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Civil Engineering Report
Development Application

High Technology Industrial Development

Astra Aerolab, Newton Parade, Williamtown 2318

Prepared for: **Greater Newcastle Aerotropolis Pty Ltd**

Address: **Part Lot 200/212, Newtown Parade, Williamtown**

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Revisions

Revision	Description	Date	Prepared by	Approved by
A	Draft Development Application Issue	19/12/2023	Josh Rhodes	Greg Couch
B	Development Application Issue	19/01/2024	Josh Rhodes	Greg Couch
C	Development Application Issue	24/01/2024	Josh Rhodes	Greg Couch
D	Development Application Issue	25/01/2024	Josh Rhodes	Greg Couch
E	Development Application Issue	27/02/2024	Greg Couch	Josh Rhodes
F	Development Application Issue	14/08/2024	Josh Rhodes	Ulrika Knight
F	Development Application Issue	16/08/2024	Josh Rhodes	Ulrika Knight

Review Panel

Division/ office	Name
Newcastle	Ulrika Knight, Josh Rhodes

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1 Introduction

1.1 General

The development is for a secure high technology industry within the Astra Aerolab Precinct, adjacent to Newcastle Airport.

The site is located at proposed Lot 200 and 212 in the subdivision of Lot 11, Deposited Plan 1036501 ('Lot 11'), and Lot 1, DP 1147810, being 38 Cabbage Tree Road, Williamtown.

The site will front Newton Parade to be constructed as part of the Stage 2A and 2C subdivision works in Development Consent 16-2009-324-3. The approved subdivision works include the clearing of existing vegetation, the filling of land to an RL of a minimum of 3.8m AHD, remediation, construction of Newton Parade and associated stormwater drainage, installation of utilities, pedestrian pathways, street lighting and public domain areas and landscaping.

The proposed development is for a high technology industry comprising of office and workshop areas, and associated development. This includes a car park providing one hundred and eighty three (168 standard, 8 electric vehicle charging, 7 accessible) car parking spaces, driveway, manoeuvring area for B-double trucks, ring road, fire services, hardstand areas, antenna, and landscaping. The facility will be highly secure with perimeter fencing, and secure truck, vehicle and pedestrian entry and exit points. The development will be connected to potable water, sewer, stormwater drainage, electrical services, and communications services.

ACOR Consultants have been engaged by Astra Aerolab and EJE Architecture to prepare Civil Engineering Documentation and an Engineering Report to support the Development Application for a proposed development at Part Lot 200/212, Newtown Parade, Williamtown.

Engineering items addressed in this report include:

- Site grading and proposed levels.
- Stormwater Quantity
- Stormwater Quality

Stormwater quantity items addressed in this report include:

- Stormwater conveyance/network
- Stormwater detention

Stormwater quality items to be addressed in this report include:

- Operational water quality management incorporating Water Sensitive Urban Design principles (WSUD)
- Construction water quality management incorporating soil and water management.

2 Site

2.1 Location

Lots 200/212 are vacant lots within Stage 2 of the Astra Aerolab Subdivision and is located approximately 550m south-west of the Newcastle Airport Terminal. The property id is Lot 200/212 in an unregistered DP at Newtown Parade and has an approximate area of 2.284ha.

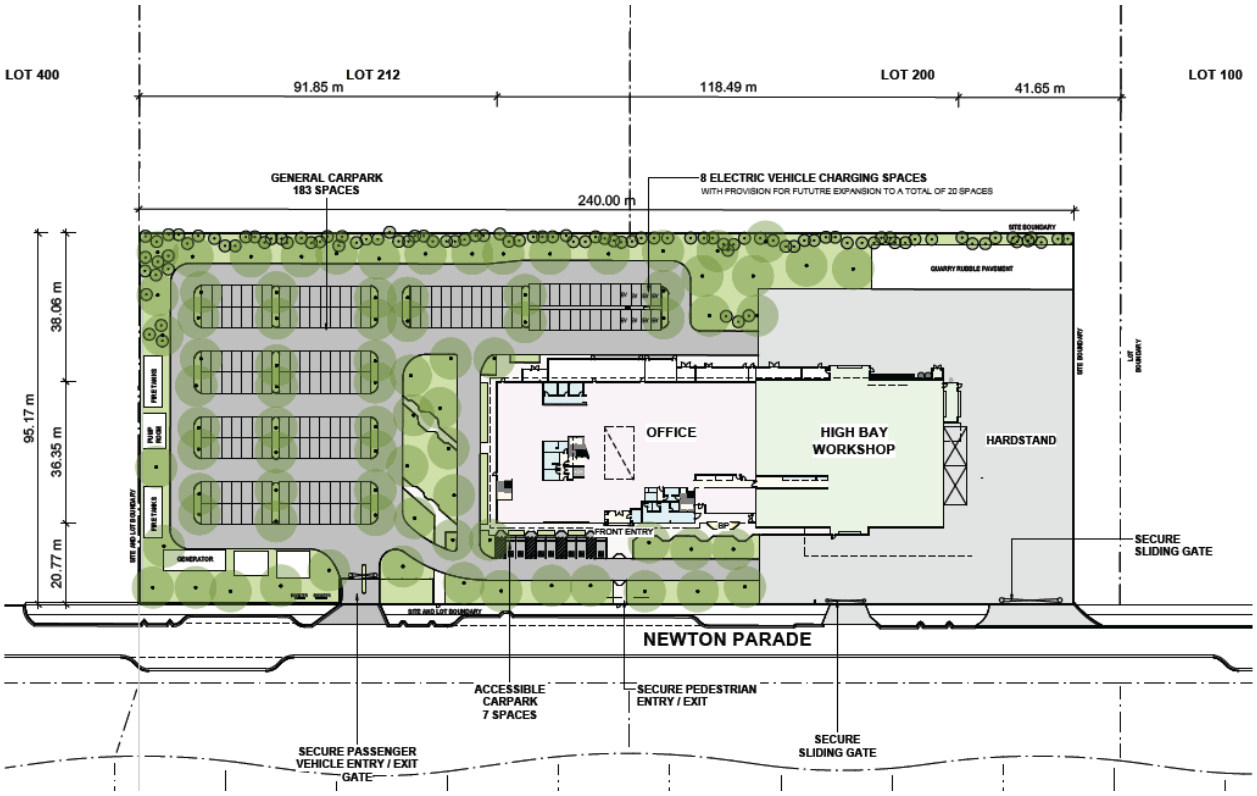

Figure 1 – Architectural Site Plan (EJE Architects)

2.2 Description

Lots 200/212 are currently vacant with a localised area of placed turf, regrowth grass and vegetation. The current design model provided for the subdivision works indicated the site runs from north to south with 2 valleys across the lot area.

Levels on site are generally between a maximum RL 4.70m AHD at the northern boundary and minimum of RL 3.80m (AHD) along the southern boundary. These levels provide a gentle 0.5 to 1.0% (1:100) fall towards the southern boundary fronting Newton Parade. The proposed drainage system on Newton Parade (designed by others) connects into the subdivision infrastructure and drains to the recently constructed stormwater storage basin. Further review of the previous site information indicates the site was likely filled to the above levels to help provide the proposed grade towards the storage basin and the existing /proposed grassed stormwater swales that form part of the wider subdivision works designed by others.

2.3 Existing Catchments and Site Drainage

Upstream catchments are diverted past the site via the two grassed drainage swales constructed as part of the previous subdivision works. These swales are located along the northern boundary of the lot.

Survey data provided indicates that no off-site runoff will be directed onto the lot from adjoining properties. There is currently no existing stormwater drainage infrastructure on site.

Lots 200/212 appear to currently sheet surface runoff towards the south to the front of the lot. As there are no off-site catchments contributing to the site runoff, proposed stormwater networks will be sized to cater only the site specific pervious and impervious areas.

Figure 2 below shows the general fall of the site.

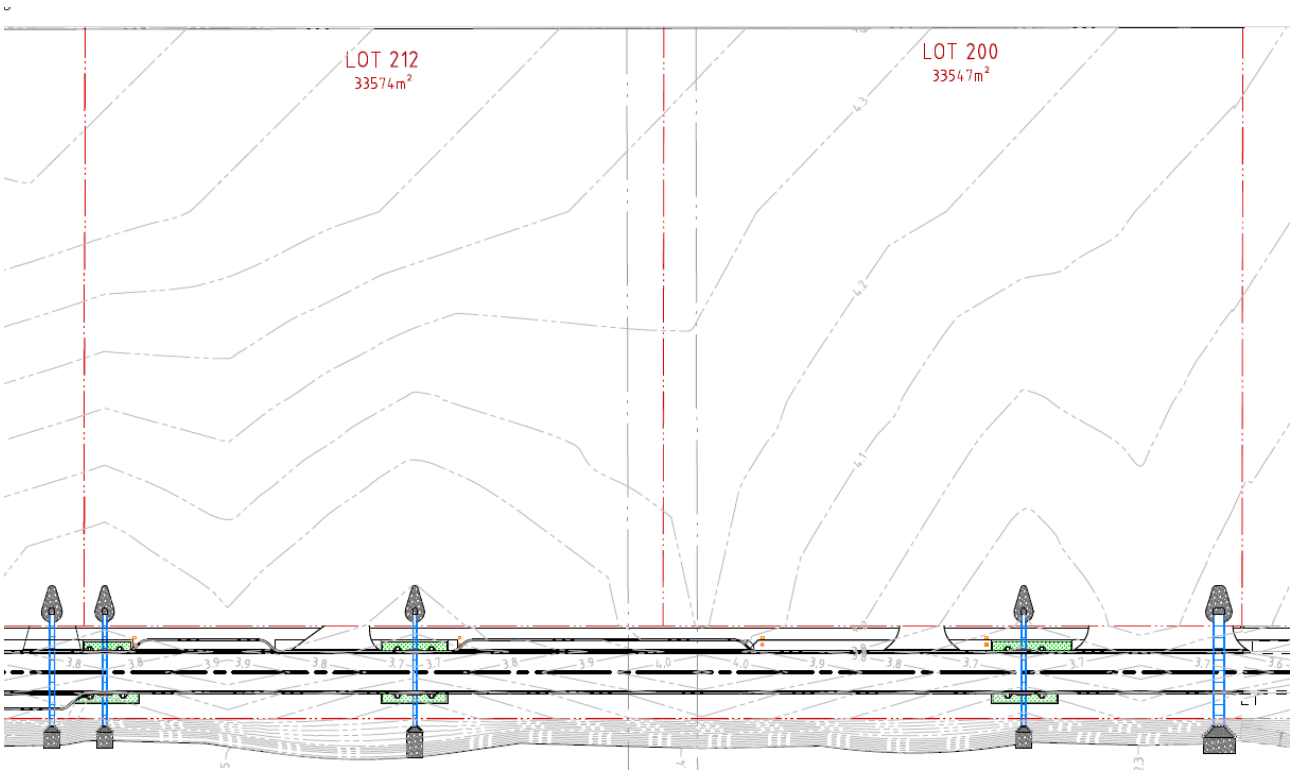

Figure 2 – Existing Site

2.4 Site Clearing and Demolition

With the existing site being clear of structures and generally grassed, site clearing will be minimal with no demolition of existing structures required.

3 Proposed Development

The overall proposed development on part Lots 200/212 will provide office space, a high bay workshop and accompanying car parking and siteworks. Refer to Overall Site Plan C02-0001 for the overall site layout.

The approximate development area for proposed part lots 200/212 is 22,840m^2 with the proposed catchments being split as follows:

Impervious: (Approx. 80% of lot area)

- Building Area – 4,390m^2
- Carpark – 7,020m^2
- Hardstand – 4,790m^2
- Walkways and plant – 1,870m^2

Pervious (Approx. 20% of lot area)

- Landscaping/turf – 4,770m^2

4 Concept Civil Design

4.1 Vehicle Access

B-double vehicle access is proposed on the eastern driveway adjacent to the high bay workshop. There is as secondary access adjacent to the main heavy vehicle assess point providing more direct access to the workshop for smaller vehicles. Light vehicle access is proposed via a 2 way driveway on the western side of the development adjacent to the car park. The verge crossing (between the kerb line and the boundary) of both driveways will be designed in accordance with Port Stephens Council (PSC) Specifications and Australian Standards (AS2890) requirements to always provide 2-way vehicle access into and from the site. Sight lines from the driveway in accordance with AS2890.1 will be achievable due to the flat existing grade of the site.

4.2 Carparking

An on-site car park with provision for 183 bays will be provided for the facility including 8 electric vehicle charging spaces and 7 accessible parking spaces. The car parking will primarily be used by staff and will be designed in accordance with the requirements of AS2890.1 – Off-Street Car Parking and AS2890.6 – Off-street Parking for People with Disabilities. Further information about site related traffic can be obtained from the Traffic Engineering Report for the development.

4.3 Concept Site Grading

Proposed levels and site grading for the proposed development will generally follow the natural topography of the site and maintain the existing site catchment. Filling will be required to raise the levels around the proposed development to ensure stormwater is managed and flows are directed away from the proposed building. Refer to Site Grading Plan C02-0101 and C02-0102 for the concept site grading.

4.4 Footpaths and Pedestrian Access

A pedestrian pathway is proposed from Newtown Parade to the proposed office building.

The main pedestrian pathway is an existing footpath located in Aerospace Avenue. It is expected that general foot traffic will likely only access the site via the street frontage. All other pedestrian movements through and around the site (if required) will be by facility staff and likely localised to car park and hardstand areas of the proposed facility.

All proposed paths of travel from the street and the adjacent staff car park will be designed to be complaint with AS1428 with consideration to slip and trip hazards. Further details will be provided at CC stage.

4.5 Bulk Earthworks

The proposed levels and grading intent for Lots 200/212 ensure a facility that is free of flooding and stormwater runoff.

The majority of bulk earthworks on the site have been completed as part of the Stage 2 Astra development. Remaining bulk earthworks over the site will generally involve minor cut to fill within a maximum difference of approximately 1m to finished surface level. Most of the development will be much closer to natural.

Based upon the current engineering plans an approximate maximum cut and fill depth of 1m will allow the construction of the pavement subgrade and slab bedding. All proposed finished levels will match to and maintain existing levels around boundaries.

5 Stormwater Quantity

ACOR Consultants have undertaken a review of the existing design and documentation supplied from the Astra AeroLab Stage 2 subdivision and associated or referenced reports. As part of this ACOR Consultants have put together the following understanding of the site-specific requirements and our proposal for managing stormwater quantity for the development of Lots 200/212.

5.1 Stormwater Conveyance

Minor system stormwater conveyance for the development will be a via a traditional pit and pipe system. Stormwater will be collected from the site and discharged to the Astro Aero Lab trunk drainage swale on the southern side of Newtown Parade.

The minor stormwater system will have the capacity to convey the peak flows from a 5% AEP storm event. The proposed pit and pipe network through the development will be sized to convey the 5% AEP flows with a drainage design in accordance with the approved Astra Aerolab DA, PSC design requirements and AS3500.

Major system stormwater conveyance for the proposed development will be via overland flow. This will be via the internal roadways, car park and hardstand areas. The major stormwater system will have the capacity to convey the peak flows from a 1% AEP storm event, containing flows within the site and providing freeboard to the building. In the event of pipe or pit blockages, overland flow paths will be detailed to convey surface runoff away from building openings and into the constructed external stormwater network.

Multiple stormwater outlets are proposed from the site to assist with

- Minimising the required earthworks on the site;
- Keeping pipe sizes within an acceptable range to maximise pipe cover;
- Ensure min pipe grades can be achieved due to the flat site grades.

Refer to Stormwater Management Plan C08-0001 for the site stormwater layout.

Scour protection will be provided on each outlet during detailed design. The scour protection designs shall be in accordance with Catchments & Creek guidelines on rock sizing.

5.2 Stormwater Detention

Stormwater detention has been provided for the whole development as part of the Astra AeroLab Stage 2 subdivision. It has been assumed that the site has been allowed a 90% impervious percentage in accordance with PSC Engineering requirements. The overall development is proposed to stay under this 90% target and as such, Stormwater Detention is not required for the development.

5.3 Flooding

Previous reporting for the overall site has indicated that a detailed flood assessment was undertaken by Northrop Engineers in December of 2021. This assessment has identified the nominal 1% AEP Top Water level of 2.70m AHD in the detention basin.

Allowing a free board of 500mm above this, Lots 200/212 floor levels are well above 3.20m AHD and will generally be free from flooding impact in the 1% AEP storm event.

6 Stormwater Quality - Operational Phase

6.1 Objectives

The objectives of the stormwater quality management for the site are:

- Meet the water quality objectives of PSC for the operational phase of the site by using best practice stormwater treatment measures. The water quality reductions required by Port Stephens Council are:
- % Reductions from the developed site of:
  - 90% reduction in Total Suspended Solids (TSS)
  - 60% reduction in Total Phosphorus (TP)
  - 45% reduction in Total Nitrogen (TN)
  - 90% reduction in litter/gross pollutants

6.2 Operational Phase Water Quality Management

ACOR Consultants have reviewed the Astra AeroLab subdivision Stormwater Management Report (NL182640_Rev B) prepared by Northrop Engineers, it is understood that there is an approved strategy that considers the entire subdivision in a fully developed state and achieves the above noted pollutant reductions.

This strategy assumes each lot will be developed to a 90% fraction of impervious area and assumed to be industrial. The report proposed treatment train consisting of grassed swales, in-street rain gardens, storage basins and the existing downstream wetland.

It is understood that the approved strategy as noted in Northrop's report will achieve the following reductions (Table 1 of their Stormwater Management Report)

- 94.8% reduction in Total Suspended Solids (TSS)
- 74.6% reduction in Total Phosphorus (TP)
- 45.2% reduction in Total Nitrogen (TN)
- 100% reduction in litter/gross pollutants

Noting the above, we understand that no site-specific stormwater quality measures/devices will be required for the proposed development. It is also noted that as mentioned above, the proposed impervious area for part Lots 200/212 is below the maximum allowable 90% impervious area noted in councils DCP and mentioned in the previous subdivision report by Northrop Engineers.

To reduce the volume of gross pollutants leaving the site, Ecosol Gross Pollutant Traps have been provided upstream of the stormwater pipe outlets. These units will reduce the gross pollutants and TSS flowing downstream in the subdivision stormwater conveyance system.

7 Stormwater Quality - Construction Phase

7.1 General

During the construction phase of the development, an Erosion and Sediment Control Plan will be implemented to minimise the water quality impacts. The erosion and sediment controls will be in accordance with Landcom's Managing Urban Stormwater: Soils and Construction Volume 1, 4th Edition (Landcom, 2004) and the requirements of PSC. Erosion and sediment controls will be required preconstruction, during construction and post construction until the site is stabilized. The expected erosion and sediment control measures will include stabilized site access, sediment fence, gully pit sediment barriers, rock outlet scour protection and a temporary sediment basin (if applicable).

7.2 Pre-Construction Erosion and Sediment Control

Due to the topography of the site, the preconstruction erosion and sediment controls will be limited to stabilized site access, sediment fence and a temporary sediment basin until the initial bulk earthworks is undertaken. The proposed detention/water quality basin will be used as a sediment basin while construction is being undertaken. Figures C03-0001 and C03-0101 detail preliminary erosion and sediment control plans for the development.

7.3 During Construction Erosion and Sediment Control

During the construction phase of the development, the erosion and sediment controls will consist of installed sediment fence, a constructed sediment basin, gully pit sediment barriers and permanent rock outlet scour protection.

Regular inspection and maintenance of the erosion and sediment controls is required during the construction process.

As the site drains in two directions, two sediment basins will be required for the development during construction.

As the soils on site are clay, a sediment basin volume was calculated using the Blue Book for type F soils. During construction, if the soils are found to be dispersive, the contractor will need to provide a flocculating agent to ensure discharge from the basin meets the requirements of the Blue Book. The sediment basin calculations are shown in Appendix A.

In general, the required basin volumes for Lots 200/212 are as follows.

West Basin

- 23m^3 sediment storage zone
- 307m^3 water settlement zone

East Basin

- 21m^3 sediment storage zone
- 221m^3 water settlement zone

7.4 Post Construction Erosion and Sediment Control

The contractor/developer will be responsible for the maintenance of the erosion and sediment control devices from the practical completion of the works for a minimum of 6 months or until stabilization has occurred to the satisfaction of Port Stephens Council.

8 Conclusion

This Civil Engineering Report addresses the concept civil design, stormwater quantity and quality of the proposed industrial development known as part Lots 200/212 Newtown Parade, Williamtown.

Site access, grading and carparking have been addressed to the requirements of Port Stephens Council. The site has also been designed to incorporate future expansion.

Stormwater quantity and stormwater quality (both operational and construction phases) have been addressed.

Stormwater conveyance for the site will be in accordance with the minor/major system philosophy and the requirements of Port Stephens Council. The minor system consisting of surface inlet pits and pipes will have capacity to convey peak flows from a 5% AEP storm event. The major stormwater system will consist of overland flow paths within the proposed driveway, carpark, hardstand and landscaped areas, will be designed for an AEP of 1%.

On-Site Detention and Water Quality of runoff from the site is not to be required due to sufficient allowance and capacity being previously provided as part of the greater subdivision design and construction works.

Construction phase erosion and sediment control will be undertaken in accordance with Landcom's Managing Urban Stormwater and Port Stephens Council.

If you have any questions regarding the information provided in this Civil Engineering DA Report, please call the undersigned or Ulrika Knight to discuss.

Yours faithfully,

ACOR Consultants Pty Ltd

Josh Rhodes
National Discipline Lead
Principal Engineer - Civil

9 Engineering Drawings

C01-0001	**COVER SHEET AND DRAWING INDEX**
C01-0201	**EXISTING SITE PLAN**
C02-0001	**OVERALL SITE PLAN**
C02-0101	**SITE GRADING PLAN - SHEET 1**
C02-0102	**SITE GRADING PLAN - SHEET 2**
C03-0001	**SOIL EROSION AND EDIMENT CONTROL PLAN**
C03-0101	**EROSION AND SEDIMENT CONTROL NOTES AND DETAILS**
C08-0001	**STORMWATER MANAGEMENT PLAN**

Appendix A Sediment Basin Calculations

1. Erosion Hazard and Sediment Basins

Site Name: Lot 200 / 121 Newtown Parade, Williamtown

Site Location: Newcastle Airport

Precinct/Stage:

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
	East	West					
Total catchment area (ha)	1.324	0.953					If less than 2,500sqm to be disturbed only ESC
Disturbed catchment area (ha)	1.324	0.953					

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	F	F					From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	F	F					Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	5	5					See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	85	85					
x-day, y-percentile rainfall event (mm)	48.3	48.3					
Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	10.7	10.7					

RUSLE Factors

Rainfall erosivity (*R*-factor)	2500	2500					Auto-filled from above
Soil erodibility (*K*-factor)	0.065	0.065					RUSLE LS factor calculated for a high rill/interrill ratio.
Soil erodibility (K-factor) (Factoring Disperssion)	0.065	0.065					
Slope length (m)	80	80					
Slope gradient (%)	3	3					
Length/gradient (*LS*-factor)	0.65	0.65					
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	2	2	2	2	2	2	Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.48	0.48					See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	138	138					
Soil Loss Class	1	1					See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	106	106					Conversion to cubic metres
Soil Loss for Site (m3/yr)	140	101					If less than 150cu.m then no basin required
Sediment basin storage (soil) volume (m^3)	23	21					See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	307	221					See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	330	242					

Appendix B Civil Engineering Drawings – For DA

ASTRA AEROLAB - HIGH TECHNOLOGY INDUSTRIAL DEVELOPMENT PART LOT 200/212 NEWTON PARADE, WILLIAMTOWN

DRAWING SCHEDULE	
DRAWING No.	DRAWING TITLE
C01-0001	COVER SHEET AND DRAWING INDEX
C01-0201	EXISTING SITE PLAN
C02-0001	OVERALL SITE PLAN
C02-0101	SITE GRADING PLAN - SHEET 1
C02-0102	SITE GRADING PLAN - SHEET 2
C03-0001	SOIL EROSION AND SEDIMENT CONTROL PLAN - SHEET 1
C03-0101	SOIL EROSION AND SEDIMENT CONTROL DETAILS - SHEET 1
C08-0001	STORMWATER MANAGEMENT PLAN - SHEET 1

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Issue.	Description	Date	Drawn	Approved
F	ISSUED FOR DA ASSESSMENT	16.08.24	SJO	JPR
E	ISSUED FOR DA ASSESSMENT	14.08.24	SJO	JPR
D	ISSUED FOR DA ASSESSMENT	27.02.24	MDM	GPC
C	ISSUED FOR DA ASSESSMENT	24.01.24	KB	GPC
B	ISSUED FOR DA ASSESSMENT	18.01.24	MDM	GPC
A	DRAFT ISSUE	19.12.23	JER	GPC

North

Scale

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Project
ASTRA AEROLAB - HIGH TECHNOLOGY INDUSTRIAL DEVELOPMENT PART LOT 200/12 NEWTON PARADE, WILLIAMTOWN 2318

CONCEPT DESIGN

Drawing Title
CIVIL SERVICES
COVER SHEET AND DRAWING INDEX

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	N.T.S

Project No.	Drawing No.	Issue
NA231561	C01-0001	F

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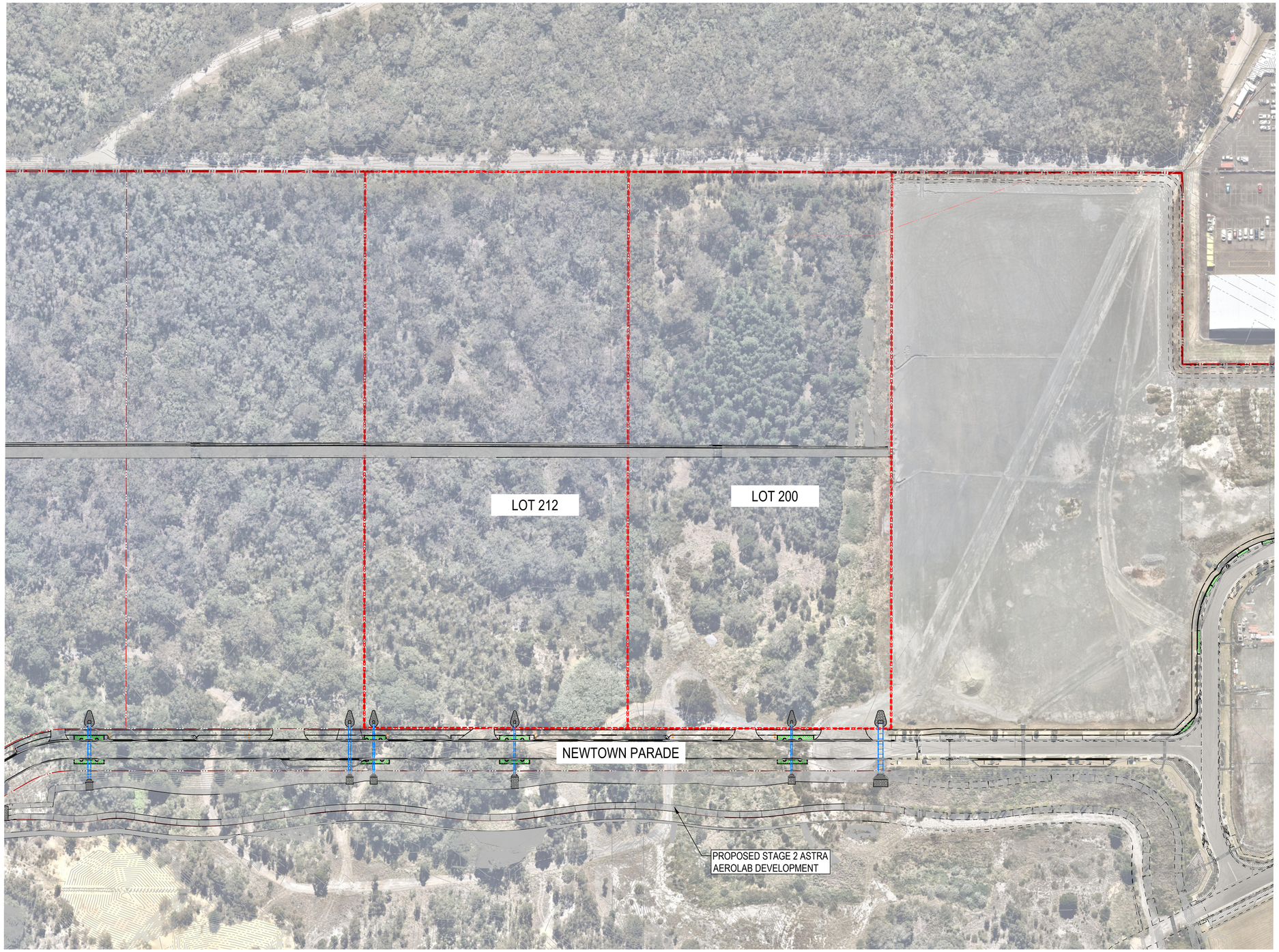
Aug 16, 2024 - 11:08am



LEGEND

- EXISTING STORM WATER DRAINAGE LINE
- EX/W — EXISTING POTABLE WATER MAIN
- EX/S — EXISTING SEWER MAIN
- EX/C — EXISTING COMMUNICATIONS LINE
- EX/HV — EXISTING HIGH VOLTAGE POWER LINE
- EXISTING BOUNDARY LINE
- HEADWALL BY OTHERS
- PIPE END BT OTHERS
- KERB INLET PIT BY OTHERS
- EXISTING SURFACE CONTOUR
- EXISTING RAIN GARDEN BY OTHERS

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Issue.	Description	Date	Drawn	Approved
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A	DRAFT ISSUE	19.12.23	JER	GPC

North

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PRINT IN COLOUR

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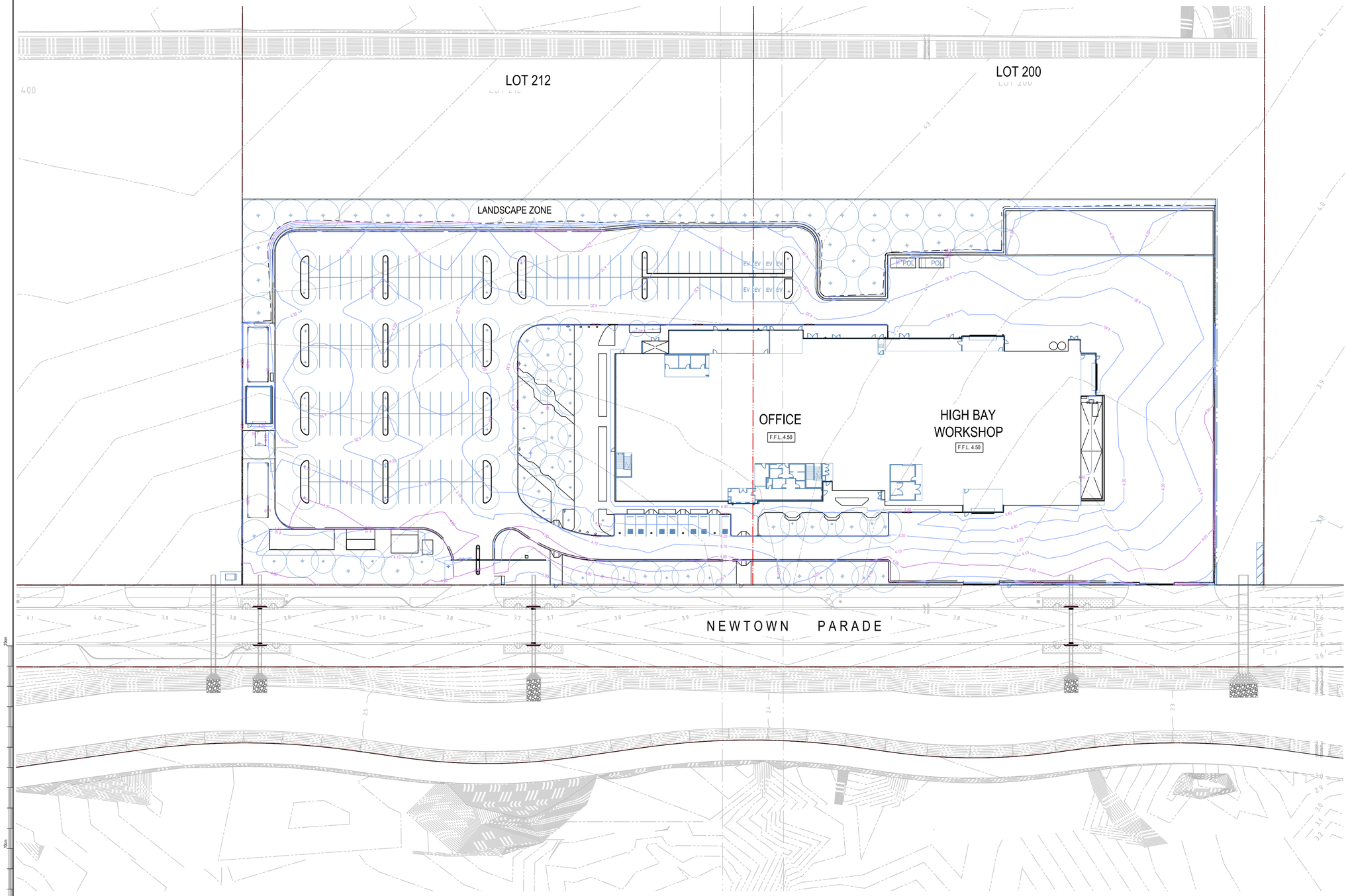
CONCEPT DESIGN

Drawing Title
CIVIL SERVICES
EXISTING SITE PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	1:1000

Project No.	Drawing No.	Issue
NA231561	C01-0201	F



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North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3
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CONCEPT DESIGN

Drawing Title
CIVIL SERVICES
OVERALL SITE PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	1:500

Project No.	Drawing No.	Issue
NA231561	C02-0001	F

LEGEND

- KERB ONLY
- KERB AND GUTTER
- INTEGRAL KERB
- GRATED DRAIN
- PRAM RAMP
- BOLLARD
- PROPOSED FSL CONTOUR (MAJOR)
- PROPOSED FSL CONTOUR (MINOR)
- PROPOSED DESIGN LEVELS
- PROPOSED STORMWATER DRAINAGE LINE
- PROPOSED STORMWATER PIT
- PROPOSED GPT
- PROPOSED DOWNPIPE CONNECTION
- EXISTING SURVEY CONTOURS
- BOUNDARY LINE
- RETAINING WALL
- A.C. PAVEMENT LIGHT DUTY
- A.C. PAVEMENT HEAVY DUTY
- BLOCK PAVING LIGHT DUTY
- BLOCK PAVING HEAVY DUTY
- CONCRETE PAVING (EXPOSED AGGREGATE) LIGHT DUTY
- CONCRETE PAVING HEAVY DUTY
- QUARRY RUBBLE PAVEMENT
- LANDSCAPING

Issue.	Description	Date	Drawn	Approved
F	ISSUED FOR DA ASSESSMENT	16.08.24	SJO	JPR
E	ISSUED FOR DA ASSESSMENT	14.08.24	SJO	JPR
D	ISSUED FOR DA ASSESSMENT	27.02.24	MDM	GPC
C	ISSUED FOR DA ASSESSMENT	24.01.24	KB	GPC
B	ISSUED FOR DA ASSESSMENT	18.01.24	MDM	GPC
A	DRAFT ISSUE	19.12.23	JER	GPC

North

Scale: SCALE BAR 1:250 @A1 1:500 @A3

PRINT IN COLOUR

Client: GREATER NEWCASTLE AEROTROPOLIS PTY LTD

Architect: EJE architecture, 412 KING STREET, NEWCASTLE NSW 2300, T: +61 2 4929 2353

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Project: ASTRA AEROLAB - HIGH TECHNOLOGY INDUSTRIAL DEVELOPMENT PART LOT 200/12 NEWTON PARADE, WILLIAMTOWN 2318

CONCEPT DESIGN

Drawing Title: CIVIL SERVICES SITE GRADING PLAN SHEET 1

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	1:250

Project No. NA231561 | Drawing No. C02-0101 | Issue F

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Aug 16, 2024 - 11:07am

BATTER 1V:4H (TYP)

RETAINING WALL
TO FUTURE DETAIL

F.F.L. 4.50

F.F.L. 4.50

FINAL RETAINING / BOUNDARY
TREATMENT TO BE CONFIRMED
DURING DETAILED DESIGN

SECURE SLIDING GATE

SECURE SLIDING GATE

NEWTON PARADE

LEGEND

- KO — KERB ONLY
- K&G — KERB AND GUTTER
- IK — INTEGRAL KERB
- GD — GRATED DRAIN
- PRAM RAMP
- B — BOLLARD
- 4.00 — PROPOSED FSL CONTOUR (MAJOR)
- 3.90 — PROPOSED FSL CONTOUR (MINOR)
- P.4.365 — PROPOSED DESIGN LEVELS
- PROPOSED STORMWATER DRAINAGE LINE
- PROPOSED STORMWATER PIT
- PROPOSED GPT
- PROPOSED DOWNPIPE CONNECTION
- 3.7 — EXISTING SURVEY CONTOURS
- BOUNDARY LINE
- RW — RETAINING WALL
- A.C. PAVEMENT LIGHT DUTY
- A.C. PAVEMENT HEAVY DUTY
- BLOCK PAVING LIGHT DUTY
- BLOCK PAVING HEAVY DUTY
- CONCRETE PAVING (EXPOSED AGGREGATE) LIGHT DUTY
- CONCRETE PAVING HEAVY DUTY
- QUARRY RUBBLE PAVEMENT
- LANDSCAPING

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A	DRAFT ISSUE	19.12.23	JER	GPC

North

Scale: 0 2.5 5 10 15m — SCALE BAR 1:250 @A1 1:500 @A3

PRINT IN COLOUR

Client: GREATER NEWCASTLE AEROTROPOLIS PTY LTD — ASTRA AEROLAB

Architect: EJE architecture
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Project:
ASTRA AEROLAB - HIGH TECHNOLOGY
INDUSTRIAL DEVELOPMENT PART LOT 200/12
NEWTON PARADE, WILLIAMTOWN 2318

CONCEPT DESIGN

Drawing Title:
CIVIL SERVICES
SITE GRADING PLAN
SHEET 2

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	GPC	14.08.24	1:250

Project No.	Drawing No.	Issue
NA231561	C02-0102	F

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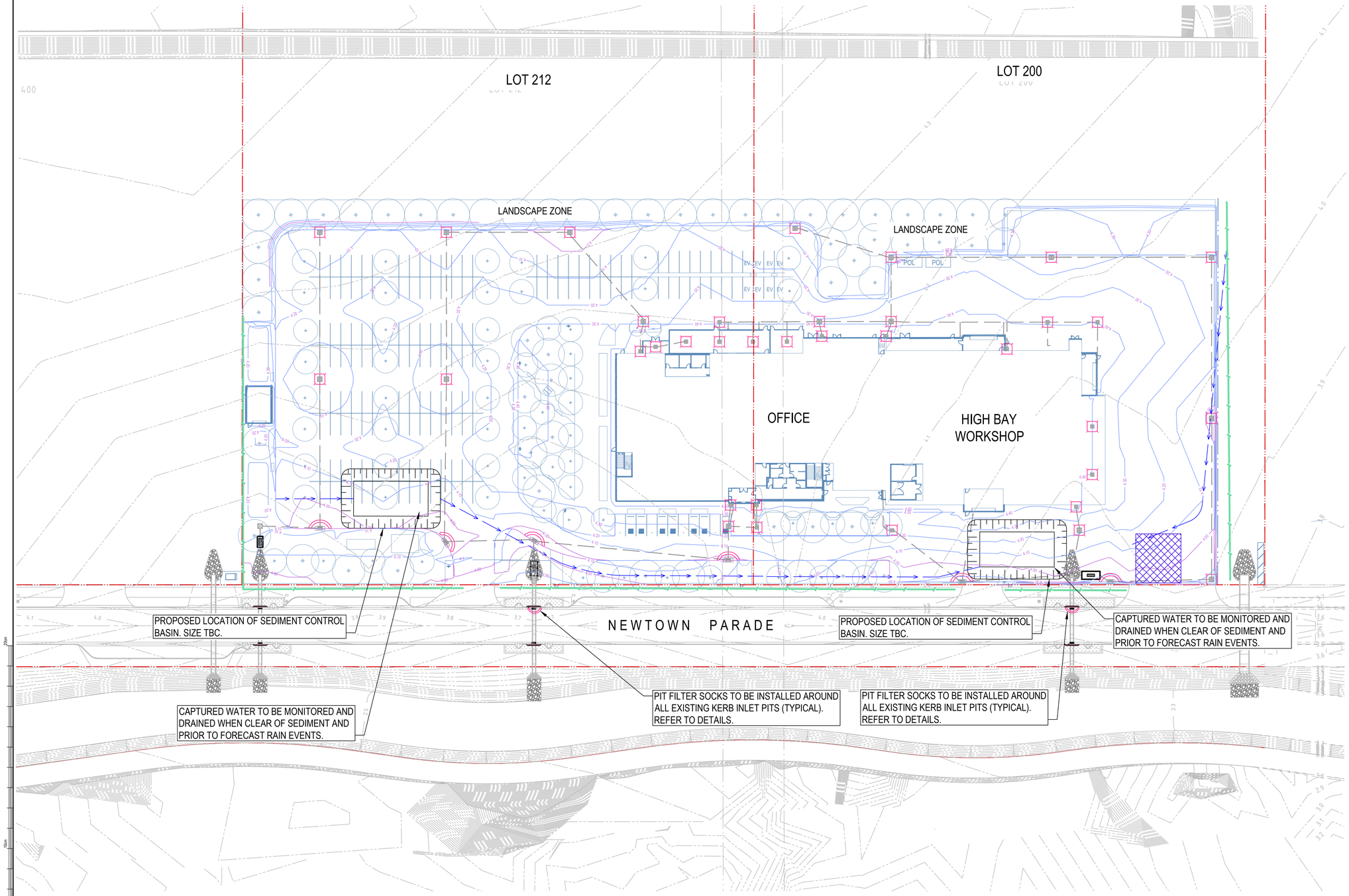
Aug 16, 2024 - 11:07pm

LEGEND

REFER TO LANDCOM: SOILS AND CONSTRUCTION VOL 1, 4TH EDITION, MARCH 2004

- SEDIMENT FENCE TO SD 6-8
- DIVERSION DRAIN WITH EARTH BANK
- MESH AND GRAVEL INLET FILTER TO SD 6-11
- GEOTEXTILE INLET FILTER TO SD 6-12
- STABILISED SITE ACCESS TO SD 6-14



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A	DRAFT ISSUE	19.12.23	JER	GPC

North

Scale: 0 5 10 20 30m — SCALE BAR 1:500 @A1 1:1000 @A3

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ASTRA AEROLAB

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Project: ASTRA AEROLAB - HIGH TECHNOLOGY INDUSTRIAL DEVELOPMENT PART LOT 200/12 NEWTON PARADE, WILLIAMTOWN 2318

CONCEPT DESIGN

Drawing Title: CIVIL SERVICES
SOIL EROSION AND SEDIMENT CONTROL PLAN
SHEET 1

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	1 :500

Project No.	Drawing No.	Issue
NA231561	C03-0001	F

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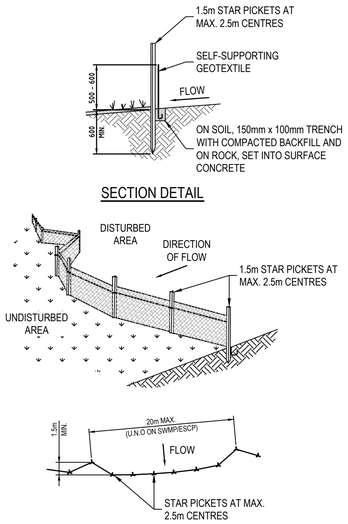
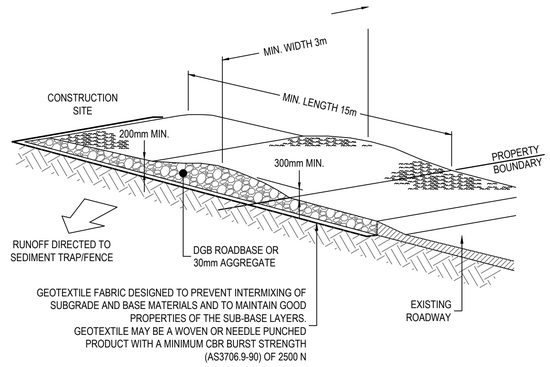


SEDIMENT FENCE CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50L PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10 YR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.5m INTERVALS (MAX) AT THE DOWN SLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECCOMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THROUGHLY OVER THE GEOTEXTILE.

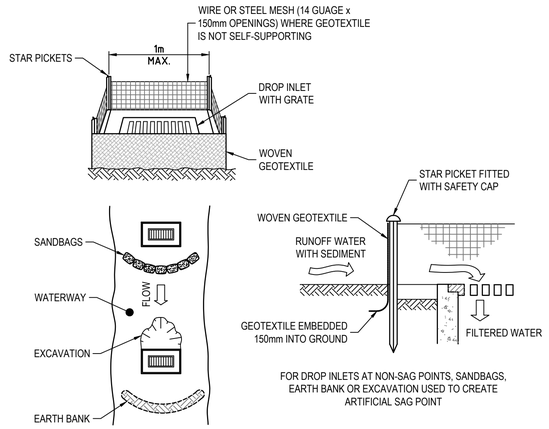
SEDIMENT CONTROL FENCE DETAIL (TO SD6-8)
NOT TO SCALE



STABILISED SITE ACCESS CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

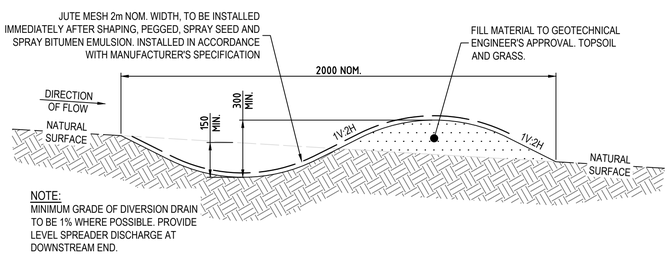
STABILISED SITE ACCESS DETAIL (TO SD6-14)
NOT TO SCALE



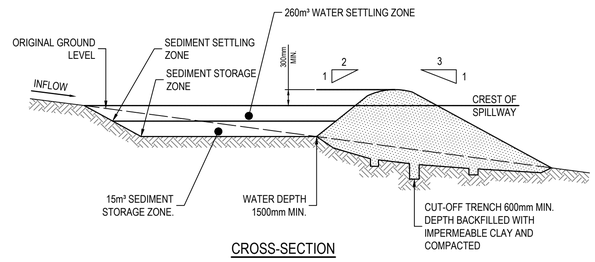
GEOTEXTILE INLET FILTER CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1m CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL (TO SD6-12)
NOT TO SCALE



EARTH BANK DETAIL (TO SD5-5)
NOT TO SCALE



CROSS-SECTION

EARTH BASIN (WET) - SD6-4
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)
NOT TO SCALE

CONSTRUCTION NOTES:

1. REMOVE ANY VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 500 mm DEEP AND 1200 mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY.
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100 mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100 mm TO 150 mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. CONSTRUCT THE EMERGENCY SPILLWAY.
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

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A	DRAFT ISSUE	19.12.23	JER	GPC

North

Scale

PRINT IN COLOUR

Client
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Project
ASTRA AEROLAB - HIGH TECHNOLOGY INDUSTRIAL DEVELOPMENT PART LOT 200/12 NEWTON PARADE, WILLIAMTOWN 2318

CONCEPT DESIGN

Drawing Title
CIVIL SERVICES
SOIL EROSION AND SEDIMENT CONTROL PLAN
SHEET 1

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	N.T.S.

Project No.	Drawing No.	Issue
NA231561	C03-0101	F

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Aug 15, 2024 - 11:07am

LEGEND

- KO — KERB ONLY
- K&G — KERB AND GUTTER
- IK — INTEGRAL KERB
- GD — GRATED DRAIN
- PRAM RAMP
- B — BOLLARD
- 4.00 — PROPOSED FSL CONTOUR (MAJOR)
- 3.90 — PROPOSED FSL CONTOUR (MINOR)
- P 4.365 — PROPOSED DESIGN LEVELS
- PROPOSED STORMWATER DRAINAGE LINE
- PROPOSED STORMWATER PIT
- PROPOSED GPT
- PROPOSED DOWNPIPE CONNECTION
- 3.7 — EXISTING SURVEY CONTOURS
- BOUNDARY LINE
- RW — RETAINING WALL
- PIT34 — STORMWATER PIT NUMBER

LOT 212

LOT 200

LANDSCAPE ZONE

PIT01 PIT11 PIT10 PIT27 PIT32 PIT33 PIT31 PIT22 PIT09 PIT30 PIT28 PIT27 PIT02 PIT12 PIT08 PIT06 PIT21 PIT23 PIT24 PIT25 PIT26 PIT29 PIT34 PIT07

DOWNPIPES TO BE CONNECTED TO STORMWATER NETWORK AS REQUIRED.

OFFICE
F.F.L. 4.50

HIGH BAY WORKSHOP
F.F.L. 4.50

PIT42 PIT43 PIT16 PIT14 PIT37 PIT04 PIT03 PIT13 PIT19 PIT38 GPT 1 PIT17 PIT15 PIT39 GPT 3 PIT36 PIT35 PIT05 GPT 2 PIT18 PIT40 PIT41 PIT20

FIRE TANK
PUMP ROOM F.F.L 4.20
GENERATOR
HCB
TRANSFORMER

NEWTON PARADE

NEWTOWN PARADE

NEWTON PARADE

EXISTING HEADWALL OUTLET INTO DRAINAGE SWALE

EXISTING HEADWALL OUTLET INTO DRAINAGE SWALE

EXISTING HEADWALL OUTLET INTO DRAINAGE SWALE

Issue.	Description	Date	Drawn	Approved
F	ISSUED FOR DA ASSESSMENT	16.08.24	SO	JPR
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North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3
PRINT IN COLOUR

Client
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Project
ASTRA AEROLAB - HIGH TECHNOLOGY INDUSTRIAL DEVELOPMENT PART LOT 200/12 NEWTON PARADE, WILLIAMTOWN 2318

CONCEPT DESIGN

Drawing Title
CIVIL SERVICES
STORMWATER MANAGEMENT PLAN
SHEET 1

Drawn	Designed	Q.A. Check	Date	Scale @ A1
SJO	SJO	JPR	14.08.24	1 : 500

Project No.	Drawing No.	Issue
NA231561	C08-0001	F

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Aug 16, 2024 - 11:06am