

Memorandum

To	Wollongong City Council	From	Aurecon
Copy		Reference	520547
Date	16-02-2024	Pages (including this page)	5
Subject	SGID CHPC Supplementary floodplain storage assessment		

1 Introduction

This memo aims to present the floodplain storage outcomes for the proposed Community & High Performance & Centre for St George Illawarra Dragons (this development will be referred to as CHPC herein).

A review of the initially submitted DA has been undertaken with the intent to minimise the loss of floodplain storage as a result of the project. The initial design had presented a loss of floodplain storage in the order of 16,000m³. Following discussions with Wollongong City Council (WCC), the proposal was reviewed and a revised strategy to mitigate the floodplain storage impact was developed. Further discussion on the strategy is outlined below.

2 Filling strategy

The revised proposal has looked to minimise filling across the project. The strategy includes the following components in comparison to the initial DA proposal. The strategy components are

- Lowering of Field 2 to below existing levels.
- Scrapping the open space adjacent to Field 2.
- Lowering Field 1 finished levels
- Placing the main building on piers and allowing the underside of the building to remain open for flood storage
- Placing the carpark on piers and allowing the underside to remain open for flood storage.

These areas are shown in Figure 2-1. The above elements all contribute to minimising the loss of floodplain storage in the PMF, 1% AEP, 5% AEP and 20% AEP events.

The finished levels of the main building and carpark are unchanged from the original DA submission. Levels for the playing fields and loading dock can be found in the civil drawing set.



Loading dock at grade and existing levels and ramping up to building and access road

**Main building and carpark
on piers. Void underneath.
Natural surface level
underneath to maintain
flowpath**

Figure 2-1: Strategy to minimise loss of floodplain storage

3 Floodplain storage assessment

The change in floodplain storage because of the proposed development is presented in Table 3-1. The table presents the pre-development and post development flood storage based on the pre-development flood levels for the PMF, 1% AEP, 5% AEP and 20% AEP flood events. The results show that there is no expected loss in floodplain storage. This is evidenced through the cut and fill drawings provided in the civil design package that forms part of the same DA.

The flood storage volumes in this floodplain were calculated using 12D Model software. It compared the existing (pre-development) flood level with the existing topographic survey. This provided the baseline flood storage for the PMF, 1% AEP, 5% AEP and 20% AEP events. Using the same existing flood levels, the flood storage volume was calculated using the proposed development design surface. Both volumes were compared and the change in flood storage volume was determined.

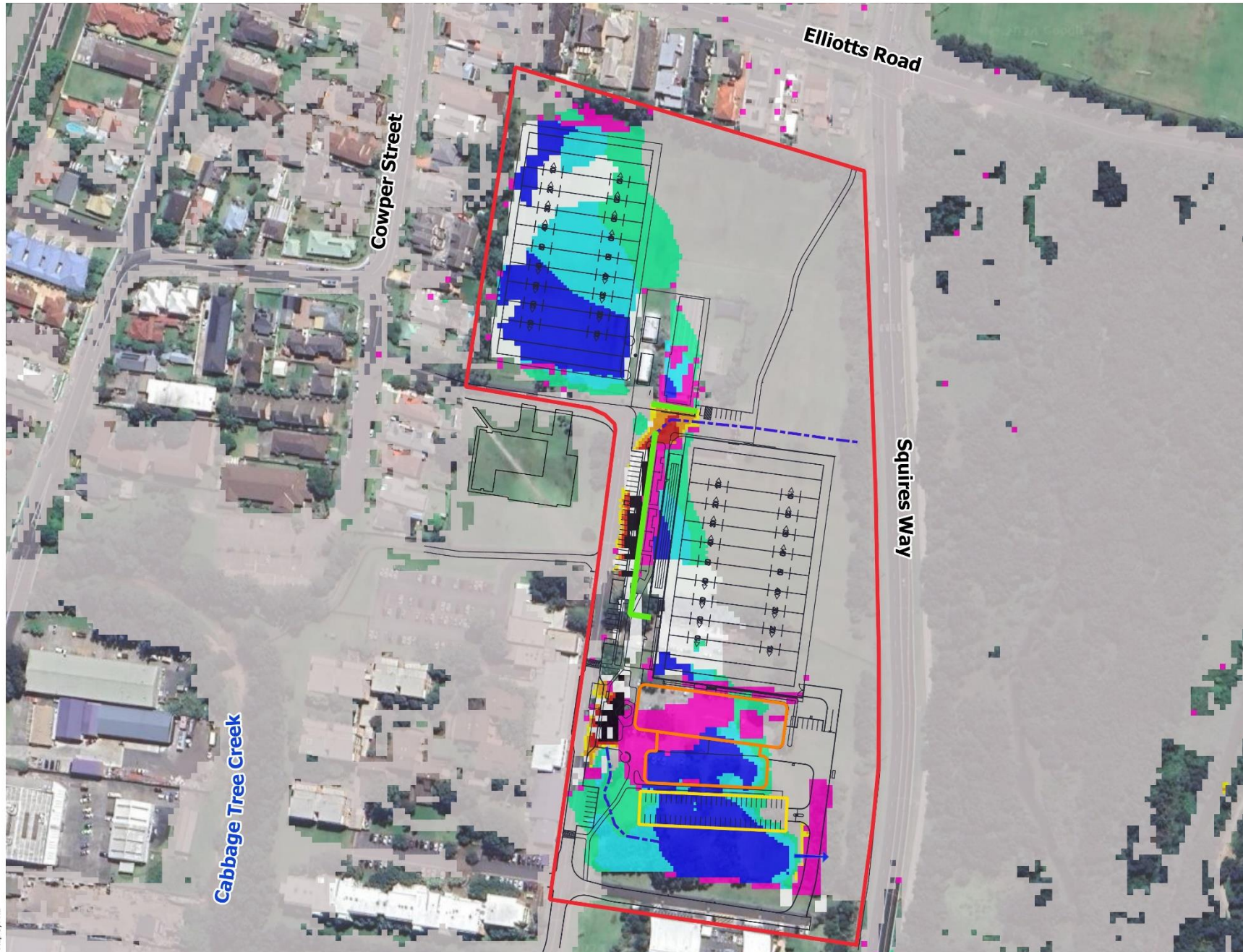
In the larger flood events, the building and carpark superstructures are partially submerged. Furthermore, piers and walls supporting the substructure consume some of the calculated flood storage. The structural volume below the corresponding flood levels were then subtracted from the calculated floodplain storage volumes to provide a final change in floodplain storage.

Table 3-1 - Flood storage volumes

Scenario/component	Flood storage volume (m ³)			
	PMF	1% AEP	5% AEP	20% AEP
Existing volume	116335	26373	14740	8254
Proposed development volume	120955	32211	17415	10216
Structural volume	3067	345	151	71
Change in flood storage	1553	5493	2524	1891

4 Flood impacts

Based on the volumes, it is evident that the proposed strategy provides for an increase in floodplain storage. This is reflected in flood afflux maps below, which demonstrate that there is no increase in flood levels on adjacent properties in the 1% AEP and PMF flood events. Reductions in flood levels are predicted across the site which is a reflection of the no loss of floodplain storage outcome of the proposal.



Legend

Changes In Flood Level (m)	
Dark Blue	≤ -0.2
Light Blue	-0.20 to -0.10
Green	-0.10 to -0.02
Light Green	-0.02 to 0.02
Yellow	0.02 to 0.05
Orange	0.05 to 0.1
Red	0.1 to 0.2
Dark Red	> 0.2
Pink	Was Wet Now Dry
White	Was Dry Now Wet

Green Line	Diversion Walls
Blue Line	Diversion Drains
Blue Arrow	Proposed Culvert
Grey Line	Design Lines
Red Outline	Development Site
Orange Outline	Building with Piers
Yellow Outline	Carpark with Piers
Black Outline	Cadastre

Notes:

- * For Information Only
- * Hydrology ARR1987
- * Hydraulics TUFLOW Classic
- Version 2018-03-AD SP

Map by: HL



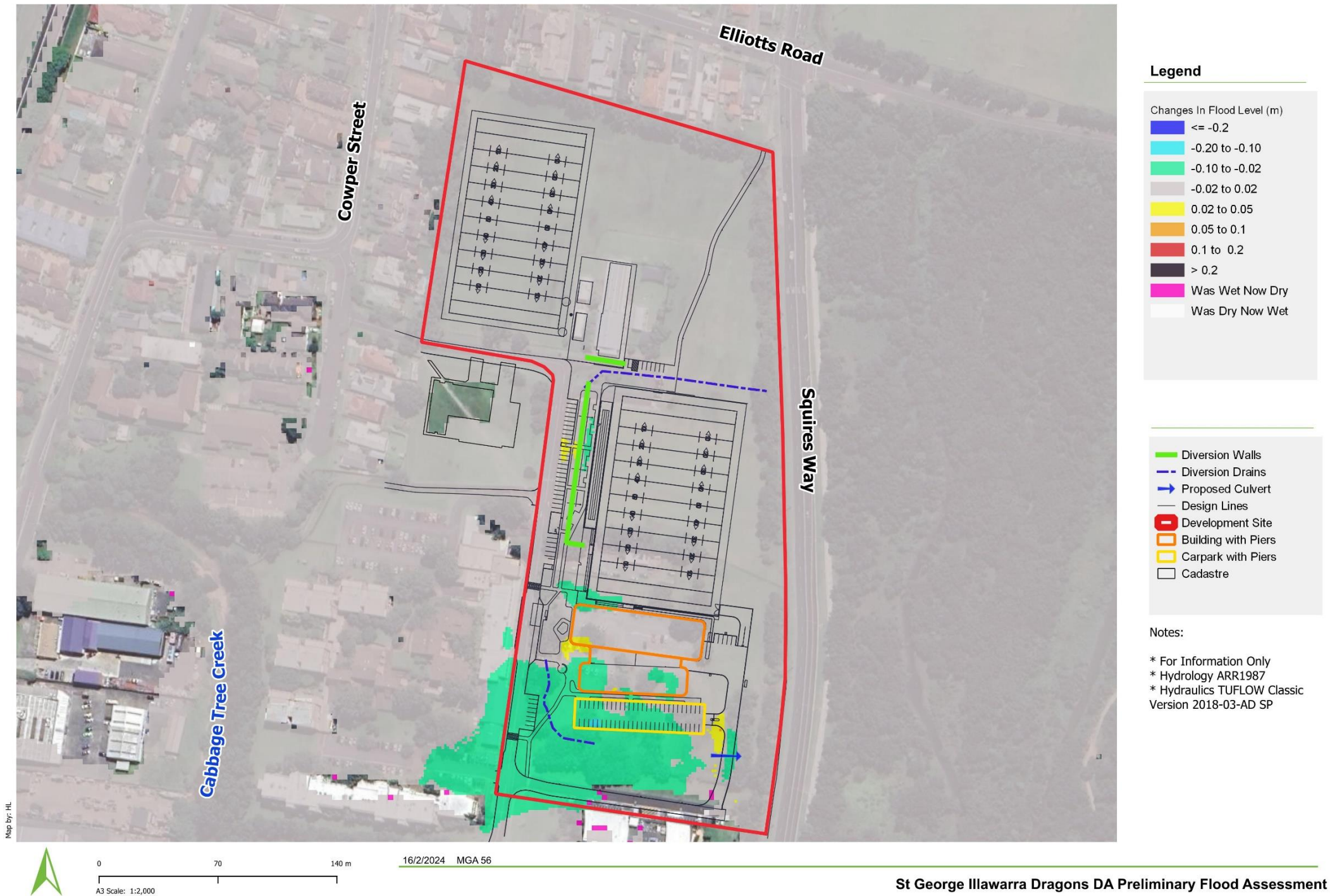
0 70 140 m

A3 Scale: 1:2,000

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St George Illawarra Dragons DA Preliminary Flood Assessment

Figure A3 - 1%AEP changes in flood level (m)
Zero Blockage Scenario



St George Illawarra Dragons DA Preliminary Flood Assessment

Figure A5 - Probable Maximum Flood (PMF) changes in flood level (m)
Zero Blockage Scenario