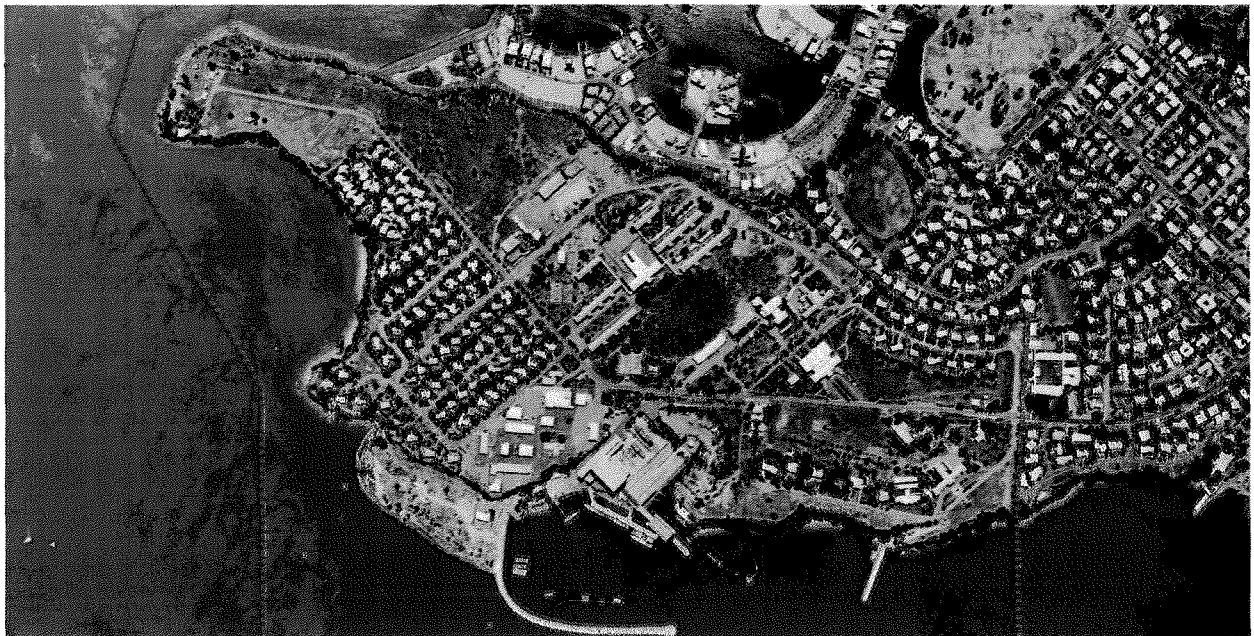




**SUBMISSION TO THE  
PARLIAMENTARY STANDING COMMITTEE  
ON PUBLIC WORKS**

**PROPOSED CONSTRUCTION AND RENOVATION  
OF  
HOUSING FOR DEFENCE  
AT  
LARRAKEYAH BARRACKS, DARWIN, NORTHERN TERRITORY  
  
SEPTEMBER 2009**



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## **IDENTIFICATION OF THE NEED**

### **1 PROJECT OBJECTIVES**

- 1.1 In this submission, Defence Housing Australia (DHA) seeks approval from the Parliamentary Standing Committee on Public Works (PWC) to demolish 61 existing houses and construct 97 new houses on Larrakeyah Barracks Darwin, at a total cost of \$52.4 million (excluding GST).
- 1.2 The objective of the Project is to provide 97 new, modern community standard houses on base at Larrakeyah barracks in part satisfaction of the immediate housing requirements of Australian Defence Force (ADF) members in Darwin.

### **2 HISTORICAL BACKGROUND**

- 2.1 The Larrakeyah Barracks residential precinct is part of the Larrakeyah Base, a military establishment which was commenced in 1932 as part of a government initiative to establish a military presence in the Darwin area. The base has operated continuously since that time, currently accommodating Headquarters Northern Command and HMAS Coonawarra.
- 2.2 The residential area of Larrakeyah Barracks contains 131 houses, the oldest of which were constructed in the 1970s. New houses were added to the residential precinct in the 1990s, most of which are in a townhouse development on the north-west end of the residential precinct. An aerial photograph and a map of the area are included with the Supplementary Information at Items 1 and 2.

### **3 THE NEED**

- 3.1 Currently about 4500 Defence personnel reside in the Darwin area, of which 1800 are members with dependents. To meet this demand, DHA manages 1816 dwellings in and around Darwin. A total of 729 houses are located on

the Australian Defence Force (ADF) bases; Larrakeyah Barracks, RAAF Base Darwin and Defence Establishment Berrima (DEB). The remaining houses are located in the suburbs of Darwin.

- 3.2 In July 2007, Defence introduced its New Housing Classification Policy (NHCP) with a new (increased) minimum standard. A large number of houses in the Darwin area, both on and off base, do not meet the new standard. To replace or upgrade these houses, together with the replacement of houses for which leases will expire, DHA has programmed 493 constructions over the financial years 2009/10 to 2012/13. These are shown in Table 1 which summarises DHA's estimated capital investment and residential construction program for the Darwin area.

Financial Year		2009-10	2010-11	2011-12	2012-13	Total
Defence Housing Forecast		1815	1639	1695	1757	---
OPENING STOCK		1816	1761	1696	1694	---
Subtract lease expiries & disposals of on-base and sub-standard stock		321	218	271	189	999
<b>New housing</b>	Direct purchases	10	0	0	10	20
	New leases	10	8	10	15	43
	Conversions of existing leases	75	66	131	75	347
	<b>Larrakeyah constructions</b>		<b>14</b>	<b>55</b>	<b>28</b>	<b>97</b>
	Other constructions, eg (Lyons, Muirhead)	171	65	73	87	396
	Total constructions	171	79	128	115	493
	<b>Total additions</b>	<b>266</b>	<b>153</b>	<b>269</b>	<b>215</b>	<b>903</b>
CLOSING STOCK		1761	1696	1694	1720	--

Table 1: DHA Housing Requirements for Darwin

- 3.3 The majority of these constructions will be off-base in the new suburbs towards Lee Point (Lyons and Muirhead). However, the availability of land in Darwin remains problematic and a challenge for DHA. Accordingly, retention of on-base housing on Larrakeyah will remain an important part of the total housing strategy.

- 3.4 Of significance, 87 percent of the houses on Larrakeyah do not meet the Defence standard that was introduced in July 2007. The project aims to replace a block of 61 houses, 50 of which were built in the 1970s, and all of which would require significant upgrading to create modern houses that meet the Defence New Housing Classification Policy (NHCP).

#### **4 DESCRIPTION OF THE PROPOSAL**

- 4.1 The proposal comprises the demolition of 61 houses in the main residential precinct of Larrakeyah, and the construction of 97 new houses on the site so created. The additional 36 houses will be achieved by:

- reducing the lot sizes to match contemporary lot sizes; and
- utilising a small amount of land that had not been previously utilised for housing.

- 4.2 The development will retain and utilise existing road, water, sewerage, drainage and power infrastructure, with the exception of minor improvements and an extension of the south-western end of Whittle Street to facilitate improved land utilisation.

- 4.3 The proposed redevelopment will be progressed in two stages. Stage 1 will construct 69 houses with associated changes to site infrastructure, and Stage 2 will construct the remaining 28 houses and infrastructure. The proposed housing layout and stages are shown at Supplementary Item 3.

- 4.4 The construction of the 69 houses in Stage 1 is planned to be completed by December 2011. Completion of Stage 2 is dependent on Defence assessment of the base infrastructure to accept the additional 28 houses. Paragraph 18.8 refers.

#### **5 OTHER OPTIONS CONSIDERED**

- 5.1 As outlined in section 2 of this submission, on-base housing has historically formed a high proportion of the Defence housing requirement in Darwin. However, with the increase of Defence personnel in Darwin and the lack of

sites available to build on-base, there has been a move of accommodation off bases. For example, DHA owns 85 and leases another 590 houses at Palmerston, which is well located for personnel serving at Robertson Barracks. The construction of Lyons and the future suburb of Muirhead will yield another 700 homes.

- 5.2 The great majority of DHA's leased properties have been acquired through the Sale and Leaseback (SLB) program. Other rental properties in Darwin to the standard required by Defence are in short supply. A realistic expectation is that only 43 new direct leases will be available over the five years from 2009/10 to 2012/13 inclusive.
- 5.3 Renovation of the 61 houses planned for demolition was considered but discounted (see paragraph 6.2).

## **6 REASONS FOR SELECTING THE PREFERRED OPTION**

- 6.1 Because of the shortage of land on which to conduct housing developments in the foreseeable future, DHA will need to utilise existing on-base stock to meet the total Defence housing requirement. To this end, Larrakeyah Barracks is an excellent candidate, being the most popular location for ADF members because of its proximity to schools, Darwin City, public transport and support networks.
- 6.2 While ideally located, the housing on Larrakeyah needs to be upgraded. The option of renovating was analysed, however, owing to the age of the houses (50 of the 61 were built in the 1970s) and the high costs of renovation, reconstruction was determined to provide a more cost effective, solution when life cycle maintenance costs were also considered. In addition, the ability to clear the site enables an additional 36 homes to be built on the available land.

## **7 ENVIRONMENTAL CONSIDERATIONS**

**7.1 Ecological Values.** An Environmental Impact Statement (EIS) was prepared for DHA by Environmental Resources Management (ERM) Australia in September 2006. This work satisfies the requirements under the *Environmental Protection and Biodiversity Conservation (EPBC) Act, 1999* and Defence requirements for an Environmental Impact Assessment to be carried out. This work has identified no significant impacts on the environment that would require referral to the Minister for the Environment, Heritage and the Arts. Nonetheless, the selected construction contractor will be required to produce an Environmental Management Plan (EMP) that satisfies the recommendations of the EIS. In particular:

- Heritage and significant trees in Allen Avenue will be retained.
- As much as possible of the existing vegetation will be retained, consistent with the redevelopment of the site. On completion of building works the landscape will be reconstructed to include plants of all suitable types.
- Sediment and erosion control measures will be installed prior to works commencing, as will other environmental controls, in accordance with a project Environmental Management Plan (EMP).
- Excess dust will be controlled by wetting down or covering piles of soil and fill material.
- Cliff lines will be protected by ensuring that run-off from the development area will be diverted or otherwise managed to ensure that it will not result in increased run-off and erosion.
- Contractors will be required to remove waste from the site in accordance with the Northern Territory waste management legislation.

**7.2 Noise impacts.** The main issue with noise will be that associated with the demolition and construction work. This noise will be managed by ensuring contractors' equipment operates within specified noise levels and by restricting contractors' working hours. In addition, adjacent residents will be kept advised of the expected noise impacts.



### **7.3 Contamination.**

**7.3.1** Owing to the age of the existing houses, it is likely that asbestos is present on the site. This will be removed and disposed of by approved contractors in accordance with approved standards.

**7.3.2** Other site contamination has been considered in the context of previous site uses. There is no specific evidence of any site uses that may have caused soil contamination. However, DHA will continually monitor for any unusual site conditions and will undertake investigations as required.

## **8 HERITAGE CONSIDERATIONS**

**8.1** The area occupied by Larrakeyah Barracks has both Indigenous and European heritage value.

**8.1.1 Indigenous Heritage.** The Larrakia (also known as the Goondal or Goondalwa) people are the traditional owners of the land around Darwin. An area of land on Emery Point is considered to be an Indigenous sacred site, the cliffs and associated land areas having been used for male initiation ceremonies until the 1930s.

**8.1.2** The service residences in the most recent, north western part of the residential precinct were built under an Authority Certificate C92/52 dated 30 April 1992 which was issued by the Aboriginal Areas Protection Authority (AAPA). Defence has advised that, as the construction proposed by this submission is outside the boundary of the sacred site, no further AAPA certificate is required. Nonetheless contractors will be required to adhere to the Conditions and Restrictions of Authority Certificate C92/52.

**8.1.3 European Heritage.** The following buildings are listed on the Commonwealth Heritage List and/or the Register of National Estate:

- The Defence fortifications at Emery Point;
- The lighthouse at Emery Point;
- Larrakeyah Barracks Headquarters building; and

- Larrakeyah Barracks Sergeants' Mess.

In addition, a World War II gun emplacement is located at the rear of No. 3 Elliot Road that has European heritage significance.

- 8.1.4** Contractors will be required to ensure that none of the proposed works will affect the European heritage assets.

## **9 STAKEHOLDER CONSULTATION**

- 9.1** The Department of Defence and DHA have prepared a Communication Plan to ensure that all possible stakeholders are provided with adequate notice of the project and its likely commencement date.
- 9.2** The Defence Families of Australia, National Convenor, Mrs. Nicole Quinn has been briefed on the project and has provided her support (see Supplementary Item 4).
- 9.3** The AAPA and the Larrakia National Aboriginal Corporation have been formally advised of the project by Defence. Defence has also made the Corporation aware of the opportunity to attend the PWC public hearing.

## **10 REVENUE**

- 10.1** As the construction is all on-base, DHA will charge Defence a fee for project management plus reimbursable costs, as per the Services Agreement.
- 10.2** Funding will be provided for the new houses from DHA equity and debt, and recovered from Defence through an established Annuity Agreement arrangement, which is similar to a finance lease.
- 10.3** Details of the financial estimates are included in a separate commercial-in-confidence briefing to the PWC.

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## **TECHNICAL INFORMATION**

### **11 LOCATION**

**11.1** The site of the proposed project is shown on the aerial photograph at Supplementary Item 1. The site is part of the existing residential precinct on Larrakeyah Barracks, Darwin, Northern Territory.

### **12 PROJECT SCOPE**

**12.1** The scope of the project is as follows:

- Demolition of 61 existing houses in Elliot Point Road, Nimmo Place, and Whittle, Robertson and Clowes Streets;
- Construction of 97 new houses on the cleared site;
- Extension of the south-western end of Whittle Street to facilitate improved land utilisation;
- Minor upgrades to stormwater and sewerage infrastructure;
- Resealing of roads and replacement of footpaths where required; and
- Landscaping and construction of a new playground.

Further details of the work are found in Sections 18, 21 and 27 of this submission.

**12.2** The proposed redevelopment will be progressed in two stages:

- Stage 1 will construct 69 houses together with the associated changes and rectifications to site infrastructure outlined at paragraph 12.1.
- Stage 2 will construct the remaining 28 houses and associated infrastructure.

**12.3** The project will yield 97 new modern, community standard houses for Defence members and their families. The proposed housing layout and stages are shown at Supplementary Item 3.

### **13 SITE SELECTION**

- 13.1** The site of the project will be created by the demolition of 61 older houses in the existing residential precinct of Larrakeyah Barracks. Defence master planning intends the area to be retained for on-base residences.

### **14 SITE DESCRIPTION**

- 14.1** The site is located on Larrakeyah Barracks, within the Darwin suburb of Larrakeyah. The site is within an existing residential precinct on and around Elliot Point and bounded by the coastal cliff line to the west, Allen Avenue to the north east, Steele Street to the south east and a townhouse development to the north west. Supplementary Items 1 and 3 refer.
- 14.2** Larrakeyah Barracks is a sought after location for Australian Defence Force (ADF) families to live, being close to Darwin city centre and beside the coastline.

### **15 ZONING AND APPROVALS**

- 15.1** As this project is on Commonwealth land, the planning controls and building approvals processes of Darwin City Council and the NT government are not applicable. However, as the various utility services to the Base are linked to those of Darwin city, the necessary liaison will be undertaken with Council and NT authorities as appropriate.

### **16 DETAILS OF LAND ACQUISITION**

- 16.1** The project houses will be built on Larrakeyah Barracks on land already owned by the Commonwealth.

### **17 CODES AND STANDARDS**

- 17.1** All design and construction works carried out as part of this project will comply with or exceed local, State and Federal controls and requirements.

All housing works will meet the Building Code of Australia for cyclone prone areas.

- 17.2 All housing construction will be in accordance with the DHA Performance and Design Requirements (Supplementary Item 8).
- 17.3 All construction requiring certification will be undertaken by approved Private Certifiers.
- 17.4 All contractors used for construction of houses will be certified by the Federal Safety Commission.

## **18 PLANNING AND DESIGN CONCEPTS**

**18.1 Structure, Materials and Finishes.** The design concept for the project is illustrated at Supplementary Items 5 and 6.

- 18.1.1 The character of the existing married quarter built form will be respected, with new dwellings harmonious with the existing built form character.
- 18.1.2 Roofs will be a maximum of eight metres above surrounding natural ground and constructed from powder coated metal (Colorbond), with generally no gutters and downpipes. Roof/ceiling cavities will be vented.
- 18.1.3 External cladding will be robust, salt resilient washable materials and not requiring frequent painting. Colours will be pale earth tones, with no highly reflective materials.
- 18.1.4 Passive solar design principles will be incorporated, including maximised yet protected northern orientation with reduced exposure to east and west sunlight, and 'breezeways' incorporated in the dwellings to capture prevailing breezes. New plantings of shrubs and trees will be used to shade external walls.
- 18.1.5 To maximise ventilation, fenestration will be predominantly louvre style windows and sliding glazed doors, with combined security and insect exclusion.

**18.1.6** Fences will be lightweight mesh metal (galvanised/powder coated), maximum heights 1m to street (if required) and 1.8m to rear/side boundaries.

**18.2** ***Subsurface Conditions.*** As the site is a current residential precinct on which civil works and housing construction have been undertaken, subsurface conditions are not expected to be an issue. However, testing will be carried out prior to the commencement of construction.

**18.3** ***Erosion and Sediment Control.*** Demolition and construction activities will involve considerable excavation and removal of spoil. This will create minor localised sediment and erosion impacts. The Environmental Management Plan will address these issues.

**18.4** ***Hydraulic Services.***

**18.4.1** ***Water supply.*** The water infrastructure of the site has been assessed by consultant engineers as adequate to support the proposed development.

**18.4.2** ***Drainage.***

**18.4.2.1** An engineering survey carried out by consultants SMEC Urban Consulting Group revealed that the storm water capacity is sufficient to carry the run-off from a two year Average Recurrence Interval (ARI) storm event. Modelling has determined that a major storm event (100 year ARI) will tend to create some local flooding of the allotments because the road levels are high relative to the lots. The consultant has recommended that rectification of this issue is not justified, given the existing road levels cannot be altered without considerable expense, and that there are no anecdotal problems relating to local flooding of the residential area.

**18.4.2.2** Currently, stormwater from the lots along Nimmo Place drain individually into the bay at the rear. An underground stormwater pipe will be installed at the rear of these lots to better control the discharge, and an existing outfall drain under one of the lots in Nimmo Place will be relocated.

**18.4.2.3** A small amount of new drainage will also need to be laid to facilitate the extension of Whittle Street.

**18.4.2.4** The existing stormwater drainage will also be improved, in accordance with the consultant's recommendations, by cleaning out the existing stormwater pipe networks and adding some additional road side entry drainage pits to improve the drainage.

**18.4.3 Sewerage.**

**18.4.3.1** The sewerage system is a conventional gravity drainage system to a pumping station at Elliot point which transfers sewerage into the town system towards the East. The capacity of the pump will be increased to accommodate the additional 36 dwellings.

**18.4.3.2** A survey of the pipes shows that the existing sewerage system has adequate capacity for the current residential layout. However, the opportunity will be taken to carry out some minor improvements.

**18.4.3.3** The sewer that currently runs through the middle of lots along Nimmo Place will be relocated to the rear of the lots.

**18.5 *Electrical Services.*** The electrical distribution system was upgraded in the 1980s, converting from an overhead system to underground. The capacity of existing substations and 11kV mains has been assessed as adequate for the project, however, some minor upgrade will be required to the 415V system. The detail of the upgrade required will be addressed in the further review of engineering services to be conducted prior to construction tenders being called.

**18.6 *Telecommunications.*** The domestic voice telecommunications network within Larrakeyah Barracks is owned and maintained by the Department of Defence. It was upgraded in late 2004 and there is adequate capacity to accommodate the additional dwellings proposed by this project. Broadband access is currently not available in the Larrakeyah residential precinct.

**18.7 *Mechanical Services.*** All houses will be air conditioned in accordance with Defence requirements. However, energy saving design features will be incorporated (paragraph 20.2 refers).

**18.8 Base Infrastructure.** The infrastructure capacity outlined above with respect to water, drainage, sewerage and electricity supply have been assessed by DHA's consultants with reference to the existing base infrastructure and the current living and working accommodation on the base. Defence has advised that the infrastructure issues need further review to take into account future development plans for the Larrakeyah Base. As a result, Defence and DHA have agreed to stage the project as described in this submission. Commencement of Stage 2 will commence following Defence advice that the additional 28 dwellings can be accommodated within the existing infrastructure, or that any necessary augmentation of the infrastructure has been defined.

## **19 ACOUSTICS**

**19.1** There are no acoustics issues associated with the project, other than construction noise. Construction contracts will control vehicle access and limit hours of work to minimise the effect of construction noise on nearby residents.

## **20 WATER AND ENERGY CONSERVATION MEASURES**

**20.1** All new houses will comply with the Defence Green Building Policy Version 3.2 dated November 2007 which meets or exceeds the standards of the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act).

**20.2 Direct energy consumption.** The energy consumed in the residence is to be reduced by adopting the following:

- thermal comfort – minimum 6 star NatHERS rating for dwellings;
- thermal mass – minimal use of high mass materials to reduce passive heat load;
- cooling – maximise passive with flow through ventilation (block orientation, louvre windows, minimum 2.7m high ceilings, overhead fans) and shade to building;



- air conditioning - minimum 5 star rating appliances located in bedrooms only;
- lights – low watt lights only;
- appliances - minimum 5 star rating;
- hot water – solar with on ground storage tank.

**20.3 Water.** Water supply in the NT is not as constrained as it is elsewhere in Australia, however, reduction of demand on the potable mains supply will be achieved through the following means:

- plumbing – minimum WELS ratings 4 star for tap ware and showers and 6/3L dual flush toilets;
- stormwater – roof runoff used and temporarily detained on site with soakage pits/trenches in gardens and minimal use of guttering over pedestrian entry/access ways only;
- irrigation – pop up sprinklers for private open space lawn areas only, with time controllers.

## **21 MASTER AND SITE PLANNING CONSIDERATIONS**

**Lot arrangement.** The lot arrangement has been designed to fit the existing road and services infrastructure, thus minimising the need for extensive engineering work. A small extension to Whittle Street will maximise lot yield from the site.

**21.1 Block sizes.** The majority of the lots in the precinct are 450 - 650 square metres with 12 smaller lots, as shown on Supplementary Item 3.

### **21.2 Home Layouts.**

**21.2.1** The new dwellings will be designed for tropical living and oriented to capture prevailing breezes. A close relationship of internal and external living spaces is to be provided through integrated multi function under cover areas (all plumbing, storage and service areas to be screened from view, no separate sheds). The covered outdoor area is to be fully integrated with the indoor living space and visually linked to outdoor play

space. Clothes drying opportunity is to be provided with two lines, one under cover (carport area) and another external. A typical home layout is included at Supplementary Item 5, excepting that all houses to be delivered will be four bedroom.

**21.2.2** A Brief(s) is to be let to provide detailed design documentation for a number of different sympathetic house types. This work will form the basis of the construction tender documentation.

**21.3 *Playground.*** A fenced play facility is to be constructed on the vacant block at the corner of Nimmo Place and Elliot Point. The playground will replace the existing facility which takes up two building lots and no longer meets current safety standards. New equipment for pre-school aged children will be installed in a smaller fenced and mulched surface play space in the larger open space.

#### **21.4 *Roads.***

**21.4.1** The existing roads in the precinct are a typical two lane, kerb and channel road profile with a two coat chip seal, other than Allen Avenue which has an asphaltic concrete seal. They are all 7.6 metres wide (between backs of kerbs) except for Clowes Street which is 6.5 metres wide, and are only lightly trafficked.

**21.4.2** The roads have been resealed in the past, which has protected the underlying pavement from ingress of water. A survey carried out by consultants reports that they are generally in good condition with no apparent deformations in the pavement, although with fine cracks which are not considered to be a problem. With the exception of Allen Avenue, existing roads will be resealed as part of the project.

**21.4.3** A small amount of new road will be constructed to relocate the south-western end of Whittle Street. The road size and pavement will match the existing roads on the site.

## **21.5 Footpaths.**

**21.5.1** A high percentage of the footpaths are damaged from vegetation and lack of general maintenance. In addition, there are three service pits that have been installed too high causing safety concerns.

**21.5.2** Damaged footpaths will be replaced and service pits made flush with the pavement. Root guards will be installed to reduce future root damage.

## **22 PROVISION FOR PEOPLE WITH DISABILITIES**

**22.1** No provision will be made for families with disabilities. Defence families with special needs are accommodated by DHA by either modifying existing homes, or by renting properties that are already modified or that can be readily modified to meet the particular requirements of the family.

## **23 HERITAGE CONSIDERATIONS**

**23.1** As stated in Section 8, the Larrakeyah Barracks residential precinct is near an indigenous sacred site. The barracks area also contains a number of structures that are included in the Commonwealth Heritage List and/or the Register of National Estate. While the proposed works are clear of these heritage aspects, contractors will be required to ensure that none of the proposed works will affect them.

**23.2** In addition to the listed heritage items, a World War II gun emplacement is located in the rear yard of No. 3 Elliot Point Road. Siting of the new houses for Elliot Point Road will retain the current set-back between the existing house and the gun emplacement. During construction, this gun emplacement will be fenced off to protect the structure. In particular, heavy vehicles and equipment will be kept clear of this site.

**23.3** The existing housing in the Larrakeyah Barracks residential precinct has been assessed as having no heritage value. However, design of the new houses will remain sympathetic to the heritage values of Larrakeyah Barracks, drawing upon the design elements of the existing housing,

namely, elevated construction form, simple roof forms, the use of similar materials and maintaining existing setbacks.

- 23.4** Conservation of the remnant natural vegetation on the cliffs north and south of Elliot Point will be achieved through exclusion of construction and remediation works at the interface (open spaces).

## **24 COMMUNITY FACILITIES**

### **24.1 Shops and Services**

- 24.1.1** Larrakeyah is within 3 km of the Darwin Central Business District which provides a wide range of shopping and services, including a medical centre.

### **24.2 Public transport.**

- 24.2.1** Buses to the city run along Mitchell Street, about 500m from the front gate.

### **24.3 Education**

- 24.3.1** Larrakeyah Primary School is located directly outside the front gate (see Supplementary Item 2). St Marys Primary School is located in the city, about 2 km from the base.

- 24.3.2** Darwin High School and St Johns College are located in the neighbouring suburbs of Bullocky Point and The Gardens respectively, about 4 km north of the Base.

### **24.4 Child Care Facilities.**

- 24.4.1** Local child care centres are located on Mitchell and Cavenagh Streets, respectively 500m and 1.5km from the front gate. ABC child care centres with Defence priority access are located at Stuart Park about 6 km from the base.

## **25 FIRE PROTECTION AND SECURITY MEASURES**

- 25.1** Civil works and house construction will conform to Australian standards and the Building code of Australia.

## **26 OCCUPATIONAL HEALTH AND SAFETY**

- 26.1** As noted in paragraph 7.3, it is likely that asbestos is present on the site. Although there is no specific evidence of any site uses that may have caused other soil contamination, there is a possibility that it has occurred. DHA will continually monitor for any unusual site conditions and will undertake investigations as required. Contractors will be required to manage and dispose of asbestos and any other toxic substances found in accordance with the relevant Northern Territory and Federal regulations and codes.
- 26.2** All DHA contractors to be used in the project will be accredited by the Federal Safety Commissioner.

## **27 LANDSCAPING**

- 27.1** The site contains a typical 1970's Darwin 'garden' landscape of turf with a scattering of exotic palms. The existing vegetation is to be conserved as much as practicable. Where possible all existing mature trees and palms will be retained insitu or relocated. All trees and palms to be retained will be protected during the construction process in accordance with recognised standards.
- 27.2** On completion of building works the landscape is to be reconstructed. New plantings are to be used to shade external walls. When completed, the vegetation on all blocks is to comprise suitable plants including palms, upper and lower canopy trees, shrubs and ground covers.
- 27.3** There is to be a minimum area of grass lawn (15 sq.m.) on each block for recreation that is irrigated, but all other areas of grass will not be irrigated.
- 27.4** The landscape upgrading of the public open spaces will follow on completion of the main building works to remediate any damage and upgrade the amenity of the landscape in the precinct. All open spaces and street verges will remain unirrigated grass. Any work requiring restoration of ground surfaces will use grass to match existing species.

**27.5** Plantings in verges and open spaces are to be provided to supplement and enhance existing vegetation, providing shade to pavements and recreational spaces while not blocking key views and vistas. Species are to be predominantly native. Those species that are likely to 'escape' (propagate into adjacent open space and cliff areas) and those that are known to be highly damaged in cyclones will be avoided.

**27.6** A landscape plan is included at Supplementary Item 7.

## **28 CONSULTATION WITH AUTHORITIES**

**28.1** A project briefing has been provided to the local Federal Member of Parliament, Mr Damian Hale, MP.

**28.2** As the project is on Commonwealth land, the planning controls and building approvals processes of Darwin City Council and the NT government are not applicable. However, prior to commencement, all works will be discussed and relevant documents provided to the various NT government agencies where required.

## **29 IMPACT ON THE LOCAL COMMUNITY**

**29.1 Off-Base.** The project will create 36 more dwellings than currently exist on Larrakeyah Barracks, an increase of 27 per cent. However, in terms of the relative increase to the local civilian community in the suburb of Larrakeyah, the increase is small. Therefore no ongoing effects on the local community are expected in terms of traffic and population. Some increase in traffic will occur during construction.

**29.2 On-Base.** The project will require the relocation of 30 – 40 families from the existing accommodation. These families will be sensitively relocated in other DHA properties in Darwin, or in privately rented accommodation, at public expense.

**29.3 Economic.** The proposed project will have a positive economic effect during the development and construction period. Economic activity is generated by individuals and local businesses working directly on site as

well as by individuals and businesses off-site providing goods and services to support the project.

### **30 PROJECT COSTS**

**30.1** The estimated overall project cost of \$52.4 million (excluding GST) includes all construction, landscaping and civil works. Detailed estimates will be made available to the Committee in a separate commercial-in-confidence submission.

**30.2** Financing for the project will be provided by DHA through equity and debt funding. The capital cost, including DHA's management fee, will be recovered from Defence through standard annuity arrangements.

### **31 PROJECT DELIVERY SYSTEM**

**31.1** Development and construction packages will be contracted on a fixed price lump sum basis to a select panel of qualified builders who will have been successful in addressing the selection criteria from a publicly advertised open call for expressions of interest. The successful tenderer will be required to comply with detailed architectural guidelines that will be prepared by an independent consultant.

### **PROJECT SCHEDULE**

**32.1** Subject to Parliamentary approval by February 2009, the significant milestones to achieve completion of the project by June 2009 are:

<b>Activity</b>	<b>Start</b>	<b>Completion</b>
<i>PWC process</i>	<i>17 September 2009</i>	<i>February 2009</i>
<i>Tender process</i>	<i>4 March 2010</i>	<i>20 July 2010</i>
<i>Construction of Stage 1: 69 dwellings</i>	<i>20 July 2010</i>	<i>31 August 2011</i>
<i>Construction of Stage 2: 28 dwellings</i>	<i>May 2012</i>	<i>30 May 2013</i>

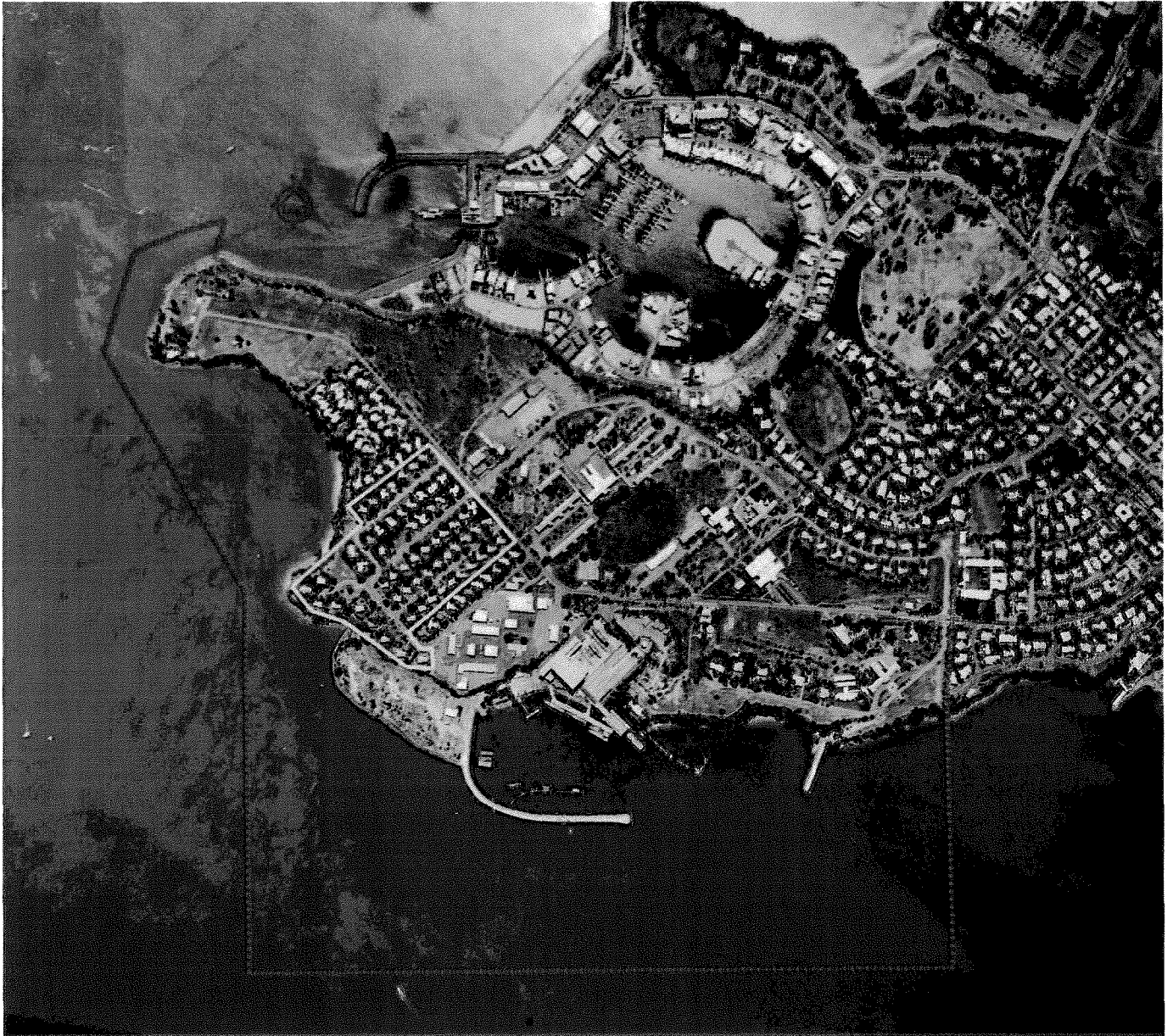
# Supplementary information

- Item 1 Site location aerial photograph
- Item 2 Area map
- Item 3 Site plan
- Item 4 Supporting letter from Defence Families Australia
- Item 5 Typical house layout
- Item 6 House design concept
- Item 7 Landscape plan
- Item 8 Design and construction specifications for DHA residences



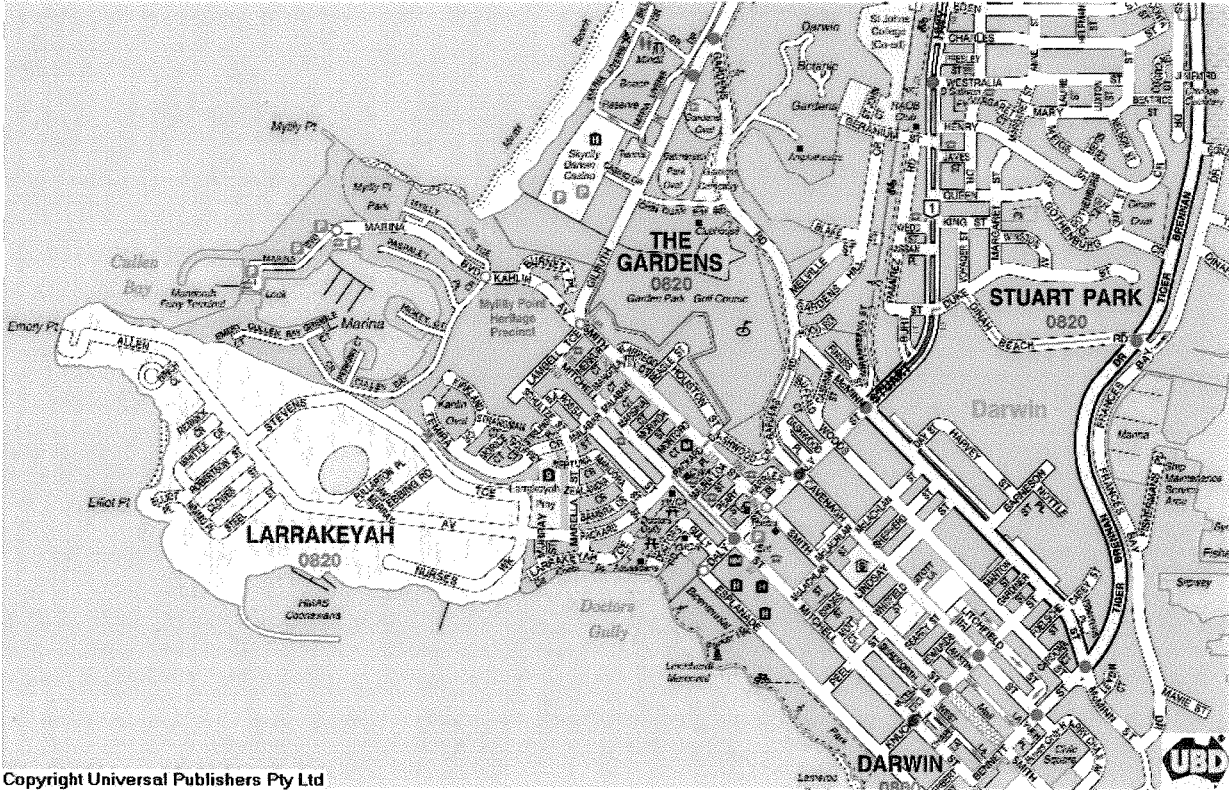
# Supplementary item 1

## Site location aerial photograph



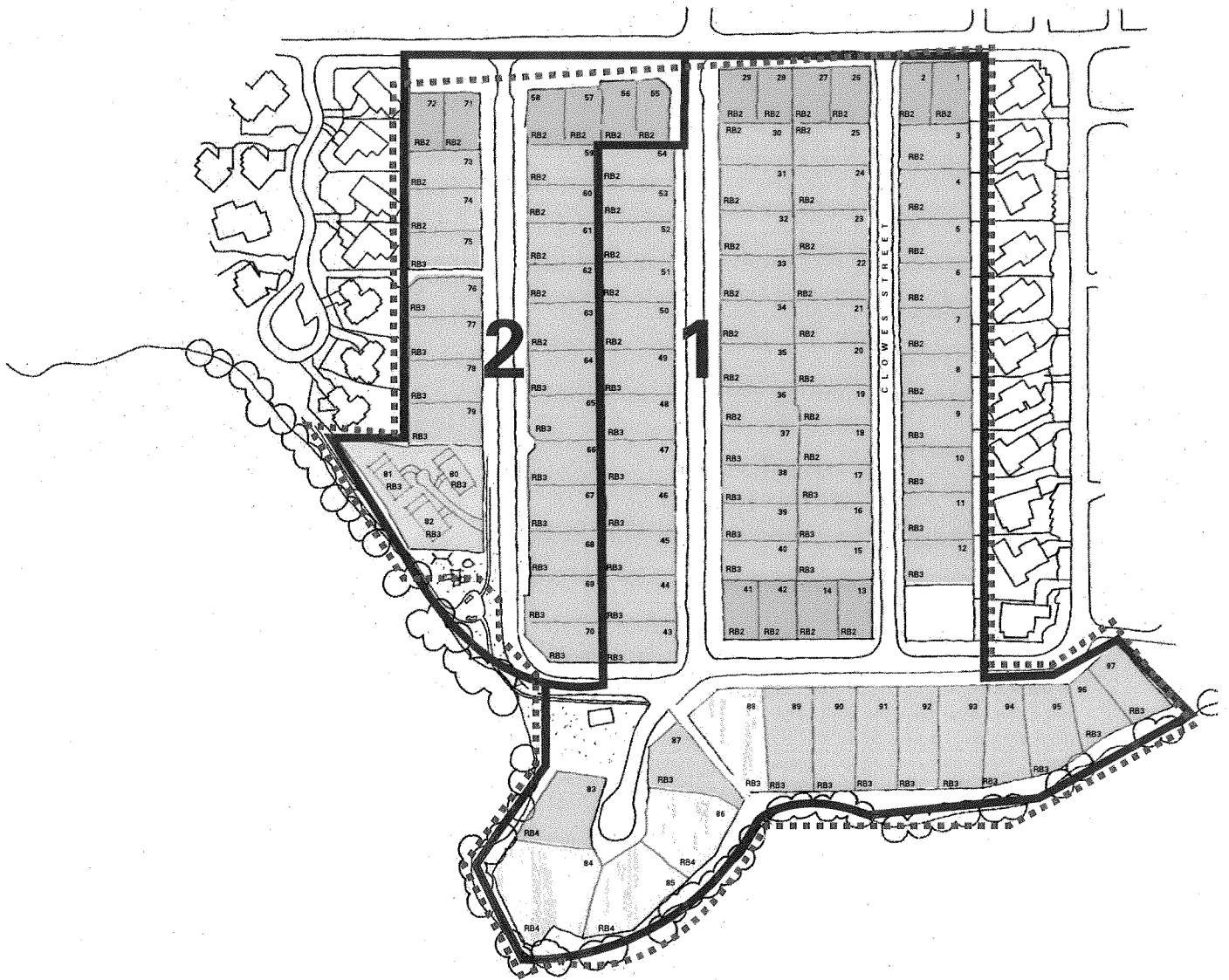
# Supplementary item 2

## Area map



# Supplementary item 3

## Site plan



**LEGEND**

- ▤▤▤▤ Proposed development area
- ▬▬▬▬ Stage development
- Green - 350m<sup>2</sup> - 450m<sup>2</sup>
- Orange - 450m<sup>2</sup> - 650m<sup>2</sup>
- Purple - 680m<sup>2</sup> - 880m<sup>2</sup>
- Yellow - 1000m<sup>2</sup> - 1600m<sup>2</sup>
- Blue - Cluster housing lots





## Supplementary item 4

# Supporting letter from Defence Families Australia



Nicole Quinn  
National Convenor  
Defence Families of Australia  
CP2-1-11  
Campbell Park Office  
CANBERRA ACT 2600

15 August 2009

Mr Michael Del Gigante  
Managing Director  
Defence Housing Australia  
26 Brisbane Avenue  
BARTON ACT 2600

*Michael*  
Dear Mr Del Gigante

### Development of Housing for Defence – Larrakeyah Barracks

Defence Families of Australia (DFA) has received a briefing on the proposed re-development of housing at Larrakeyah Barracks. This re-development will support Australian Defence Force (ADF) families posted to Darwin. There are many exciting aspects to this development which DFA believes supports the unique working and lifestyle considerations of ADF members and their families.

#### Location:

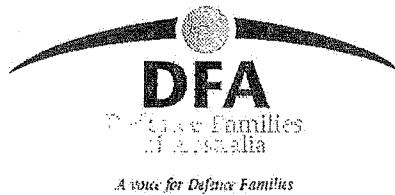
Larrakeyah Barracks has been a popular location for ADF families posted to Darwin for many years. Its proximity to city, base amenities and the local primary school has resulted in it being a highly desirable location.

- Being able to live on base is a popular for many service families when a member is 'absent from home' or deployed as it enables them to access and use on base facilities and support. It gives ADF families the sense of a supportive and safe community.
- The ability to access established community facilities, including transport, schools, childcare services and shopping facilities are also important to ADF families.

#### Housing:

DHA must be able to replace old housing stock with new as community standards and expectations change over time.

The current housing on Larrakeyah is getting old and outdated and though in a wonderful location, does not represent current Defence housing standards. The age of the homes are



becoming a great concern to the current families living in location, with a growing dissatisfaction when comparing to other service residences in the Darwin posting location.

The proposed design features of the new homes support modern living including open plan, outdoor alfresco living and environmentally friendly features. It also meets (or exceeds) the new Defence minimum housing standard.

DFA strongly supports the proposed re-development of houses located at Larrakeyah Barracks.

Yours Sincerely

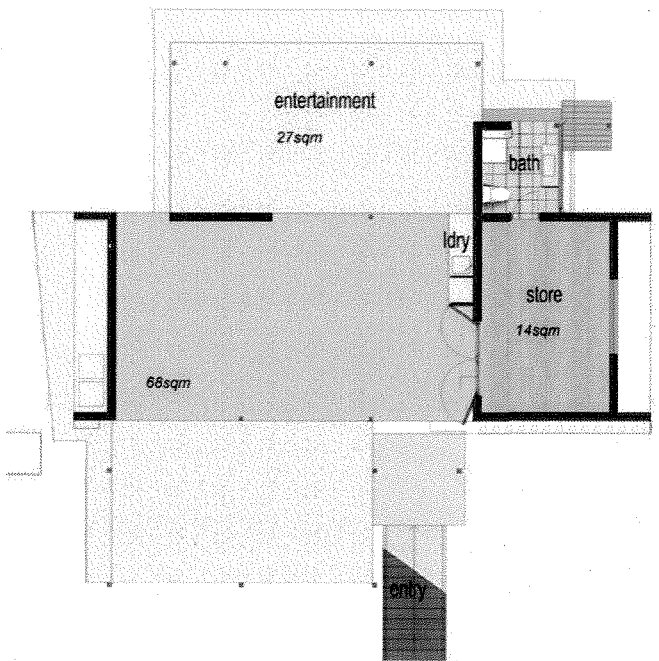
A handwritten signature in black ink, appearing to read "Nicole Quinn", written over a horizontal line.

Nicole Quinn  
National Convenor  
Defence Families of Australia

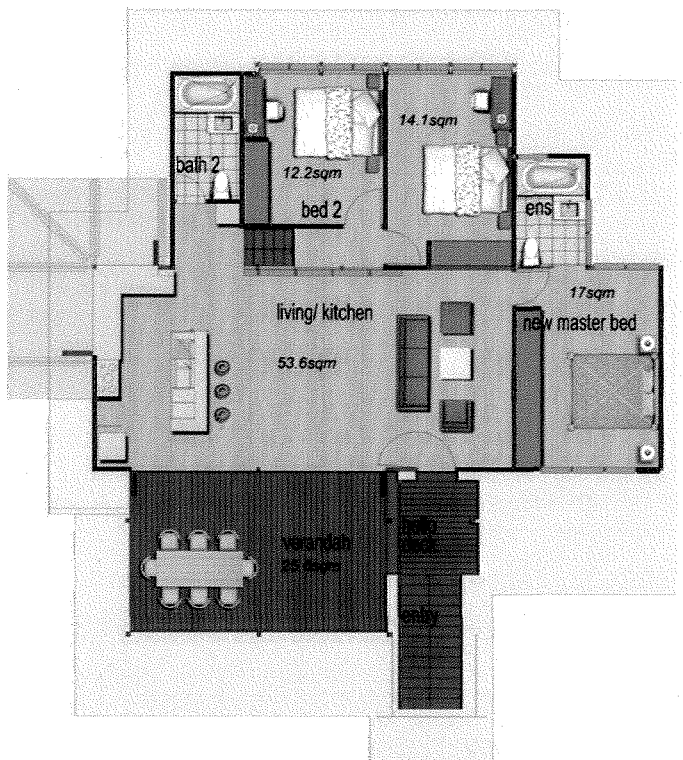
# Supplementary item 5

## Typical home layout

### Ground floor

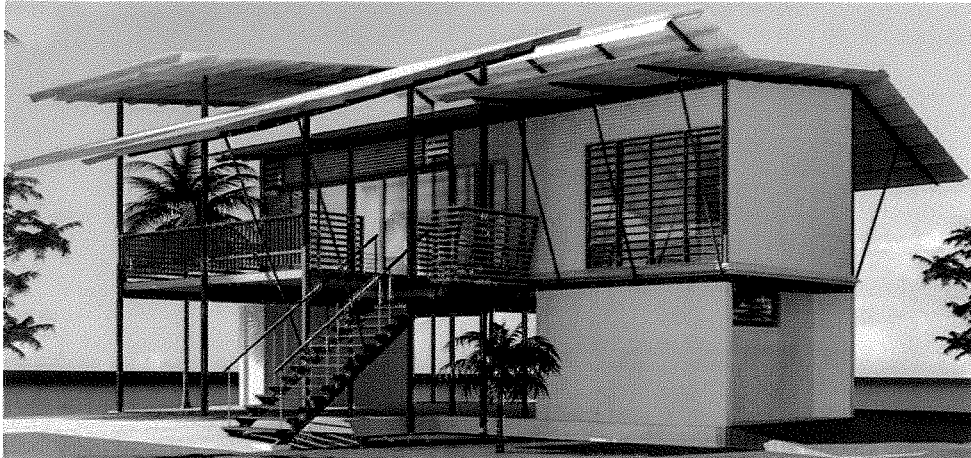


### First floor

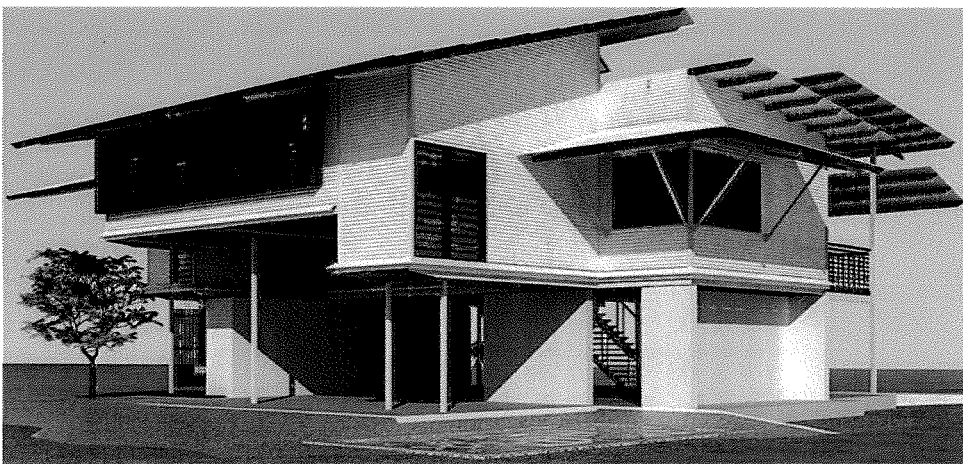


# Supplementary item 6

## House design concept

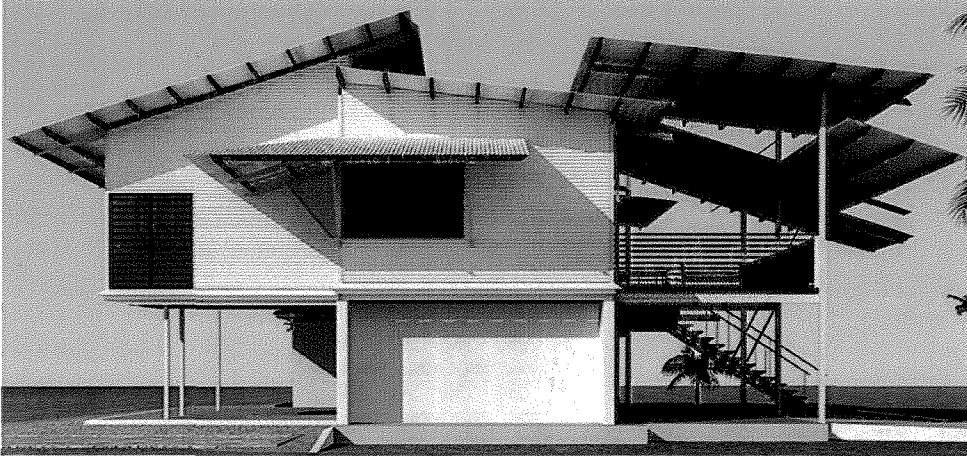


Front 45°

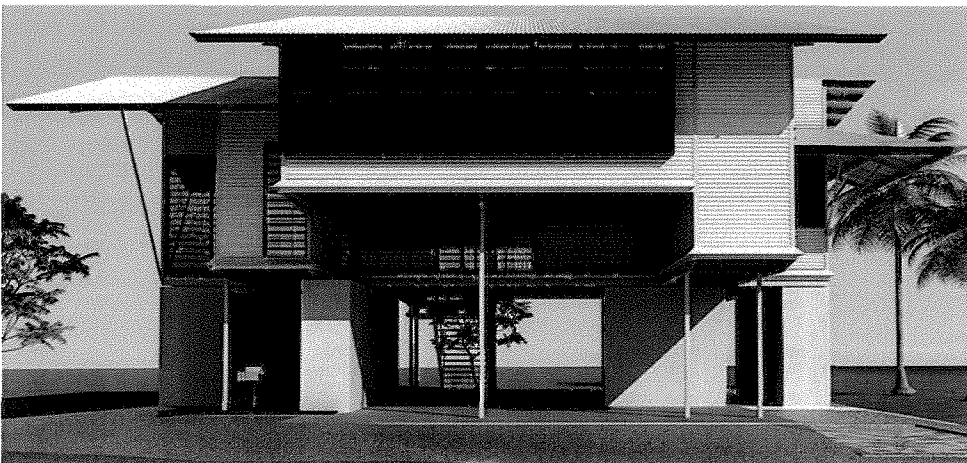


Back 45°

## House design concept cont.



**Side**

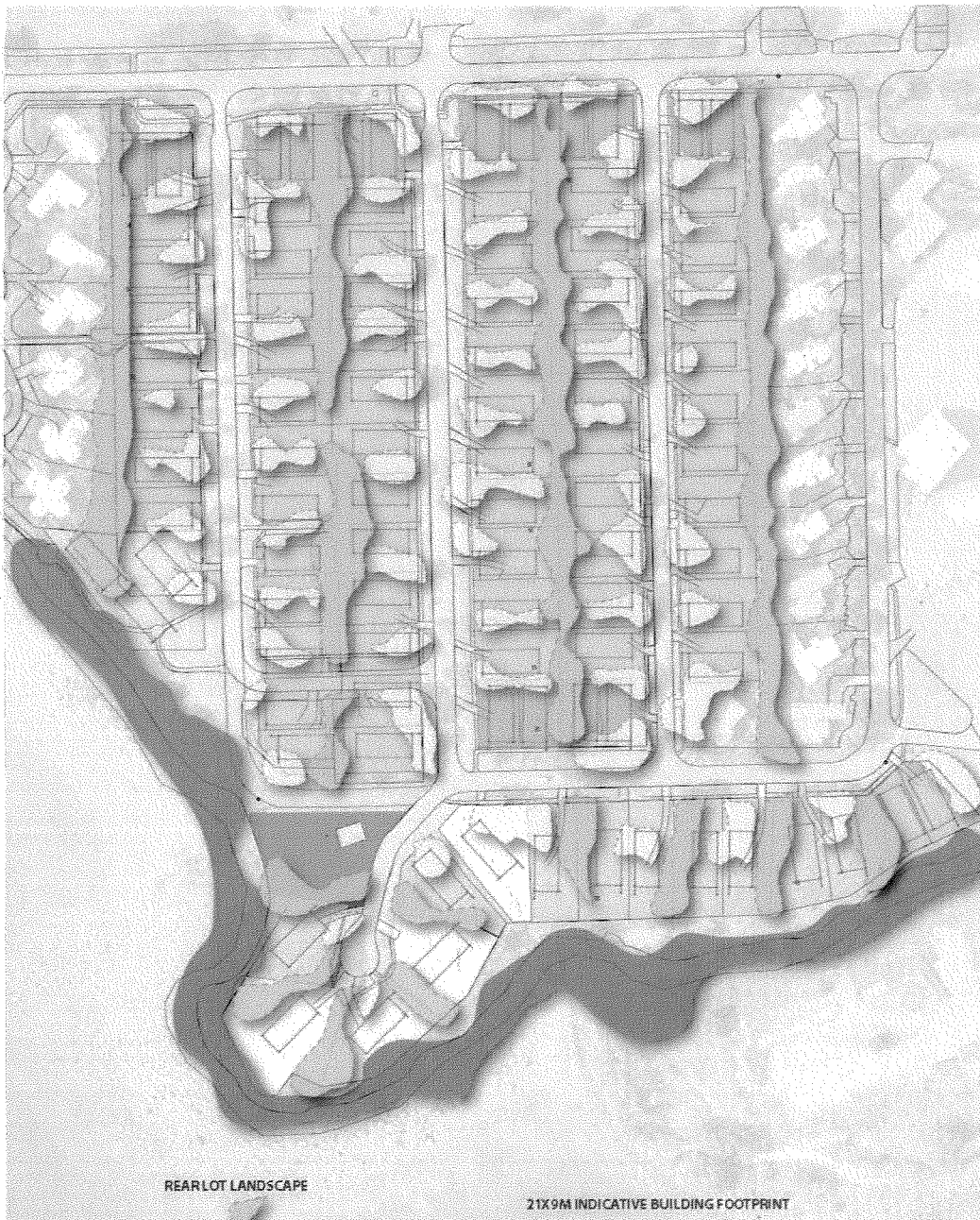


**Back**



# Supplementary item 7

## Landscape plan





# Supplementary item 8

## Performance and design requirements



### **DESIGN AND CONSTRUCTION SPECIFICATION FOR DHA RESIDENCES**

Version 3.3 Aug 2009


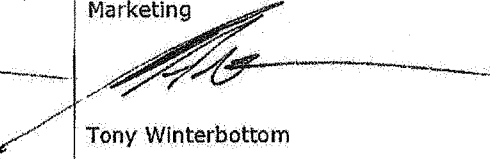
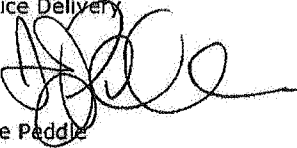
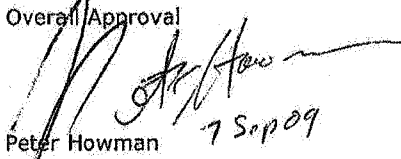
#### Introduction

This document contains the guidelines and requirements for construction of houses in standard (low) and medium density developments. This document does not address project specific requirements, which are addressed in Tender documentation.

Design and construction specification for DHA residences

VERSION	RELEASE DATE	NOTES
Version 1.1	October 2007	Original
Version 2	January 2009	Corrections and revisions
Version 2.1	February 2009	Amended for clarification page 21 Garage and Storage
Version 2.2	February 2009	Amended for clarification (various clauses)
Version 3.0	April 2009	General review all clauses
Version 3.1	April 2009	Re-added regional requirement Darwin, Tindal and Alice Spring eaves increased to 900 mm
Version 3.2	June 2009	General revision following review of version 3 within DHA and by builders
Version 3.3	Aug 2009	Reorganise content, revise document name (Document was "Performance & design requirements for construction of DHA residences"), content also modified.

**Approvals**

Finance  Robert Groom Chief Financial Officer	Marketing  Tony Winterbottom General Manager-Sales and Marketing
Service Delivery  Steve Paddle General Manager-Service Delivery	Overall Approval  Peter Howman 7 Sep 09 Chief Operating Officer

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**Design and construction specification for DHA residences**

**1000 PRELIMINARIES**

**1010 DEFINITIONS - ROOMS, AREAS, SPACES**

The definitions of rooms, spaces or areas are listed in the chart below. Requirements that vary by regional location are noted; refer to section on mandatory regional requirements.

BEDROOMS	
Bedroom 1	largest bedroom
Other Bedrooms	bedrooms numbered 2, 3, etc.
LIVING AREAS	
Kitchen	separate room, can be open plan with Dining or with Meals
Meals	open plan area adjacent to Kitchen
Family	separate from Dining and Lounge rooms, can be open plan with Meals
Dining	separate room, can be open plan together with Kitchen and Lounge
Lounge	separate room, can be open plan with Dining
Entry	entry space from front door not opening directly into living areas
Hallway	internal access and circulation space
Study	separate room or alcove
Rumpus (Games)	separate room, in addition to other living areas
WET AREAS	
Bathroom	separate room with bath and separate shower recess, hand wash basin in vanity unit, close to bedrooms
Ensuite	separate room directly accessible from Bedroom 1
Powder Room	separate room with a toilet and wash basin provided in two storey houses
Toilet	separate room for toilet only, adjacent to bathroom
Laundry	space for washing machine, tub, dryer and cupboard
STORAGE	
Garage	fully enclosed secure area for car parking
Carport	under cover area for car parking, may be secured, may be partially enclosed
Shed	waterproof, lockable, located in secured Fenced Yard
Storage	secure area within Garage where a Garage is included, or secured area adjacent to Carport where a Carport is included

**Design and construction specification for DHA residences**

OUTDOORS	
Front Yard	area facing the address or side street(s), with main pedestrian and vehicular entries and driveway with plant beds (garden)
Covered Outdoor Area (COA)	paved area accessible from daytime living areas, behind fences
Fenced Yard	contiguous area secured behind fences and gates, with COA, location for utilities, with plant beds (garden), but excludes services, and Shed (where provided).

**1020 STANDARDS**

The Contractors must comply with all applicable national, state or local requirements. All design and construction activities must comply with, but are not limited to, the requirements of:

- Building Code of Australia (BCA) and the Deemed to Satisfy provisions;
- Australian Standards (AS and ASNZ) relevant to the work;
- State or Territory, Local Authority and Statutory Requirements;
- House Building Certification Fund, owners and Contractors contributions;
- National code of practice for the Construction Industry;
- Building and Construction Industry Improvement Act 2005
- Utility companies – power, water, gas, telecommunications; and
- Specific estate design guidelines, encumbrances and covenants.

All houses must achieve a minimum 5 star Energy Efficiency Rating (HER) as certified by an Independent accredited assessor, using AccuRate (NatHERS replacement) or other equivalent method (e.g. state systems such as BERS Pro), or where permitted, BCA Deemed-to-Satisfy Provisions.

**1030 HOUSE LAYOUT**

Rooms, spaces and areas must be oriented and connected to allow their most functional and efficient use. The spatial arrangement of rooms and their fit-out must also ensure ease of furniture removal, particularly for large items (beds) in double storey houses.

**1040 MINIMUM SIZES - ROOMS, AREAS AND SPACES**

The rooms, areas and spaces or their components that have mandatory minimum



Design and construction specification for DHA residences

sizes are listed in the following tables.

**All dimensions in this section are measured internal plate to plate unless otherwise stated.**

**1041 MANDATORY REQUIREMENTS LOW DENSITY**

NAME	REQUIREMENT(S)	MIN DIMENSION (mm)	MIN AREA (m2)
<b>BEDROOMS</b>			
Bedroom 1	must fit a queen size bed & side tables (area is exclusive of BIR or WIR)	none stated	15
Wardrobe Bedroom 1	hanging depth hanging length (refer Appendix 1 for details)	700 3000	none stated
Other Bedrooms	must fit single bed & side table (area is exclusive of BIR)	none stated	9
Wardrobe Other Bedrooms	hanging depth hanging length (refer Appendix 1 for details)	600 1500	N/A
<b>LIVING</b>			
Kitchen	refrigerator space clear of all obstructions e.g. skirtings	W 1000 H 2000	Not stated
Dining	Must fit a table and seating for at least 6 people	none stated	none stated
Lounge	Must enable seating for at least 5 people plus entertainment unit and coffee table	none stated	none stated
Study	Must fit a (computer) desk, chair and bookshelf	none stated	none stated
<b>STORAGE</b>			
Garage single	1 car space	D 6000	21
Garage double	2 car space inclusive of Storage Distance from wall to wall Distance from wall to engaged pier Depth	W 6000 W 5890 D 6000	36
Carport single (Darwin only)	1 car space	D 6000	21

**Design and construction specification for DHA residences**

Storage	-function obvious.	none stated	9
<b>OUTDOORS</b>			
Fenced Yard	measured from house wall to boundary line, excludes sheds and services	2000	35
	nominated locations in Sydney	2000	25
Covered Outdoor Area (COA)	must fit table and chairs for 4 to 6 people plus BBQ.	none stated	15
	-in locations south of Tropic of Capricorn -in locations north of Tropic of Capricorn		20
Driveway	Minimum area to enable safe access to the garage door(s) and must accommodate 1 (one) car parked on the driveway within the block.	none stated	none stated

**1042 MANDATORY REQUIREMENTS MEDIUM DENSITY**

Requirements for low density apply, with the following changes:

NAME	REQUIREMENT(S)	MIN DIMENSION (mm)	MIN AREA (m2)
<b>OUTDOORS medium density</b>			
Covered Outdoor Area (COA)	Must fit table and chairs for 4 people plus BBQ	Not stated	10
<b>STORAGE medium density</b>			
Utility Cupboard(s)	Replaces Coat cupboard and has multiple uses (coats, brooms)	W 800	Not stated
Storage near car accommodation	Shed or fully secured, waterproof area with lighting and lockable gate	Not stated	9

**1043 MANDATORY REQUIREMENTS ON MILITARY BASES**

Requirements for low density apply, with the following changes:

**Design and construction specification for DHA residences**

NAME	REQUIREMENT(S)	MIN DIMENSION (mm)	MIN AREA (m2)
<b>LIVING</b>			
Lounge	Lounge must enable seating for at least 5 people plus entertainment unit and coffee table.	Not stated	Not stated
Dining	Dining must fit a table and seating for at least 6 people	Not stated	6
Lounge/ Dining combined	Combined room must fit lounge furniture and dining furniture as detailed above	Not stated	21
Meals	Meals must fit a table and seating for at least 6 people	Not stated	5.7 (but not >15)
Study	Must fit a (computer) desk, chair, cabinet and bookshelf	none stated	none stated
Family	Family room must fit lounge seating for four people and television contained in a medium sized wall unit	Not stated	11
Family/Meals combined	Combined room must fit Meals furniture and Family furniture as detailed above	Not stated	15

Notes to this table:

Add 1m2 to minimum area requirements for each entrance into a room.

Add 1m2 to minimum area requirements to any room with wall mounted heaters.

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**2000 DESIGN GUIDELINES**

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**In this section, design guidelines are set out. Design guidelines are items that are preferred by DHA, but not obligatory.**

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**2010 HOUSE LAYOUT**

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**South of Tropic of Capricorn**

- o main daytime living areas oriented towards the north to allow maximum sunshine penetration in winter and summer shade. [COA] should not compromise the sunshine into indoor living areas;

**Design and construction specification for DHA residences**

- western walls are shaded and west facing windows are avoided or shaded; and
- Fenced Yard receives sun and or shade as necessary for optimum use throughout the year.

**North of Tropic of Capricorn**

- minimise sun into interiors and onto house walls with eaves, awnings, covered outdoor area and plants;
- maximise natural cross ventilation with design and placement of windows;
- ensure landscape treatments promote breezes into the house; and
- Fenced Yard to receive shade as necessary for optimum use throughout the year.

COA design and materials should ensure:

- sunlight (light and heat) is not obscured from interiors;
- design / ventilation prevents heat build up under roofing;
- lighting is adequate for cooking and dining.

Internal spaces should take advantage of any views and vistas. The landscape should enhance any existing views and create outlooks from each daytime living room.

**2020 HOUSE ORIENTATION**


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Placement of the house on the site should consider:

- the most efficient and functional use of the site for provision of required internal and external spaces;
- suit the local climate, and property microclimate;
- minimise earthworks (cut and fill) and avoiding cut to export soil; and
- minimise the need for active heating and cooling systems;
- harmony with existing street and locality setbacks;
- front entry forward of the garage wherever possible;
- visual privacy to indoor spaces, COA and Fenced Yard;
- solar access internally and to outdoor living areas, with overshadowing of or by neighbouring development avoided where possible; and
- plant root zones with sufficient space for trees in each block.

**2030 FENCED YARD**


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Fencing should provide visual privacy and does not adversely impact solar access

**Design and construction specification for DHA residences**

to adjacent properties. The visual impact of fences should be minimised with plants in beds beside fences.

If services are located externally they should be collocated and placed to minimise sound and visual impact to the household and neighbours.

**2040 STREETScape**

Individual house frontage and garden design should meet the following general requirements:

- contemporary in style -not have faux, 'add-on' or 'period' features;
- keep with the architectural expression in the locality;
- building scale and mass suitable to the street and neighbourhood;
- letterbox should suit the house, and where possible conceal services;
- landscape setting to be dominant over the pavements or the garage; and
- trees to give shade and character.

Multiple house construction within a street should have variation in:

- built form
- exterior façade
- textures, colours and materials used.

Variation of the street facade may be achieved through expressed structures, feature windows, shading elements, front verandahs and entry porches.

**2050 LANDSCAPE**

The landscape design should meet the following general requirements:

- compliment the architectural style of the house;
- enhance the front entry area;
- contribute to the streetscape;
- low water use plants for regions south of Tropic of Capricorn;
- integrate with existing neighbouring properties;
- ensure clear lines of sight from the house entry to the street;
- reduce overlooking into adjoining properties;
- screen fences with plants;
- screen utility areas;
- provide trees to give shade; and
- allow winter sun in southern climates to children's play/lawn area.

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**Design and construction specification for DHA residences**

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**2060 SUSTAINABILITY**

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Contractors are encouraged to adopt as many principles of sustainable design as possible. Some methods in building in an energy efficient house are:

**Heating/Cooling**

All elements of the design and construction (layout, orientation, interiors and landscape) should be integrated and suited to the site to minimise the need for active heating and cooling.

**Insulation**

Insulation to wall and ceiling cavities and slab or sub-floor spaces along with draught exclusion.

**Thermal mass**

In cool climate regions, select areas of floor and wall surfaces can act as thermal 'banks' to provide thermal stability and in cooler localities can absorb and re-radiate solar energy in the cooler months. The placement of windows and shading devices as well as the selection of interior materials and finishes can be designed to enable this effect.

**Shade**

The eaves overhang can be constructed to admit winter sun into the house while excluding summer sun. Pergolas or trees can reduce heat gain in summer but permit light all year round.

**Ventilation**

Maximise cross ventilation to ensure breezes flow through the house by locating operable windows to capture prevailing breezes. This is particularly important in the tropical regions.

**Light**

Maximise natural day light into the house and minimise the use of artificial lighting during the day by location and size of windows. Use low wattage light fittings.

**Water**

Sustainable use of water means reducing the use of potable water and facilitating water to soak into the ground (gardens and lawns) wherever possible.

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**3000 TRADES SECTION**

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All preliminary tasks, such as site works and provision of temporary power or water, are to be undertaken without additional costs to DHA. The Contractor is expected to be familiar with the site physical conditions and subsurface conditions.

**Design and construction specification for DHA residences**

Temporary fences must include the adjacent public land (verges) except where they have been developed (paths and landscape works) or they are required for public access. The work site is to be securely locked at all times when workers are not present. All activity and all materials storage must be within the fenced area.

**3010 SITE CONSTRUCTION****3011 GROUNDWORKS**

The Contractor must not disturb or damage any land outside the block boundaries. Healthy existing trees on the block that have been retained as part of the estate development should be retained wherever possible.

Excess earthworks are to be avoided. The Contractor is expected to strip and stockpile, for later re-use, the existing site topsoil as part of the site works and remove vegetation from the topsoil prior to both earthworks and prior to re-use.

Following execution of site works, access to the site for all construction works is restricted to the location of the driveway, unless otherwise agreed by DHA and local authorities.

**3012 FOOTINGS**

Contractor must design all required footings, nominate type. The depth and extent of all site works must be sufficient to prepare the house and driveway 'platform' to suit the site's geotechnical conditions and consequent design.

**3013 FLOORS**

Contractor to nominate type.

**3014 DETAILED EXCAVATION (CUT AND FILL)**

The levels of the house and adjacent landscape surfaces must be designed to ensure that water drains away from house sufficient to avoid flooding in storm events.

The Contractor must complete the following earthworks as part of the Lump Sum:

- all clearing and grubbing of the site;
- all bulk earthworks required to achieve benching levels including landscape surface levels (allowing for topsoil refilling); and

**Design and construction specification for DHA residences**

- o all detailed excavation associated with retaining walls and to achieve the nominated fall requirements.

All contaminants, debris and rubble to be removed prior to site shaping and other works. Contractor's rubble and debris must not be buried or covered over on the site.

All external spaces and surfaces must meet the following different gradients (slopes):

- o Fenced Yard 1:6 maximum to 1:50 minimum;
- o Garage finished floor level (FFL) slopes from back to front (street) with a fall of 1:100;
- o driveways 1:6 maximum;
- o plant (garden) beds 1:4 maximum to 1:100 minimum;
- o pavements (pedestrian): 1:6 maximum (short runs only) to 1:100 minimum with crossfall of 1:33 maximum.

Sloping blocks must be terraced with retaining walls and associated steps.

Shaping to be undertaken prior to other exterior and landscape works, with placement of SW systems and retaining walls/steps. Leftover spoil must be disposed by the Contractor at their cost.

**3015 STORMWATER**

The treatment of stormwater within the block must be designed to suit the climate, soils and local Authority requirements. Stormwater system must have grated pits, soakage drains or other piped systems to ensure no flooding of house. All systems elements, i.e. soakage drains, grated pits and pipes must be adequately sized for purpose and local conditions.

Where it is required by local authorities, all roofs must have gutters that are connected to the stormwater system and/or to water tanks.

No sumps to be installed within gardens. Covered Outdoor Area design and materials must be integrated with SW drainage.

**3015 (A) DRAINAGE**

Surface flows must be diverted away from the house and off paved areas onto garden beds and lawn areas. Excess stormwater runoff must not be directed onto



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adjoining properties. On site temporary (i.e. two hours) ponding of rain is acceptable where it is a deliberate detention area with suitable disposal of overflow stormwater.

A grated drain connected to the stormwater system must be installed at the garage opening where the driveway slopes towards the garage.

Retaining walls to have suitably placed agricultural drains behind walls with geotextile fabric to back of wall.

**3015 (B) IRRIGATION**

Irrigation systems will be installed only in locations where nominated in regional requirements or to meet estate covenants.

**3016 ROOFING & ROOF PLUMBING****3016 (A) FASCIAS & GUTTERS**

Sheet colour bonded metal, colour to coordinate with, or match, roof and or walls

**3016 (B) DOWNPIPES**

Sheet colour bonded metal or PVC, colour to coordinate with, or match, roof and or walls. COA roof plumbing must be connected to storm water.

**3017 DRIVEWAYS**

Driveways must be impermeable pavements constructed from unit pavers or reinforced, uncoloured concrete, unless otherwise required in specific estate covenants or local Authority regulations.

The driveway must stop at the property boundary so that any installed public footpath is continuous and not cut by the driveway. Vehicle access over the verge to the kerb crossing, if installed as part of the scope of work, is to match the driveway and any local Authority requirements.

**3018 PAVEMENTS**

Impermeable pavement surfaces with subsurface preparation and base course as required for:

- o Minimum 800 wide pedestrian access linking front entry to driveway and letterbox; and
- o access from the laundry to the clothesline (a path to the clothes line as a continuous pavement with no steps).

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Use of permeable pavements is preferred wherever practical in any other areas where necessary. No mowing strip or pedestrian pavements around the house perimeter are required.

The path to a rotary hoist clothes line must be a minimum 800mm width and extend past the post. Wall attached clothes lines and extended clothes lines must have pavement underneath the lines and the pavement must extend 600 mm past the side furthest from the wall and the side adjacent to the path. Clothes line to have minimum 1 metre clearance to any obstruction.

**3019 FENCING & GATES**

Fenced Yard must meet the following requirements, unless other requirements are nominated in estate covenants or local Authority requirements:

- minimum one pedestrian (single), gate may be increased to double gate where specified by estate guidelines;
- all gates constructed to swing open to a minimum of 90 degrees;
- gates must not obstruct services;
- no side boundary fence forward of the wing fences, or the front building line;
- wing fences and gates located behind meter boxes;
- completed height 1.8m maximum (1.5m minimum) when measured from the adjacent finished ground levels; and
- base of the fence clear of ground surfaces, including mulch materials, for its entire extent, with a bottom gap no greater than 50mm.

Fences and gates must be designed with materials as per local conditions and practices. If timber is used, it must be durable and treated. Metal components must be galvanised or zinc and or powder coated e.g. steel posts, bracket fittings and nails. Posts and stays must have concrete footings designed to suit site specific conditions and functional requirements.

Fences and gates must be designed and constructed to last at least 15 years.

**3020 CONCRETE WORKS**


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**3021 CONCRETE SLAB FINISH**

Brickwork must extend to ground level with no slab edge shown.

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**3022 TERMITE TREATMENT**

A physical barrier system in addition to BCA requirements, compliant with relevant Australian standards. Liquid chemical treatments prohibited unless mandated by local Authority. Top-up systems not required, unless mandated by Local Authorities.

**3023 UTILITIES**

Concrete pads must be placed under the hot water system, water tanks, air conditioners and other externally located utilities.

**3024 COVERED OUTDOOR AREA**

Design and materials integrated with house, SW drainage and impermeable pavements. **Refer to regional requirements for where COA must be placed under the house roofline.** Where COA not under the house roofline, provide an impermeable roof. Finished surface pavement is impermeable with 1:100 slope away from the house (minimum standard is in-situ concrete with light broom finish).

**3030 MASONRY****3031 RETAINING WALLS**

Retaining walls must be included as part of the works where necessary to ensure outdoor spaces are functional and meet the gradient requirements detailed elsewhere. Retaining walls to be designed to AS 4678 - Earth Retaining Structures. Retaining wall materials must be robust masonry.

Retaining walls must have steps incorporated except when the upper area is not a children's play area and the wall is a crescent shape to allow access via the sides. The maximum is 5 risers per flight. Walls over 1.0m height must be certified by structural engineers and are to have integrated child safety barriers or handrails. Nominate location, construction details and top and bottom levels of walls and slopes. The use of natural stone (rocks) to form retaining walls is permitted. The materials must be finished in a colour to match the walls of the house or in an earth or vegetation colour.

The materials and construction must last at least 20 years.

**Design and construction specification for DHA residences****3040 CONSTRUCTION SYSTEMS**

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**3041 WALL FRAMING AND FACADES**

Contractor to nominate wall framing system .

**Some regions specify ceiling heights, refer to regional requirements.**

Garage exterior construction must be same materials as house; fully enclosed and secured. Garage interior construction may be either timber stud walls or engaged plers. Carport (where specified) must be attached to house.. Carport materials same as house.

Any façades must be consistent within the street but having diversity between each house.

**3042 ROOF TRUSSES**

Contractor to nominate type.

**3043 ROOFS**

Sheet colour bonded metal or tile.

**3044 EAVES**

Eaves minimum plate to fascia width of 450mm, or to meet local Authority and estate requirements. Materials, finishes and colour to coordinate with walls.

**Some regions specify greater fascia widths, refer to regional requirements.**

**3045 THERMAL INSULATION**

Insulating sheet materials and or batts as required to meet statutory energy and fire rating requirements.

**3046 WATERPROOFING/ WET SEALING**

Waterproofing required in all wet areas, in accordance with BCA. An accredited waterproofing contractor must be used.

There must be a minimum 7 year warranty on products and workmanship.

**3050 JOINERY**

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**3051 (A) KITCHEN**

Maximise storage and bench space, include cupboards overhead and under bench,

**Design and construction specification for DHA residences**

3 x cutlery drawer, no bulkhead to overhead cupboards required.  
 Separate pantry (cupboard) in or immediately adjacent to kitchen.  
 Bench tops: minimum standard laminate with edges pencil round or post formed.  
 Cupboard doors and drawers: minimum standard laminate with rigid thermoplastic (ABS) 1-2mm edge.  
 Cavities required for dishwasher, microwave (over bench), refrigerator (vented).

**3051 (B) VANITIES**

Bathroom vanity unit: minimum 900 mm length, with hand basin and storage cupboards underneath, all constructed of high moisture resistant sheeting/materials. Vanity unit with integrated basin is acceptable.  
 Ensuite: All inclusions as for Bathroom EXCEPT no bath, vanity nominal 900mm length.

**3051 (C) WARDROBES**
**Bedroom 1**

Wardrobe built-in (BIR) with sliding doors or walk-in (WIR) with either swing or sliding doors. Dimensions: hanging depth 700mm (plate to plate), hanging length 3000mm min, maximise full height hanging. Include shelf over head, plus minimum 2 x 4 shelves located in wardrobe. Refer to diagram in Appendix 1 for details.

**Other bedrooms**

Wardrobe built-in (BIR) with sliding doors, hanging depth 600 (plate to plate), hanging length 1500 min. maximise full height hanging. Include shelf over head, plus minimum 1 x 4 shelves located in wardrobe. Refer to diagram in Appendix 1 for details.

**3051 (D) CUPBOARDS & MISC JOINERY**

Linen cupboard must have a minimum of four shelves. Minimum width 1500 mm.  
 Coat cupboard must have a hanging rail, plus shelf over rail. Minimum width 700, minimum depth 600 mm.  
 Utility cupboard (where required) must have a high shelf. Minimum width 800mm.  
 Broom cupboard is to be located in Laundry, with high internal shelf. Minimum width 600mm. A dryer support board also to be provided in Laundry, W 800mm x H 800mm x D 19mm, high moisture resistant board sheeting screw fixed to wall, painted to match wall.

## Design and construction specification for DHA residences

**3060 DOORS & WINDOWS****3061 (A) DOORS**

Internal: Swing doors, hollow core. Sliding doors: Internal cavity sliders with jump proof roller track.

External: Solid core for all doors. Weather seal to bottom of doors only.

Door between garage and house is a solid core door. Door between garage and Fenced Yard is a weatherproof door. Where door from house to Fenced Yard is glazed, External sliding doors must be powder coated aluminium frame.

**3061 (B) DOOR SECURITY**

All doors leading from the house to the outside must have combined security / insect screens. Sliding doors must have powder coated aluminium frames fitted with interior expanded mesh.

**3061 (C) DOOR HARDWARE**

Solid core doors fitted with double cylinder deadlocks, all keyed alike.

Door between House and Garage fitted with double cylinder deadlock, keyed to solid core doors.

Security screen doors fitted with door closers, all locks keyed alike. No requirement for door closer on sliding doors.

Glass sliding doors, fitted with latch and double cylinder deadlock, all locks keyed alike.

Passage sets to all Internal doors (no ceramic or sharp pointed handles).

Privacy sets to bathroom, toilet, powder room and Bedroom 1.

All doors with stops or hold open devices.

All hardware must have a minimum 5 year warranty.

**3061 (D) ROLLER AND PANEL LIFT DOORS**

Roller or panel lift doors must be powder coated sheet metal colour coordinated with and visually recessive to house, walls, and roof. Access to street: Minimum requirement is single roller door (not automated). If double roller door or panel lift doors are used, automate and provide two handsets.

**3061 (E) WINDOWS/GLAZING**

Windows fixed and opening must have powder coated aluminium frames. All

**Design and construction specification for DHA residences**

opening windows must have insect screens to match security screens where security screens fitted.

Above Tropic of Capricorn, windows can be louvre style with built in insect screen and security bars, a proportion of powder coated aluminium louvres can be considered in lieu of glazing for privacy. Glazing above Tropic of Capricorn to meet WERS 2 stars cooling rating.

Obscure glazing minimum to all laundries, front door side panels, ensuite and bathroom. Where obscure glazing is used then window coverings are not required except in the ensuite and bathroom. No glazing for garage or garage door to Fenced Yard, unless security screens fitted as well.

**3061 (F) WINDOW FURNISHINGS**

All external glazing (except side windows to front door) to have blinds in light, neutral colours for privacy and light control, mounted internal to window reveals where possible. Maximum light block for bedrooms.

Wet areas: slim line (mini) Venetians, fixed at base.

All other areas must have Vertical blinds, polyester, rated at 100% block out, child safe chords and chainless bottom, with weights sewn into each blade.

**3061 (G) WINDOW SECURITY**

All opening windows to have either:

- security screens with powder coated aluminium frames with interior expanded aluminium mesh, or
- window locks (all keyed alike). Where evaporative cooling is installed, windows should be lockable in an open position.

**Refer to regional requirements as to which option applies.**

**3070 APPLIED FINISHES**

All external materials and finishes must be durable, robust and well constructed and not requiring regular maintenance such as painting. Interior design schemes must be with materials and finishes that are robust to ensure reduced costs over the whole lifecycle of the house.

**3071 PLASTERING**

Affix plaster board internally to stud wall and ceiling batten system and or single

**Design and construction specification for DHA residences**

skin masonry as per manufacturer's specification, then sealed by paint systems. For all internal wet areas the minimum is water resistant plasterboard with paint systems.

Install plasterboard sheeting on all stud walls within garage.

**3072 EXTERNAL RENDER**

Patch coat and top coat with mineral/polymer based system applied as per manufacturers recommendation with texture finish minimum of 1.5mm thick, then sealed with paint system.

**3073 CERAMIC TILING**

Ceramic Tiles - non porous, non slip with coloured sealant as necessary to joints with kickboards and skirtings + metal join strips to adjoining surfaces if levels are not flush.

**Skirtings:**

- Bathroom & ensuite: skirting 150mm
- Baths 600 mm above the top of the bath.
- Shower recess: 2000mm minimum.
- Toilet: skirting 150mm minimum.
- Laundry: skirting 150mm and over tub 450mm minimum.

Laundry, Bathroom, graded to floor waste with grate to meet BCA requirements

**3073 (A) NORTH OF TROPIC CAPRICORN**

Ceramic floor tiles to all bedrooms, living areas, and wet areas.

**3073 (B) SOUTH OF TROPIC CAPRICORN**

Ceramic floor tiles to all areas except bedrooms and separated Dining, Lounge, and COA.

**3073 (C) SPLASHBACKS**

Kitchen splashback (from bench to underside of over head cupboards), either ceramic or glass tiles or stainless steel.

Bathroom, Ensuite, and Powder Room splashbacks must meet mirror.



**Design and construction specification for DHA residences****3074 PAINTING****3074 (A) INTERNAL**

The pallet of interior colours, materials and finishes should be contemporary and timeless in style with an emphasis on neutral tones to accommodate the furnishings of tenants. Coloured paints must be prepared by the manufacturer from a recognised colour pallet, and as per the colour schedule approved for the contract. Excessive use of grey tones should be avoided. No mixing of colours on-site.

Paint system is primer/undercoat plus 2 coats. Coats to be applied as per manufacturer's directions to achieve recommended dry film thickness. If paints are applied by spraying, the top coat must be rolled.

Cellings – white, flat.

Walls – wash and wear low sheen.

Trims & architraves – gloss or semi gloss.

Doors – gloss or semi gloss to all vertical surfaces; top & base to be primer plus minimum one coat.

Wet areas (including their cellings) – wash and wear semi gloss.

**3074 (B) EXTERNAL**

External high quality domestic systems fit for purpose, with primer/undercoat plus 2 coats.

Walls – matt or low sheen; doors and trim – gloss.

**3075 CARPET AND UNDERLAY**

Carpet only installed South of Tropic Capricorn to all areas not tiled. Carpets must be a minimum four star rating (residential) as set out the Australian Carpet Classification System (ACCS). Underlay to be minimum 7.5mm thick for rubber, 9mm thick for foam.

Carpet and underlay must have a minimum 5 year warranty.

**3080 SPECIALTIES****3081 WHITE GOODS**

Cooktop – 4x positions, mandatory gas where gas is reticulated.

Overhead range hood with exhaust fan and light that is directly externally vented.

**Design and construction specification for DHA residences**

Electric oven: 600mm width with minimum 55 L capacity. Must, as a minimum, have timer and fan forced cooking mode.

Appliances must have a minimum 2 year warranty, access to spare parts and warranty service is crucial.

**3082 TOILETS**

Toilets required for Toilet, Ensuite and Powder Room (when Powder Room is specified). Dual flush 6/3 litre cisterns.

All toilets must have a minimum 2 year warranty.

**3083 SHOWER**

Separate recess min. 900 x 900mm. Screen frame chrome / powder coated metal, with pivot door.

**3084 TAPWARE**

**Kitchen:** Stainless steel sink 1080 nominal length, one and half bowls, single side drainer, plug, single flick mixer tap.

Cold water connection to dishwasher, include capped perforations to carcass panel to facilitate service connections.

**Laundry:** Swivel spout, separate hot and cold water taps outlets to wash tub and separate connections for washing machine. Wash tub in a cabinet, 70 L (45L in medium density) capacity, washing machine by-pass drain, and plug.

**Shower:** Contractor to nominate tapware; no sharp edges.

**Bathroom:** Bath min. 1500mm long. contractor to nominate tapware.

**When Powder Room specified:** Provide hand basin with plug, (vanity unit with integrated basin is acceptable).

Contractor to nominate other tapware not detailed. All tapware must be minimum 3 star WELS rating with a minimum 2 year warranty.

**3085 MISC SANITARY FITTINGS**

Bathroom & Ensuite towel rail(s): Double rail, chrome or powder coated metal, min. 900mm length (to fit 2 large towels).

Towel ring for Ensuite, and Powder Room (when Powder Room specified).

Materials: chrome or powder coated metal.

Soap holder/recess for Bath and Shower.

Toilet roll holder for every toilet installed. Materials: Chrome or powder coated metal to match bathroom fittings. Plugs required for all sinks.

**Design and construction specification for DHA residences****3086 MIRRORS**

Bath & Ensuite mirror: Placed above vanity, sized to be full width of vanity and height aligned with top of shower screen.

Bedroom 1 mirror: Minimum width 400mm x height 1200mm.

When Power Room is specified, place mirror over hand basin.

**3087 CLOTHESLINE**

The clothes line should not be visible from the street and must be near as practicable to the laundry door. The clothes line should receive sunlight for most of the day in temperate climates, and be shielded from the sun in tropical climates.

Clothesline must have minimum 33 lineal metres of unobstructed hanging length, Contractor to nominate type of line (rotary hoist preferred where space allows).

**3088 LETTER BOX**

The letterbox must be directly accessible on pavements from the front door and or driveway. Australia Post approved type and position of letter box (located on the street address side of the house and just inside property boundary), sturdy construction and have large metal number(s) fixed to street face. As a minimum, must have provision for a padlock.

**3089 STORAGE SHED (WHEN PROVIDED)**

A storage shed must be provided when storage is not provided in the Garage or Carport. Storage shed must be powder coated sheet metal, waterproof, with access door that has provision for a lock, located within Fenced Yard. The shed must be fixed down to a rebated concrete slab or footings to local requirements.

**3090 MECHANICAL SERVICES**

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**3091 HOT WATER SYSTEMS**

Natural gas should be used where reticulated. Install one of the following:

Instantaneous gas system sized for house (locations with reticulated gas);

Gas –min storage 135L (locations with reticulated gas);

Gas/solar hybrid- min storage 180L (locations with reticulated gas);

Solar –min storage 300L with electric booster (locations without reticulated gas);

Solar – heat pump, min storage 250L.

**Design and construction specification for DHA residences****3092 HEATING**

The requirements for active (powered) heating vary around Australia.

**Refer to regional requirements as to which option applies.**

Where heating is specified and rooms and specific rooms are not nominated, all Bedrooms, Living Areas, Wet Areas (except the Laundry) are to be heated.

Where placement of the units and the enclosure is in a constructed housing or within wing walls, the location of units and the enclosure must be marked on the house plans to be submitted to council. If mechanical units are located within the roof space, the Contractor must provide a suitable platform/walkway and a light for ease of maintenance.

All units must comply with noise level restrictions applicable in the jurisdiction.

All systems must be a minimum 5 star energy rating. All products and systems must be selected to be robust, with minimum 5 year warranties, and have maintenance service (call out) available in that location.

**3093 COOLING**

**Refer to regional requirements for cooling systems applicable.**

Systems serving bedrooms must have a minimum five star rating for cooling. Reverse systems dedicated to shared rooms must be a minimum of five stars for cooling except where such units are not commercially available, and then a minimum energy rating of four stars for cooling applies (there is no relaxation of the requirement on the overall house energy rating as a result). All units must comply with noise level restrictions applicable in the jurisdiction.

Warranty to be a minimum of three years on parts.

**3094 WATER TANKS**

Water Tanks are not a mandatory item. If nominated in the house configuration, supply and install as a minimum:

- 5000 litre plastic tank with colour to match house;
- first flush diverter, stopcock fitted to tank base and upturned; and
- pump, with pump guard

Catchment to be a minimum of 35% of roof area.

## Design and construction specification for DHA residences

**3095 HOSECOCKS**

Install 2 wall mounted taps (hosecocks), with 1 per yard area.

**3100 ELECTRICAL SERVICES**

Provide all electrical works necessary with installation by certified installer.

**3101 POWER**

General purpose outlets (GPO) to be installed as listed below:

**Living:** Kitchen x2 plus 1 in either the kitchen island bench or kitchen return, dining x1, lounge x2, hall x1, study x1, meals x1, rumpus x2, family x2;

**Bedrooms:** Bedroom 1 x2, other bedrooms x2;

**Wet Areas:** Bathroom x1, Ensuite x1, Laundry x1, Powder room x1.  
Cavities with power points for dishwasher, microwave (over bench), refrigerator (vented);

**External:** COA 'weather proof' x1, Garage or Carport x 1.

For any rooms not listed, install a minimum of one GPO per room.

All GPOs to be double, except appliances hardwired or requiring a dedicated GPO, including refrigerator, dishwasher, microwave, air conditioning, hall, HWS, garage door motors, water tanks, reticulation units and heating units.

**3102 EXTERNAL LIGHTING**

Lights suitable for external use (e.g. bunker style), with all components and switches, eaves or soffit mounted to provide adequate light levels to following minimum areas: 1x front door, 1x laundry door, 1x clothes line area. COA to have fluorescent lights.

**3103 INTERNAL LIGHTING**

All fixtures, fittings, levels of illumination and colour rendering to be fit for purpose for the size and function(s) of the room. Lights must be provided with batten holders and shades. Provide two-way switching where appropriate (hallways and living areas). Use only down lights (2 off) where ceiling fans to be installed (to avoid strobe effect).

**3104 VENTILATION**

Install 1x exhaust fan for both Bathroom and Ensuite. All exhaust fans separately

**Design and construction specification for DHA residences**

switched from lights unless required by BCA.

**Refer regional requirements for when ceiling fans are included.**

All ceiling fans to have variable speed control. Where COA requires a circulation fan, the ceiling and mounting height is to be min. 2700mm.

**3105 TV SYSTEMS**

Television: Minimum 2 outlets provided adjacent to GPOs in Lounge and Family, located to suit indicative furniture layout.

TV aerial (antennae): Installed and located to achieve good quality reception for all free air TV stations to suit both analogue and digital reception (gutter mounted aerials not permitted).

**3106 TELEPHONE SYSTEMS**

Contractor to connect telephone and pay all fees associated with connection, and minimum 2 phone outlets, provided adjacent to GPOs in Kitchen and Bedroom 1,

**3107 SMOKE DETECTORS**

Installed to meet Australian standards.

**3110 SOFT LANDSCAPING**

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**3111 GENERAL**

The landscape design documents must be prepared by a qualified landscape contractor. The Contractor must allow for the production of the landscape documents as part of the Lump Sum. The construction of the landscape works must be undertaken to meet industry standards by a qualified landscape contractor.

**The only earthworks to be undertaken as soft landscaping is the shaping and cultivation associated with plant beds and grass.**

**3112 GROUND PREPARATION**

Prior to undertaking any landscape works the block must be appropriately prepared for the intended surface treatments and plants. Where there is insufficient quality or quantity of stockpiled site topsoil, areas must have imported topsoil blended to make up quantities required. Prior to placement of soil additives or topsoil, all weeds must be sprayed or removed and the ground must then be

**Design and construction specification for DHA residences**

ripped and cultivated to achieve de-compaction to the depths to enable plant growth.

**3113 GRASS PREPARATION**

Remove or kill weeds and grasses on site prior to cultivation. Areas to be grassed to be ripped to minimum 150mm depth and rock picked.

Topsoil for grass - minimum 100mm depth, comprised of stockpiled site topsoil spread to 50mm depth if available, plus imported topsoil

Final shaping and cultivating to minimum 100mm depth with addition of soil additives prior to turfing, seeding or stolon sprigging.

**3114 GRASS**

Grassed areas to be turfed. Turf not mandatory outside the property boundaries. Nominate species and cultivar and provide certification for supply source.

Grass - species and cultivar plus method (turf, seed, stolons) to be nominated and provide certification for supply source.

All lawn grass species must suited to the climatic area. Summer active grass must be planted in summer; winter active grass must be planted in winter. Supply should be weed free. Area within property boundaries must be fully established on completion of the 4 weeks establishment period.

**3115 PLANTS**

**Preparation:** Areas to be planted to be ripped to minimum 150mm depth and rock picked. Stockpiled site topsoil or imported topsoil to be respread to minimum 300mm depth.

Plants must be resistant, native to the area, suitable for the soil type and climate, hardened off, of good form consistent with species or variety, free from disease and insect pests, with healthy roots and shoots and no evidence of having been restricted or damaged.

Plants that have a short life, less than 10 years, must be avoided or minimised. Climbing plants must not be planted against walls and fences. Plant beds must not be placed against house walls.

Spacing of plants must achieve a 'semi-mature look', ie fully covered plant beds, after five years growth and 'established look' after 15 years growth. Plants that

guidelines must be used.

Planting includes excavation of plant holes, placement of soil additives, staking and tying as required and construction of watering basins as part of backfilling.

### **3116 TOPSOIL**

Remove or kill weeds and grasses prior to respreading of stockpiled site topsoil to areas to be grassed and or planted. Certification of imported topsoils is required for supply source and composition. Fertilisers - type and quantity of soil additives are to suit site specific conditions and plants proposed, Nominate specific products such as fertilisers, composts plus additives such as water absorbing crystals, soil wetters and minerals.

### **3117 EDGE STRIPS**

Edge strips must be installed between lawn and plant beds, and between lawn and gravel pavements. All edge strips must be constructed to finish flush with surrounding surfaces and where adjacent to grass, must serve as a mowing edge and inhibitor of grass crossing into adjacent areas.

Edge strips – timber 50mm width x 75mm depth and or masonry (in-situ concrete or unit pavers on a mortar bed) 75mm width x 100mm depth. Edge strips to be constructed to finish flush with surrounding surfaces.

### **3118 MULCH**

All areas, except for lawns and pavements, must be mulched plant beds. Mulch must be placed as the finished surface treatment to all garden beds. Organic mulch products must be a weed free product. Inorganic mulches, such as washed gravel or pebbles may be used.

Mulched areas to be minimum 75mm thickness for wood based system, minimum 50 mm for gravel or pebble based system. Supply should be weed free, and provide certification as to type, supply source, composition.



will commence for plants and lawn. The Contractor must undertake all work during this Period to ensure the plants and lawn's healthy and continued growth.

This work may include, but is not limited to: replacement of dead/dying plants or lawn, topdressing, weeding, staking, pruning/ tying, mowing, fertilising and watering, all activities as relevant to the season. The Contractor must supply and apply at their cost adequate water to plants and lawns during the Period. All local water restrictions apply.

The Period continues for duration of four (4) weeks. If more than 20% of either the plants or the lawn is replaced within the first two (2) weeks of the Period, the Period will extend. The Period will extend until:

- 80% of either the plants or the lawn areas have been in place for four (4) weeks; and
- any replaced items have been in place for two (2) weeks.

No additional payment is due for any costs incurred by the Contractor for the extension of the Period.

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#### **4000 PRACTICAL COMPLETION**

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At the Practical Completion inspection, the Contractor must have:

- the house and site cleaned (inside and out) to a standard sufficient for tenants to move in;
- all temporary fencing removed;
- any damage of public and/or private land/or property adjacent to the site repaired;
- any verge restoration (if required) completed;
- telephone connected and working; and
- all services including electricity, gas, water, sewer connected, approved and tested ready for occupation.

As part of the requirements for Practical Completion, the Contractor must provide to DHA the following documents and items:

- A 'folder' (to stay in the house) with appliance (or fittings) manuals and the house telephone number;
- Two (2) complete sets of keys each on three (3) separate key rings that have labels for purpose plus the address (lot and house number):
  - Key ring 1 all external doors including security screens
  - Key ring 2 all windows
  - Key ring 3 garage, letterbox (and any others); and
- Certificates and plans:
  - Occupancy Certificate from relevant body or approved Private Certifier
  - Building Certificate from relevant body or approved Private Certifier AccuRate (or equal) certificate
  - Termite treatment warranty and certificate
  - Truss manufacturer certificate
  - Structural Design compliance and inspections, incl. retaining walls if required
  - Plumbing and Gas certificate
  - Electrical certificate
  - Waterproofing certificate
  - "As constructed" version of plans for site, house, electrical, landscape
  - "As constructed" house survey ( house outline and block boundaries)
  - Glazing certificate
  - Insulation certificate (not applicable for Darwin)
  - Clean fill certificate

All requisite appliance guarantees / warranties (paper or electronic), must be filled in and nominating Defence Housing Australia as the beneficiary and must be dated as per day of installation (not purchase date).

Documents must be supplied in the handover folder and clearly labelled.

Upon Practical Completion certification, the telephone, electricity and gas accounts

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must be terminated by the Contractor to allow connection by the tenant.

## 5000 DEFECTS LIABILITY

Within the Defects Liability Period, DHA will advise the Contractor of defects as they arise.

Defects affecting health, safety or security must be rectified within 24 hours and all other defects must be rectified within 10 business days.

## 6000 REGIONAL REQUIREMENTS

### 6010 SOUTH AUSTRALIA

ITEM	REQUIREMENT
<b>Adelaide</b>	
Heating	RC gas ducted heating (minimum two zones). Ducted heating and ducted evaporative cooling may be provided as an equivalent alternative. For Bathrooms and ensuites, heating to be other than infrared lamps embedded within ceiling fans.
Cooling	Minimum ducted evaporative cooling. RC split system air conditioning may be provided as an equivalent alternative.
Security	Locks to all opening windows.
<b>Adelaide Hills</b>	
Heating and Cooling	Reverse cycle split system Bedroom 1 and living rooms plus ceiling fans to bedrooms and other living rooms. For Bathrooms and ensuites, heating to be supplemented via infrared lamps embedded within ceiling fans.
Security	Locks to all opening windows.

### 6020 VICTORIA AND TASMANIA

ITEM	REQUIREMENT
<b>Melbourne, Sale, Frankston, Queenscliff</b>	
Heating	Ducted heating. RC split system air conditioning may be provided as an equivalent alternative. For Bathrooms and ensuites, heating to be supplemented via infrared lamps embedded within ceiling fans.
Cooling	Ceiling fans to bedrooms and living rooms. Ducted evaporative

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	cooling may be substituted in place of ceiling fans to all bedrooms and living areas.
Security	Locks to all opening windows.
<b>Puckapunyal</b>	
Heating	Ducted heating. RC split system air conditioning may be provided as an equivalent alternative. For Bathrooms and ensuites, heating to be supplemented via infrared lamps embedded within ceiling fans.
Cooling	Ducted evaporative cooling. RC split system air conditioning may be provided as an equivalent alternative
Security	Locks to all opening windows.
<b>Tasmania</b>	
Heating and Cooling	Minimum reverse cycle split system to living rooms plus panel heating to bedrooms.
Security	Locks to all opening windows.

**6030 ACT**

ITEM	REQUIREMENT
<b>Canberra &amp; Queanbeyan</b>	
Heating	Ducted heating. RC split system air conditioning may be provided as an equivalent alternative. For Bathrooms and ensuites, heating to be supplemented via infrared lamps embedded within ceiling fans.
Cooling	Minimum ducted evaporative cooling. RC split system air conditioning may be provided as an equivalent alternative.
Security	Security screens to all opening windows.

**6040 NSW**

ITEM	REQUIREMENT
<b>Armidale &amp; Tamworth</b>	
Heating	Ducted heating. RC split system air conditioning may be provided as an equivalent alternative. For Bathrooms and ensuites, heating to be supplemented via infrared lamps embedded within ceiling fans.
Cooling	Minimum ducted evaporative cooling. RC split system air

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	conditioning may be provided as an equivalent alternative.
Security	Security screens to all opening windows.
<b>Hunter &amp; Northern NSW</b>	
Heating/Cooling	Reverse cycle split system Bedroom 1 and living room plus ceiling fans to bedrooms and other living rooms.
Security	Security screens to all opening windows.
<b>Nowra</b>	
Heating	1x relocatable 25mj gas heater with bayonet connections to living rooms (incl. associated GPO).
Cooling	Ceiling fans to bedrooms and living rooms.
Security	Locks to all opening windows.
<b>Riverina</b>	
Heating	Ducted heating. RC split system air conditioning may be provided as an equivalent alternative. For Bathrooms and ensuites, heating to be supplemented via infrared lamps embedded within ceiling fans.
Cooling	Minimum ducted evaporative cooling. RC split system air conditioning may be provided as an equivalent alternative.
Security	Locks to all opening windows.
<b>Sydney &amp; Blue Mountains</b>	
Heating/Cooling	Reverse cycle split system Bedroom 1 and living rooms plus ceiling fans to bedrooms and living rooms.
Security	Security screens to all opening windows.

**6050 SOUTH EAST QUEENSLAND**

ITEM	REQUIREMENT
<b>Brisbane &amp; Ipswich</b>	
Heating/Cooling	Reverse cycle split system Bedroom 1 and living rooms plus ceiling fans to bedrooms and living rooms.
Security	Security screens to all opening windows.
<b>Toowoomba</b>	
Heating/Cooling	Reverse cycle split system Bedroom 1 and living rooms plus ceiling fans to bedrooms and living rooms.
Security	Locks to all opening windows.

**Design and construction specification for DHA residences**

**6060 NORTH QUEENSLAND**

ITEM	REQUIREMENT
<b>Townsville, Rockhampton &amp; Cairns</b>	
Ceilings	Internal ceiling height must be a minimum 2700mm.
Drainage	All down pipes to be directly connected to the stormwater system.
Cooling	Refrigerated air conditioning (central or split system) plus ceiling fans to bedrooms and living rooms.
Security	Security screens to all opening windows.
COA	COA to be placed under roofline. Circulation fan required.
Eaves (Soffit)	Eaves width minimum 900mm, plus to meet DHA shade expectations plus local Authority and estate requirements, with materials, finishes and colour to coordinate with walls.

**6070 WESTERN AUSTRALIA**

ITEM	REQUIREMENT
<b>Perth &amp; Geraldton</b>	
Heating	1x relocatable 25mj gas heater with bayonet connections to living rooms (incl. associated GPO).
Cooling	Minimum ducted evaporative cooling. RC split system air conditioning may be provided as an equivalent alternative.
Security	Supply and fix security screens to all opening windows.
<b>Karratha &amp; NW Region</b>	
Ceilings	Internal ceiling height must be a minimum 2700mm.
Cooling	Refrigerated air conditioning (central or split system) plus ceiling fans to all bedrooms and living rooms.
Security	Security screens to all opening windows.
COA	COA to be placed under roofline. Circulation fan required.
Eaves (Soffit)	Eaves width minimum 900mm, plus to meet DHA shade expectations plus local Authority and estate requirements, with materials, finishes and colour to coordinate with walls.

**6080 NORTHERN TERRITORY**

ITEM	REQUIREMENT
<b>Darwin</b>	
Ceilings	Internal ceiling height must be a minimum 2700mm.

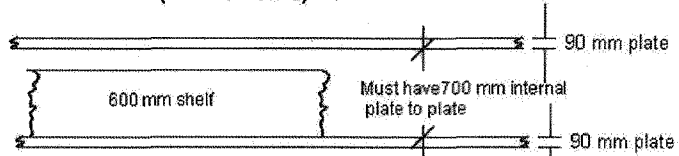
Design and construction specification for DHA residences

Drainage	Roof guttering over entry ways, with associated SW management. Any down pipes to be fitted with 2 x 45 degree elbows at the bottom to ensure SW is discharged with minimum 75mm clearance between elbow and surface of gully pits
Cooling	Refrigerated air conditioning (central or split system) plus ceiling fans to bedrooms and living rooms.
COA	COA to be placed under roofline. Circulation fan required.
Security	Security screens to all opening windows.
Eaves (Soffit)	Eaves width minimum 900mm, plus to meet DHA shade expectations plus local Authority and estate requirements, with materials, finishes and colour to coordinate with walls.
Carport and Storage OR Garage	Either carport with secured storage shed or a garage- provided that the garage sufficient ventilation to ensure temperature inside is not greater than ambient external temperature; with natural light including secure storage area.
<b>Katherine</b>	
Ceilings	Internal ceiling height must be a minimum 2700mm.
Drainage	Roof guttering over entry ways, with associated downpipes. All down pipes to be fitted with 2 x 45 degree elbows at the bottom to ensure SW is discharged with minimum 75mm clearance between elbow and surface of gravel filled soakage pits.
Cooling	Refrigerated air conditioning (central or split system) plus ceiling fans to all bedrooms and living rooms.
COA	COA to be placed under roofline. Circulation fan required.
Security	Security screens to all opening windows.
Eaves (Soffit)	Eaves width minimum 900mm, plus to meet DHA shade expectations plus local Authority and estate requirements, with materials, finishes and colour to coordinate with walls.
<b>Tindal requirements as for Katherine except</b>	
Security	Insect screens to all opening windows.
<b>Alice Springs</b>	
Cooling	RC split system air conditioning Bedroom 1 and living plus ceiling fans to all bedrooms and living rooms.
Security	Security screens to all opening windows.
Eaves (Soffit)	Eaves width minimum 900mm, plus to meet DHA shade expectations plus local Authority and estate requirements, with materials, finishes and colour to coordinate with walls.

**APPENDIX 1 WARDROBE DETAILS**

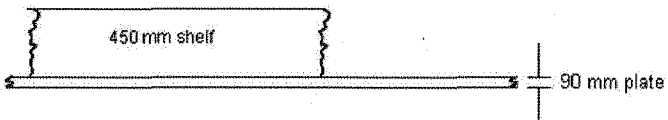
(not to scale)

Bedroom 1  
Built in wardrobe  
plan view

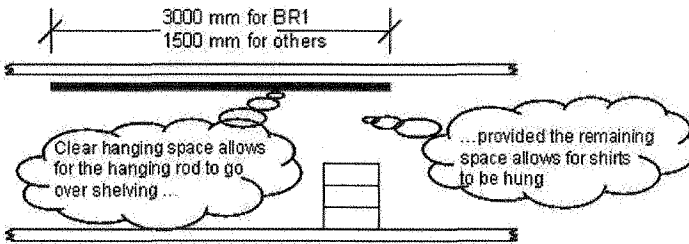


Note: sheeting dimensions reduce the 700mm to 680mm as finished

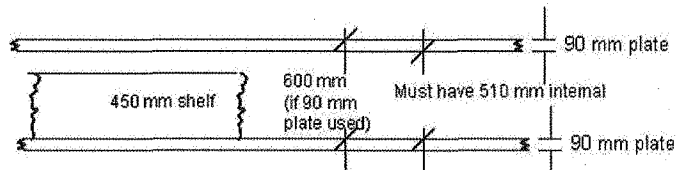
Bedroom 1  
Walk in wardrobe  
plan view



Bedroom  
wardrobe  
elevation



Bedroom 2,3,4  
Built in wardrobe  
plan view



Note: sheeting dimensions reduce the 510mm to 490mm as finished