

A GUIDE FOR I HF PI RARA VERNAGULAR DEMONSTRATION

INNOVATION

DEMONSTRATION

THROUGH



MADIGAN ESTATE WAS SELECTED AS THE FIRST PROJECT to demonstrate the pilbara vernacular.

To that end we organised a Demonstration Home Design Competition to display the theory behind of the Pilbara Vernacular. The Design Competition provided an opportunity for the three invited architects and nominated builders to explore and showcase Pilbara Vernacular principles in a demonstration home. The primary objective of the exercise was to develop a concept design for a home, which contributes to the character and sense of place of Karratha while providing functional efficiency and comfort at a reasonable market price.

INTRODUCTION TO THE PROJECT

In 2012, LandCorp created the Pilbara Vernacular Handbook to better inform future Pilbara projects and guide development in the region.

The Handbook has been designed to support people

industry, including urban

government officers.

the region by:

working within the Pilbara's

land and property development

designers, architects, builders,

engineers and to support local

It brings together a collection of

considerations and suggested

built form design outcomes in

strategies to help improve

/ Responding to climate

/ Incorporating the

natural landscape

 / Building on the Pilbara character and identity
 / Encouraging change and innovation





KARRATHA CENTRI

INNOVATION THROUGH DEMONSTRATION

LOT 1 PRANCING AVENUE

A PANEL OF INDEPENDENT PROFESSIONALS, INCLUDING MEMBERS OF LANDCORP, THE OFFICE OF THE GOVERNMENT ARCHITECT AND THE AUSTRALIAN INSTITUTE OF ARCHITECTS AWARDED FIRST PLACE TO GRESLEY ABAS FOR ITS HOLISTIC APPROACH IN RESPONDING TO THE COMPETITION BRIEF.

The Gresley Abas Pilbara Vernacular Demonstration House was designed for the people of Karratha and the local conditions. By applying and interpreting the principles of the Pilbara Vernacular Handbook, the design seeks to strike a careful balance by responding to Karratha's climate, people, character, culture and future.

Gresley Abas teamed up with local builder Eaton Building to deliver this demonstration home and provide a glimpse into the future of residential design in the Pilbara.







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Example plan from Madigan Estate Detailed Area Plan



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PLAN FEATURES

- / Large, sheltered outdoor area to the south of the house provides a comfortable alfresco living space in the cooler months.
- / A sheltered outdoor living area on the upper level provides a secondary shade device (parasol roof) to further reduce heat load on living areas and reduce energy costs associated with air conditioning.
- / Deep eaves shielded the sun from directly shining through the windows and protect the walls from heat gain.



A simple lightweight construction method combined with an intelligent and simple planning approach allows for robust performace and flexible and adaptable arrangements of spaces that can change over time, easily and at low cost.

- / Clear breezeway to the south of the outdoor area allows airflow around the house to promote air circulation and comfort.
- / Composite timber screening on the master bedroom to block harsh morning light and summer heat, provides a comfortable, semi-private and sheltered deck area to the street.
- / Composite screening to the southern outdoor area blocks the harsh summer sunlight from penetrating the living space, whilst allowing free air movement.

- / 'Wind scoops' bring cooling northeasterly breezes into the outdoor living space from the northern side of the house.
- / 'Wind blades' on the bedrooms on the northern façade, direct the breeze into the bedrooms in the cooler months.
- / Bedrooms oriented to the north, act as a heat barrier to main living spaces during the day, reducing the heat load on these areas.



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CLIMATE OUR HOME DESIGN IS BASED ON A STRONG AND APPROPRIATE RESPONSE TO LOCAL CLIMATIC CONDITIONS.

Karratha's climate is not like Perth's, yet many homes in Karratha are based on Perth suburban models. This is highly problematic as many of the housing models in Perth are inappropriate for the local climate. let alone a semi-arid climate like Karratha.

WINTER MODE

For the winter months, when the temperature is around 27 degrees, our home has been designed to promote excellent natural and passive ventilation through window and door openings. Using wind catching fins at narrow window openings, and maintaining a negative

pressure through an open side selection, the north and easterly cooling breezes are captured and will drive heat out of the house.

We have undertaken a comprehensive design process to ensure this home responds positively to the climatic

conditions. The spaces in this home have been arranged to keep the main living areas zoned off as a sealed 'esky' in the summer months, with the house able to be opened up to accept the cooling breezes during the mild winter.



SUMMER MODE

In the hot summer season, natural ventilation is not enough to provide suitable comfort levels to residents. The temperatures are just too hot. Using both insulated and shaded 'esky' like internal spaces we propose using a combination of high quality and efficient air conditioning systems which draw power from a 5kW solar

panel system. In implementing this, we have created an energy neutral solution and a highly comfortable environment. In summer, the use of air conditioning will keep residents comfortable, knowing that the PV panels are working hard to replace the energy being taken from the grid.



ROOF / COLORBOND COOLMA)

Highest index of reflectivity available

EXTERNAL WALLS / 75MM MASTERWALL

Cyclone rated and excellent insulation

EXTERNAL FEATUR

Cloudy Sky

Your choice of front door and air scoop colour

STEEL WORK AND BALLUSTRADES / COLOURBOND

Powdercoated steel

BLOCKWORK WALLS

External screens to the outdoor shower and drying court

SCREENS

Rightwood secret-fix decking - brush finished low maintenance and sustainable timber alternative

CABINET WORK / LAMINEX

Resilient and stylish finishes to all cupboards

KITCHEN BENCHES / LAMINE

Pure Calcite

LOOR TILES / EUPHORIA

Fully vitrified hardwearing and easy to clean

WALL TILES / EUPHORIA

2,100mm height in all wet areas

INCLUDED SYSTEMS	
 Øpţimal shading / ventilation and other passive devices including treatment and delivery of outdoor areas High COP / Iow noise air conditioning şystem 30sqm, 5kW Solar PV system 	 / Low maintenance and water-wise plant selections / Sub-surface irrigation system to reduce evaporation / Capture condensate from air conditioning condenser unit and use for irrigation
Sealed doors and windows and no roof ventilation to optimise air conditioning requirements	OPTIONAL EXTRAS
/ High efficiency light fittings	INCLUDED IN THIS DISPLAY HOME
/ High efficiency appliances	
 / High levels of wall / ceiling and roof insulation (wool based batts / foil backed) best for climate 	
 / Mid-tone paving / aggregate to reduce heat sinking around home 	/ · Pooł / Built-in outdoor cinema package
. /. High quality solar hot	/ Built-in outdoor kitchen
Colorbond 'Coolmax' in lieu of standard Colorbond	PBQ including outdoor tridge nook. Full integration into outdoor kitchen by using insulated cabinet to reduce
/ Off-centre ceiling fans with 2.8m high ceilings	energy usage
I Top WELS rated fixtures and fittings	Imber deck to outdoor shower .
 . / 75mm thick mulching in the garden to optimise water retention	



AccuRate V2.0.2.13 SP1



Nationwide House Energy Rating Scheme

Project Details										
Project Name: Landcorp Madigan Road Housing Competition										
File Name: \\vmware-host\Sha	red Folders\Dropbox\01 I	Projects	2013-17							
Gresley Abas GAA\NatHERS\	03 AccuRate\GAA2M001	l.pro								
Postcode: 6714	te Zone: 2									
Design Option: Base Design										
Description:										
	Client	Details								
Client Name: Gresley Abas Arc	chitects									
Dhana	For		Emoil							

Phone:	Fax:	Email:						
Postal Address:								
Site Address:Lot 1 Karinha Way Baynton West								
Exposure:Open								
Council submitted to (if known by assessor): Shire of Roeburne								

Assessor Details										
Assessor Name:Sid Thoo Arch	nitect		Assessor No.70045							
Phone:08 6364 3775	Fax:08 6210 1758	Email:sid@a	rchitecture.net.au							
Assessment Date:4/07/2013			Time:6:02:							
Project Code:2013-17 GAA										
Assessor Signature:										

CALCULATED ENERGY REQUIREMENTS*										
Heating	Cooling (sensible)	Cooling (latent)	Total Energy	Units						
0.0	91.6	46.3	137.9	MJ/m ² .annum						
* These energy requirements have been calculated using a standard set of occupant behaviours and so do not necessarily represent the usage pattern or lifestyle of the intended occupants. They should be used solely for the purposes of rating the building. They should not be used to infer actual energy consumption or maning nects. They atting wave and for the simulation are shown in the building at the same state.										

AREA-ADJUSTED ENERGY REQUIREMENTS										
Heating	Cooling (sensible)	Cooling (latent)	Total Energy	Units						
0.0	85.0	43.0	128.0	MJ/m ² .annum						
Cond	itioned floor area	129.4 n	1 ²							



Area-adjusted star band score thresholds											
1 Star	2 Stars	3 Stars	3 Stars 4 Stars 5 Stars 6 Stars 7 Stars				8 Stars	9 Stars	10 Stars		
569	455	373	310	260	215	172	131	93	62		

During concept design, the design team used state-of-the-art environmental performance modelling to provide the best measure of how the house would perform in Karratha.





LANKE CONTRACT OF A CONTRACT

YEARS OF DESIGN LIFE FOR DWELLING (INCLUDING RECURRING MAINTENANCE)

397,690

KILOGRAMS OF CARBON OFFSET BY PROPOSED DESIGN RESULTING IN A 100% CARBON NEUTRAL OUTCOME

Source: eTool

The figures on this page reflect the concept design outcome. Live environmental measurements are being taken to test that the house lives up to the design. If this house is replicated, performance ratings may vary.

*Operational Carbon: total carbon emissions produced by the use of energy from the grid. **Embodied Carbon: total carbon emissions produced by construction and building materials.

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ARE YOU INTERESTED?

LANDCORP.COM.AU/PILBARAVERNACULAR

If you would like a house just like this in any location across the Pilbara, please contact:	•	• • •	• • •	• •	
Michael Marcello Development Manager 9482 7886	•	· ·		· ·	
Julio Navarrete Design and Sustainability Manager 9482 7560	•	• • •		• •	
MORE INFORMATION CAN BE FOUND AT			•	·	

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