ESD Guidance

Pre-application checklist - 2-9 townhouses

Development applications are to demonstrate best practice in Environmentally Sustainable Design

Brimbank City Council has a local planning policy similar to that shared by multiple other Victorian councils which targets Environmentally Sustainable Design (ESD). It focuses on improving the impact of new development on the community and the natural environment:

- 'Clause 22.02 – 'Environmentally Sustainable Development Policy' which seeks best practice in Environmentally Sustainable Design (ESD): https://planning-schemes.app.planning.vic.gov.au/Brimbank/ordinance/22.02

There are several state-wide ESD related planning provisions which applicants are asked to address with their ESD response:

- 'Clause 53.18 - Stormwater Management in Urban Development' is a state-wide policy which has further objectives associated with integrated water management (IWM): https://planning-schemes.app.planning.vic.gov.au/Brimbank/ordinance/53.18
- 'Clause 15.01-2S - Building design' includes further related strategies which relate to ESD: https://planning-schemes.app.planning.vic.gov.au/Brimbank/ordinance/15.01

A Sustainable Design Assessment (SDA) must be submitted for 2 to 9 dwellings. Most applications provide a Built Environment Sustainability Scorecard (BESS) in their SDA to support their claim of best practice. BESS is available for use by Brimbank applicants for free. See: http://bess.net.au

The notes below are provided as a general checklist for planning applications for 2-9 townhouses. See the 10 Sustainable Building categories where objectives from the above policies, expectations for how these should be met, and links to helpful resources are listed under each heading.

Overview

See ESD Category: Overview

- ☐ The overarching objective is that development should achieve best practice in environmentally sustainable development from the design stage through to construction and operation.
- ☐ Best practice exceeds the legal minimum requirements of the building code, and business-as-usual design and construction, so noting these is not relevant.
- ☐ Passive design is to optimise winter sun, as well as summer breeze, and shade.
- ☐ Wherever possible, orient dwellings to catch winter, warming-sun from the north, cooling breezes from the south-west, and limit exposure to western afternoon sun.
- ☐ Provide a single ESD report which includes WSUD information, and provide supporting information in appendices (e.g. STORM and BESS reports).

Energy

See ESD Category: Energy Efficiency

- ☐ Design townhouses with living areas positioned to optimise access to northern, winter warming-sun.
- ☐ Position non-habitable spaces to the west to shield habitable rooms from hot, afternoon summer sun, where possible.
- ☐ Achieve a minimum thermal performance of 7 star NatHERS rating for each dwelling, and provide preliminary ratings for all thermally unique dwellings to ensure that the proposed NatHERS rating are achievable.
- ☐ Provide double glazing to all glazed doors and windows in habitable rooms.
- ☐ Use doors to allow heated and cooled rooms to be closed off to limit heated or cooled air escaping into hallways and stairwells.
- ☐ Optimise designs to allow ample space on north-facing roofs for solar panels, and indicate any photovoltaic arrays or solar hot water panels.

- ☐ Use best practice efficiency heating and cooling systems such as reverse-cycle electric heat-pumps, and avoid electric resistance heating.
- ☐ Select an efficiency rating within one star of the highest available (electric appliance ratings, gas appliance ratings).
- ☐ Use best practice efficiency hot water systems with an efficiency within one star of the highest available. If electric, provide a heat pump, or electric resistant system with a minimum 50% solar boost.
- ☐ Utilise LED lamping with a 10% improvement on NCC illumination power density requirements, and movement sensors for garages and external lighting.
- ☐ Provide clotheslines with ample height and width to accommodate bed linen.

Indoor Environment Quality

See ESD Category: IEQ

Shade

- ☐ Design shading which allows low-altitude, winter-warming sun in the middle of the day – especially in living areas. At the winter solstice the noon sun will be 29° above the horizon.
- ☐ Protect glazed doors and windows in habitable rooms by blocking summer sun with effective, external shade:
  - North – Horizontal shading elements work best. The rule of thumb for fixed horizontal awnings or eaves to project a distance that is ¼ of the height of the glazing they protect. In the middle of the day this will block high-altitude summer sun (76° above the horizon), yet allow low-altitude, winter sun (29° above the horizon).
  - East/west – Think vertical shading elements on the east and west. Fixed pergolas or vertical fins over windows provide 'set & forget' protection. Where these aren't suitable, roll-down, external blinds will block low-angle morning and afternoon summer sun These can also be retracted fully when not needed, however, only work when residents remember to operate them.
  - Information – See the Brimbank ESD Guidance – Effective External Shading.
  - Drawings – Make sure shading devices are shown on the plans, and the extent of vertical shading on elevations. Note shading is not to be roller-shutters.

Daylight

- ☐ Provide windows for rooms on external walls, and translucent panels in garage doors to avoid the need for use of lighting in the day.
- ☐ Maximise the Visible Light Transmittance (VLT) of glazing. Effectively shaded clear glazing is preferred.
- ☐ Provide skylights for bathrooms, halls and stairwells where daylight is inadequate to avoid the use of lighting in the day.
- ☐ Provide double-glazed skylights, and beware not to over-size as they will lose warmth in winter, and can easily lead to overheating in summer.

Ventilation

- ☐ Indicate how all windows and doors open on the elevations using architectural conventions.
- ☐ Provide at least one openable window sash per habitable room in addition to any glazed door. Glazed doors can ventilate well in summer – but produce uncomfortable drafts.
- ☐ For living levels, provide a clear cross-ventilation path that transverses living spaces (NB. Melbourne's cooling breezes generally come from the south-west).
- ☐ For bedrooms, if two window openings aren't possible on opposite or adjacent walls, ensure cross-ventilation can be gained via the hall or room it opens to.
- ☐ Leaving doors ajar compromises privacy. Breeze-paths can only pass through a maximum of one doorway and be accepted as effective.
- ☐ Provide remote operation for window sashes that are out of reach (e.g. windows over stairs).
- ☐ Note all windows can be locked open so residents feel safe to leave windows open – particularly overnight.

Water

See ESD Category: Water Resources

- ☐ Reduce potable water usage by using tapware, fittings and equipment that have a WELS (Water Efficiency Labelling and Standards) water efficiency rating within one star of the best available: https://www.waterrating.gov.au/
- ☐ Currently best practice: 5 star tapware, 4 star toilets, 3 star showers, and 5 star dishwashers. Don't note washing machines or dishwashers efficiency unless these are to be supplied.

Stormwater

See ESD Category: Stormwater Management

WSUD Strategy

- ☐ Develop a strategy for best practice in Stormwater management with reference to the Brimbank ESD guidance – Water Sensitive Urban Design
- ☐ Avoid raingardens wherever possible (e.g. by increasing rainwater tank size; adding laundry reuse connection, and utilising buffer strips aside driveways).
- ☐ Where connecting washing machine taps to rainwater tanks indicate an extra 'occupant' per dwelling in STORM to acknowledge the additional reuse demand.
- ☐ Aim for a rainwater tank treatment 'reliability' of 80% in STORM. Stay below 85% to avoid the untreated water overflowing from the tanks.

WSUD submission

- ☐ See 'What WSUD information do I need to submit' in the Brimbank ESD guidance – Water Sensitive Urban Design.
- ☐ Modelling - Use the simple and free STORM stormwater modelling tool wherever possible to demonstrate best practice.
- ☐ WSUD Plan - Provide a WSUD Plan in the main drawing set that indicates the treated and non-treated portion of all new and altered catchments, the area of each, and WSUD treatment devices annotated with a description per the WSUD modelling. Indicate the portion of paving to be treated by each buffer-strip/raingarden and show indicative falls to it. See pages 15 and 16 of the above Guidance for examples of duplexes and townhouses WSUD plans.
- ☐ Treatment device details - Provide typical details of treatment devices appropriate for them to be assessed.
- ☐ Treatment device maintenance – Provide maintenance commitments for each type of treatment device in a simple table to ensure they operate effectively for the life of the development. Include inspection frequency, cleanout procedures, and remediation requirements at a minimum.
- ☐ During Construction - Provide details of, or reference to an appropriate erosion and sediment control measures to be employed during construction.

Materials

See ESD Category: Building Materials

- ☐ Avoid dark coloured, heavy materials, and those with high embodied energy.
- ☐ Consider 'dematerialisation' where possible (e.g. concrete over tiled floors).
- ☐ Use recycled materials where possible, and where this is not possible, those with lower impact such as:
  - Concrete - Consider committing to the incorporation of Supplementary Cementitious Materials (SCM's), use of recycled aggregate and recycled water.
  - Timber – Commit to sourcing all timber from sustainably managed sources that hold third party verification (note reference to FSC/PEFC 'Responsible Wood').
  - Recycled content – Consider materials that include recycled content such as polyester insulation, recycled paving or timber.

Transport

See ESD Category: Transport

- ☐ Provide at least one secure, undercover bicycle space for each dwelling. These should be horizontal and at grade so that bicycles don't need to be lifted (i.e. no over-bonnet racks), and positioned so that no vehicles need to be moved.
- ☐ If 5 or more dwellings, provide bicycle hoops for visitors, located in positions that have good passive surveillance.
- ☐ Provide an electric vehicle charging point for each dwelling. A minimum of a Level 1, 15 Amp outlet is sought.

Waste

See ESD Category: Waste Management

- ☐ Victoria is moving to a 4 bin system to capture more waste and recycling streams. Indicate space for 4 separate bins.
- ☐ Where possible, consider shared bins for townhouses, to increase space and collection efficiencies.

Urban Ecology

See ESD Category: Urban Ecology

- ☐ Retain and protect significant trees.
- ☐ Enhance biodiversity with planting that uses appropriate native species, adds ample foliage, and provides shaded space for residents in summer.
- ☐ Space for productive gardens is encouraged, particularly in larger residential developments.
- ☐ Use the shade from tree canopies, and light coloured roofs and paving to minimise the urban heat island effect.
  - For visible roofs – mid-tone or lighter colours are sought (e.g. <0.6 Solar Absorptance).
  - For 'flat' roofs – provide colours as light as possible (e.g. <0.35 Solar Absorptance).

Construction & Management

See ESD Category: Construction & Building Management

- ☐ Building User Guides – The provision of Builder Users Guides is thought not to offer much value for conventional townhouses. Only provide where a BUG will significantly enhance operational impact, and if so, provide in the SDA appendices per the BESS Tool Notes.
- ☐ WSUD – Include maintenance requirements for WSUD treatment devices in any builder operation guides, of handover information.

Innovation

See ESD Category: Innovation

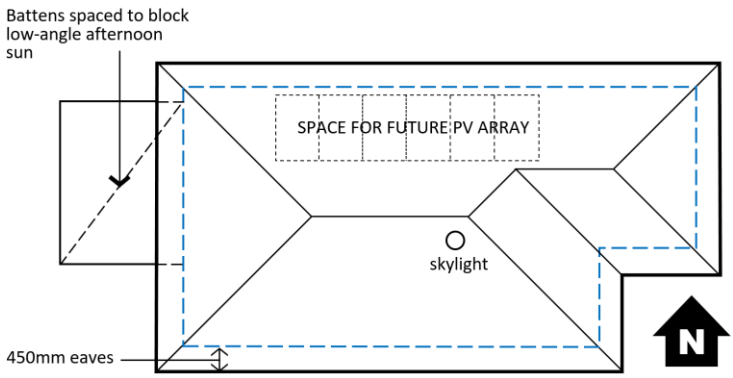
Innovation is strongly encouraged, however, exclude an Innovation section from the SDA unless the innovative initiatives are proposed which meet the innovation definition in the BESS Tool Notes.

ESD report

- ☐ Consider using the pre-written 'SDA Alternate Pathway' and adding to this the required WSUD information.
- ☐ Alternatively, provide a simple Sustainable Design Assessment (SDA) which demonstrates best practice in environmentally sustainable design (ESD) performance from the design stage through to construction and operation. See the guidance for what to include and exclude in the ESD reports.

Drawings

- ☐ Site/Floor Plans – thermal performance rating, extent of double glazing, rainwater tanks/buffer-strips/raingardens, paving extent and permeability, roof/awning line over (dimension projection), skylights over, bicycle parking, space for 4 bins, a note stating all windows can be locked in open position, clotheslines, any productive gardens.
- ☐ Roof plan – annotate the percentage solar boost for any solar hot water collectors, and the generation capacity of any photovoltaic arrays, skylight locations, roof colour. See the example below.
- ☐ Elevations - any translucent elements, extent of shading (e.g. show a dashed line for the extent of roll down awnings cover glazing), visible light transmission (VLT) level of glazing. See the example below.
- ☐ Section – Provide a section if there are double-height spaces with clerestories or other high-level glazing.
- ☐ WSUD Plan –Provide a WSUD Plan in the main drawing set which indicates the treated and non-treated portion of all new and altered catchments and the area of each. Indicate treatment devices and annotate with a description (e.g. buffer-strip area, raingarden area and detention depth, tank capacity and reuse connections) per the WSUD modelling. See the example WSUD plan in the Brimbank ESD guidance – Water Sensitive Urban Design.

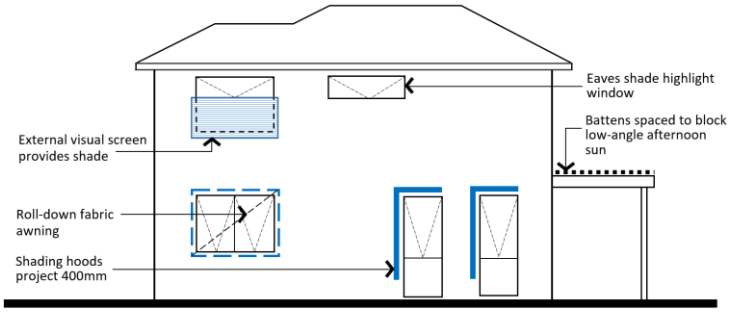


ROOF PLANS

- Consider roof forms that allow space for north-facing solar panels
- Show the position for future photovoltaic panels and annotate
- Indicate the roof overhang
- Show any skylights or ventilators
- Dimension the projection of horizontal shading elements

ELEVATIONS

- Indicate translucent elements and ventilation openings
- Show window and door sash operation
- Dimension the projection of horizontal shading elements
- Note how overlooking is prevented
- Show the extent of vertical shading
- Describe shading device (this can be done once in a legend)



See the ESD pages on the Brimbank website for more information.

Email SustainableDesign@brimbank.vic.gov.au for further assistance.