



people adding value

SITE BASED STORMWATER MANAGEMENT PLAN

Brisbane Housing Company Development

**22 Unit Townhouses Development,
Fitzgibbon QLD 4018**

Revision 1

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 31 / 5 / 10

Table of Contents

Introduction	2
2.0 Site Characteristics	4
2.1 Location	4
2.2 Topography	5
2.3 Water Courses.....	5
2.4 Existing Land Use and Vegetation	5
3.0 Stormwater Quantity	6
3.1 Stormwater Discharge	6
3.2 Flood Immunity.....	6
3.3 Legal Point of Discharge	6
3.4 No Worsening of Peak Flows	6
4.0 Stormwater Quality	7
4.1 Treatment.....	7
4.2 Erosion Sediment Control.....	7
6.0 Conclusion	9

Appendix A - Stormwater Code
Appendix B – ETS Civil Drawings
Appendix C – WRM Flood and Stormwater Management Studies
Appendix D– McVeigh's Preliminary Civil Drawings

Introduction

1.1 Background

McVeigh Consultants were commissioned by the Brisbane Housing Company to prepare a Site Based Stormwater Management Plan in support of the Development Application for the proposed development on Lots 118-122 & 147-152 (SP to be confirmed) Fitzgibbon QLD 4018. Refer to figure 1.0 for development location. This report has been prepared to meet the requirements of the Urban Land Authority & the Brisbane City Council.

1.2 Proposed development

The proposed development of the site includes the construction of 22 townhouse dwellings over a total area of 6397m². The site density will be approximately 30 dwellings per hectare.

1.3 Stormwater management requirements

The stormwater management requirements for the proposed development on the corner of Roghan Road and Road 1 (road name yet to be confirmed), outlined for the current application, have been based on the following: -

- Brisbane City Council Subdivision and Development Guidelines 2008
- Queensland Urban Drainage Manual (QUDM).
- WRM Flood & Stormwater Management Studies

Brisbane City Council Subdivision and Development Guidelines is a Planning Scheme Policy under the Brisbane City Plan. It provides a consistent framework in which both the industry and council can operate without inhibiting innovative development proposals within Brisbane City.

QUDM assisted the design of urban stormwater drainage works in Queensland. It has provided details of technical and regulatory aspects to be considered during the planning of drainage works, to formalise the design processes, and to provide details of appropriate design methods and computational procedures. Both hydrologic and hydraulic procedures were considered as well as environmental and legal aspects.

Guideline on Identifying and Applying Water Quality Objectives in Brisbane City, 2000 Brisbane City Council, aims to assist in the identification of appropriate water quality objectives (WQOs) to ensure that development assessment, environmental licensing and land use planning decisions in Brisbane results in the protection of environmental values (EVs) in and around affected receiving waters. Healthy Waterways' Water Sensitive Urban Design: Developing Design Objectives for Water Sensitive Urban Design in Southeast Queensland was referred to adopt recommended water quality objectives for developments in Southeast Queensland.

2.0 Site Characteristics

2.1 Location

As shown below in Figure 1.0, the site is located in the north western corner of the Stage 3 & 4 Fitzgibbon subdivision, Fitzgibbon QLD 4018. The townhouse development is on the corner of the proposed North-South Connector Road & Roghan Road (refer to appendix 1 for a preliminary architectural site plan). The site is located in Brisbane City Council planning unit code C/O20 which is located in the Cabbage Tree Creek Catchment.

Extent Of Residential Subdivision – Stage 3 & 4

Proposed Townhouse Development



Figure 1.0 Approximate Site Location

2.2 Topography

The proposed site has minimal grades with each lot falling towards the road frontage. The proposed site has an approximate RL of 11.5 as shown by the proposed Civil Engineering drawings by ETS Group in **Appendix B**. The lots proposed to be developed are from 118 to 122 & 147 to 152.

2.3 Water Courses

The existing site prior to the subdivisional development sloped towards the north and naturally conveyed stormwater runoff to the existing Carseldine Drain, which connects downstream with Cabbage Tree Creek. As the site is now under development the constructed water courses will still generally drain towards Carseldine Drain, however via pipes and overland flow paths (for proposed stormwater layout refer to Civil Engineering drawings by ETS Group in **Appendix B**). The proposed runoff is treated for quality and quantity as stipulated in the stormwater management report by WRM in Appendix C.

2.4 Existing Land Use and Vegetation

There are currently no buildings or vegetation coverage on the site.

3.0 Stormwater Quantity

3.1 Stormwater Discharge

It is proposed that the stormwater runoff from the proposed development will be conveyed through rainwater tanks with overflow pipes & surface runoff connecting to the kerb. ETS Group civil drawings (appendix B) indicate the allowance for kerb connections.

3.2 Flood Immunity

The report by WRM (Appendix C) indicates the subdivision will have no adverse impacts on flood levels and on discharge peak flow rates as long as the recommended infrastructure is constructed. This SWMP assumes the required infrastructure will be constructed.

3.3 Legal Point of Discharge

All rainwater tank overflows and surface runoff within the site will discharge to road drainage systems via kerb adaptor. Refer to appendix D FOR McVeigh's preliminary stormwater drainage drawing.

3.4 No Worsening of Peak Flows

A flood investigation of the Cabbage Tree Catchment has been carried out by WRM for the Urban Land Development Authority which indicates that numerous flood preventative measures will be adopted as part of the Fitzgibbon development scheme. The increase in flow due to the proposed development will be mitigated to pre-development levels by numerous flood management infrastructures proposed in the estate development. Therefore no flood mitigation is proposed as part of the proposed development. Refer to section 11 of **Appendix C**.

4.0 Stormwater Quality

Requirements within this report have been based on The Flood & Stormwater Management Studies For The Fitzgibbon Development Scheme by WRM (Appendix C).

4.1 Treatment

This site consists of 11 lots which will be developed into 22 townhouses with landscaping, vehicle access and car parks. The treatment used to achieve target pollutant removals has been identified previously in the report by WRM, Section 9.2. (Appendix C). The proposed treatment train by WRM incorporates Bio-Retention, Stormwater Capture Basin, Stormwater Detention Basins & Swales. To achieve treatment compliance the ERM report indicates a requirement of a 3000L tank in each dwelling within the development area. For dwellings within zones having densities of 15 dwelling per hectare a 5000 litre tank is required and for dwellings within zones having densities of 30 dwelling per hectare a 3000 litre tank is required. These tank sizing are also in accordance with the current QDC requirements for rainwater reuse. The incorporation of rainwater tanks will greatly reduce the need for Bio-Retention as a fair portion of the water discharges to sewer due to the mandatory internal reuse requirements (e.g. flushing toilets, washing machine connections and hose taps).

It is anticipated that the majority of the stormwater runoff would be relatively free of secondary pollutants as most of the stormwater is from the proposed roof of buildings, which is assumed to be relatively 'clean' water. Furthermore, almost all the roof water will be discharged into rainwater tanks. Refer to Appendix D, McVeigh's Preliminary Civil Drawings for proposed Stormwater drainage. It is also worth noting that a majority of the stormwater runoff from the site discharges directly to bio-retention located within the centre of the road. Refer to Appendix B for proposed subdivision stormwater drainage layout by ETS Group.

4.2 Erosion Sediment Control

An erosion sediment control plan has been completed and is part of Appendix D.

5.0 Maintenance

A summary of maintenance requirements are outlined below.

Rainwater Tank

A summary of maintenance recommendations to keep contaminants out of rainwater tanks are outlined below.

- keeping roof clear of large tree branches
- keeping gutters and downpipes clear of leaves and debris
- checking inlet and overflow screens are securely in place, are in good condition and cleaned regularly
- opening and cleaning out first flush devices after rain
- checking the tank and fittings regularly for leaks
- check sludge levels in the bottom of the tank every two to three years or if any sediment in the water is noticed
- removing sludge before the layer builds to the level of the tank outlet – usually once every five to ten years
- avoiding using harsh cleaning products that may contaminate the rainwater

Corrosion in tank systems

Direct contact between different metals or run-off from one metal surface to another can cause accelerated corrosion or holes when metals are wet. Metal roofing materials, roof accessories, gutters, screens, piping and steel rainwater tanks can cause or be affected by corrosion.

Mosquitoes

Mosquitoes breed if they get inside a tank or systems where water does not drain from pipes, gutters and plumbing. Mosquitoes can carry diseases like Ross River and Dengue Fever.

Mosquitoes breeding in your rainwater tank can be stopped by:

- ensuring there is no debris in the tank
 - gutter design does not allow water to pool
 - ensuring water does not pool on the tank lid
 - sealing all entry routes to the tank including the inlet and overflow pipes with mosquito-proof screens
- Mosquito-proof screens should:
- have openings less than 1mm squared
 - be made of stainless steel or aluminium
 - be secure but removable for cleaning. In some systems, screens can be incorporated into a rainhead, first flush device or underground filter pit

If mosquito larvae or wrigglers are found inside the tank, they can be destroyed by adding a small amount of liquid paraffin or edible kitchen oil to form a thin film on the surface of the water. This stops any hatched mosquitoes flying off. Find out how the mosquitoes got into the tank and seal off the entry route.

6.0 Conclusion

This stormwater management plan report conforms to the WRM stormwater management plan for both the required rainwater tank sizes and stormwater connection locations. No further stormwater quantity or quality is required to meet necessary objectives.

APPROVED BY:

VINCE WILLIAMS,
McVEIGH CONSULTANTS.
RPEA 10145

McVeigh

Appendix A - Stormwater Code

Performance Criteria		Acceptable Solutions		Compliance Assessment
4.1	General			
P1	The planning of the stormwater management system must provide for the integrated management of stormwater in order to: • Minimise flooding • Protect and enhance environmental values of receiving waters • Maximise the use of natural waterway corridors and natural channel design principles • Maximise community benefit • Minimise public safety risk	A1.1 A1.2 A1.3	The proposal complies with the Subdivision and Development Guidelines A Site Based Stormwater Management Plan (SBSMP) is prepared for all management measures. The SBSMP must provide for the following where applicable: • An underground and/or open drain/overland flowpath network maximising the use of natural channel design and water sensitive urban design principles. • Make provision for detention/retention storage basins • An Erosion and Sediment Control (ESC) Program where required by Council's Erosion and Sediment Control Standard. • Retention of natural waterway corridors • Public safety factors and risk management measures • And acceptable level of flood immunity The proposal complies with any Stormwater Management Plan (SMP), Local Stormwater Management Plan (LSMP) or Waterways Management Plan (WMP) prepared by Council <i>Note:</i> The Subdivision and Development Guidelines provide guidance on the level of information required for different development types	The proposed development complies

Brisbane Housing Company Stage 4 Townhouse Development
Fitzgibbon QLD 4018

Performance Criteria		Acceptable Solutions		Compliance assessment
			<i>hydrology report (as part of the SBSMP) identifying the area required to accommodate the drainage network</i>	
P3	Development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level	A3.1	All development is located above minimum flood immunity levels in accordance with Council's Subdivision and Development Guidelines <i>Note:</i> Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a SBSMP)	The proposed development complies
		A3.2	Road access is provided in accordance with the flood immunity levels identified in Council's Subdivision and Development Guidelines <i>Note:</i> Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels	
P4	Any channel works that are part of the development, major drainage works or flood mitigation works must maintain and/or enhance the environmental values of the waterway corridor or drainage corridor	A4	Design and construction of channel works incorporate water sensitive urban design and natural channel design features which will comply with: • Council's Subdivision and Development Guidelines, and • where applicable any SMP, LSMP or	Not applicable

Performance Criteria		Acceptable Solutions		Compliance assessment
			WMP prepared by Council Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any channel works (as part of a SBSMP) All erosion and sediment controls are established and maintained in accordance with Council's current Erosion and Sediment Control Standard	
P5	Erosion treatment works along waterway banks and associated drainage structures must maintain or enhance the environmental values of waterways	A5	Design and construction of erosion treatment features incorporate natural channel design features which will comply with: - Council's Subdivision and Development Guidelines, and - Council's Urban Creek Erosion—Guidelines for Selecting Remedial Works Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any erosion treatment works (as part of a SBSMP)	The proposed development complies
P6	Bridges and culverts provided for flood immunity to minimise traffic disruption must improve public safety and allow for fauna movement and recreation corridors where these needs are identified	A6	The design complies with Council's Subdivision and Development Guidelines Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual	Not applicable

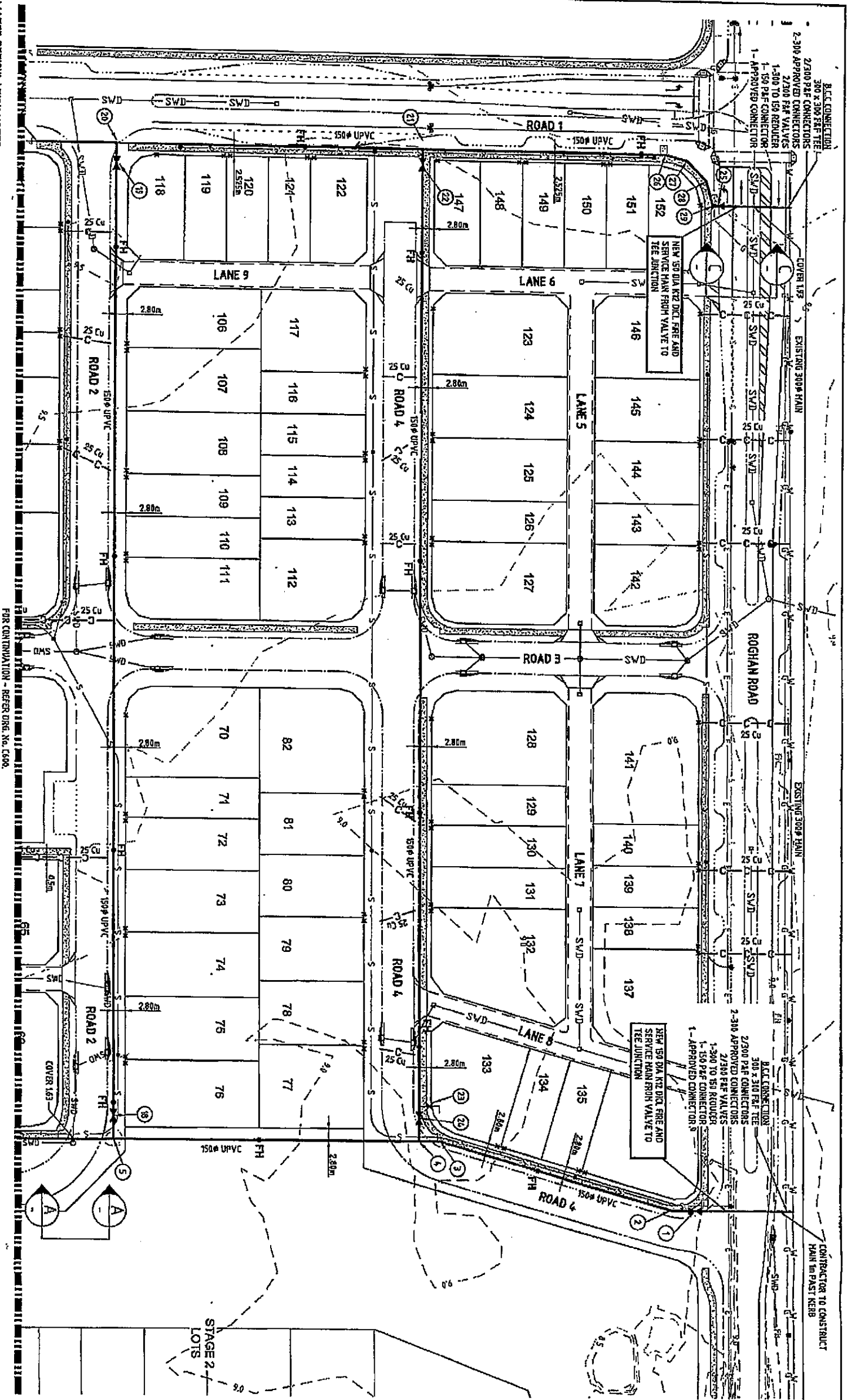
Performance Criteria		Acceptable Solutions		Compliance assessment
			<i>details of any bridge or culvert works (as part of a SBSMP)</i>	
P7	The design and construction of detention and retention storage features must: • achieve acceptable impacts on environmental values • provide for recreational use where possible • achieve acceptable risk to public safety and property	A7	The design complies with Council's Subdivision and Development Guidelines and where applicable any SMP, LSMP or WMP prepared by Council <i>Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any detention and retention storage features (as part of a SBSMP)</i>	Not applicable

Performance Criteria		Acceptable Solutions		Compliance assessment
4.3 Water Quality and Drainage				
	Low risk development			
P1	Water quality impacts must be minimised using best practice techniques	A1.1	The design provides for storm water quality best management practices that are sufficient to treat the target pollutants and will comply with Council 's Subdivision and Development Guidelines <i>Note:</i> <i>Compliance with this acceptable solution can be demonstrated by indicating the areas that are to be set aside for water quality best management practices. For most development this can be achieved by determining pollutant loads using hand calculations as set out in Councils Guidelines for Pollutant Export Modelling in Brisbane and identifying the type and size of stormwater quality best management practices based on their efficiencies identified in Council's Subdivision and Development Guidelines</i>	The proposed development complies
		A1.2	Storm water quality best management practices are designed, constructed and maintained in accordance with Council 's Subdivision and Development Guidelines <i>Note:</i> <i>Compliance with this acceptable solution can be demonstrated by providing conceptual detail of how stormwater quality will be managed (as part</i>	

Prof. Dr. G. H. B. van der

Performance Criteria		Acceptable Solutions		Compliance assessment
		A3.3	's Subdivision and Development Guidelines Stormwater quality best management practices are designed, constructed and maintained in accordance with Council 's Subdivision and Development Guidelines <i>Note:</i> Compliance with this acceptable solution can be demonstrated by providing conceptual detail of how stormwater quality will be managed (as part of a SBSMP)	
P4	Release of sediment laden stormwater is minimised	A4	All development complies with Council's Erosion and Sediment Control Standard <i>Note:</i> Compliance with this Performance Criteria/Acceptable Solution can be demonstrated by providing conceptual details of how the requirements of Council's Erosion and Sediment Control Standard will be met (conceptual SBSMP). This will generally be conditioned and may require the submission of a subsequent detailed SBSMP for operational works	The proposed development complies

Appendix B -- ETS Civil Drawings

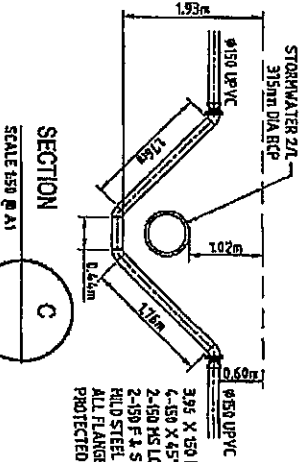


LEGEND

- PROPOSED UPVC WATER MAIN U.G.
- PROPOSED WATER RETICULATION CONDUIT
- STORM BRANCH REFER WATER FITTING TABLE BELOW.
- DEAD END, REFER WATER FITTING TABLE BELOW.
- PROPOSED FREE HYDRAULIC LOCATION.
- TEST POINT, REFER WATER FITTING TABLE BELOW.
- ISOLATION VALVE, REFER WATER FITTING TABLE BELOW.
- WATER MAIN FITTING, REFER WATER FITTING TABLE BELOW.
- LOT NUMBER.
- PROPOSED STORMWATER LINE
- PROPOSED SEWER MAIN
- LOT WATER METER LOCATION, ON OR AT ALIGNMENT.
- EXISTING WATER
- EXISTING SEWER
- EXISTING FIRE HYDRANT LOCATION.
- EXISTING STORMWATER

WATER FITTING TABLE

FT.	DESCRIPTION
1	ISOLATION VALVE
2	1500 x 225° BEND
3	1500 x 225° BEND
4	1500 TO 1500 TEE JUNCTION
5	1500 TO 1500 TEE JUNCTION
6	1500 TO 1500 TEE JUNCTION
7	ISOLATION VALVE
8	ISOLATION VALVE
9	1500 TO 1500 TEE JUNCTION
10	1500 TO 1500 TEE JUNCTION
11	1500 TO 1500 TEE JUNCTION
12	ISOLATION VALVE
13	ISOLATION VALVE
14	ISOLATION VALVE
15	1500 x 225° BEND
16	1500 x 225° BEND
17	1500 x 225° BEND
18	1500 x 225° BEND
19	1500 x 225° BEND
20	1500 x 225° BEND
21	1500 x 225° BEND
22	1500 x 225° BEND
23	1500 x 225° BEND
24	1500 x 225° BEND
25	1500 x 225° BEND
26	1500 x 225° BEND
27	1500 x 225° BEND
28	1500 x 225° BEND
29	1500 x 225° BEND



CONSTRUCTION ISSUE

- ### WATER RETICULATION NOTES
- ALL WORKS AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT LOCAL COUNCIL SPECIFICATIONS AND STANDARDS.
 - UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
 - ADAPT TOP OF KERB AS PERMANENT LEVEL TO BE AS FOLLOWS
 - 63, 100 & 150 DIAMETER PIPE - 600mm COVER
 - 200, 250 & 300 DIAMETER PIPE - 1000mm COVER
 - INCREASE COVER TO 1200mm WHEN NEXT TO BUS BAY.
 - CONDUITS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL SPECIFICATIONS.
 - A WATER METER SUPPLIED AT THE DEVELOPER'S COST, IS TO BE INSTALLED AT THE SERVICE POINT OF EACH LOT.
 - UPVC PIPES SHALL BE CLASS 36 AND COMPLY WITH A.S. 1477. FITTINGS SHALL BE CEMENT LINED GRIEY FROM IN ACCORDANCE WITH A.S. 2544, OR DUCTILE IRON CEMENT LINED (DICI) IN ACCORDANCE WITH A.S. 2280.
 - DUCTILE IRON CEMENT LINED (DICI) PIPES AND FITTINGS SHALL BE CLASS 36 AND COMPLY WITH A.S. 2280. PIPES AND FITTINGS SHALL BE POLYETHYLENE SLEEVED, RILD STEEL, INSUL PIPES SHALL COMPLY WITH A.S. 1579 AND BE CEMENT LINED IN ACCORDANCE WITH A.S. 1241.
 - PIPE COATING SHALL COMPLY WITH A.S. 4231 (SILICATE IN POLYETHYLENE PIPES OF 63 OD SHALL BE CLASS PRK 9500 AND COMPLY WITH A.S. 4180. FITTINGS SHALL COMPLY WITH A.S. 1160.
 - ALL CONCRETE FOOTPATHS TO BE CLEAR OF WATER MAINS WHERE POSSIBLE.
 - TEST / COMBINATION PORTS TO BE INSTALLED IN ACCORDANCE WITH RELEVANT LOCAL AUTHORITIES STANDARD DRAWINGS AND IDENTIFICATION.
 - ALL WATER & SEWER CONSTRUCTION WORK UNDERTAKEN BY THE CONTRACTOR IS TO COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH & SAFETY ACT 1995. CONTACT YOUR NEAREST OFFICE OF THE DIVISION OF WORKPLACE HEALTH AND SAFETY. FOR INFORMATION PHONE 1300 369 915
 - THE CONSTRUCTION OF THE WATER RETICULATION WORK SHOWN ON THE ACCOMPANYING DRAWINGS MUST BE SUPERVISED BY AN ENGINEER WHO HAS PERFORMED REGISTRATION WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT ANY COUNCIL'S RETICULATION SYSTEM.
 - ALL WATER CONSTRUCTION WORK UNDERTAKEN BY THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT 1995. CONTACT THE DIVISION OF HEALTH & SAFETY FOR INFORMATION. PHONE 1300 369 915

CLIENT URBAN LAND DEVELOPMENT AUTHORITY RESIDENTIAL SUBDIVISION - STAGES 3 & 4 153 TELEGRAPH ROAD, FITZGIBBON WATER RETICULATION LAYOUT PLAN 2 OF 2		DESIGNED AL DATE 11/12/19	APPROVED [Signature] DATE 11/12/19
PROJECT 153 TELEGRAPH ROAD, FITZGIBBON WATER RETICULATION LAYOUT PLAN 2 OF 2	DATE MAY 2008	SCALE 1:100 (A1)	SCALE 1:100 (A1)
ARCHITECTS - CIVIL & STRUCTURAL ENGINEERS [Firm Name] [Address] [Phone] [Email]			
UTDS-634 SHEET NUMBER: 601 OF: 2			

Appendix C – WRM Flood and Stormwater Management Studies