

Supplementary information

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- Item 13 Neighbourhood map
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- Item 15 Landscape plan
- Item 16 Design and construction specifications for DHA residences

Attachment to Submission No. 1

(Muirhead)



Date: 10/02/2011



Supplementary item 1

Site location maps



LEGEND

-  Parks / Reserves
-  Roads / Highways

-  Property Boundary
-  Suburbs

Scale 1: 140,000






Supplementary item 2

Aerial photograph of the site



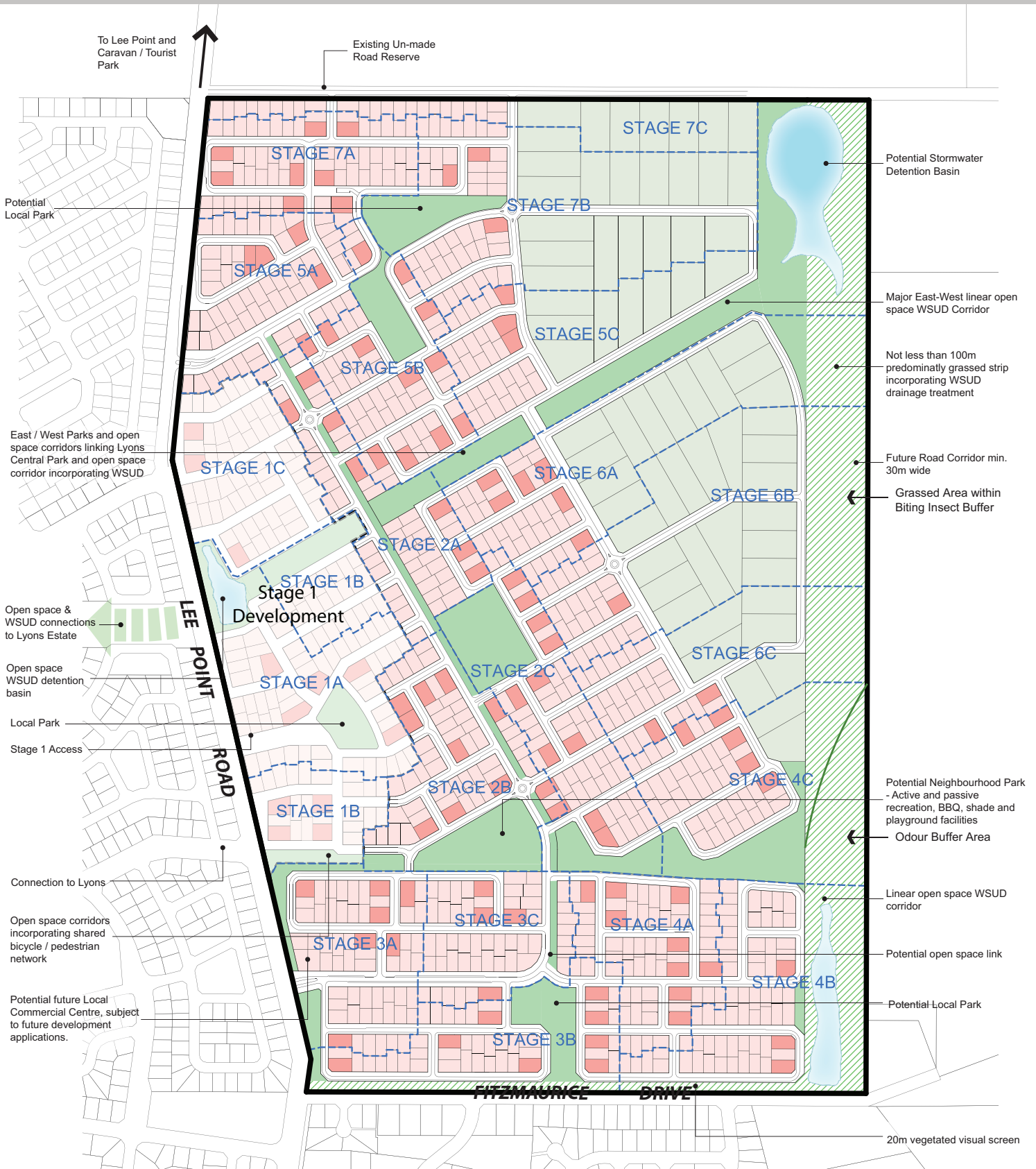
LEGEND

-  Contours
- 28 Contour Height

-  Property Boundary
-  Cadastre

Scale 1: 22,000



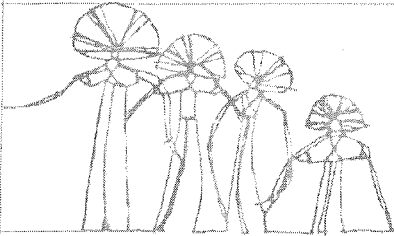


DEVELOPMENT SUMMARY BALANCE SD23:

Land Budget	Area (m ²)	Area (ha)
Local Park	221,767	22.18
WSUD (Drainage)	115,845	11.58
Residential	832,097	83.21
ROAD - Development	317,095	31.71
TOTAL	1,486,804	148.68
SD23 Zone Requirements	Area (m ²)	Area (ha)
Grassland Strip	155,126	15.51
ROAD - Eastern Bypass	48,292	4.83

LEGEND:

- Single Dwelling Residential
- Multiple Dwelling Residential
- Public Open Space
- 4000m² + Lots
- Grassed Area/Odour Buffer/Vegetation Screen



ABORIGINAL AREAS PROTECTION AUTHORITY

GPO BOX 1890
DARWIN NT 0801
TELEPHONE: 08 8981 4700
FACSIMILE: 08 8981 4169
EMAIL: enquiries.aapa@nt.gov.au

File: D89/199; 90/312

In Reply Please Quote: 65488

Defence Housing Australia Northern Territory Government
26 Brisbane Avenue
Barton ACT, 2600

Attention: ROGER BOLLEN

RE: ISSUE OF AUTHORITY CERTIFICATE FOR MUIRHEAD SUBDIVISION

I refer to your application for Authority Certificate received on the 13th November 2008 for the above location.

Accordingly, under the powers delegated to me under Section 19 of the *Northern Territory Aboriginal Sacred Sites Act 1989* I am pleased to issue the attached Authority Certificate.

Please read carefully the conditions outlined in the Certificate. In particular, you should note that it has been issued for an indefinite period of time, providing that the works covered by the Certificate start within the period stipulated in condition 3.

You should also note that the Authority has issued you with two identical copies of digitised maps attached. One copy should be retained with your original Certificate. The second is supplied for use by contractors to avoid unnecessary photocopying of a colour coded document.

Please note that the cost of this Authority Certificate will be **\$1040.00** and an invoice will be issued to you by the Department of Business and Employment (DBE). The terms and conditions of the invoice will require you to make payment within 30 days of receipt.

If you have any further queries regarding this Authority Certificate please contact Gareth Lewis on 89824227.

Yours faithfully,

DR BEN SCAMBARY
Chief Executive Officer

13 March 2009



Australian Government
Department of Defence
Defence Support Group

Minute

Director Relocation & Housing
Garrison Estate & Business Support
Campbell Park Offices (CP3-7-062)

DRH/OUT/2010/182

Mr Peter Howman
Chief Operating Officer
Defence Housing Australia
26 Brisbane Avenue
BARTON ACT 2600

Dear Mr Howman,

Muirhead Development Darwin

Thank you for your recent briefing presentation on the development of Muirhead. I strongly support the proposed plan developed by Defence Housing Australia (DHA).

Over the next five years, supply of housing in the Darwin area will become critically important due to the need to replace housing at RAAF Darwin and Defence Establishment Berrimah. These houses are being replaced because of their age and proximity to flight path exclusion zones.

The proposed development at Muirhead will be ideally suited to house members posted to Darwin Bases as it is a short distance to the base and has easy access to community facilities like schools, shops and public transport. Defence have been briefed on DHA's plans to provide these houses and is satisfied that they will meet our provisioning expectations.

I am confident that the accommodation DHA proposes to construct will be very popular with ADF members and their families who work in Darwin. It will greatly assist Defence meeting its obligations to provide community standard housing for Defence families.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Alan McClelland'.

Alan McClelland
Director Relocations and Housing
(02) 6266 3114

27 October 2010



Defence Families of Australia
CP2 – 1 – 11
Campbell Park Offices
Canberra ACT 2600

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

2/11/2010.

Dear Michael

Thank you for the presentation on the Lawson project that I recently received from your project director, Mr. James Wallace.

As you know, it is important for Defence families to be located in service housing that is in-keeping with Defence Requirements, that also provides a backyard and proximity to work location. Access to schooling, amenities, and work opportunities for the family members is also important. My understanding from this presentation is that the development of housing at Lawson will be in-keeping with these areas of importance for families.

Therefore, so long as this development will not negatively impact on individuals intended to reside in this area, Defence Families Australia supports the Lawson project as presented at this time, and would welcome updates on its progress.

Yours Sincerely,

Julie Blackburn
DFA National Convenor
Ph: 0410 626 103
Email: julie.blackburn1@defence.gov.au





Our ref EN2010/0153
Your ref

Environment, Heritage and
The Arts Division
Level 2, Darwin Plaza
41 Smith Street, Darwin
Postal address PO Box 496
PALMERSTON NT 0831
Tel 08 8924 4135
Fax 08 8924 4053
Email matt.darcey@nt.gov.au

Neil Morris
General Manager of Development and Construction
Defence Housing Australia
26 Brisbane Avenue
Barton ACT 2600

Dear Mr Morris

**RE: Notice of Intent – Muirhead Planned Community Lot 9737 Town of Nightcliff;
Defence Housing Australia.**

Reference is made to your Notice of Intent (NOI) submitted to the Department of Natural Resources, Environment, the Arts and Sports (NRETAS), Environment and Heritage (EH) Division on 27 May 2010 for the proposed development of a planned residential community at Muirhead, Lee Point. Following a review of the proposal, I am of the opinion that the proposed development does not require formal assessment under the *Environmental Assessment Act*.

The NOI states that Defence Housing Australia (DHA) are committed to creating a sustainable, economically viable and affordable master planned community that incorporates climatically and socially responsive breezeway and greenway concepts. The EH Division would encourage DHA to follow through with the sustainable design vision and incorporate the Territory 2030 principles into the Muirhead development.

The EH Division is satisfied with the extent of consideration and evaluation the consultant has made of potential environmental impacts from the entire Muirhead development. However, various issues have been recognised by Northern Territory Government Agencies during review of the NOI and hence the following comments have been made:

Sustainability

- Given DHA's commitment to sustainable development, it is recommended that a Sustainability Management Strategy be developed and made public for the entire Muirhead development.
- This plan could detail pre and post construction initiatives that Muirhead will establish, realising its potential to lead the way in sustainable industry standards in areas such as:
 - passive building design,
 - streetscape connectivity,
 - locally sourced materials and labour,
 - provision of community shopping, recreation and sporting facilities,

- public transport and bikeway implementation,
 - energy efficient housing design,
 - habitat provision for native fauna,
 - water sensitive urban design, and
 - incentives for solar heating and rainwater tanks.
- A Sustainability Management Strategy can propose a plan of action to ensure that these initiatives are addressed well into the future, thereby providing a sense of ownership for both the Darwin community and DHA in realising sustainable development. The purpose of this strategy might be to manage the cumulative impacts of the development post-construction, and educate the community on the sustainable living goals set out in Territory 2030.
 - The building covenant that is provided to potential owners of Muirhead subdivided parcels should specify the goals of DHA so that this sense of ownership is realised not only at a suburb level but also at an individual parcel level. If the intentions of DHA are to lead the building industry into sustainable design, then DHA should ensure that this vision is communicated to landowners before the subdivided land has been sold.

Stormwater Management and Water Sensitive Urban Design

- The large size of the Muirhead development raises concern that increased impervious surfaces will result in a build up of pollutants and a higher rate of water runoff. Water Sensitive Urban Design (WSUD) is important for managing heavy metals, hydrocarbons, total suspended solids (TSS), total phosphorus (TP) and total nitrogen (TN) in Darwin's storm water discharge. Studies on Darwin Harbour illustrate that pollutant build up in residential suburbs during the dry season results in high pollutant loads being transported in runoff in the early part of the Wet season.
- Monitoring of pollutant loads in nearby waterways before construction is essential for understanding and managing the impacts that stormwater discharge may have when Muirhead is an occupied suburb. DHA's commitment to obey the Subdivision Development Guidelines 2005 (stormwater drainage design) set out by the Darwin City Council is encouraged. However, DHA has expressed that vegetated street swale systems will not be used. Rather, stormwater will be drained away from the street setting to an offsite accumulation and detention area, most probably an open grassed space. The use of attenuation/detention basins to limit post development peak discharges off site is supported with the incorporation of Water Sensitive Urban Design (WSUD) to ensure water quality is also optimised prior to leaving the site. However, the size of decentralised detention/accumulation basins and drainage methods required for such a large area should be approved by the appropriate officer from the Department of Lands and Planning (Contact Phill Piper: Director Major Projects, Infrastructure).
- NRETAS also reminds the proponent that Buffalo Creek drains into the Shoal Bay - Vernon Islands Beneficial Uses area. This has been legislated as a beneficial use for Aquatic Ecosystem Protection and Recreational Water Quality and Aesthetics under the NT *Water Act 1992*.

Erosion and Sediment Control

- The NOI states that an Erosion and Sediment Control Plan (ESCP) will be prepared to minimise erosion and sediment transport from the site due to runoff of surface waters. This plan is important for managing sediment in Wet season runoff during construction on the already highly modified Buffalo Creek system.
- It is strongly recommended the ESCP is developed and approved by the Natural Resources Division of NRETAS prior to the commencement of any works, and subsequently implemented to the satisfaction of the Consent Authority on advice from the Natural Resources Division. The plan should detail but not be limited to drainage methods and treatments for minimising erosion and subsequent sediment loss from the site both during the construction and post construction phases.
- Information regarding erosion and sediment control is available from NRETAS at: www.nt.gov.au/nreta/natres/soil/management.

Natural Resources and Conservation

- The Flora and Fauna survey carried out by Ecoz Environmental Services in December 2008 has provided an outline of the dominant vegetation communities across the proposed development site. It identified the presence of the 'vulnerable' listed *Cycas armstrongii*. The salvage of *Cycas armstrongii* for use in landscaping of the development is encouraged by NRETAS.
- NRETAS have identified through a previous site inspection and land resource information ("Remnant Vegetation of the Darwin Municipality" by John Brock in 1995) an area of mixed species coastal monsoon rainforest, closed forest of *Melaleuca* spp. and sedgelands to the east of the proposed site. As this vegetation is likely to be a groundwater dependant ecosystem the subdivision works needs to demonstrate how the hydrological regime is to be managed so that impacts to these ecosystems will be avoided. This should be provided in the Water Sensitive Urban Design plan to the appropriate officer from the Department of Lands and Planning.
- It is expected that DHA's intent to provide larger 4000 square metre lots in the north/east of Muirhead will allow for restricted clearing of the areas subject to inundation and containing plant communities that are groundwater dependant.
- Of the eight fauna species (*Varanus mertensi*, *Varanus panoptes*, Christmas Island Frigatebird, Australian Bustard, Red Goshawk, Partridge Pigeon, Gouldian Finch, Northern Quoll) identified either on or within 10 km of the proposed development area. None are highly restricted to the proposed development area and are not expected to be significantly affected by the development.
- The NOI proposed management actions for both flora and fauna which state:
"Areas of existing vegetation will be retained and incorporated into the Muirhead design to provide habitat areas for fauna(/flora). Some portions of vegetation that will be retained will form a linear park of varying widths which generally follows the sewer easement running east-west."
The NOI indicates that these areas will be mostly open lawn with pockets of native vegetation. NRETAS have identified that this type of patchy, discontinuous vegetation would be of little or no value for the threatened species identified in the area.
- Habitat trees should be provided in the Muirhead streetscape and also to residents for the large number of native birds identified in the area. This is

particularly important for creating a connection between the Casuarina Coastal Reserve and the Buffalo Creek habitats.

- The weeds report provided by the NRETAS Weeds Branch indicated two declared species under the *Weeds Management Act 2001* and two weeds of concern. All weeds are subject to eradication controls and must not be disturbed, spread or carried off site.

Environmental Health

- The Medical Entomology Unit of the Department of Health and Families encourage the implementation of their design principles for stormwater pondage systems and drainage as specified in their reports '*Guidelines for preventing biting insect problems for urban residential developments or subdivisions*', and '*Construction practice near tidal areas in the Northern Territory*'.
- If water is to be held in a detention area, the design of this structure should be submitted to the Medical Entomology Branch for review (additional to the WSUD plans to the Department of Lands and Planning). In general terms the detention area should not pond water for more than five consecutive days, to prevent mosquito breeding, unless the detention pond is constructed according to strict guidelines to prevent mosquito breeding.

Heritage

- The Heritage Branch of NRETAS has previously provided comment for this NOI that there are no heritage values associated with the development of Muirhead.

The majority of environmental impacts can be addressed by a Construction Environmental Management Plan (CEMP). It is recommended that the Draft CEMP be revised based on the comments provided above. The EH Division also recommends that a biting insects management plan be developed and the final CEMP approved by the relevant authorities and NT Government departments before construction commences. A Sustainability Management Strategy will also allow for DHA to commit to its sustainability vision well into the future.

If you would like any further information in regard to this issue please contact the Environmental Officer, Maeli Cooper on telephone 8924 4207 or email: maeli.cooper@nt.gov.au.

Yours sincerely





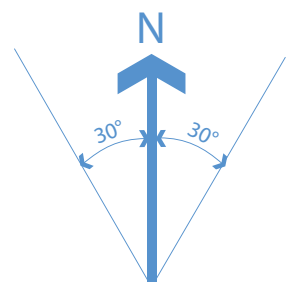
MATT DARCEY
Executive Director

30 June 2010



LEGEND:

-  LOTS ORIENTATED WITHIN 30° OF NORTH
(Predominate breeze direction)
-  INDICATIVE BREEZEWAY ZONE
(Lots not orientated within 30° of North)



Supplementary item 10

Building Envelope Considerations

board 5.0

high humidity (+70-80%)

moderately high air temperature

moderately high solar radiation mainly overhead

small range in diurnal and annual temperature

high rainfall damp earth + flooding

subject to cyclones/hurricanes

ROAD

ROAD

cooling breezes travel far

a big cool yard

1 Figure 1. A thin plan form on a wide lot

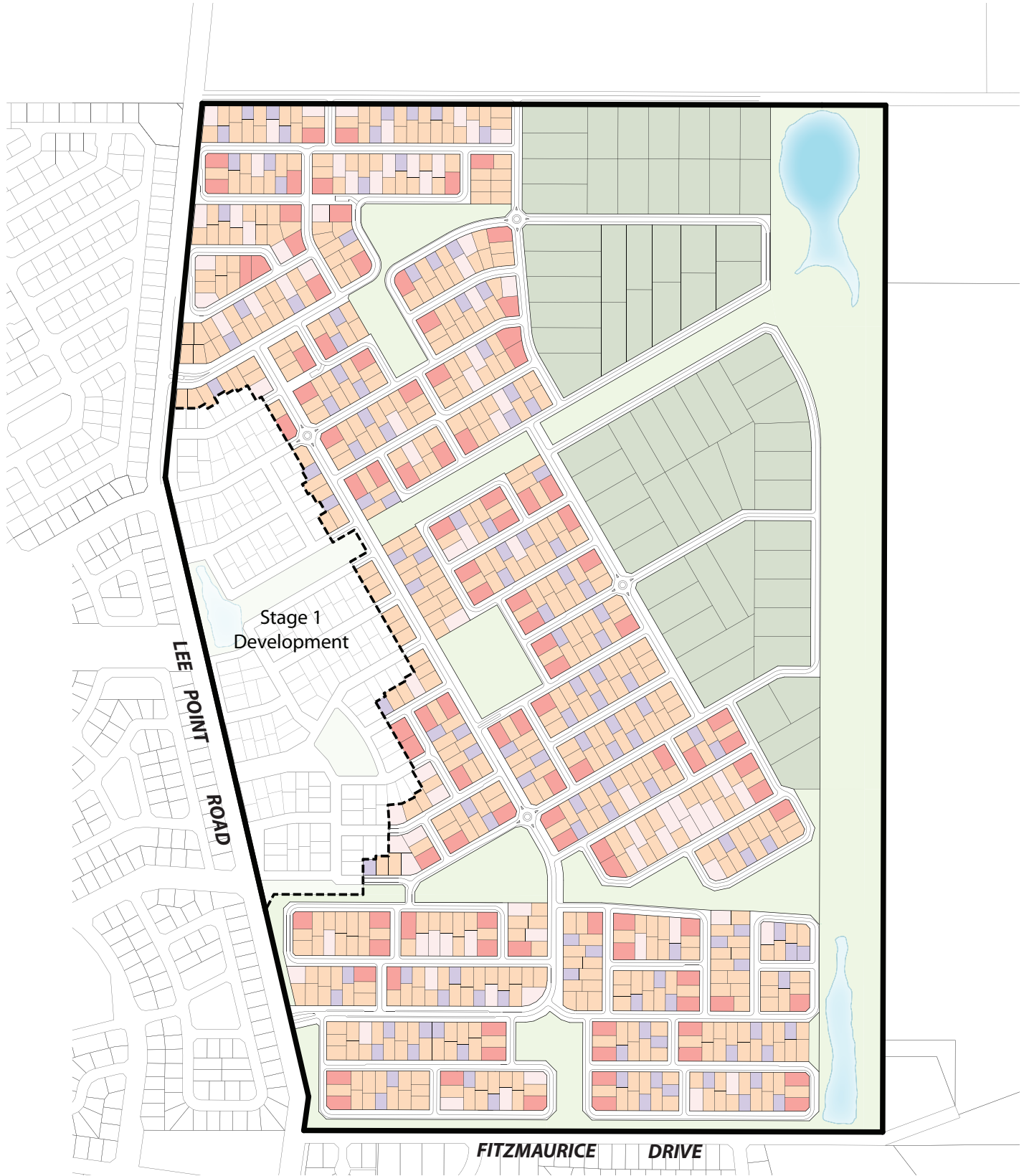
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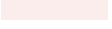
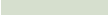
ROAD

cooling breezes don't travel far

a small hot yard

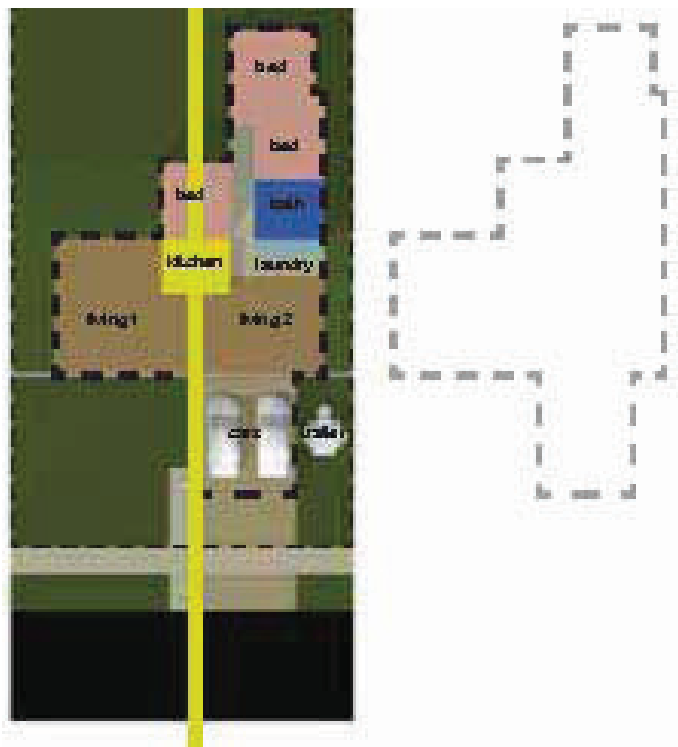
1 Figure 2. A deep plan form on a narrow lot

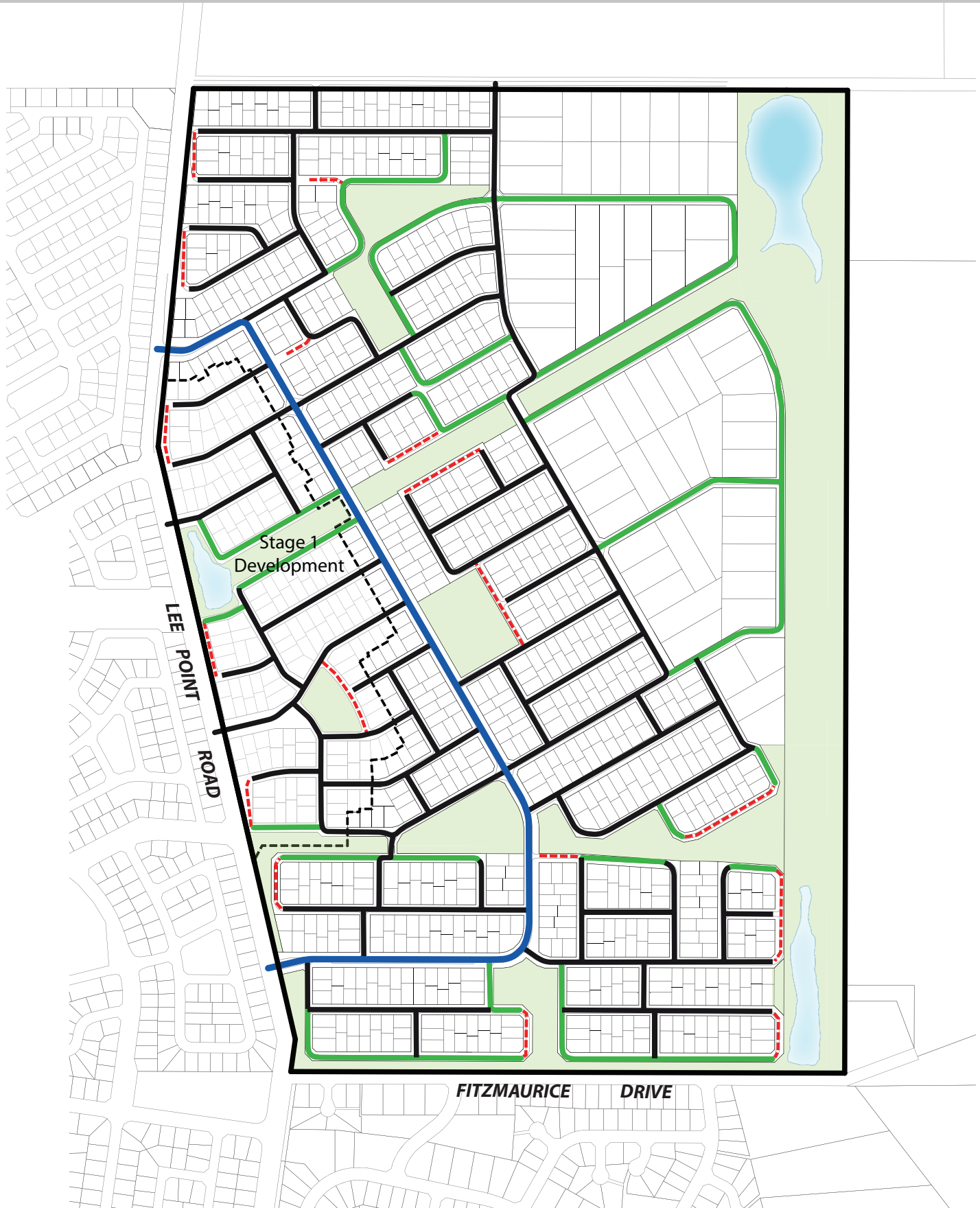


LEGEND:		COUNT	%
	MULTIPLE DWELLING LOTS	103	11
	RESIDENTIAL LOTS - 450-499m ²	133	14
	RESIDENTIAL LOTS - 500-699m ²	544	59
	RESIDENTIAL LOTS - 700-3999m ²	82	9
	RESIDENTIAL LOTS - 4000m ² +	68	7
TOTAL LOTS		930	





Supplementary item 12

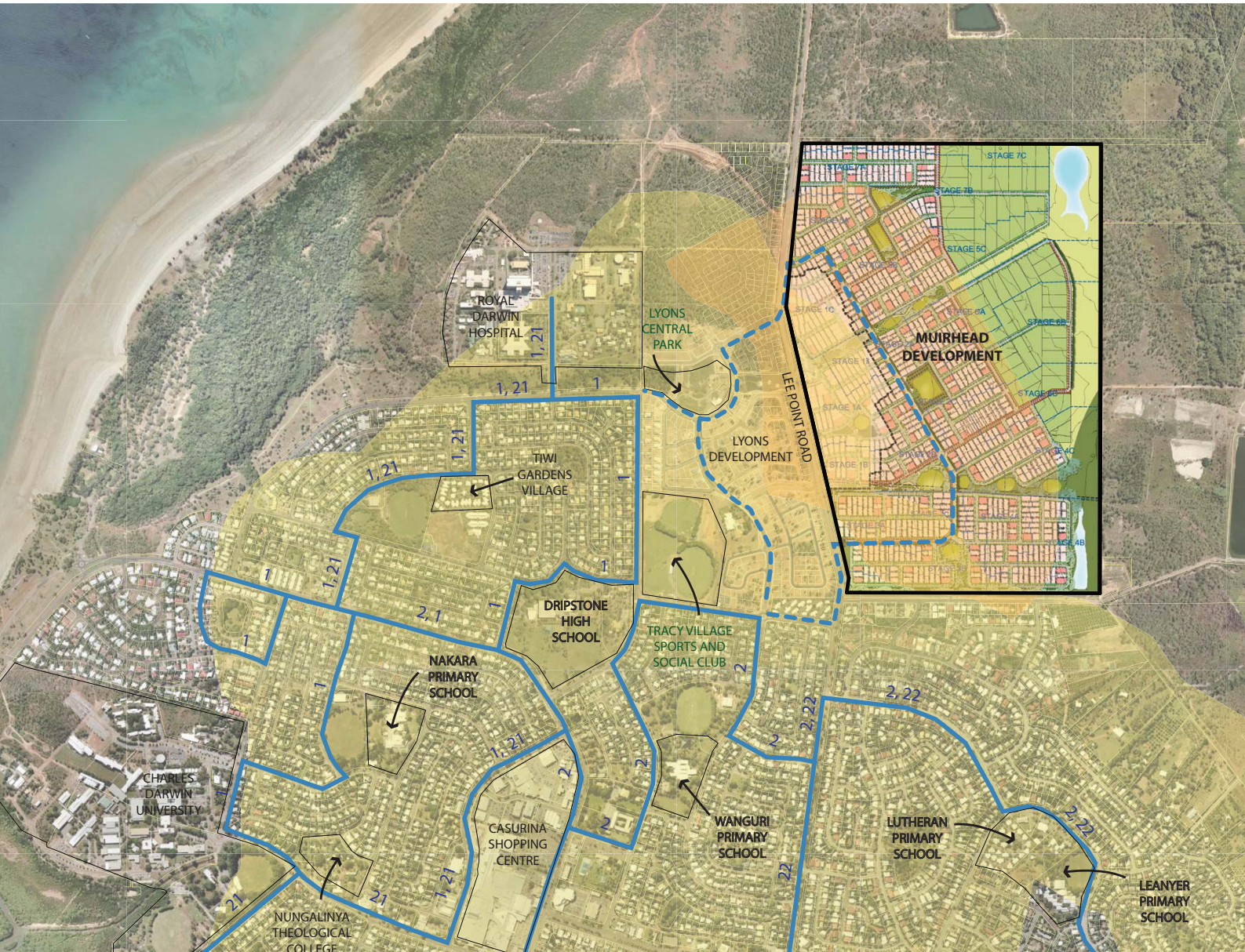
House Typology









LEGEND:

-  BUS STREET
-  ACCESS STREET 1
-  ACCESS STREET 2
-  PARK EDGE STREET/ SHARED ZONE
(Concrete, Low Key Treatment)












LEGEND:

-  Current Bus Routes & Route No.s
-  Current 400m Catchments
-  Allowance for Extension of Bus Routes
-  Additional 400m Catchment on Muirhead



LEGEND:

- | | | | |
|---|-------------------------------|---|---|
|  | LEE POINT ROAD LINK |  | INDICATIVE BUS STOP LOCATION |
|  | INTERNAL LINK |  | INDICATIVE ENTRY POINT - Threshold Treatment |
|  | SHARED PATH NETWORK |  | INDICATIVE ACTIVE OPEN SPACE - Major & Local Parks |
|  | INDICATIVE ULTIMATE BUS ROUTE |  | INDICATIVE PASSIVE OPEN SPACE - Includes Buffers and Linear Corridors |
| | |  | INDICATIVE DETENTION BASINS |



STREETScape
This masterplan indicates the overall concept of the structure of landscape for Muirhead. This gives context to & demonstrates how Stage 1 fits within Muirhead & Lyons developments.

OPEN SPACE AREAS, LINEAR CORRIDOR "GREENWAYS"
Important linkages between major and local, active and passive open spaces have been identified providing a defined hierarchy to the shared path circulation network and contribution to habitat connections. Refer to the Open Space Network Plan for details.

Local Native Species will be used predominantly throughout Muirhead. These will be selected for their suitability to the site climatic, soil, and environmental conditions, and their minimum maintenance requirements. Non-native species are used only at feature locations to highlight or define nodal points.

Key vehicle entries, nodes & road hierarchy will be reinforced with the use of regularly spaced formal larger scale street tree plantings for legibility of avenues and boulevards.

Elsewhere street plantings in local streets and along frontage to open space areas, including to remnant vegetation, will be informal, random and where appropriate & possible; increased in density to provide a 'blurring' of the residential development edges.

LEGEND

THRESHOLDS:

- 1. THE BIG WET - Landscape contains the iconic top end creek / gully crossing species & creates strong zones of visual interest on Lee point Road corridor
- 2. THE LITTLE WET - LYONS NODES + SHARED NETWORK LOOP / LINK Landscape contains Native Hibiscus to provide strong cohesion to existing Lyons landscape
- 3. THE BIG WET - ENTRIES - Creates "big & cool" node to highlight vehicle entries

CONNECTED CANOPY:

- 4. THE BIG WET/DRY - EAST WEST LANDSCAPE - The predominant streets planted with *Allosyncarpia ternata* as a linking & connected landscape element
- 5. THE LITTLE WET - SIDE YARD LANDSCAPE OF COMPACT LITTORAL RAINFOREST Encouraging appropriate small scale plantings in private gardens to integrate with the streetscape

THE GREEN FLESH:

- 6. THE BIG DRY - OPEN SPACE FRAME Providing strong cohesion to the broader Muirhead environment

DESIGN AND CONSTRUCTION SPECIFICATION FOR DHA RESIDENCES

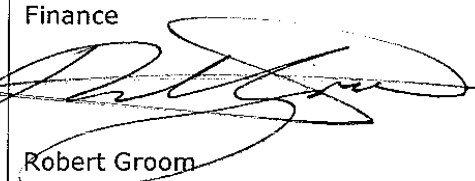
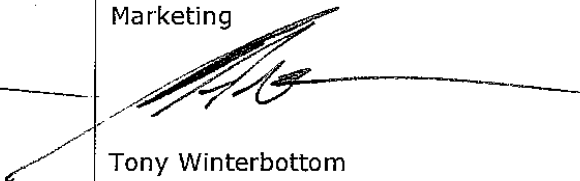
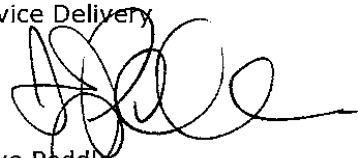
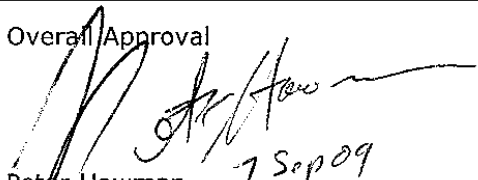
Version 3.3 Aug 2009

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.

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

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

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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

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

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)
BEDROOMS			
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
LIVING			
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
STORAGE			
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

Storage	-function obvious.	none stated	9
OUTDOORS			
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. -in locations south of Tropic of Capricorn -in locations north of Tropic of Capricorn	none stated	15 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)
OUTDOORS medium density			
Covered Outdoor Area (COA)	Must fit table and chairs for 4 people plus BBQ	Not stated	10
STORAGE medium density			
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:

NAME	REQUIREMENT(S)	MIN DIMENSION (mm)	MIN AREA (m2)
LIVING			
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.

2000 DESIGN GUIDELINES

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

2010 HOUSE LAYOUT

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;

- 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

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

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

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.

2060 SUSTAINABILITY

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.

3000 TRADES SECTION

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.

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:

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

- 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

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).

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:

- o minimum one pedestrian (single), gate may be increased to double gate where specified by estate guidelines;
- o all gates constructed to swing open to a minimum of 90 degrees;
- o gates must not obstruct services;
- o no side boundary fence forward of the wing fences, or the front building line;
- o wing fences and gates located behind meter boxes;
- o completed height 1.8m maximum (1.5m minimum) when measured from the adjacent finished ground levels; and
- o 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

3021 CONCRETE SLAB FINISH

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

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.

3040 CONSTRUCTION SYSTEMS

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 piers. 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

3051 (A) KITCHEN

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

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.

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

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:

- o security screens with powder coated aluminium frames with interior expanded aluminium mesh, or
- o 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

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:

- o Bathroom & ensuite: skirting 150mm
- o Baths 600 mm above the top of the bath.
- o Shower recess: 2000mm minimum.
- o Toilet: skirting 150mm minimum.
- o 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.

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.

Ceilings – 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 ceilings) – 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.

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.

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

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.

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.

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

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

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

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

form hedges must be spaced to suit the natural growth habits of the plant and not rely on frequent clipping or shaping to form the hedge. There must be deep root zones (areas of unimpeded natural ground) for trees to grow.

Nominate plant numbers, sizes and species in Landscape Plan, substitutions may be considered. Plant species if nominated on lists provided in estate or Council 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.

Weed mat or other geotextiles must not be used under mulch materials in any planted areas. However, where washed gravel or pebbles are used as a permeable pavement, weed mat or other geotextiles must be used.

3119 ESTABLISHMENT PERIOD

Following achievement of Practical Completion, an establishment period (Period) 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:

- o 80% of either the plants or the lawn areas have been in place for four (4) weeks; and
- o 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.

4000 PRACTICAL COMPLETION

At the Practical Completion inspection, the Contractor must have:

- o the house and site cleaned (inside and out) to a standard sufficient for tenants to move in;
- o all temporary fencing removed;
- o any damage of public and/or private land/or property adjacent to the site repaired;
- o any verge restoration (if required) completed;
- o telephone connected and working; and
- o 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

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
Adelaide	
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.
Adelaide Hills	
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
Melbourne, Sale, Frankston, Queenscliff	
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

	cooling may be substituted in place of ceiling fans to all bedrooms and living areas.
Security	Locks to all opening windows.
Puckapunyal	
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.
Tasmania	
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
Canberra & Queanbeyan	
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
Armidale & Tamworth	
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.
Hunter & Northern NSW	
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.
Nowra	
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.
Riverina	
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.
Sydney & Blue Mountains	
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
Brisbane & Ipswich	
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.
Toowoomba	
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.

6060 NORTH QUEENSLAND

ITEM	REQUIREMENT
Townsville, Rockhampton & Cairns	
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
Perth & Geraldton	
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.
Karratha & NW Region	
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

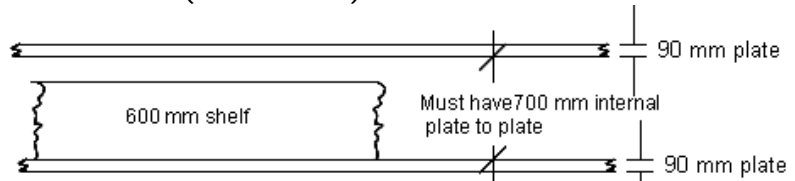
ITEM	REQUIREMENT
Darwin	
Ceilings	Internal ceiling height must be a minimum 2700mm.

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.
Katherine	
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.
Tindal requirements as for Katherine except	
Security	Insect screens to all opening windows.
Alice Springs	
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

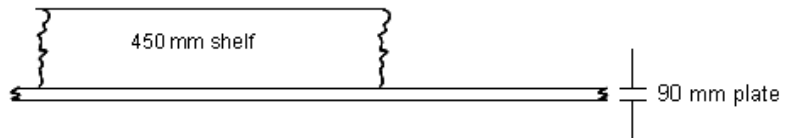
(not to scale)

Bedroom 1
Built in wardrobe
plan view



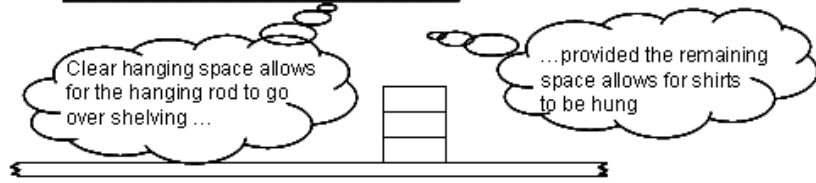
Note: sheeting dimensions reduce the 700mm to 680mm as finished

Bedroom 1
Walk in wardrobe
plan view

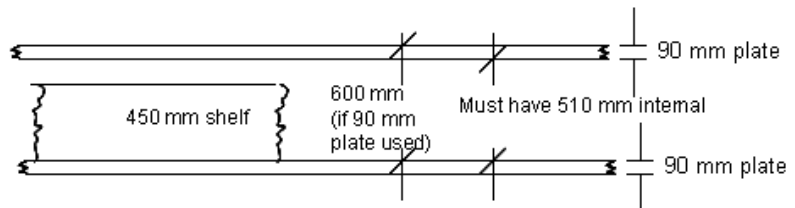


3000 mm for BR1
1500 mm for others

Bedroom
wardrobe
elevation



Bedroom 2,3,4
Built in wardrobe
plan view



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