Our Ref:AL:HW:239944

12th June 2020

The Director General
NSW Department of Planning, Industry & Environment
GPO Box 39
Sydney NSW 2001

ATTENTION: MS OLIVIA HIRST

Dear Olivia,

RE: ADDENDUM NO. 2 – DEVELOPMENT OF STAGE 3.1A
ENVIRONMENTAL MANAGEMENT PLAN – SOIL & WATER MANAGEMENT PLAN (MP07_0086)
TOMAGO ROAD, TOMAGO

1.0 INTRODUCTION

ADW Johnson has been engaged by Northbank Enterprise Hub Pty Limited (NEH) to prepare an addendum to the Soil and Water Management Plan (SWMP) completed by ADW Johnson, dated January 2010, for the proposed development being Stage 3 of the approved Part 3A project, Project Approval No. MP07_0086 at Tomago Road, Tomago. Stage 3 comprises the entirety of Lot 210 DP 1174939, however the focus of this addendum to the SWMP is on part of Stage 3 only, named Stage 3.1A.

Previous SWMP correspondence has been reviewed by the Biodiversity & Conservation Division (BCD) forwarded by NSW Department of Planning, Industry & Environment (DPIE) which contained a list of requirements to be addressed for the approval of the Stage 3.1A activities as described below. A checklist is provided in ***Section 7*** for referencing the responses to the BCD list of requirements.

Following installation of erosion and sediment controls, the proposed works activities in Stage 3.1A will be initiated by creating a stockpile of up to 35,000 m^3 imported fill material, limited until NSW DPIE approve of further SWMP work separately from this Addendum. Subject to geotechnical supervision, the stockpile may be shifted over the existing surface within the Stage 3.1A area, for ground improvement purposes by preloading the soft ground beneath. Ultimately the stockpiled fill material will be spread to fill the Stage 3.1A footprint to bulk earthworks levels.

ADW JOHNSON PTY LIMITED
ABN 62 129 445 398

Sydney
Level 35 One International Towers
100 Barangaroo Avenue
Sydney NSW 2000
02 8046 7411
sydney@adwjohnson.com.au

Central Coast
5 Pioneer Avenue, Tuggerah NSW 2259
PO Box 3717, Tuggerah NSW 2259
02 4305 4300
coast@adwjohnson.com.au

Hunter
7/335 Hillsborough Road,
Warners Bay NSW 2282
02 4978 5100
hunter@adwjohnson.com.au

www.adwjohnson.com.au

2.0 COMPLIANCES

This addendum maintains compliances with the following approved reports:

- The approved Construction Environmental Management Plan (CEMP) by ADW Johnson, 2009;
- The approved Soil and Water Management Plan by ADW Johnson, January 2010;
- The approved Acid Sulphate Soils Management Plan (ASSMP) by Douglas Partners, November 2009; and
- The approved 'Volume 4 - Stormwater Management Report – Industrial Subdivision' by Asquith & deWitt, November 2007.

The proposed layout plan of stormwater controls and treatment remains consistent, in terms of strategy and approach to stormwater management, with the Project Approval.

3.0 DEVELOPMENT DESCRIPTION

3.1 CURRENT WORKS STAGE 3.1A – THIS ADDENDUM

This addendum is for Stage 3.1A only, consisting of the stockpiling of up to 35,000 m^3 fill material within the Stage 3.1A area, installation of erosion and sediment controls, and spreading of the 35,000 m^3 fill material to bulk earthworks levels in the Stage 3.1A area. These fill works are likely to occur in isolation, separate to any proposed future tenancy.

Initially, the fill material will be temporarily stockpiled on the Stage 3.1A site to a maximum height of approximately 5 m and revegetated with mulch and grasses if the stockpile is to remain in place for longer than 30 days. Based on previous experience in the area, preloading is expected to occur within two (2) weeks. Therefore, stabilisation of the fill material will not be required during the ground improvement work. However, if a preload stockpile remains in place for longer than 30 days, stabilisation will be required.

This is in accordance with the existing Draft Statement of Commitments of the Project Approval. The stockpile may shift within Stage 3.1A to improve ground conditions for future development, under geotechnical supervision. Ultimately the stockpile will be pushed out into a final fill platform of bulk earthworks over the Stage 3.1A area. For the stockpile and extent of the fill platform locations, utilising the 35,000 m^3 fill, refer to the Engineering Plans by ADW Johnson (Ref: 239944-BEW).

Appropriate erosion and sediment controls, stormwater controls and construction sequencing shall be implemented (see ***Section 6***) to minimise potential impacts to the downstream environments following the Stage 3.1A earthworks.

3.2 FUTURE WORKS

The approach by NEH is to complete bulk earthworks in stages as site preparation works ahead of proposed development approved under MP07_0086. NEH is not currently proposing to subdivide and sell off vacant land, however this may remain a future option. NEH is established for potential tenancies and long-term leases, catering for new development which are unlikely to be less than 5,000 m^2 in area. Lot 210 DP 1174939, is approximately 50 hectares in area and accordingly will take some time to be populated with tenancies. The size, layout and timing of tenancies will be market driven.

Based on this model of tenancies, as opposed to vacant land subdivision, land allocation for stormwater management can be incrementally increased to cater for increasing levels of development within the site. With approximately 50 hectares of Lot 210 DP 1174939 being available, there remains sufficient opportunity for adequately sized stormwater controls to meet stormwater compliance requirements.

4.0 WATER CONSERVATION MEASURES

Owing to this Addendum being for stockpiling and bulk earthworks for Stage 3.1A only, there are no water conservation measures for inclusion in this Addendum to the SWMP.

5.0 STORMWATER DETENTION

The hydrologic routing package *DRAINS* was used to estimate peak discharges from the site in the predeveloped state and post-filling in order to determine detention requirements for the bulk earthworks footprint of Stage 3.1A. The Rainfall Intensity Frequency Duration (IFD) data adopted was sourced from the Bureau of Meteorology website (IFD ARR16 application).

The catchment parameters for the predeveloped and filled state are shown in ***Table 1.***

Table 1 – Catchment Parameters

Catchment	Total Area (ha)	% Impervious	Slope (%)	Retardance (n*)
Predeveloped	1.2	0	0.2	0.48
Filled	1.2	0	0.5	0.22

It is proposed that a detention basin is provided to attenuate peak stormwater flows to predeveloped levels up to and including the 1% Annual Exceedance Probability (AEP) storm event. ***Table 2*** summarises the detention basin controls. The location of the detention basin is shown in the Engineering Plans by ADW Johnson (Ref: 239944-BEW) and is consistent with the layout plans previously provided to NSW DPIE.

Table 2 – Detention Basin Parameters

Property	Value
Detention Volume (at spillway level) to be constructed	10,400 m^3
Detention Volume required for Stage 3.1A	590 m^3
Sediment Storage Volume	406 m^3
Basin Invert Level	~0.5 m AHD (natural ground surface)
Basin Berm Level	2.0 m AHD
Outlet Controls	300 mm uPVC – RL 0.5 m AHD
	4 m wide spillway – RL 1.5 m AHD

It should be noted that the detention basin is initially utilised as a sediment basin during bulk earthworks and construction. The basin is oversized to minimise future disturbance. Further modelling has been undertaken to size the basin and outlet controls to satisfy peak flow attenuation for a future catchment area up to 9 ha and with a conservative 100% impervious area percentage (future development and upstream catchment area). Further incremental adjustments to the basin volume may be required should the catchment area increase. A separate SWMP or Addendum will be completed to address these details and results for future works.

The basin embankment design is subject to geotechnical advice, however will likely be constructed with clayey fill material over the existing ground over a layer of geotextile fabric. The natural ground surface will remain intact as the basin invert is unlikely to involve any excavation. In the event that excavation is required to form the basin embankment key-in or basin invert, then the approved Acid Sulfate Soils Management Plan (ASSMP) shall be adhered to during construction. A 4 m wide embankment is proposed around the basin to enable vehicle access for ongoing maintenance of the basin.

The initial methodology for stormwater management will be to divert the sediment laden runoff from the catchment area of Stage 3.1A into the basin. Surface water in the existing drain will pass by the eastern edge of the basin, continuing south as the clean water flowpath.

The spillway of the basin will face toward the west, discharging surface water from the basin for connection with existing drainage downstream within Lot 210. Minor embankment works will also be undertaken along the existing drain/clean water flow path to maintain the extended flowpath of the basin discharge. This provides an extended flowpath for ponding of stormwater runoff within Lot 210, before discharging to Lot 1001 DP 1127780. To be conservative, the piped drainage connection into the existing drain, under existing easement (c) along the southern boundary of Lot 22 DP 1150980 will be capped off. Whilst dense vegetation has prevented flows being conveyed to the east via this drainage easement for a number of years, the capping provides certainty. This will prevent regular stormwater flows heading eastward to the drains upstream of the North South Drain floodgate and Tomago Wetland Rehabilitation Project. Lot 1001 is owned by NEH and this discharge direction and approach to stormwater management is consistent with the approved stormwater documentation.

A site inspection was undertaken on the 28th May 2020 by the Principal Engineer from Torque Projects Pty Ltd. Williamtown recorded 73.4 mm of rainfall between 14th-26th May 2020, including 38.8 mm on the 28th May 2020. The rainfall event provided on-ground saturation of existing drains and flow paths observed for the direction of drainage over the typically flat land. Various locations were identified where Lot 210 'leaks' onto Lot 1001 (refer 239944-BEW Sheet 103 for photos). Spoil embankments were consistently dry to walk on, confirming the vegetation zonation and flow directions.

Google Earth imagery dated November 2004 provides the best aerial image defining the existing drainage paths identified during the site visit (refer 239944-BEW Sheet 103 for aerial image). The aerial image also shows that the basin discharges directly into an existing drainage path centralised within Lot 210.

Table 3 shows the peak flowrates from the site for both the predeveloped scenario and filled area of Stage 3.1A scenario.

Table 3 – Peak Flowrates

AEP (%)	Predeveloped Peak Flow (m^3/s)	Filled & Detained Basin Peak Flow (m^3/s)
10	0.031	0.007
1	0.117	0.023

Table 3 shows that the proposed detention basin sufficiently attenuates peak stormwater flows to predeveloped levels up to and including the 1% AEP storm event. Therefore, the proposed filling for Stage 3.1A will not have any negative impact on downstream environments with regard to stormwater discharge.

6.0 EROSION AND SEDIMENT CONTROL

The Erosion and Sediment Control Plan has been prepared in accordance with Council's requirements and Landcom's Managing Urban Stormwater - Soils and Construction manual (the *Blue Book*). To ensure downstream waters and adjoining properties are protected, appropriate soil and water management devices have been specified. These devices shall be installed and maintained as outlined in this SWMP and Landcom's *Blue Book*.

Regrading is proposed across the development area to achieve drainage requirements and efficient use of the landform. Treatment devices will be utilised to contain the generated pollutants from the site during construction. These include but are not limited to:

- Sediment Fencing;
- Shaker Ramp;
- Diversion Drains; and
- Sediment Basins.

Hydroseeding with grasses and vegetation is proposed both initially on the stockpile where the stockpile is expected to remain in place for 30 days or more, and ultimately on the bulk earthworks fill platform of Stage 3.1A for surface stabilisation. A 50 mm topsoil layer shall be placed over the stockpile or bulk earthworks fill platform to promote root growth prior to hydroseeding.

Sediment fencing shall be installed to the perimeter of the fill platform batter slopes and external batter slopes of the basin. In accordance with recommendations from the Blue Book, it is considered unnecessary to construct a sediment basin where the soil loss from land disturbance is less than 150 m^3/year. The batter slopes have an area of approximately 0.35 ha in total. The Revised Universal Soil Loss Equation (RUSLE) calculates approximately 50 m^3/year of soil loss over these batter slopes. Therefore, directing runoff from the batter slopes towards a sediment basin is considered unnecessary.

Additionally, these batter slopes will be finished with a 150 mm thick layer of topsoil, promoting rainfall infiltration similar to pre-developed land area. This will ensure that erosion is minimised and that the batter slopes are ready for final landscaping treatment upon future development.

The installation of sediment fencing to the works area surround will provide an obstruction for runoff from clean water catchment areas from entering the works area. The fencing placement will essentially act as a clean water diversion around the works. It is noted that the surrounding land area is very flat with gradual fall from north to south. Excavation for a clean water diversion drain, including the approved ASSMP compliances, will only be undertaken if the works area is being continually inundated and the fence is deemed insufficient to divert the flows naturally around the works area.

Runoff generated from within the site is to be treated and managed using a combination of the above stated treatment devices. The Engineering Plans by ADW Johnson (Ref: 239944-BEW) show the Erosion and Sediment Controls required for the development,

Additionally, in accordance with Condition 44 of Project Approval No. MP07_0086, an Annual Environmental Monitoring Report (AEMR) shall be prepared and submitted to the Director-General and all relevant agencies. The AEMR shall include a summary and analysis of environmental monitoring results and describe actions that have been taken to ensure compliance for the works activities of Stage 3.1A.

6.1 SEDIMENT BASIN SIZING AND CAPACITY

Sediment basin sizing was undertaken using the RUSLE as defined in Landcom's *Blue Book* to the 85th percentile. The total catchment area, disturbance area and resulting sediment basin size is presented in ***Table 4***, while basin sizing calculations are presented in ***Appendix A*** of this report.

Table 4 – Sediment Basin Catchments and Size

Basin Sizing	
Catchment Area (ha)	1.2
Disturbance Area (ha)	1.2
Basin Volume (m^3)	406

Pegs shall be installed on the floor of the basin and marked to show the top of the sediment storage zone. The basin shall be cleared of sediment once the design capacity of the basin is reached.

The detention basin shall be used as a temporary sediment basin during construction. Stage 3.1A requires 590 m^3 of detention volume (***Table 2)***, leaving an available 9,810 m^3 for sediment storage. Therefore, the temporary sediment basin has significant capacity for the accumulation of sediment, theoretically for the capacity for up to 24 design storm events. In the event that sediment removal is required, water shall be discharged to the west in a dispersed manner while sediment shall be removed.

The conventional approach for sediment basin design is to minimise basin sizes, usually due to space availability constraints with development. Consequently, more frequent, intensive management is required to maintain the minimum storage availability under these limiting conditions. To the contrary, this site has the space available and can take advantage of efficiencies by installing a larger basin upfront, having simplified, initial compliances for small development footprints and capacity for future development. An advantage of the larger basin is the reduced frequency of sediment storage reaching limits, described above as theoretically having capacity for sediment laden runoff from 24 design storm events. Accumulation of sediment can be contained by the basin for these works for extended durations due to the significant capacity, compared to the size of the development footprint.

Piped outlets will be initially blocked when the basin is being used as a sediment basin. Drawdown of runoff accumulation will be managed by relying on evaporation, owing to the excessive storage available during this time.

6.2 WORKS SEQUENCING

Works in Stage 3.1A will be carried out generally in the following sequence:

Phase 1:

a. Install sediment fencing to the work area of the site (providing clean water diversion around the work area); and
b. Install stabilised site access point.

Phase 2:

c. Construct sediment basin ready for runoff from proposed disturbed area, including ~0.5 m high, temporary embankment edge to the sediment basin along the northern edge for containment; and

d. Determine pump out arrangements for dewatering of the fill area. Until fill elevations permit gravity drainage, pump out of accumulated sediment laden water ponding is to be directed into the sediment basin for settling of sediment and to allow filling works to continue.

Phase 3:

e. Commence fill import to stockpile in Stage 3.1A;
f. Provide dirty water diversion drains as fill import levels reach sufficient levels for gravity drainage into the sediment basin; and
g. Increase the height of the northern edge of the basin embankment with fill height increases to approach final levels.

Phase 4:

h. Apply topsoil layers to fill – 50 mm thick to stockpiles remaining for >30 days; and 150 mm thick to batters of the bulk earthworks fill platform;
i. Hydroseed stockpile and fill platform to stabilise surfaces;
j. Mulch all other disturbed areas;
k. Removed erosion and sediment controls to basin outlet, including pipe outlet capping and replace with detention controls after permanent bulk earthworks landforms are complete and ground rehabilitation has been achieved; and
l. Prior to conversion of the sediment pond to detention basin, test the water to determine if flocculation is required prior to dewatering of basin, remove any accumulated sediment and dispose of appropriately as required.

6.3 SITE INSPECTION AND MAINTENANCE

Weekly inspections by the Site Superintendent shall be carried out during earthworks and prior to forecast rainfall events during earthworks to ensure the following:

- All erosion control devices are operational and drains and sediment fences are clear of trapped sediment and are well maintained;
- Areas subject to high velocity flows are clear of construction materials;
- Rehabilitation areas do not require additional maintenance and are working effectively to reduce the erosion hazard of the site;
- Additional erosion control devices are employed if necessary; and
- Temporary soil and water management devices are removed at the end of the construction and rehabilitation period.

Each inspection shall be recorded by the Site Superintendent in a log book that is kept onsite and accessible authorised persons on request. As a minimum, the log book entries shall include:

- Inspection date;
- Current weather conditions and recent rainfall events;
- The condition of the soil and water management devices, vegetation and downstream areas; and
- Any required repairs or additions to the soil and water management control devices; and the need for dust prevention or irrigation.

On completion of earthworks, inspections to be completed following major rainfall events.

7.0 BCD LETTER

A checklist is provided in **Table 5** below for the Section or Plan references to the responses from the BCD letter for the approval to stockpile 35,000 m^3 fill in Stage 3.1A only.

Table 5 – BCD Letter Points and Response

BCD Letter Point	*Section or Plan Reference*
Removal to all reference to filling and development of the remainder of Stage 3 (that is the document should refer to Stage 3a only).	-
Details of how surface will be treated following filling and prior to development, the use of grassed surface stabilisation is preferred to the use of bitumen emulsion.	***Section 3.1 Section 6.0***
Details of how offsite water will be diverted around the fill platform and where it will be discharged.	***Section 5.0 (see 239944-BEW Sheets 101-103)***
Calculations for and provision of an appropriate sediment basin to manage sediment runoff from the proposed fill. Calculations are to include any proposed batter slopes from preloading stockpiles used to meet geotechnical requirements. Calculations and design should be in accordance with "Soils and Construction, Managing Urban Stormwater, Landcom 2004, or the latest IECA guidance. Calculations should be for the 85th percentile given the sensitivity of the receiving waters. The sediment basin must be constructed and operational prior to importing the fill to site.	***Section 6.0***
Details of how the sediment basin will be managed until such time as development proceeds.	***Section 6.0 Section 6.3***
Details of how additional flows from the filled area will be controlled, use of the sediment basin as an on-site detention facility are encouraged.	***Section 5.0***
Details regarding where runoff from the filled area will be discharged and the capacity of the drainage in this area to accept the runoff, it is not accepted that the fill platform contains no pavements and will not generate additional flows.	***Section 5.0***

8.0 CONCLUSION

The above assessments regarding soil and water management are consistent with Project Approval MP07_0086 for the proposed development of Stage 3.1A. We trust that this information is sufficient to approve the stockpile and bulk earthworks of Stage 3.1A with regard to soil and water management.

Yours faithfully,

ANGUS LIM
CIVIL ENGINEER
ADW JOHNSON
HUNTER OFFICE

Appendix A

SEDIMENT BASIN CALCULATIONS

SEDIMENT CONTROL - SEDIMENT BASIN PARAMETERS

IN ACCORDANCE WITH 'MANAGING URBAN STORMWATER:SOILS AND CONSTRUCTION' VOLUME 1 4TH EDITION LANDCOM (2004)

SITE CATCHMENT AREA		
CATCHMENT	**VALUE**	**UNITS**
TOTAL AREA	1.2	ha
DISTURBED AREA	1.2	ha

SITE PARAMETERS	
CONSTRAINT	**VALUE**
SOIL MATERIALS	DISPERSIBLE SOILS
SOIL TEXTURE GROUP	D
EROSION HAZARD	VERY LOW
DESIGN RAINFALL DEPTH (DAYS)	5
DESIGN RAINFALL DEPTH (PERCENTILE)	85TH
DESIGN RAINFALL DEPTH (mm)	48.3
VOLUMETRIC RUNOFF COEFFICIENCT (CV)	0.69

RUSLE FACTORS		
CONSTRAINT	**VALUE**	**UNITS**
RAINFALL EROSIVITY (R-FACTOR)	2496	mm
SOIL ERODIBILITY (K-FACTOR)	0.04	
SLOPE LENGTH	200	m
SLOPE GRADIENT	0.5	%
LENGTH/GRADIENT (LS-FACTOR)	0.24	
EROSION CONTROL PRACTICE (P-FACTOR)	1.3	
GROUND COVER (C-FACTOR)	1	

CALCULATIONS		
CONSTRAINT	**VALUE**	**UNITS**
SOIL LOSS	32	m^3/ha/yr
SETTLING ZONE VOLUME	400	m^3
SEDIMENT STORAGE VOLUME	6	m^3
TOTAL BASIN VOLUME REQURIED	406	m^3

239944-BEW-101(C)

LEGEND

- EXISTING LOT BOUNDARY
- PROPOSED LOT BOUNDARY
- FUTURE LOT BOUNDARY
- 18 DESIGN SURFACE CONTOURS
- EXTENT OF BATTER
- EXISTING STORMWATER
- PROPOSED STORMWATER
- CLEAN WATER DIVERSION DRAIN
- DIRTY WATER DIVERSION DRAIN
- SEDIMENT FENCE
- CONSTRUCTION ACCESS

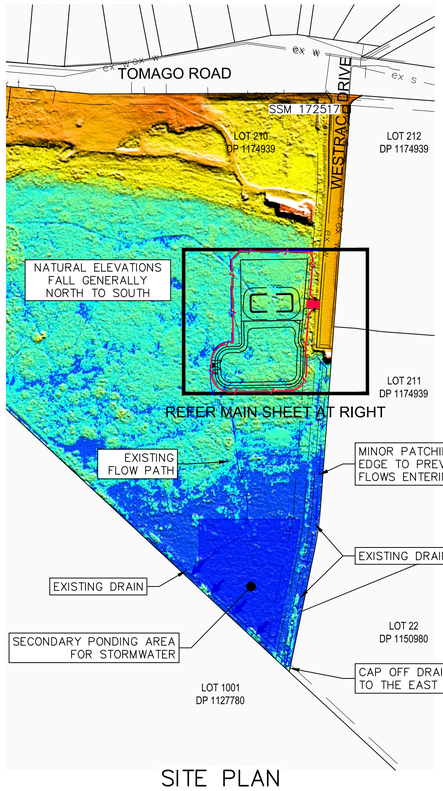
MGA

CONTOUR INTERVAL = 0.5m

ORIGIN OF LEVELS
S.S.M.172517
E: 382953.405
N: 6367799.901
AHD: 3.476

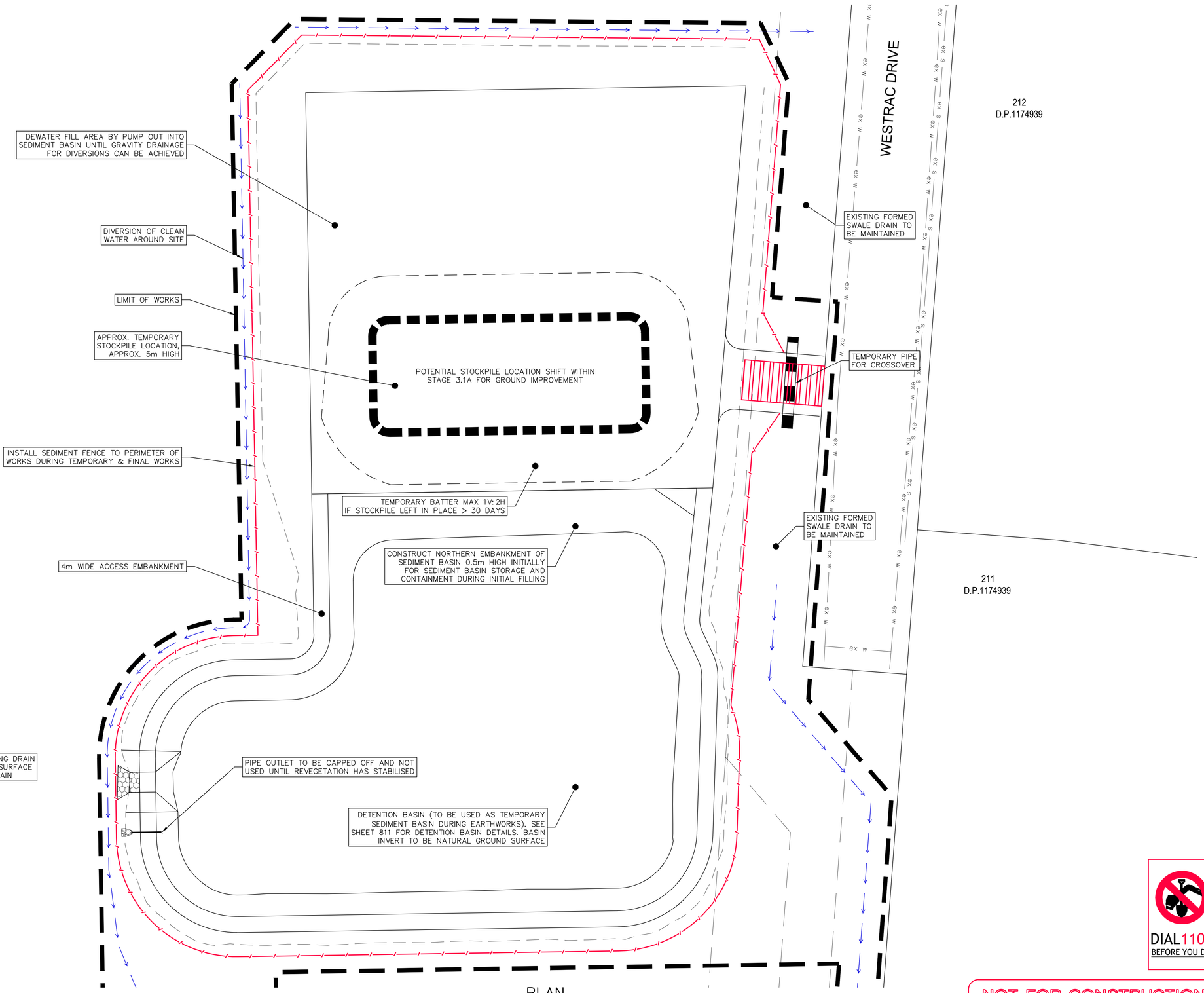
NOTES:

1. ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED & EXPOSED PRIOR TO EARTHWORKS COMMENCING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM BOTH POSITION & LEVEL OF THESE UTILITIES.
2. REFER SHEET 811 FOR EROSION AND SEDIMENT CONTROL NOTES & DETAILS.



SITE PLAN
SCALE 1:5000

REFER TO AERIAL IMAGE OVERLAY ON SHEET 103 FOR EXISTING DRAINS



PLAN
SCALE 1:500

DIAL1100 BEFORE YOU DIG

NOT FOR CONSTRUCTION

100mm AT FULL SIZE

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	13.09.2019	DPIE SUBMISSION	D.W.	R.J.	A.L.	R.J.
B	04.02.2020	DPIE COMMENTS	S.HO.	A.G.	A.L.	A.G.
C	10.06.2020	BCD COMMENTS	S.HO.	R.J.	A.L.	R.J.

SCALES
0 10 20 A1 / A3 1:500 / 1:1000
0 100 200 A1 / A3 1:5000 / 1:10000

DESIGN FILE N:\239944\Design\12D\239944 CENG

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE

adw johnson
Hunter Office
Unit 7/335 Hillsborough Rd
Warners Bay N.S.W. 2282
Phone: (02) 4978 5100
Fax: (02) 4978 5199
email: hunter@adwjohnson.com.au
www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT
Northbank Enterprise Hub.

PROPERTY DESCRIPTION
LOT 210, DP1174939
TOMAGO ROAD, TOMAGO

SURVEYED ADW Johnson
DATUM A.H.D.

PROJECT STAGE 3.1A

PLAN TITLE
TEMPORARY STOCKPILE DETAIL PLAN

PROJECT No.	DISCIPLINE	NUMBER	REV.
239944	BEW	101	C

Plotted By: scotth Plot Date: 12/06/20 – 09:52 Cad File: N:\239944\DWG's\Engineering\Civil\BEW\239944-BEW-101(C).dwg

239944-BEW-102(C)

LEGEND

- EXISTING LOT BOUNDARY
- PROPOSED LOT BOUNDARY
- FUTURE LOT BOUNDARY
- 18 DESIGN SURFACE CONTOURS
- EXTENT OF BATTER
- EXISTING STORMWATER
- PROPOSED STORMWATER
- CLEAN WATER DIVERSION DRAIN
- DIRTY WATER DIVERSION DRAIN
- SEDIMENT FENCE
- CONSTRUCTION ACCESS

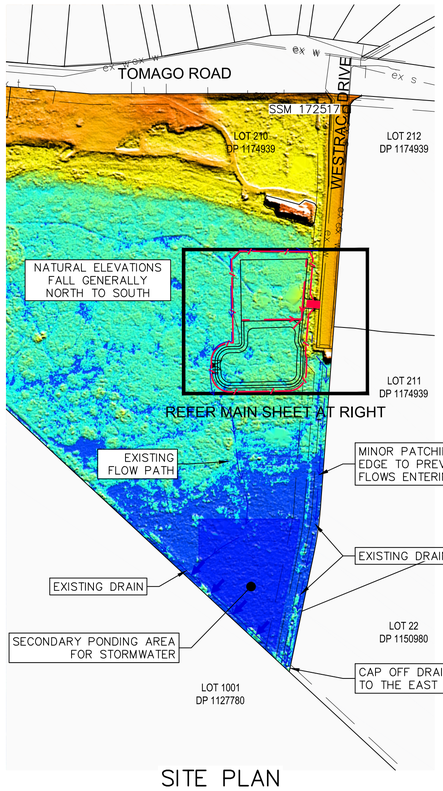
MGA

CONTOUR INTERVAL = 0.5m

ORIGIN OF LEVELS
S.S.M.172517
E: 382953.405
N: 6367799.901
AHD: 3.476

NOTES:

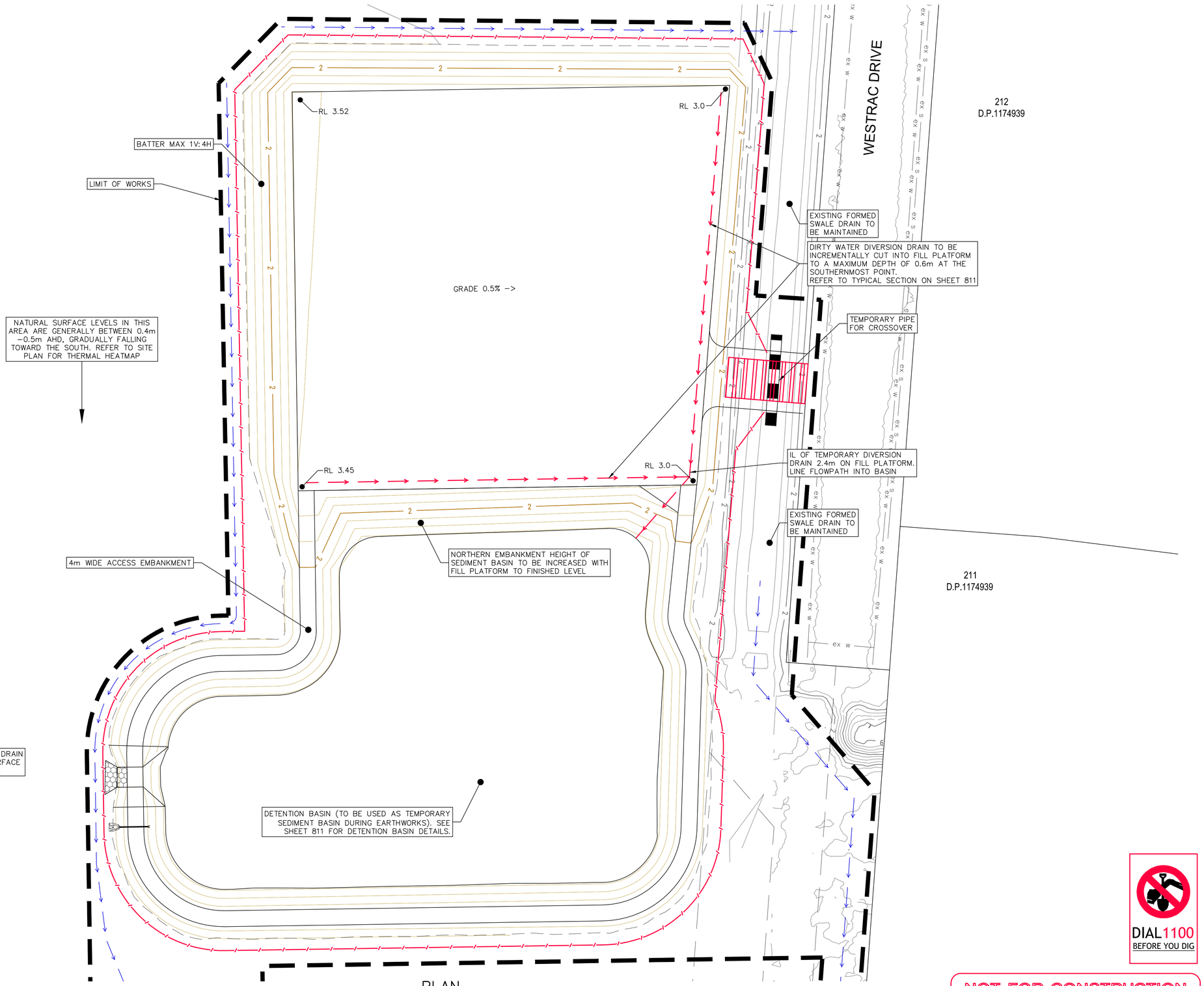
1. ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED & EXPOSED PRIOR TO EARTHWORKS COMMENCING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM BOTH POSITION & LEVEL OF THESE UTILITIES.
2. REFER SHEET 811 FOR EROSION AND SEDIMENT CONTROL NOTES & DETAILS.



SITE PLAN

SCALE 1:5000

REFER TO AERIAL IMAGE OVERLAY ON SHEET 103 FOR EXISTING DRAINS



PLAN

SCALE 1:500

DIAL1100 BEFORE YOU DIG

NOT FOR CONSTRUCTION

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	13.09.2019	DPIE SUBMISSION	D.W.	R.J.	A.L.	R.J.
B	04.02.2020	DPIE COMMENTS	S.HO.	A.G.	A.L.	A.G.
C	10.06.2020	BCD COMMENTS	S.HO.	R.J.	A.L.	R.J.

SCALES
0 10 20 A1 / A3 1:500 / 1:1000
0 100 200 A1 / A3 1:5000 / 1:10000

DESIGN FILE N:\239944\Design\12D\239944 CENG

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE

adw johnson
Hunter Office
Unit 7/335 Hillsborough Rd
Warners Bay N.S.W. 2282
Phone: (02) 4978 5100
Fax: (02) 4978 5199
email: hunter@adwjohnson.com.au
www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT: Northbank Enterprise Hub.

PROPERTY DESCRIPTION: LOT 210, DP1174939 TOMAGO ROAD, TOMAGO

SURVEYED: ADW Johnson

DATUM: A.H.D.

PROJECT: STAGE 3.1A

PLAN TITLE: FILL PLATFORM DETAIL PLAN

PROJECT No.	DISCIPLINE	NUMBER	REV.
239944	BEW	102	C

Plotted By: scotth Plot Date: 12/06/20 – 09:52 Cad File: N:\239944\DWG's\Engineering\Civil\BEW\239944–BEW–102(C).dwg

100mm AT FULL SIZE

239944-BEW-103(C)

PLATE 1
FLOWPATH INTO LOT 1001, LOOKING SOUTH

PLATE 2

PLATE 3

PLATE 4

LOOKING NORTH WEST. FOREGROUND: OVERFLOWS WITHIN LOT 1001. MIDGROUND: LOT 1001/210 FENCELINE.
BACKGROUND: LOT 210 EXISTING DRAIN. APPROXIMATE LOCATIONS ONLY

NOT FOR CONSTRUCTION

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	13.09.2019	DPIE SUBMISSION	D.W.	R.J.	A.L.	R.J.
B	04.02.2020	DPIE COMMENTS	S.HO.	A.G.	A.L.	A.G.
C	10.06.2020	BCD COMMENTS	S.HO.	R.J.	A.L.	R.J.

DESIGN FILE N:\239944\Design\12D\239944 CENG

SCALES
0 30 60 75m
SCALE: 1:1500 (FULL)

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE

adw johnson
Hunter Office
Unit 7/335 Hillsborough Rd
Warners Bay N.S.W. 2282
Phone: (02) 4978 5100
Fax: (02) 4978 5199
email:hunter@adwjohnson.com.au
www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT
Northbank Enterprise Hub.

PROPERTY DESCRIPTION
LOT 210, DP1174939
TOMAGO ROAD, TOMAGO

SURVEYED: ADW Johnson
DATUM: A.H.D.

PROJECT: STAGE 3.1A

PLAN TITLE: DRAINAGE PLAN OVERLAY OVER AERIAL IMAGE

PROJECT No.		DISCIPLINE		NUMBER	REV.
239944	–	BEW	–	103	C

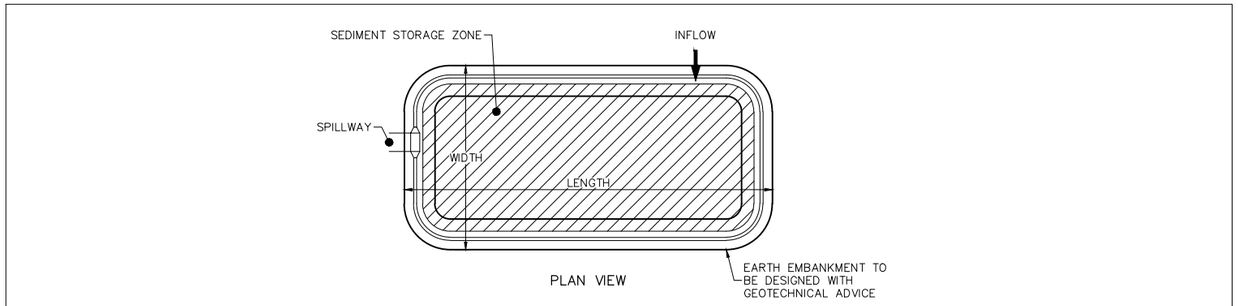
Plotted By: scotth Plot Date: 12/06/20 – 09:53 Cad File: N:\239944\DWG's\Engineering\Civil\BEW\239944–BEW–103(C).dwg

100mm AT FULL SIZE

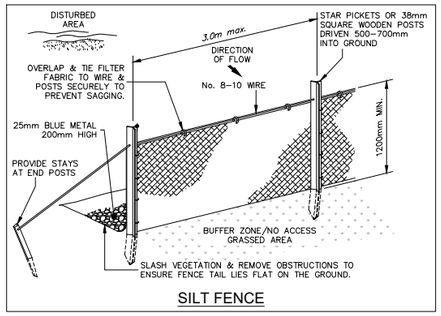
239944-BEW-811(C)

EROSION & SEDIMENT CONTROL NOTES:

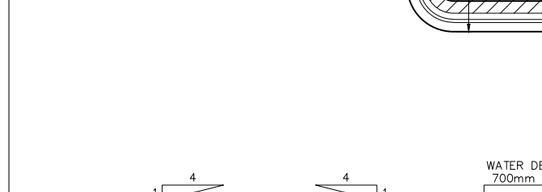
1. BARRIER FENCING TO BE INSTALLED TO DELINEATE ALL NO GO AREAS PRIOR TO COMMENCEMENT OF WORKS.
2. STOCKPILE AREA TO BE FULLY FENCED WITH SILT PROOF FABRIC AT ALL TIMES
3. ALL AREAS DISTURBED OUTSIDE OF WORKS AREA DURING CONSTRUCTION ARE TO BE RE-INSTATED AND SEEDED IMMEDIATELY.
4. SEEDING/REVEGETATION TO BE CARRIED OUT IN ACCORDANCE WITH PORT STEPHENS COUNCIL'S MANUAL OF ENGINEERING STANDARDS.USE OF A SEED MIX THAT VARIES FROM THE GUIDELINES TO BE APPROVED BY COUNCIL PRIOR TO USE. TOPSOIL TO BE APPLIED AS FOLLOWS:
   (A) STOCKPILES, FILLING AND FINAL FILL PLATFORM > 30 DAYS: 50mm THICK
   (B) BATTERS OF BASIN EMBANKMENT AND FILL PLATFORM 150mm THICK
5. ALL SITE REGRADING OF FILLING, PRELOAD AND EMBANKMENTS, IS TO BE CARRIED OUT UNDER THE SUPERVISION OF A QUALIFIED GEOTECHNICAL ENGINEER
6. SILT FENCES AND STRAW BALING TO BE PLACED WHERE DIRECTED BY COUNCIL'S ENGINEER AND MAINTAINED AT ALL TIMES
7. WHERE PRACTICAL CATCHDRAINS OR SMALL LEVIES ARE TO BE CONSTRUCTED TO MINIMISE EXTERNAL RUNOFF ENTERING THE SITE
8. DISTURBED AREAS TO BE KEPT TO A MINIMUM.
9. CONTROL CLEAN WATER FROM ABOVE THE SITE, THROUGH THE SITE AND AROUND THE SITE.
10. KEEP CLEAN WATER SEPARATE FROM DIRTY WATER.
11. PROTECT ALL DISTURBED AREAS FROM EROSION.
12. MINIMISE SEDIMENTATION.
13. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL COMPLETE REHABILITATION IS ACHIEVED.
14. OBTAIN COUNCIL'S PERMISSION BEFORE CLEARING OF ANY TREES.
15. AN ONSITE MEETING WITH COUNCIL'S SOIL CONSERVATION CONSULTANT PRIOR TO COMMENCEMENT OF WORK WILL BE REQUIRED
16. MAXIMUM SIDE SLOPE OF STOCKPILES REMAINING IN PLACE FOR > 30 DAYS TO BE 2H:1V
17. ADJACENT ROADS TO BE KEPT CLEAN. ANY MATERIAL IS TO BE REMOVED, USING STREET SWEEPER, AT LEAST TWICE A WEEK OR AS DIRECTED BY SUPERINTENDENT.
18. TEMPORARY SEDIMENT BASIN OUTLETS TO BE PROVIDED WITH
19. 3 METRE x 3 METRE D50=300mm ROCK SCOUR PROTECTION APRONS CONSTRUCTED.



'WET EARTH' SEDIMENT BASIN
(TYPE D SOILS)



SILT FENCE



DETENTION BASIN OUTLET DETAIL

SCALE 1:50

(FOLLOWING REVEGETATION OF BULK EARTHWORKS PLATFORM)

SEDIMENT CONTROL - SEDIMENT BASIN PARAMETERS

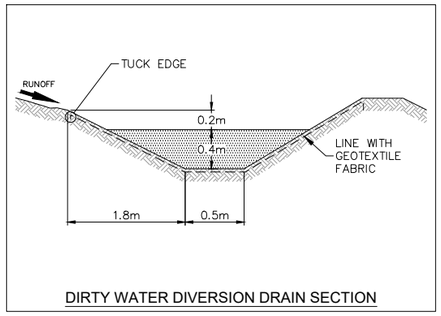
IN ACCORDANCE WITH 'MANAGING URBAN STORMWATER:SOILS AND CONSTRUCTION' VOLUME 1 4TH EDITION LANDCOM (2004)

SITE CATCHMENT AREA		
CATCHMENT	**VALUE**	**UNITS**
TOTAL AREA	1.2	ha
DISTURBED AREA	1.2	ha

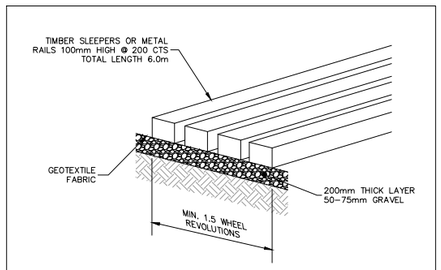
SITE PARAMETERS	
CONSTRAINT	**VALUE**
SOIL MATERIALS	DISPERSIBLE SOILS
SOIL TEXTURE GROUP	D
EROSION HAZARD	VERY LOW
DESIGN RAINFALL DEPTH (DAYS)	5
DESIGN RAINFALL DEPTH (PERCENTILE)	85TH
DESIGN RAINFALL DEPTH (mm)	48.3
VOLUMETRIC RUNOFF COEFFICIENCT (CV)	0.69

RUSLE FACTORS		
CONSTRAINT	**VALUE**	**UNITS**
RAINFALL EROSIVITY (R-FACTOR)	2496	mm
SOIL ERODIBILITY (K-FACTOR)	0.04	
SLOPE LENGTH	200	m
SLOPE GRADIENT	0.5	%
LENGTH/GRADIENT (LS-FACTOR)	0.24	
EROSION CONTROL PRACTICE (P-FACTOR)	1.3	
GROUND COVER (C-FACTOR)	1	

CALCULATIONS		
CONSTRAINT	**VALUE**	**UNITS**
SOIL LOSS	32	$m^3/ha/yr$
SETTLING ZONE VOLUME	400	m^3
SEDIMENT STORAGE VOLUME	6	m^3
TOTAL BASIN VOLUME REQURIED	406	m^3



DIRTY WATER DIVERSION DRAIN SECTION



SHAKER RAMP

DIAL1100 BEFORE YOU DIG

NOT FOR CONSTRUCTION

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	13.09.2019	DPIE SUBMISSION	D.W.	R.J.	A.L.	R.J.
B	04.02.2020	DPIE COMMENTS	S.HO.	A.G.	A.L.	A.G.
C	10.06.2020	BCD COMMENTS	S.HO.	R.J.	A.L.	R.J.

SCALES

DESIGN FILE N:\239944\Design\12D\239944 CENG

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE

adw Johnson

Hunter Office
Unit 7/335 Hillsborough Rd
Warners Bay N.S.W. 2282
Phone: (02) 4978 5100
Fax: (02) 4978 5199
email: hunter@adwjohnson.com.au
www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT: Northbank Enterprise Hub.

PROPERTY DESCRIPTION: LOT 210, DP1174939 TOMAGO ROAD, TOMAGO

SURVEYED: ADW Johnson

DATUM: A.H.D.

PROJECT: STAGE 3.1A

PLAN TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

PROJECT No.		DISCIPLINE		NUMBER	REV.
239944	-	BEW	-	811	C

Plotted By: scotth Plot Date: 12/06/20 - 09:53 Cad File: N:\239944\DWG's\Engineering\Civil\BEW\239944-BEW-811(C).dwg

100mm AT FULL SIZE