WATER SENSITIVE URBAN DESIGN (WSUD) REPORT

Development Summary

Date: 23/12/2022

This document serves as the Water Sensitive Urban Design Report for the proposed development at **13 Gladys Street, Nunawading** and is based on the drawing set provided by **Premier Projects, dated July 2022**. This report is intended to meet the requirements of the City of Stonnington's planning scheme for Stormwater Management.

Address: **13 Gladys Street, Nunawading Vic 3131**

Type: **Two Proposed Residential Dwellings**

Site area: **673 m2**

Site impervious area: **406.37m2**

Dwellings: **2**

No of Bedrooms:

Unit 1: **4**

Unit 2**: 5**

Overall Building area: **366.75 m2**

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Introduction

Premier Projects engaged 360 Energy Rating to prepare a WSUD Report for the proposed development at **13 Gladys Street, Nunawading.** This report demonstrates how this development incorporates sustainability initiatives, and meets the objectives set out in the **Whitehorse City Council** Stormwater Management Policy.

In summary, the proposed development:

- Achieves the best practice stormwater quality performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines, (BPEMG) 1999
- Promotes water sensitive urban design, including onsite rainwater harvesting and re-use

The contents presented in this report are based on:

- Architectural drawings prepared by **Premier Projects Pty Ltd**

Limitations

This WSUD report is based on the architectural drawings and other documentation provided to 360 Energy Rating at the time of writing. The drawings and documentation are subject to change during design development. Consequently, some initiatives in this report may be amended or substituted while still maintaining compliance with the objectives of Clause 19.03-3L

Project Overview

The existing site contains a single storey residential dwelling which is to be demolished. The new site will contain two proposed residential units, which will consist of 4 bedrooms in unit 1 and 5 bedrooms in unit 2. The site is located within the **Whitehorse City Council** and covers an area of **673m2**

The proposed residential dwelling comprises of the following building uses:

BUILDING LEVEL	**BUILDING USE**
Unit 1	
Ground Floor	Bedroom, Kitchen, Meals, Family & Water tank
First Floor	Bedrooms, Bathrooms & Rumpus
Unit 2	
Ground Floor	Bedroom, Kitchen, Meals, Family & Water tank
First Floor	Bedrooms &, Bathrooms

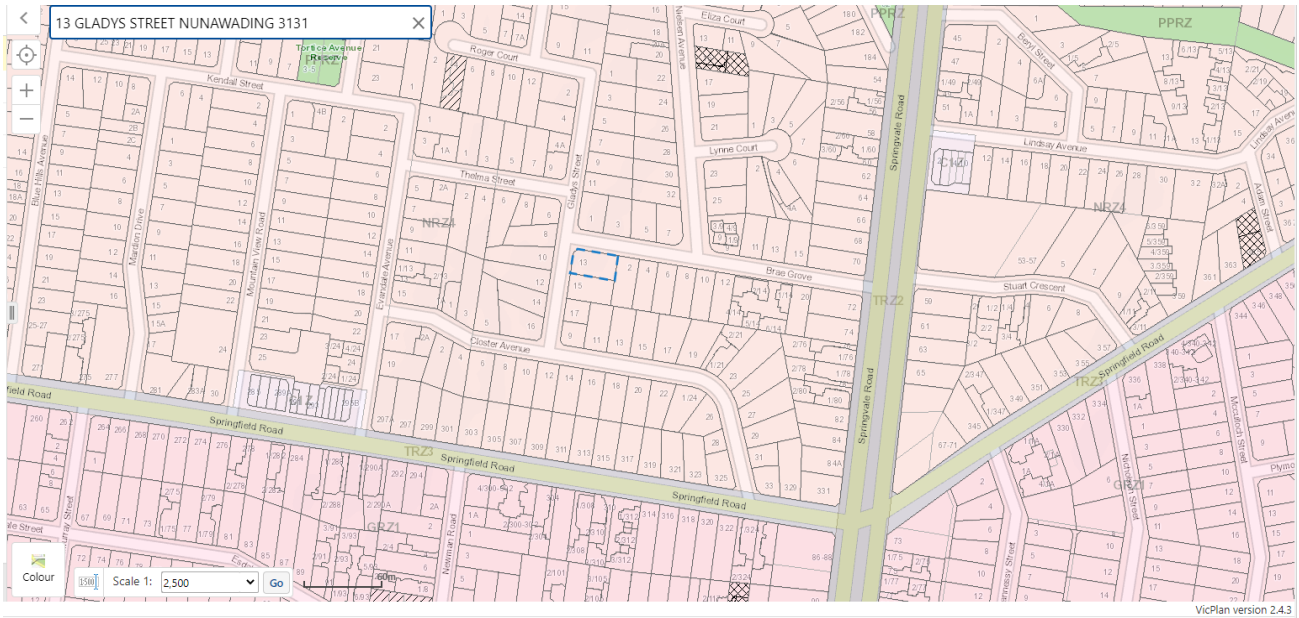

Figure 1: Shows the location of the proposed site and the surrounding locality.

Water Sensitive Urban Design Initiatives

The proposed development has been designed to contribute to the broader **Whitehorse City Council** stormwater management objectives.

In summary, the WSUD initiatives integrated into the development aim to:

- Minimise onsite potable water consumption
- Contribute to the protection of waterways by improving stormwater quality

Accordingly, the analysis presented in this report demonstrates that the proposed development meets these objectives by incorporating the following measures:

✓ Attain the best practice standard for urban stormwater quality
✓ Integrating permeable landscape elements
✓ Onsite rainwater harvesting and reuse

Focus Area - WATER EFFICIENCY

Objective: To reduce potable water use within the proposed development.

Fixtures and Fittings

To ensure efficient use of water within the proposed development, water efficient fixtures and fittings will be specified and installed as follows:

- WELS 5-star kitchen taps
- WELS 5-star basin taps
- WELS 4-star toilets
- WELS 4-star dishwashers and washing machines

Rainwater Collection

The following rainwater harvesting system will be installed in the development:

WSUD ELEMENT	DESCRIPTION	COMMENTS
Rainwater Tank Capacity	4000 litres to each dwelling	Water tank to capture rainwater from Ground Floor and First Floor Roof
Collection Areas	Approx 296.82 m2 of Roof	
Re -Use Purpose	Toilet Flushing Landscape Irrigation	Captured rainwater to be used for toilet flushing and landscape irrigation where possible

Focus Area - STORMWATER QUALITY

Objective: To reduce peak stormwater flows and pollution from stormwater runoff that may cause negative impacts on waterways.

Urban Stormwater Quality

The online STORM Rating Tool developed by Melbourne Water has been used to demonstrate that the project meets best practice standards for urban stormwater quality. Refer to the STORM report at the end of this report. The proposed development attains an overall STORM rating of **100%.**

The STORM rating achieved is a result of incorporating the following stormwater management measures:

- Rainwater harvesting from approximately 296.82 m2 of roof areas
- Re-use of captured water for toilet flushing and Landscape Irrigation
- Onsite rainwater harvesting, and re-use is envisaged to divert runoff from the stormwater system
- Minimum 3m2 Buffer Strip to be placed next to both driveways
- Garden landscape areas will also enhance the ecological value of the site and improve building user's amenity.

The STORM rating attained demonstrates that the proposed development will meet the best practice objectives for stormwater quality as contained in the Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999).

Refer to figure below for a mark-up of the proposed rainwater catchment and stormwater treatment areas.

	Roof Area to Rainwater Tanks
	Driveway to Buffer Strip
	Untreated Roof Area

Figure 3 and 4: Stormwater treatment areas

Construction Site Management Plan

During the construction phase, the builder/general contractor will prepare and implement a construction site management plan. The plan will outline how the stormwater system shall be protected from erosion and pollution during construction works and will generally meet the guidelines set out in Melbourne Water's 'Keeping our stormwater clean: Builders Guidelines'.

Focus Area - WSUD Maintenance Manual

Objective: To set out future operational and maintenance arrangements for all stormwater management measures.

RAINWATER HARVESTING SYSTEM

To ensure the rainwater harvesting system described in this report operates as designed and that the water quality is maintained during the life span of the tank, the homeowner will implement the maintenance program outlined below:

EVERY 6 MONTHS:

TANK ELEMENTS	ACTION REQUIRED	ADDITIONAL COMMENTS
Gutters	Inspection and Clean Gutters	If large amounts of leaf material and other debris are found during inspection, then inspection and cleaning frequency may need to be increased. Alternatively, gutter leaf screens may be installed.
Pipework	Inspection, Check for structural issues and repair.	N/A
Tank Filters & Flush Diverters	Inspection, Check for obstruction issues and clean or repair	N/A
Pumps	Inspection and maintenance as per manufacturer's guidelines	N/A

EVERY 2-3 YEARS:

TANK ELEMENTS	ACTION REQUIRED	ADDITIONAL COMMENTS
Rainwater Tanks	a. Inspection b. Check for structural drainage issues c. Check for sediment accumulation d. Repair any issues if necessary e. Clean/ desludge the tanks if necessary	N/A

The rainwater harvesting system will be installed in accordance with the guidelines set out in the Rainwater Design & Installation Handbook published by the National Water Commission.

Appendix A Construction Site Management Plan

This preliminary site management plan outlines how the proposed development will reduce the risks and impacts of stormwater pollution on nearby waterways during construction works.

a. Sediments such as soil, sand, gravel, mud, and concrete washings
b. Oil, foam, scum, grease, and other chemicals; and
c. Litter, stones, debris etc.

These pollutants arise from several factors such as dirt from construction vehicles, stockpiles located close to surface runoff flow paths, surface runoff from disturbed areas during earthmoving and construction works. It is therefore important to have measures that either prevent or minimise the pollutant loads entering stormwater system during construction.
To mitigate the impacts of the above pollutants on the stormwater system, the following stormwater management strategies will be implemented during the construction phase as appropriate:

PRELIMINARY SITE MANAGEMENT PLAN: SCOPE

- Establish a single stabilised entry/exit point to the site
- Ensure any stockpiles are on the project site and not on footpaths, roadways, and neighbouring land
- Only clear those lands that must be disturbed during the building works

- Where necessary, put-up barrier fences around areas where vegetation or topsoil is not to be disturbed
- Installation of onsite erosion and sediment control measures such as silt fences, sediment traps, hay bales and geotextile fabrics
- To prevent litter from getting blown away and potentially entering stormwater drains, waste bins with a lid shall be used where possible
- Site induction by the general contractor/ builder to make personnel aware of stormwater management measures in place
- Employ suitable measures to reduce mud being carried off-site into the roadways such as installing a rumble grid/gravel/crushed-rock driveway (or equivalent measure) to provide clean access for delivery vehicles, and removing mud from vehicle tyres with a shovel etc
- Safe handling and storage of chemicals, paints, oils and other elements that could wash off site to prevent them from entering stormwater drains
- Where practical, stockpiles will be covered, located within the sites fence and away from the lowest point of the site where surface runoff will drain to. This initiative will minimise erosion.

The measures presented above are considered appropriate for the proposed development at this stage of the project. This management plan is in accordance with the objectives set out in Clause 22.10 of the **Whitehorse City Council** Planning Scheme.

Conclusion

The outcomes presented in this report demonstrate how the proposed development incorporates water sensitive urban design initiatives into the design.

The proposed development will:

- Achieve the best practice objectives for stormwater quality as contained in the Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999) .

- The STORM rating achieved has confirmed this, and by integrating the following initiatives into the design:
- Onsite rainwater harvesting and reuse for toilet flushing and landscape irrigation (watering)
- Driveways graded into minimum 3m2 Buffer Strip
- Permeable/porous pavers to be used to promote onsite infiltration of stormwater

The proposed development therefore meets the objectives set out in Clause 56 and 22.10: Stormwater Management Scheme.

STORM Rating Report

TransactionID:	1509226
Municipality:	WHITEHORSE
Rainfall Station:	WHITEHORSE
Address:	13 Gladys Street
	Nunawading
	VIC 3131
Assessor:	Anna Tsoumas
Development Type:	Residential - Multiunit
Allotment Site (m2):	673.00
STORM Rating %:	100

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Unit 1 Ground Floor and First Floor to Water Tank	132.25	Rainwater Tank	4,000.00	4	126.90	92.10
Unit 1 Ground Floor and First Floor Untreated	38.94	None	0.00	0	0.00	0.00
Unit 1 Concrete Driveway to Buffer Strip	32.27	Buffer Strip	3.00	0	66.00	0.00
Unit 2 Ground Floor and First Floor to Water Tank	164.57	Rainwater Tank	4,000.00	5	120.20	89.40
Unit 2 Ground Floor and First Floor Untreated	11.78	None	0.00	0	0.00	0.00
Unit 2 Concrete Driveway to Buffer Strip	26.56	Buffer Strip	3.00	0	66.00	0.00

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