

To: Chiara Frisby
Company: RPS

From: Nic Smith / Shaun Leinster
Company: DesignFlow

Our Ref: 4277
Date: 29-07-2021

Subject: Oxley PDA Reconfiguring a Lot - 1 Into 2 Lots (Retirement Site)
Stormwater Management Plan Addendum

**PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL**



Approval no: DEV2021/1194

Date: 30 August 2021

1 INTRODUCTION

This technical memorandum provides information to support the reconfiguration of a lot (1 into 2) for the proposed retirement living lot within the Oxley PDA Stage 1 (specifically Stage 1C). This memorandum is to be read as an addendum to the *Oxley Priority Development Area Stormwater Management Plan – Version 3b* (DesignFlow 2021) referred to herein as the Oxley PDA SMP.

The proposed management of stormwater quality and quantity associated with the reconfiguration of lot is consistent with the previous strategy in the Oxley PDA SMP (with the retirement living site as a single lot) which broadly directs low flows to the existing bioretention basin to the east while diverting high flows to the detention basin to the north (via low/high flow diversion manhole and pipes). The updated strategy is documented below.

2 SITE DETAILS

The proposed reconfiguration seeks to create two new lots referred to as Lot 301 and 302 from the original Stage 1C lot in the approved Master Plan (EDQ Approval Ref: DEV2020/1099). The new lots will be 6390 m² (lot 301) and 9644 m² (lot 302). The proposed land use (retirement living / residential age care) remains consistent with the previous single lot assumptions in the Oxley PDA SMP with allowance for a fraction impervious up to 80%.

3 STORMWATER MANAGEMENT STRATEGY

In line with the Oxley PDA SMP, the stormwater management strategy for the proposed retirement sites adopts the following (refer also to Figure 1):

- Low flow (3 month ARI) diversion via pipe to existing bioretention basin 1
- Balance flow (2 year ARI) diversion via pipe to existing flood basin 1
- Overland flow (100 year ARI) directed to existing flood basin 1

3.1 LAWFUL DISCHARGE

The nominated lawful discharge point for each proposed lot is as follows (and represented in Figure 1 below):

- Piped flow connected to pit in northern corner of each lot
- Overland flow directed to north western boundary of each lot to a single stabilised outlet location (into flood basin 1) without adversely impacting adjoining private properties.

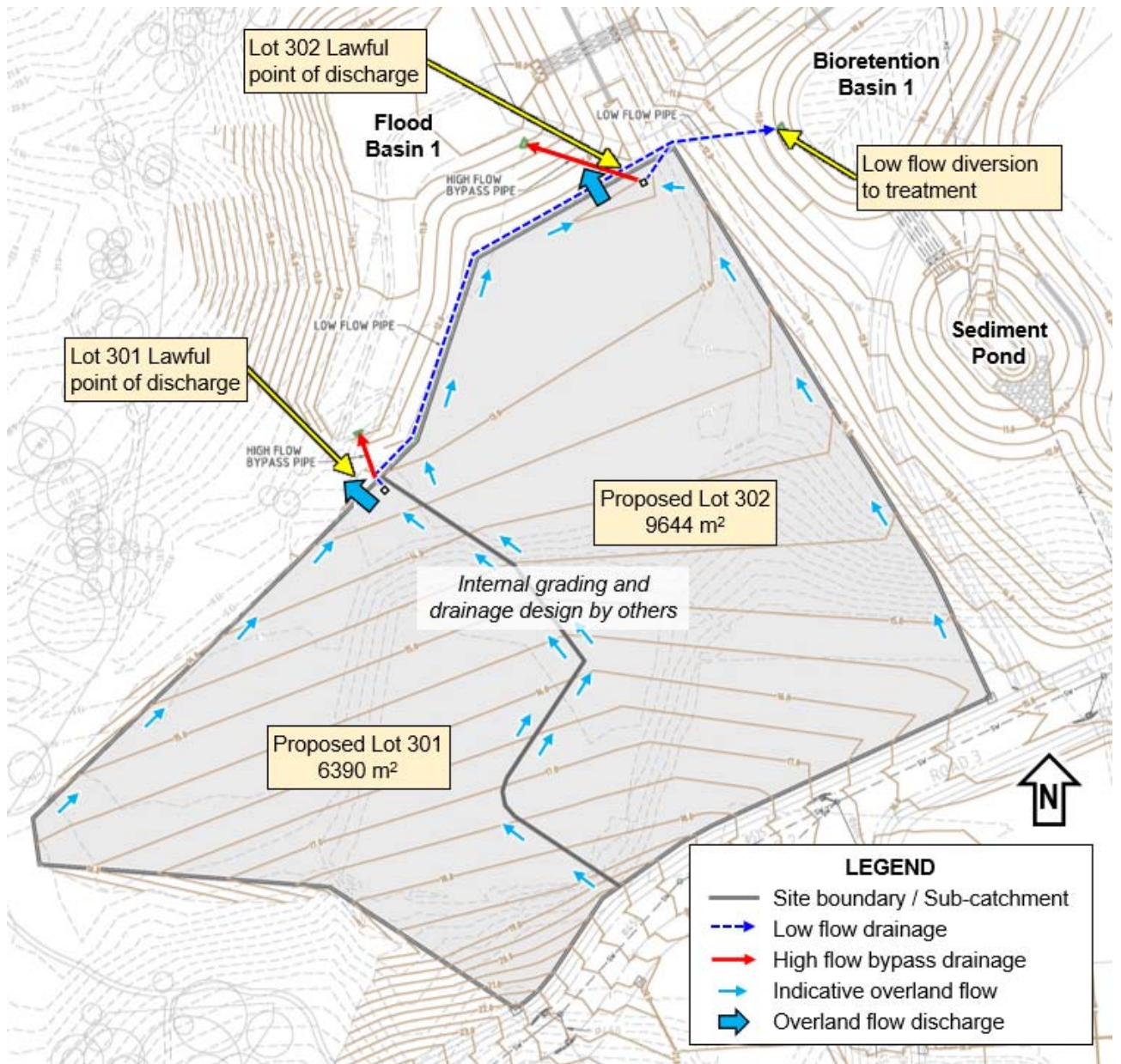


Figure 1: Stormwater drainage and discharge strategy

Given the ultimate regrading of the respective sites to accommodate the roads, buildings, services and landscape zones, due consideration must be given to site planning and design to ensure potential redirection of overland from upslope or adjoining areas is appropriately managed to avoid nuisance. This includes the influence of batters, boundary fences and landscape features when designing site drainage. This will remain the responsibility of site designers for the respective lot owners.

3.2 STORMWATER QUANTITY

Preliminary estimates of site discharge are provided below for the purpose of informing infrastructure design:

1. Low flow diversion pipe to treatment - 3 month ARI
2. High flow diversion pipe to detention - 2 year ARI (less 3 moth ARI)
3. Overland flow to detention - 100 year ARI (with adequate blockage allowances on pits)

In absence of site layout and drainage details, the initial estimate of time of concentration is taken as 6 minutes. These discharge rates also assume no flow diversion from one lot to another. Refinements to design flows can be made as part of detailed design.

Table 1: Rational Method peak discharge estimate

ARI	Lot 301			Lot 302		
	0.6390 ha			0.9644 ha		
	C	I ²	Q	C	I ²	Q
		mm/hr	m ³ /s		mm/hr	m ³ /s
3 month ¹			0.067			0.101
1	0.69	110	0.134	0.69	110	0.203
2	0.73	141	0.183	0.73	141	0.276
5	0.82	179	0.260	0.82	179	0.392
10	0.86	202	0.308	0.86	202	0.465
20	0.90	232	0.372	0.90	232	0.561
50	0.99	273	0.479	0.99	273	0.723
100	1.00	304	0.540	1.00	304	0.814

Notes:

1. 3 month ARI peak discharge estimate taken as 50% of 1 year ARI
2. Rainfall intensities sourced from BCC Planning Scheme Policy: Infrastructure Design - Chapter 7 Stormwater Drainage

Low flow/high flow diversion manholes are located external to lot 301 and within lot 302 (refer functional layout in Appendix A). Each site will be responsible for provision of a stable overland flow path within the lot capable of conveying the 100 year ARI flow to the nominated lawful point of discharge to connect to the existing detention basin to the north.

3.3 STORMWATER QUALITY

No onsite stormwater quality treatment is required on the retirement sites as treatment is managed in the existing bioretention basin 1 to the east as part of the overall site strategy documented as part of the Oxley PDA SMP.

However, it will be a requirement that gully pits and field inlets within roads and public common areas of each site are provided with gully baskets to manage potential litter loads that will discharge directly to the Council bioretention basin offsite. Ownership and maintenance of these devices will remain the responsibility in the respective site operator.

3.4 FLOODING

Flood levels within and adjacent to the proposed retirement sites are summarised below:

- Local catchment 1% AEP (100 year ARI) varies from 12.36 to mAHD 14.09 mAHD (Figure 2)
- Residential Flood Level (Brisbane River) is 11.4 mAHD
- Brisbane River 0.2% AEP (1 in 500 AEP) flood level is 15.45 mAHD.

Local flood levels occur in the adjacent Flood Basin 1 and upstream gully. Exclusion fencing is to be provided along the north western boundary of each retirement site where it interfaces with this flood basin and channel (with allowance for site overland flow discharge). The lowest lot level of lot 302 RL12.5 is 1.1m above the Residential Flood Level (RFL) from the Brisbane River.

In accordance with Section 5.4.6 of the Oxley PDA SMP (and Council's flood overlay code), minimum floor levels for vulnerable land uses within the retirement sites are to be above the 0.2% AEP (1 in 500 AEP) Brisbane River flood level of 15.45 mAHD (data supplied by BMT, 2020).

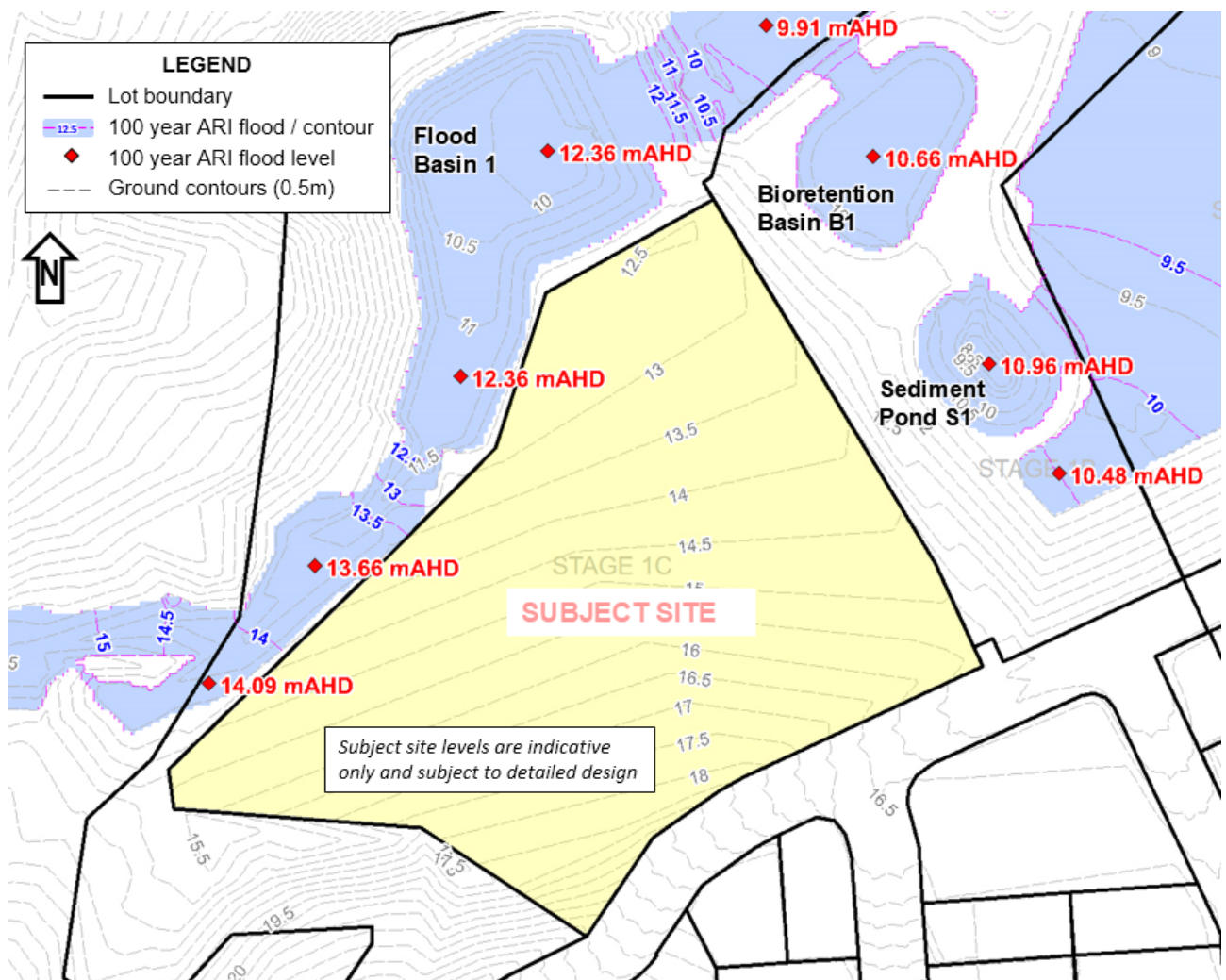


Figure 2: 100 year ARI local flood levels

4 SUMMARY

This stormwater management plan addendum to the *Oxley Priority Development Area Stormwater Management Plan – Version 3b* (DesignFlow 2021) provides a revised strategy for the management of the reconfigured retirement site into two lots. This strategy relies on the following for each retirement site:

- Connect pipe drainage to the nominated stormwater pit in the northern corner of each lot.
- Manage overland flow within each site and direct it to a single stabilised outlet on the north western lot boundary without causing nuisance to adjacent landowners.
- Provide litter baskets in road and common area drainage pits.
- Floor level of vulnerable land uses to be at or above 15.45 mAHD (Brisbane River 0.2% AEP flood level)

Prepared by:

Nic Smith

Reviewed/approved by:



Shaun Leinster

RPEQ 15637

DesignFlow

NORTH

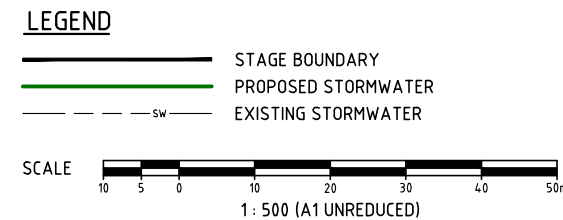
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Project

OXLEY PDA RETIREMENT SITE



Drawn SA	Designed AK	Checked SM	Date JUL '21
Scale AS SHOWN			Sheet FL02 of 01
A1	Drawing No 21-173-FL02		Revision



STORMWATER LAYOUT PLAN
SCALE 1:500