

29 September 2022

NL213640

Cox Architecture
Zamzam Sammir
70 George Street
The Rocks NSW 2000

Dear Zamzam,

**Re: Astra Development – Lot 106
Stormwater Management**

Northrop Consulting Engineers have been engaged to prepare a Stormwater Management Plan to support a Development Application for a proposed eight storey commercial building on Lot 106 of the Astra Subdivision. The purpose of this report is to describe the proposed strategies for managing stormwater derived from the new development and its compliance with Port Stephens Council (PSC) DCP requirements.

This report intends to discuss issues relating to the proposed development at a level appropriate for a Development Application submission to Council and to convey select facets of the engineering design philosophy and it should be read in conjunction with the concept engineering plans included in Attachment A. It is not intended to provide detailed design outcomes.

Objectives

The primary objective of this correspondence is to confirm the stormwater management strategy and to review the flood impact of the proposed development.

This investigation has been prepared with consideration to the following documents:

- Australian Rainfall and Runoff 2019 (AR&R 2019).
- NSW Government Floodplain Development Manual (NSW Government, 2016).
- Williamstown Aerospace Park (WAP) Flood Assessment and Stormwater Strategy for Subdivision Development Application (PB 2010).
- Williamstown Aerospace Park (WAP) Groundwater Model (PB 2009).
- Williamstown/ Salt Ash Flood Study Review (BMT WBM 2012).
- Williamstown Drainage Study (Umwelt 2018).
- PSC's Development Control Plan.
- NSW MUSIC Modelling Guidelines (BMT WBM 2015).
- Notice of Determination of Development Application (ref: DA16-2008-940-4).

		Date
Prepared by	LM	29/09/2022
Checked by	AB	29/09/2022
Admin	LC	29/09/2022

Site Description

Lot 106 (the site) is within Stage 1 of the recently constructed Astra Aerolab subdivision at Williamtown Drive, Williamtown (Lot 11 DP1036501). It is located within the Port Stephens Council (PSC) Local Government Area.

Lot 106 is a corner lot and it bounded by Aerospace Avenue and Jeffries Circuit to the south and west respectively and other commercial lots to the north and east. Lot 106 has an area of approximately 2180m².

The location of the site is depicted in **Figure 1** below.



Figure 1 - Proposed Development

The site is currently vacant, grassed land with a gentle slope to the southwestern corner. Bulk filling of the site took place as part of the subdivision works. There is an existing stormwater drainage swale to the west of Jeffries Circuit that conveys water to the basin at the south of the subdivision.

Stormwater Management

As part of the Astra subdivision design and approval, a network of stormwater drainage channels and basins were designed to manage stormwater within the overall subdivision precinct. Astra stormwater management for both volumetric and water quality treatment is managed at the subdivision scale so that each allotment is not required to provide detention or water quality.

Water Quantity

The Astra subdivision development has already catered for the development of all allotments. The required drainage infrastructure external to the lot is existing, having already been constructed as part

of Stage 1 of the subdivision. The proposed development of Lot 106 is not required to provide peak flow mitigation.

Water Quality

Similar to the water quantity strategy above, the Astra subdivision design included stormwater quality modelling using the Model for Urban Stormwater Improvement and Conceptualisation (MUSIC) V6.3.0, and the design expected the Astra Aerolab development site would be approximately 90% developed. The proposed development of Lot 106 is considerably less than 90% impervious and hence, the entire proposed development will be managed by the existing Astra infrastructure.

Stormwater Conveyance

Stormwater runoff from the proposed building will be directed to the stormwater reuse tank via a series of downpipes. Overflow from the tank will be directed to a proposed pit and pipe connecting to the existing stormwater pit in the south east corner of the site. Stormwater is then discharged into the swale on the western side of Jeffries Circuit and this swale conveys stormwater to the basins at the south of the subdivision.

External pavements and landscaped areas shall be graded to direct stormwater to a pit and pipe network and the adjacent roads.

The existing stormwater pit and pipe for Lot 105 (to the north of Lot 106) will be extended as part of these works to provide a new point of connection for future development of Lot 105 following the proposed boundary adjustment.

Refer to the Concept Stormwater Management Plan for further details (ref: DA-01-C03.01).

Flood Impact Assessment

A flood impact assessment was undertaken as part of the Astra Aerolab Development Application and was subsequently updated for the proposed Development Application modification. The proposed Astra development, and hence the flood impact assessment, included significant bulk filling above the natural site to a level greater than the 1% AEP flood event so that the proposed subdivision would not be flood impacted/inundated. Furthermore, the lowest levels proposed within the development are approximately 3.6m AHD, which is higher than the 1% AEP peak flood level.

Attachment B contains select extracts from the Astra Aerolab flood report, including:

- The extent of proposed site filling – which includes Lot 106 being filled as part of the subdivision works.
- The post development 1% AEP flood levels – which shows that the proposed development of Lot 106 is not flood impacted.

Conclusion

Based on the above assessment, it has been demonstrated that the proposed development of Lot 106 can be undertaken generally in accordance with the intent of the PSC DCP and guidelines and general 'best' engineering practice.

Water quality treatment for stormwater runoff will be adequately addressed and managed by the proposed development and existing downstream infrastructure.

Peak flow and volumetric management are not required as they are also adequately managed by the existing downstream channel and basin infrastructure.

A flood impact review indicates the site is not impacted by the 1% AEP flood event.

Yours sincerely,



Lach McRae

Principal | Group Manager | Senior Civil & Environmental Engineer
BEng (Civil & Environmental) (Hons) MIEAust CPEng NER (Civil)

Limitation Statement

Northrop Consulting Engineers Pty Ltd (Northrop) has been retained to prepare this report based on specific instructions, scope of work and purpose pursuant to a contract with its client. It has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use by Cox Architecture and Newcastle Airport Pty Ltd. The report is based on generally accepted practices and standards applicable to the scope of work at the time it was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

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Attachment A – Proposed Concept Civil and Stormwater Plan

ASTRA AEROLAB COMMERCIAL BUILDING ONE

DEVELOPMENT APPLICATION CIVIL ENGINEERING PACKAGE



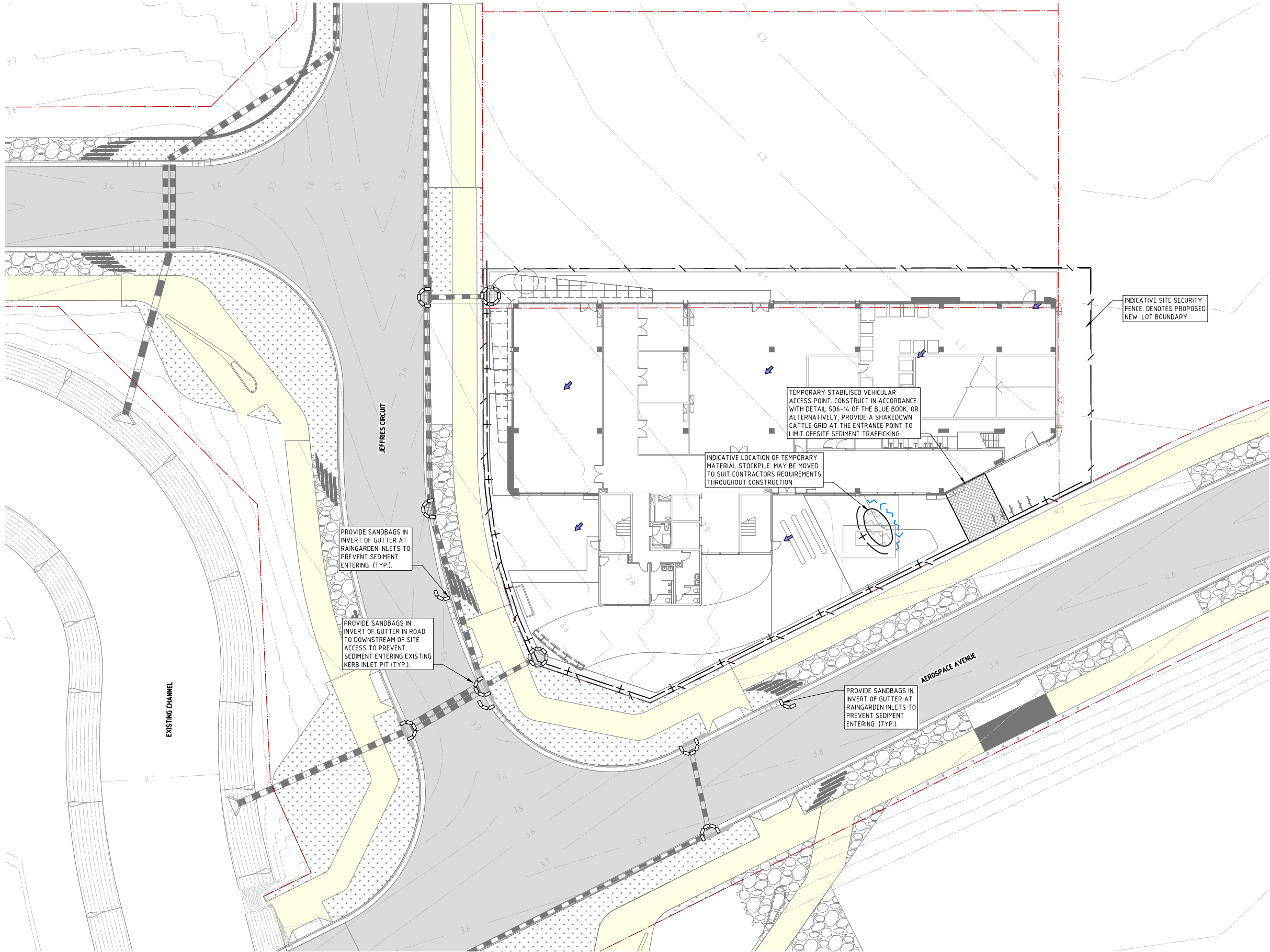
DRAWING SCHEDULE

DRG No.	DRAWING TITLE
CIVIL WORKS DRAWINGS	
DA-01-C01.01	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
DA-01-C02.01	CONCEPT EROSION AND SEDIMENT CONTROL PLAN
DA-01-C02.02	CONCEPT EROSION AND SEDIMENT CONTROL DETAILS
DA-01-C03.01	CONCEPT STORMWATER MANAGEMENT PLAN

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A	ISSUED FOR APPROVAL	RK	LM	LM	15.09.22	NEWCASTLE AIRPORT PTY LIMITED	<div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>Newcastle Airport</div></div>	ASTRA AEROLAB COMMERCIAL BUILDING ONE DEVELOPMENT APPLICATION		CIVIL ENGINEERING PACKAGE	NL213640	
								COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE		DRAWING NUMBER DA-01-C01.01	REVISION A	
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JOB MANAGER: L MGRAE
VERIFIER: L MGRAE



LEGEND

PROPOSED / SITE BOUNDARY LINE

SEDIMENT FENCE

SECURITY FENCE

SANDBAG SEDIMENT FILTER

DIVERSION DRAIN (CLEAN)

STABILISED SITE ACCESS

STOCKPILES

EXISTING CONTOURS (0.1m INTERVAL)

- NOTES
1.

ALL EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ON-SITE, IN ACCORDANCE WITH THE 'BLUE BOOK' (MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION LANDCOM, 2004), OR OTHER CURRENT RECOGNISED INDUSTRY STANDARDS FOR EROSION AND SEDIMENT CONTROL FOR AUSTRALIAN CONDITIONS. THIS INCLUDES SEDIMENT TRAPS AND LINING OF CHANNELS.
2.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION AND SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS AND SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ALL MAINTENANCE, CLEANING AND BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
3.

INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
4.

ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
5.

INSTALL SEDIMENT FENCING, OR OTHER SEDIMENT CONTROL DEVICES, AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT OR APPROPRIATE COUNCIL OFFICER.
6.

ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
7.

THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB AND GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION.
8.

ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
9.

STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE SPREAD ON-SITE AS DIRECTED BY THE SUPERINTENDENT OR REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
10.

CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
11.

ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
12.

PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
13.

ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.

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PROJECT

ASTRA AEROLAB
COMMERCIAL BUILDING ONE
DEVELOPMENT APPLICATION

DRAWING TITLE

CIVIL ENGINEERING PACKAGE
CONCEPT EROSION AND SEDIMENT
CONTROL PLAN

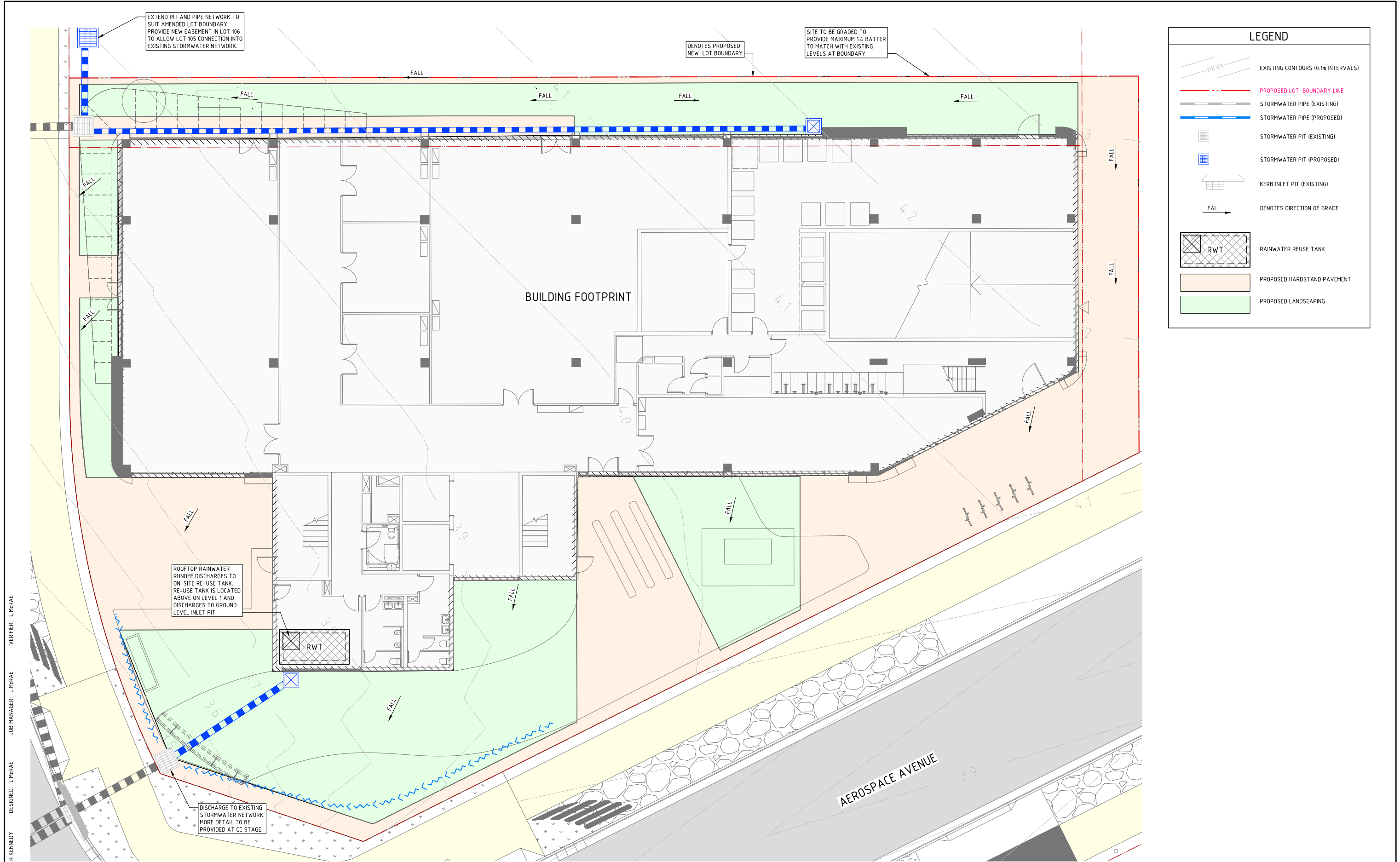
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REVISION

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LEGEND

- EXISTING CONTOURS (0.1m INTERVALS)
- PROPOSED LOT BOUNDARY LINE
- STORMWATER PIPE (EXISTING)
- STORMWATER PIPE (PROPOSED)
- STORMWATER PIT (EXISTING)
- STORMWATER PIT (PROPOSED)
- KERB INLET PIT (EXISTING)
- DENOTES DIRECTION OF GRADE
- RWT
- RAINWATER REUSE TANK
- PROPOSED HARDSTAND PAVEMENT
- PROPOSED LANDSCAPING

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A	ISSUED FOR APPROVAL	RK	LM	LM	15.09.22	NEWCASTLE AIRPORT PTY LIMITED	ASTRA AEROLAB COMMERCIAL BUILDING ONE DEVELOPMENT APPLICATION	CIVIL ENGINEERING PACKAGE	NL213640	
B	ISSUED FOR APPROVAL	RK	LM	LM	29.09.22			CONCEPT STORMWATER MANAGEMENT PLAN	DA-01-C03.01	B
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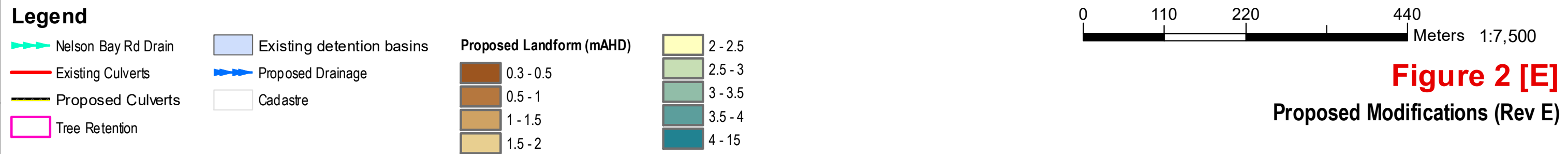
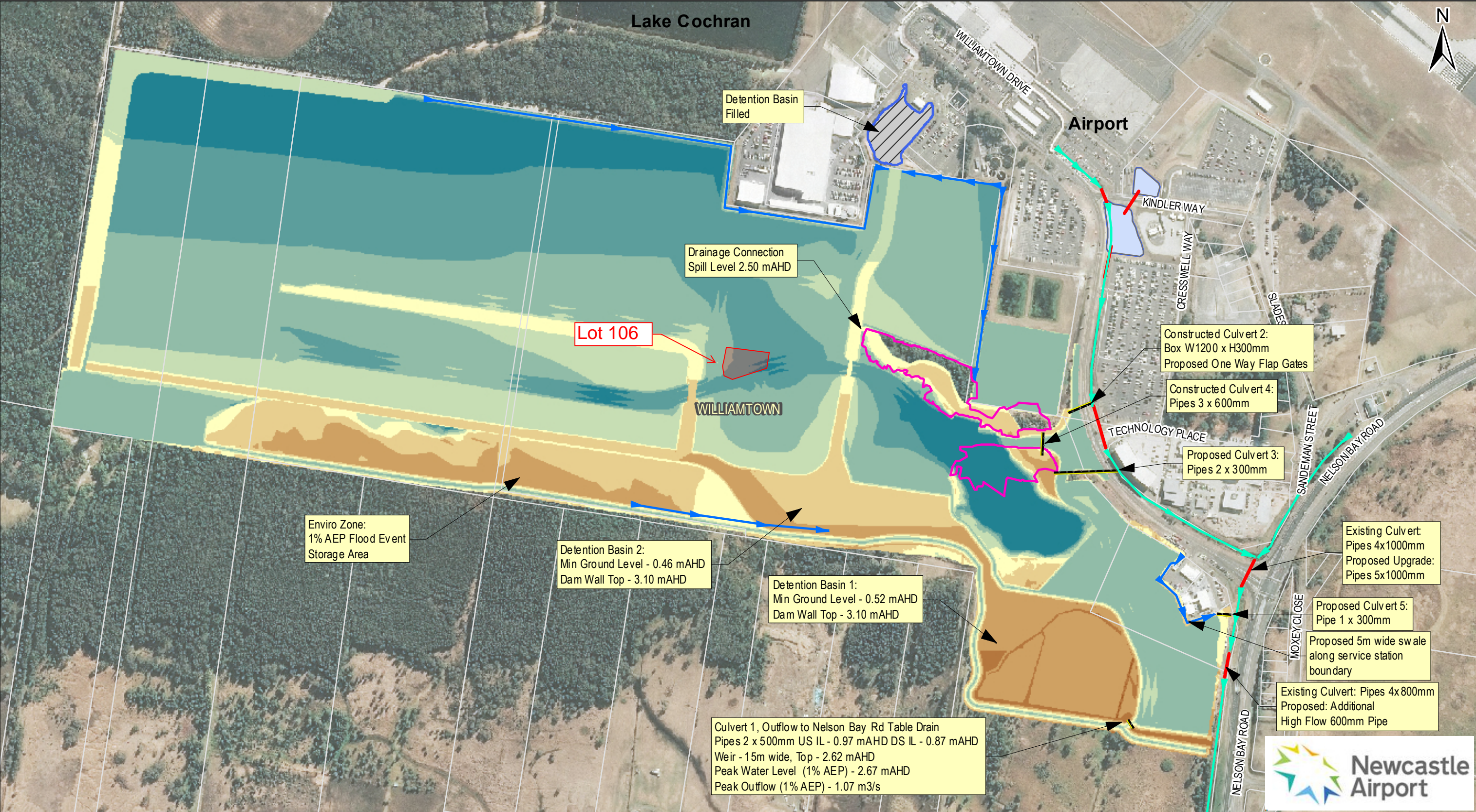
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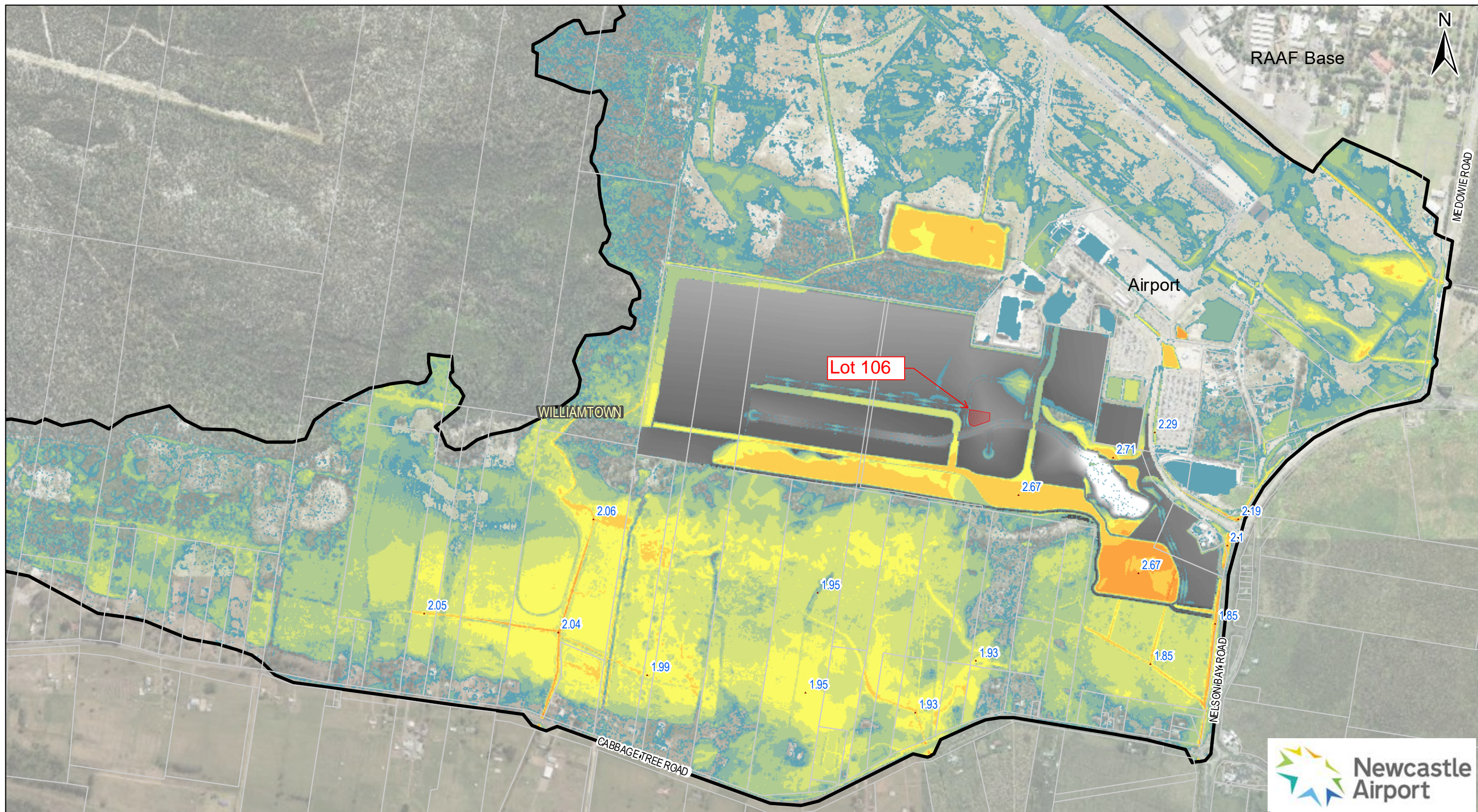
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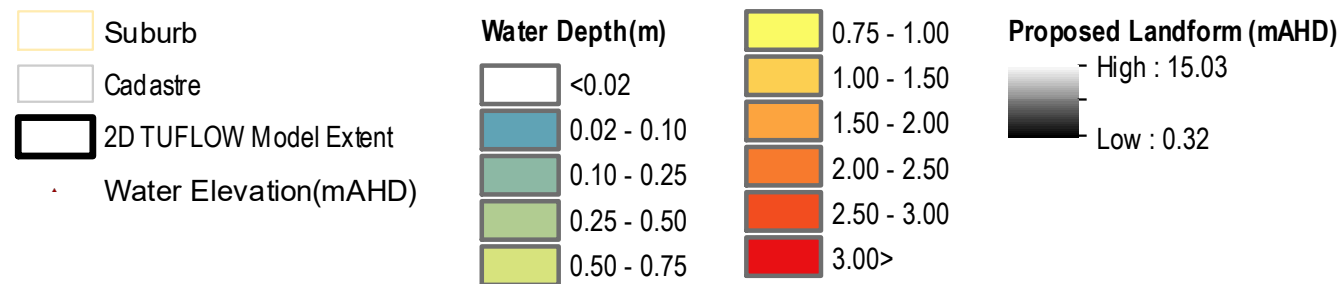
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Attachment B – Flood Impact Assessment extract





Legend



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Figure 3 [E]

1% AEP Flood Depth and Elevations
Developed Conditions

Astra Aerolab, Williamtown

