

17 May 2010

**Submission No. 1.2**

(Muirhead)

SL Date: 26/05/2010

Chair  
Parliamentary Standing Committee on Public Works  
Parliament House  
Canberra ACT 2600

PUBLIC WORKS COMMITTEE

19 MAY 2010

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**CONSTRUCTION OF HOUSING FOR THE DEPARTMENT OF DEFENCE AT  
MUIRHEAD, DARWIN, NORTHERN TERRITORY – DHA RESPONSE TO  
COOLMOB'S SUBMISSION/QUESTIONS TAKEN ON NOTICE**

I refer to the PWC hearing of April 15 that you recently Chaired on the Stage One development at Muirhead. I also refer to the submission lodged by CoolMob and to assist deliberation by the committee of DHA's proposal, make the following comments on the 28 plus issues raised.

1. *Catching Breezes – Muirhead Point is a naturally breezy location so houses built here should be designed to catch the breezes and take advantage of the coastal conditions. Outdoor living areas need to be protected from the NW monsoon.*

Defence Housing Australia (DHA) response:

DHA has promoted the capture of breezes in the Muirhead development through innovative subdivision configuration and orientation of allotments. DHA homes at Muirhead will be configured to optimise these cooling breezes as well as provide good living environments for its clients. Private purchasers will be provided with educational material and design guidance to assist them in designing their homes in the most appropriate manner.

2. *Windows – louvers allow twice as much air flow as sliding windows and do not require closing during moderate rains.*

DHA response:

DHA is currently trialling tropical elements including the greater use of louvers for use in its homes in Muirhead and other tropical areas. In developing covenants appropriate for Muirhead, the prescriptive installation of louvers and other elements will be considered while having regard to its impact on housing affordability.

HEAD OFFICE

3. *Security and fly screens – screens stop a large percentage of airflow. In appropriate locations with few insects and where possible, use retractable fly screens. Similarly, security screens and mesh stop the majority of the air flow and restrict night time cooling whereas louver security bars have little effect on air flow.*

DHA response:

Defence requires that all homes have security screens or equivalent to all doors and windows. DHA is willing to consider retractable insect screens if they are a viable and cost effective alternative.

4. *Verandas – all homes to have an outdoor living area that allows cross breezes to flow through and be fitted with ceiling fans. This is more important than large interior living areas and can be used for outdoor cooking and living. If households do not have appropriate outdoor furniture, Defence Housing could consider assistance or rental of appropriate furniture. The southern storing or inappropriate furniture could be offered to families who are moved to live in the tropics temporarily.*

DHA response:

Covered outdoor living areas are provided in all DHA homes and with the promotion of more appropriate tropical house designs as referred in two (2) above, this objective should be achieved. Reference is also made to the architectural and urban design vision for Muirhead outlined by our Architect, Mr David Randerson, at the hearing and in our submission. Specifically, the use of Verandas is encouraged to provide a positive relationship to the street, passive surveillance, community interaction and as viable outdoor living areas. Estate covenants to be prepared for Muirhead are expected to incorporate this requirement/objective. The other matters raised in this question are outside the current DHA contract with Defence.

5. *Cooking appliances – gas stoves and ovens are more efficient than electric ones. Defence Housing has said that they do not want the responsibility of managing gas bottles. The general real estate rental market do not refuse to rent houses with gas bottles so COOLmob recommends that Defence Housing specify gas stoves and ovens in homes and manage the gas bottle refills as necessary.*

DHA response:

We understand that the covenants will not prevent the use of gas bottles or appliances within the Muirhead development. However, DHA is unlikely to utilise gas appliances due to the implications on tenants and tenancy management. DHA's preference is to use mains services where available. The DHA construction specification does specify the use of gas where it is reticulated.

6. *Placement of power switches – consideration be given to the location of power points so that the occupants can easily access them to turn off “stand-by power” eg microwave ovens, home entertainment units.*

DHA response:

DHA locates switches (GPO's) to ensure they suit their intended purpose and to eliminate the use of extension cords.

7. *Energy efficient appliances – all appliances fitted to homes should be the most energy efficient available. High star rated appliances can save significant amounts of electricity and GHG emissions.*

DHA response:

DHA construction specification already requires that four or five star appliances are used for heating and cooling, and three star WELs tap ware products be used.

8. *Clothes drying – all homes need to include an area for drying clothes in the wet season, preferably under a fan. This would reduce the need for clothes driers that heat the home and are energy guzzlers.*

DHA response:

DHA constructions feature a minimum twenty square metres of undercover outdoor area with a ceiling fan. While a clothes line is not installed tenants have the ability to dry clothes under this area.

9. *Solar hot water – All homes be fitted with solar hot water services with a time sensitive booster switch. These switches are cheaper than one shot booster switches and can be set for a shorter time. If households want additional hot water, they simply press the switch as many times as needed. When only a small amount of hot water is required it is not necessary to heat the whole 300 litre tank, as occurs with a hot water booster switch.*

DHA response:

DHA is willing to consider the use of time sensitive booster switches. In respect to mandating solar hot water systems for all homes at Muirhead this will be considered as part of the Estate covenants that are yet to be developed.

10. *Lighting – All homes be fitted with energy efficient lights which produce less heat than other lighting systems.*

DHA response:

All DHA constructions at Muirhead will be six-star energy compliant. DHA will, in addition comply with any legislation that requires the installation of other specific energy efficient light systems.

11. *Sky lights – incorporate sky lights in appropriate areas such as bathrooms and kitchens.*

DHA response:

If skylights are required due to limited natural light, DHA will request their installation on a house by house basis. Generally they are not required as natural light is addressed during the design stage.

12. *Air conditioners placed appropriately – Install air conditioner compressors in appropriate shaded locations where they are drawing in cool air, thus reducing the demand on the cooling process.*

DHA response:

Air conditioners will be placed to ensure compliance with noise requirements and visual impact. DHA does attempt to provide shading to air-conditioning units where possible through landscape design and placement.

13. *Separate switches – Air conditioners to have a separate power board switch to turn them off when not needed so that they are not left on standby for long periods.*

DHA response:

DHA uses individual split systems to ensure that tenants can manage the use of air-conditioning as required. All rooms have individual split systems with their own control. In addition, air conditioning systems have their own mains switch in the meter box.

14. *Cross ventilation – Design building that have a long narrow shape and one room wide to allow cross ventilation. Such ventilation is not possible when square building designs are used which are more than one room wide.*

DHA response:

DHA is currently trialling tropical design houses that maximise cross flow ventilation and hope to adopt these designs principles for use in the Muirhead estate. Educational material and home design guidance is expected to be provided to private buyers to ensure the use of cooling breezes are maximised.

15. *Roof ventilation – incorporate roof space ventilation systems such as eve vents, “ventable” manhole covers, and solar ventilators to assist with air movement.*

DHA response:

The application of these accoutrements will be determined based on the design of the homes and the covenants applying.

16. *Roof pitch – roofs pitched at low angles are more appropriate for installation of photovoltaic solar panels.*

DHA response:

The covenants to be adopted at Muirhead will not prevent installation of photovoltaic solar panels and their use is expected to be encouraged in educational/house design material that will be prepared for purchasers. The architectural and urban design vision for Muirhead outlined by our Architect, Mr David Randerson, at the hearing and in our submission vision for Stage one at Muirhead promotes a roof that is a "big hat". The advantages of this approach is that it provides shading of walls while at the same time providing a large insulating air volume in roof cavities. The potential advantages of a lower pitched roof to assist installation and use of Photovoltaic solar panels is noted. The advantages and disadvantages of this alternative approach will be considered by our Architect and consulting team and as part of our tropical housing research referred to previously. In respect to mandating photovoltaic solar panels for all homes at Muirhead this will be considered as part of the Estate covenants, that are yet to be developed. As discussed previously, affordability factors will also be considered in the development of these estate covenants.

17. *Building design – Consideration should be given to the features of the very liveable and popular Commonwealth Government tropical design houses commonly referred to as C19's or D3's.*

DHA response:

As previously referred, DHA is trialling various tropical designs of homes for use in Muirhead. Reference to past designs and lessons gained is being incorporated into this research.

18. *Light weight construction – buildings built of light weight materials do not hold heat through the night. They cool down very quickly after the sun has gone down, unlike block materials that radiate the heat throughout the whole night, necessitating the use of air conditioners. As many people are not home during the day, it is particularly important to design for evening comfort.*

DHA response:

Please refer to above answers including (17) above. DHA is keen to trial the use of lightweight materials.

19. *Water collection – when designing the building, give consideration to installing some guttering for the collection of water into water tanks and water tank location.*

DHA response:

DHA's current information indicates that water tanks have limited advantages for use in Darwin's dry period. The use of plantings appropriate for Darwin's climatic conditions is considered more efficient.

20. *Grey water – Installation of plumbing facilities clear of the slab to facilitate easy connection of grey water systems or for use on site. Laundries can be located in areas where grey water can easily be diverted onto the garden.*

DHA response:

Although not considered appropriate for use in DHA dwellings due to the management and potential associated health issues, with highly transient families, installation by private households will not be prevented. Installation must however, be in accordance with the health/operational regulations applying in the Territory/Darwin.

CoolMob also considered the issue of Grey Water reuse in the preamble to its submission specifically it stated:-

*"Grey water recycling can be incorporated into the development for use in parks and gardens and include facilities for a community food garden."*

It is considered that this paragraph incorrectly uses the term "grey water" but is more likely to refer to the use of recycled sewerage to be delivered via a third pipe system and charged with A class water supplied from the sewage plant operated by Power and Water and located immediately east of the Muirhead site. The installation of a third pipe system to deliver recycled A class water was considered in the design of the Muirhead project however was disregarded as Power and Water have no plans or intention of installing plant to manufacture and supply A class water to the community. Further, the limited residential development opportunities in the region of the plant including the development of Muirhead apparently cannot support the investment required to justify the installation of new plant to support this service.

21. *Concrete and paving – Paved surfaces that are not shaded heat up and become heat banks. These heat banks reflect heat as well as heating air and breezes that pass over them. This contributes to the heating of the home and outdoor areas. The raised air temperatures continue throughout the night.*

DHA response:

This comment is noted and accepted. DHA endeavours to minimise the utilisation of concrete for paths and driveways however operational, safety and disability issues also must be considered in determining the extent of use.

22. *Orientation and shade – Orientate buildings in an east west orientation so that the long northern wall receives the least amount of direct morning and afternoon sun.*

DHA response:

This issue is noted. Appropriate orientation of lots and dwellings designs suitable for Darwin's climatic conditions is a cornerstone to the Muirhead project.

23. *Vegetation and trellises – Encourage vegetation around the property to create a cool envelope of air surrounding the property. Trellises for creepers can be used to shade east and west walls. If necessary, leaf guards can be fitted to guttering (if fitted) to prevent gutters clogging up.*

DHA response:

Information in selection and use of appropriate plantings will form part of the educational material provided to purchasers of Muirhead lots.

24. *Fencing – use non solid fencing to allow breezes through, particularly if the living area is on ground level.*

DHA response:

Maintenance of breezes throughout the estate is an essential element of the Muirhead approach. Covenants will restrict the use of fencing that inhibit the flow of breezes.

25. *Vegetation grown on fencing can provide privacy and still allow breezes to penetrate.*

DHA response:

Noted. Refer response to (23) above.

26. *Setback of homes from the front of the property – Ensure that buildings are set back far enough from the front foot path to allow sufficient vegetation to provide privacy, thus preventing the opportunity for natural breezes to enter the building.*

DHA response:

As described in the Hearing and in our submission, the Muirhead approach provides a minimum of 6 metres between dwelling envelopes, generous road reserves and verges and a maximum dwelling footprint on the lot of some 20 percentage less than in other areas of Darwin. This approach ensures that capture of cooling breezes is maximised.

27. *Learning to live in the tropics – If you have lived in a non humid environment it cannot be assumed that you know how to keep yourself comfortable in the tropics. People need to be educated in ways of feeling comfortable in a climate where you may need to do the opposite to what you do in temperate climates. Eg. On a 'dry' season day you open all the windows to let in as much breeze as possible, while on a hot summer day in southern Australia you keep your house closed up. The COOLmob Greenhouse Friendly Habits book is full of tips for living in the tropics.*

DHA response:

This comment is noted and appreciated. DHA will be happy to make available copies of CoolMobs publications to all Muirhead residents.

28. *Pools and Spas – these should be supplied with covers to reduce both evaporation and the water quality maintenance needs. Products such as the highly efficient Hurlcon Viron pump should be installed for all pools*

DHA response:

DHA does not install swimming pools as part of its housing. However, information on the appropriate operation of swimming pools and spas may be included as part of the educational material for Muirhead residents.

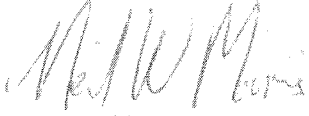
The COOLmob submission also raised in its introduction to its submission, the possibility of a community garden area. A community garden is not proposed for stage one of the project. Inclusion of a community garden is considered to be more appropriate in latter stages of the development, but would require extensive discussions with Council or Power and Water as the land to be alienated for this use would be managed by these bodies.

Coolmob further sought the inclusion of bicycle lanes in the Muirhead development. Shared lanes and provision for bicycles are to be provided throughout the development in accordance with Council requirements and Territory regulations. In addition, Muirhead will have a shared bike path along Lee Point Road which is part of the Councils bicycle strategy for the area.



I trust the above addresses all the issues raised and that DHA's responses will assist the committee's deliberations on the Muirhead stage one proposal.

Yours sincerely,

A handwritten signature in cursive script, appearing to read 'Peter Howman'.

*per* Peter Howman  
Chief Operating Officer  
Defence Housing Australia