MULTI – DWELLING PROPOSAL

AT

NO 21 LAUREL GROVE

NORTH BLACKBURN

VIC 3130

SUSTAINABLE DESIGN STATEMENT

1. BACKGROUND

This project energy review was initiated to establish viable ESD initiatives to be included into this development.

The following features are considered appropriate:

- Energy efficient lighting.
- Building Management & Air Conditioning systems.
- Solar hot water systems.
- High levels of insulation to wall and roof envelope.
- Double glazing & possible tinting.
- Solar power of a minimum of 2 KW per dwelling.

2. DESIGN LIFE

The proposed new dwellings are designed to remain unchanged, other than for general maintenance, for a minimum period of 30 years.

The majority of physical design elements would maintain their effectiveness throughout the building life; however M&E and Wet services would need to be maintained during the 'Design life'.

All the ESD features should provide the capacity to be easily extended or adapted as technology advances.

3. ENERGY & COOLING [6 STAR RATED]

The energy rating target for the building would be 6 Stars.

4. HEATING & COOLING [6 STAR RATED]

Building fabric specification and passive design techniques should be implemented to assist in optimising the mechanical service systems by:

- Detailed explanations & diagrams are readily available to all occupants.
- Simple operating instructions for occupants to understand how each system works and what they need to do to make sure the systems are operating at optimum capacity.
- Digital Control systems to monitor heating, cooling & lighting through motion and Lux sensors.
- Air conditioning systems to possibly include electronic expansion valves, heat recovery and VRV systems designed such that it does not need an electric reheat function.
- All devises to include sensors to assist in identifying faults for prompt repair.
- Time controls to enable optimum efficient control of the air conditioning systems and reduce running time of equipment. Consideration can also be given to variable speed fan systems.
- Auto daylight saving time adjustment.

5. HOT WATER & ASSOCIATED FITTINGS & APPLIANCES

Six star energy and BAC requirements optimise plumbing installations such as lagging of pipes. All hot water units should be set to 60 Degrees and timers should be installed on boiling water units subject to manufactures instructions.

Ensure that all appliances have a minimum 5 Star energy rating.

6. MATERIALS & SPECIFICATIONS

All materials specified are to be carefully considered to minimise environmental impact.

6.1 CONCRETE

Consideration to be given to a 56 day curing cycle for the concrete floor system to reduce CO2 omissions. Reducing the OPC amount in the mix by using fly-ash, can reduce the CO2 emissions within the project construction period.

Any concrete mix should comply with the appropriate Australian standard, but the Pre-mix manufacturer should strive to achieve a 30% OPC substitution with fly-ash. Use should also be made of recycled aggregates.

6.2 INSULATION

All wall and roofs are to be insulated in strict accordance to the Energy Rating report and the applicable Australian standard. This may be a combination of either reflective or bulk insulation.

Generally for walls that experience direct sunlight, a reflective foil should be used in combination with bulk insulation. All walls that face the outside should have bulk insulation. An R-value equal to 3 is the absolute minimum and this should be increased wherever possible.

In terms of specification it is recommended that insulation containing formaldehyde is avoided and that insulation made from 100% recycled polyester or a blend of wool and recycled polyester are used.

6.3 GLAZING & WINDOW SYSTEMS

All materials and design components are to achieve a 6 Star energy rating classification. Glazing selection such as low e and / or double glazing may be required to ensure minimum heat loss and minimum heat gain.

6.4 PAINT & INTERNAL FINISHES

Low VOC paints, stains and varnishes are to be used to improve the internal air quality to all dwellings.

All timbers are to be certified plantation or reclaimed. No rain forest timbers are to be used.

7. LIGHTING

For internal lighting consideration to be given to florescent, compact florescent warm light globes and LED lighting systems. LED lights are to be positioned so as to prevent spotting.

For external lighting consideration to be given to down lights with wall washing ability to prevent glare. For decorative effect consideration to be given to high or low pressure sodium lamps as they are the most energy efficient and have a long life cycle.

Security lighting should be designed to make people feel safer rather than reduce crime. Ensure all security lights are on a P/C cell and on a timer that turns the lights off after a period of time.

Any areas that have high levels of natural lighting should be controlled with a Lux sensor so that the lights are only on when the natural lighting is not providing adequate light.

8. THERMAL MASS OF FLOOR SYSTEMS

Passive energy performance relies on the ability of a building to hold its interior climate [temperature & humidity etc.] whilst the exterior climatic conditions change.

The use of thermal mass associated with concrete walls & floors can act as a buffer or damping system to the changes of climatic conditions.

The proposed concrete ground floor slab is an excellent medium to act as thermal mass buffers.

9. NATURAL VENTILATION & PASSIVE SOLAR APPLICATIONS

The new dwellings have excellent potential for both natural light & ventilation. This should be factored into the design specifications of mechanical services & lighting.

The new dwellings could be provided with roof mounted solar panels to utilise renewable energy and minimise greenhouse gas emissions. The minimum recommended system for each dwelling of 3-4 residents would be a 2 KW system. The renewable energy is ideal to power AV equipment, kitchen appliances, washing machines, dryers and computer equipment. This installation is at the owner's discretion.

10. RAIN WATER

All fixers, taps, shower heads & cisterns, are to achieve a minimum 5 Star energy rating in terms of water usage efficiency.

The installation of 2000 l rainwater storage tanks would supply one ground floor WC and be available for external use.

11. STORM WATER

The catchment roof area will reticulate to a piped system or to future rainwater storage tanks at the discretion of the owners.

12. WASTE

The development includes a 3 bin provision within the double garage together with 6 cubic m of storage space per dwelling.

13. TRANSPORT

The development is strategically placed located to enable all occupants' full access to surrounding public transport.

ZAI PTY LTD: BUILDING & URBAN DESIGN

06 Sept 2016.