

Practice note no. 04

Issued: March 2014

Integrating sustainable principles into residential subdivisions

Introduction

The MEDQ has received EnviroDevelopment accreditation through the Urban Development Institute of Australia's (UDIA). This accreditation assesses a project against six elements including; Ecosystems, Water, Energy, Waste, Community and Materials. Fitzgibbon Chase was the first project in Australia to achieve all six elements under the version 2.0 standards.



The environmental principles and practices have been incorporated into the development with minimal impact to cost and time. These outcomes were achieved by integrating appropriate design principles and methodologies early in the planning stages and working closely with our builder partners and contractors.

This practice note outlines the key sustainability objectives and how these were implemented at Fitzgibbon Chase.

Development objectives and strategies for implementation

Ecosystems

Fitzgibbon Chase is a 114 hectare site with 50 hectares of the site remaining as bushland and open space. Fauna and flora studies identified the presence of tusk frogs and squirrel gliders and stands of significant vegetation on the site. During the planning stage wildlife links were identified to be maintained and high quality vegetation and habitat retained and enhanced. The following steps were undertaken to optimise ecosystem retention:



- » site analysis to identify flora, fauna, hydrological and landscape characteristics
- » maintained and enhanced buffer zones to reduce fragmentation through development zones, wildlife corridors and fauna crossings
- » incorporated best practice Water Sensitive Urban Design (WSUD) principals by designing central bio-retention swales, bio-retention pods and stormwater detention basins to mitigate flood waters in peak times
- » controlled the amount of non-permeable pavements through sizing requirements in the project's design guidelines and encouraged the use of permeable surfaces
- » retained and enhanced significant parcels of high quality bushland
- » implemented a weed and pest management strategy to control invasive plant species
- » encouraged and controlled plant varieties, prohibited invasive species by including a detailed plant list as part of the design guidelines
- » a community engagement strategy proposed to be put into place to collect seeds and propagate native species of the area as well as educating the community on the environmental values of the retained vegetation.

Water

Water management design at Fitzgibbon Chase intends to significantly reduce potable water demand. The following WSUD requirements have been incorporated into the development design guidelines:

- » all detached dwellings to have 5000L tank
- » all attached dwellings to have a 3000L tank
- » rain water tanks to be reticulated to the toilets, laundry and external taps
- » 3 star Wels fittings installed in kitchens, bathrooms and laundries
- » 4 star Wels dual flush toilet systems
- » flow restrictors
- » large scale rain water harvesting opportunities were identified for future investigation
- » public spaces have been designed to require minimal irrigation
- » 50 per cent native plants specified for use in landscaped areas.

Energy

Fitzgibbon Chase is forecast to achieve a significant reduction in energy use. Energy use will be decreased by incorporating solar passive design into the master planning and building designs. The following requirements are incorporated into the design guidelines which formed part of the land sales contracts:

- » all dwellings to achieve a minimum of 6 star energy rating (note, several houses have already achieved 7 and 8 star energy ratings). This reduces demand for heating and cooling
- » as a minimum, ceiling fans should be installed in all bedrooms to reduce the dependence on air-conditioning
- » minimum of 450 mm eaves on eastern and western windows
- » renewable energy encouraged with no restriction on positioning
- » 5 star instantaneous gas or gas boosted solar hot water systems required
- » energy efficient lighting and energy efficient appliances used throughout
- » gas cook tops are required with range-hoods flued to the outside of the building
- » renewable energy will be incorporated into public buildings.
- » Waste
- » Waste has been minimised and recycled on site. The following initiatives have been employed to date:
- » cleared vegetation and topsoil have been reused on site
- » construction waste is taken to an on-site recycling plant and re-used on site wherever possible

- » builder partners are reducing leftover materials through design management (i.e. maximising standard product sizes)
- » every dwelling is provided with a compost bin to compost of green waste.

Materials

Across the Fitzgibbon Chase development a minimum of 20 per cent environmentally responsible materials are to be incorporated. Air quality within the estate is improved by controlling the types of materials and paints used. The following steps have been implemented:

- » a minimum of 40 per cent materials in civil and site works are to be from a recycled or reused source, including recycled aggregate used under road bases and green concrete
- » a minimum of 20 per cent of building materials to be recycled, recyclable or otherwise environmentally responsible
- » materials to be locally sourced
- » material restrictions including requirements for low voc paints, adhesives and floor coverings
- » low life cycle materials encouraged to reduce maintenance.

Community

A number of initiatives have been undertaken at Fitzgibbon Chase to assist the establishment of a vibrant, inclusive and diverse community including:

- » development of a range of housing types including accessible and universal designs
- » consultation with neighbouring and traditional stakeholders, including preparation of a community consultation plan
- » designed to incorporate Crime Prevention through Environmental Design (CPTED) principles
- » establishment of community and recreational infrastructure
- » provision of fibre to the home and encouraging work from home opportunities
- » reduction in vehicle use and design for a 'permeable' neighbourhood.



Fitzgibbon community consultation

Conclusion

With careful and detailed planning, environmental outcomes can be achieved whilst maintaining sound commercial outcomes. It is an objective of the Fitzgibbon Chase development to be a future case study for sustainable development to show that sustainability principals can be integrated with minimal cost if focused on early in the process.