emergency shall be fitted at each end of the group/cluster of accommodation modules. — Alarm buttons shall be fitted at no greater than 100m spacings externally in the central hub area.	