PROJECT: PROPOSED RESOURCE RECOVERY FACILITY

PLANSET: CONCEPT CIVIL WORKS

CLIENT: OUTLINE PLANNING CONSULTANTS

LOCALITY PLAN
NOT TO SCALE

LGA: GUNNEDAH SHIRE COUNCIL

16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

DRAWING LIST

DWG NO.	REV	DWG TITLE
GENERAL		
PS01-A000	N	COVER SHEET
PS01-A050	L	DEVELOPMENT OVERVIEW PLAN
PS01-A300	L	SITE PLAN
PS01-A310	F	UNLOADING AND PROCESSING SHED PLAN
PS01-A311	E	UNLOADING AND PROCESSING SHED ELEVATIONS AND SECTION
CONSTRUCTION MANAGEMENT WORKS		
PS01-B300	J	SEDIMENT, EROSION CONTROL & DEMOLITION PLAN
PS01-B310	A	SEDIMENT & EROSION CONTROL DETAILS
EARTHWORKS		
PS01-C100	H	EARTHWORKS GRADING PLAN
PS01-C500	H	EARTHWORKS CUT-FILL PLAN
PS01-C600	F	SITE SECTION A - PROCESSING SHED AND OPEN STORAGE BAYS
PS01-C601	F	SITE SECTION B - OPEN STORAGE BAYS AND FACILITY PADS
PS01-C602	F	SITE SECTION C - UNLOADING SHED, PROCESSING SHED AND TRUCK WASH DOWN AREA
DRAINAGE		
PS01-E100	J	DRAINAGE PLAN
PS01-E200	B	DRAINAGE DETAILS
PS01-E600	H	OSD CATCHMENT PLAN, MODEL LAYOUT & RESULT
PS01-E700	I	WATER QUALITY CATCHMENT PLAN, MODEL & RESULT
UTILITIES AND SERVICES		
PS01-F300	C	CONCEPT WATER MAIN & FIRE FIGHTING HYDRANT PLAN
STRUCTURE AND PAVEMENTS		
PS01-G400	H	PAVEMENT PLAN
PS01-GZ00	L	SWEPT PATH ANALYSIS PLAN - AV
PS01-GZ10	L	SWEPT PATH ANALYSIS PLAN - B DOUBLE
PS01-GZ20	F	SWEPT PATH ANALYSIS PLAN - HRV
PS01-GZ30	F	SWEPT PATH ANALYSIS PLAN - MRV
PS01-GZ40	F	SWEPT PATH ANALYSIS PLAN - B99
PS01-GZ50	E	SWEPT PATH ANALYSIS PLAN - B-TRIPLE (ROAD TRAIN)
GENERAL NOTES		
PS01-ZZ00	A	GENERAL LEGEND AND NOTES (SHEET 1)
PS01-ZZ01	A	GENERAL LEGEND AND NOTES (SHEET 2)
PS01-ZZ02	A	GENERAL LEGEND AND NOTES (SHEET 3)
PS01-ZZ03	A	GENERAL LEGEND AND NOTES (SHEET 4)

GENERAL NOTES

1 THIS PLAN IS FOR DEVELOPMENT APPLICATION PURPOSE AND NOT FOR CONSTRUCTION. DESIGN TO BE REVIEWED AND UPDATED FOR CONSTRUCTION CERTIFICATE.
2 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH, AND THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE RELEVANT AUSTRALIAN STANDARDS, COUNCIL SPECIFICATIONS, AND ALL PROJECT CONSULTANT'S PLANS AND REPORTS.
3 INTERNAL SURVEY INFORMATION SHOWN BASED ON INFORMATION PROVIDED BY STEWART SURVEYS.
4 SITE BOUNDARY BASED ON INFORMATION PROVIDED BY STEWART SURVEYS.
5 LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
6 FINAL SURFACE CONTOURS ARE BASED ON PROPOSED, EXISTING AND LIDAR SURFACE.

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
N	**MINOR AMENDMENTS**	**21/07/2022**	**NN**	**AVG**	**SL**	**TH**
M	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
L	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
K	MINOR AMENDMENTS	01/07/2022	NN	AVG	SL	TH
J	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
I	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
H	MINOR AMENDMENTS	03/11/2020	LL	AW/AVG	SL	TH
G	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH

A1 / A3 LANDSCAPE (A1LC__v02.0.01)

SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

martens & Associates Pty Ltd
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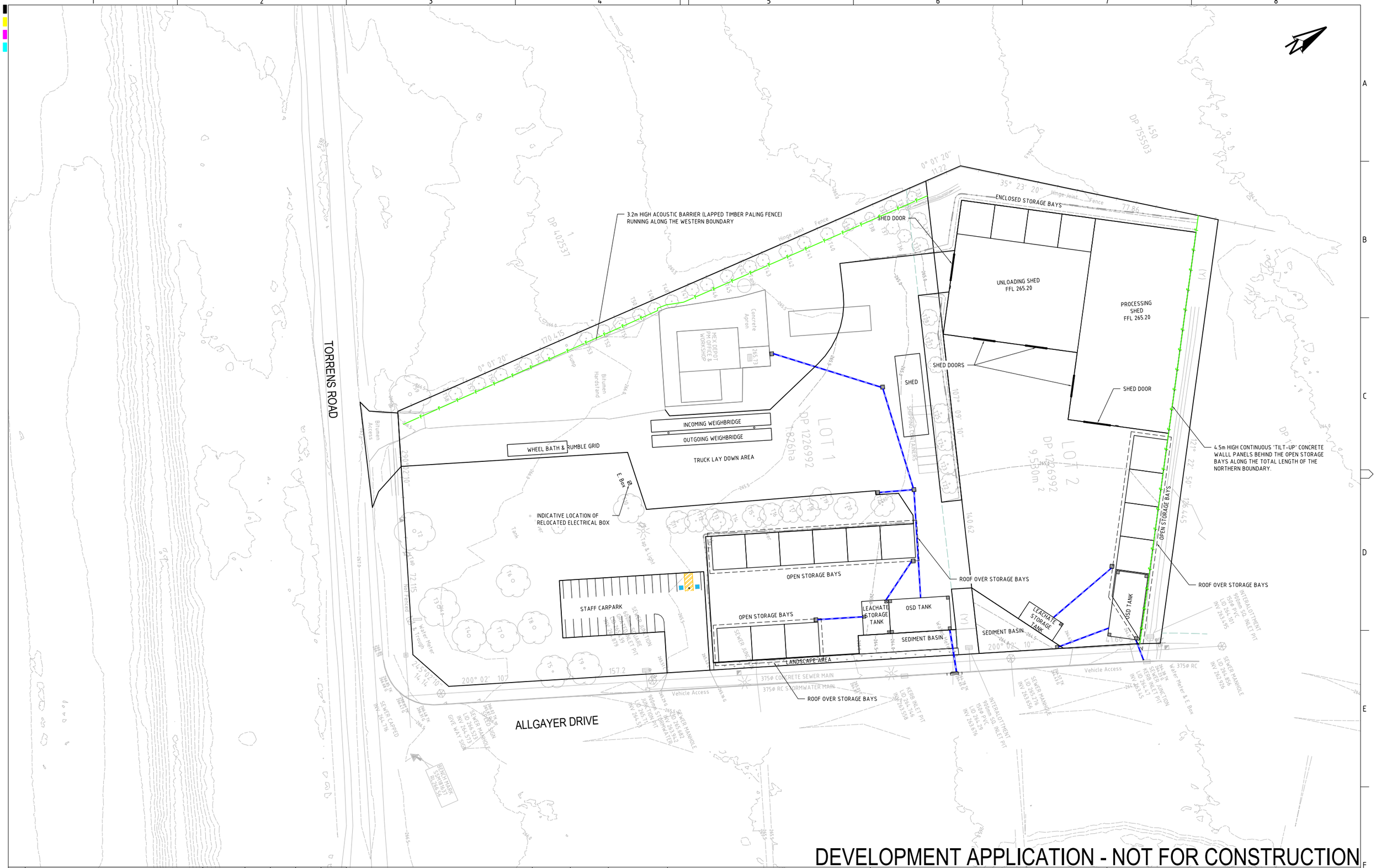
DRAWING TITLE: COVER SHEET

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-A000	N

DRAWING ID: P1907434-PS01-R16-A000



DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
L	**MINOR AMENDMENTS**	**21/07/2022**	**NN**	**AVG**	**SL**	**TH**
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J	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
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G	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
F	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
E	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH

SCALE
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A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT
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DRAWING TITLE
DEVELOPMENT OVERVIEW PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-A050	L

DRAWING ID: P1907434-PS01-R16-A050

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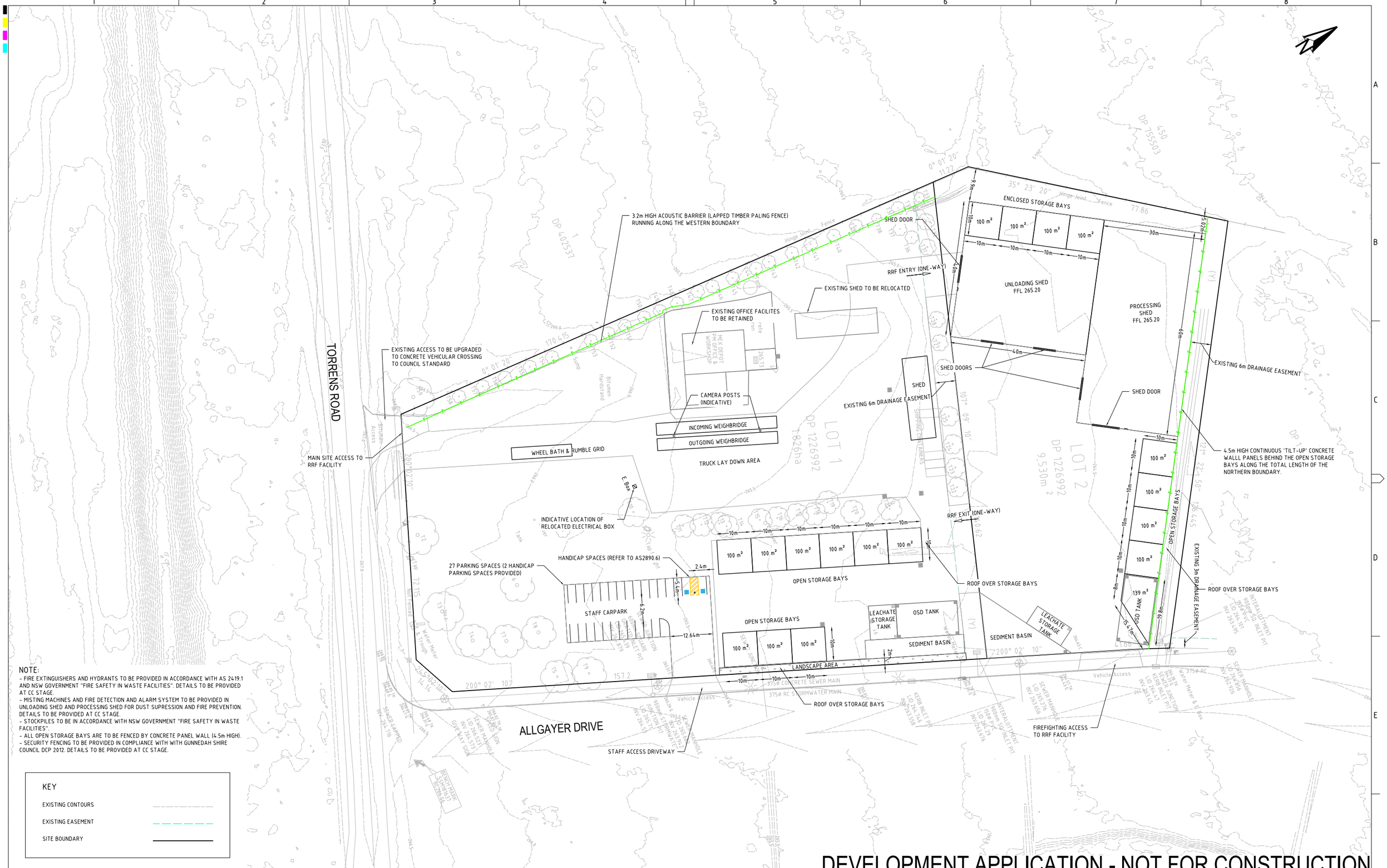
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



NOTE:
- FIRE EXTINGUISHERS AND HYDRANTS TO BE PROVIDED IN ACCORDANCE WITH AS 2419.1 AND NSW GOVERNMENT "FIRE SAFETY IN WASTE FACILITIES". DETAILS TO BE PROVIDED AT CC STAGE.
- MISTING MACHINES AND FIRE DETECTION AND ALARM SYSTEM TO BE PROVIDED IN UNLOADING SHED AND PROCESSING SHED FOR DUST SUPRESSION AND FIRE PREVENTION. DETAILS TO BE PROVIDED AT CC STAGE.
- STOCKPILES TO BE IN ACCORDANCE WITH NSW GOVERNMENT "FIRE SAFETY IN WASTE FACILITIES".
- ALL OPEN STORAGE BAYS ARE TO BE FENCED BY CONCRETE PANEL WALL (4.5m HIGH).
- SECURITY FENCING TO BE PROVIDED IN COMPLIANCE WITH WITH GUNNEDAH SHIRE COUNCIL DCP 2012. DETAILS TO BE PROVIDED AT CC STAGE.

KEY

EXISTING CONTOURS

EXISTING EASEMENT

SITE BOUNDARY

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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G	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
F	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
E	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH

SCALE
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A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT
OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
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CONCEPT CIVIL WORKS
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LOTS 1 AND 2 DP 1226992

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DRAWING TITLE
SITE PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-A300	L

DRAWING ID: P1907434-PS01-R16-A300

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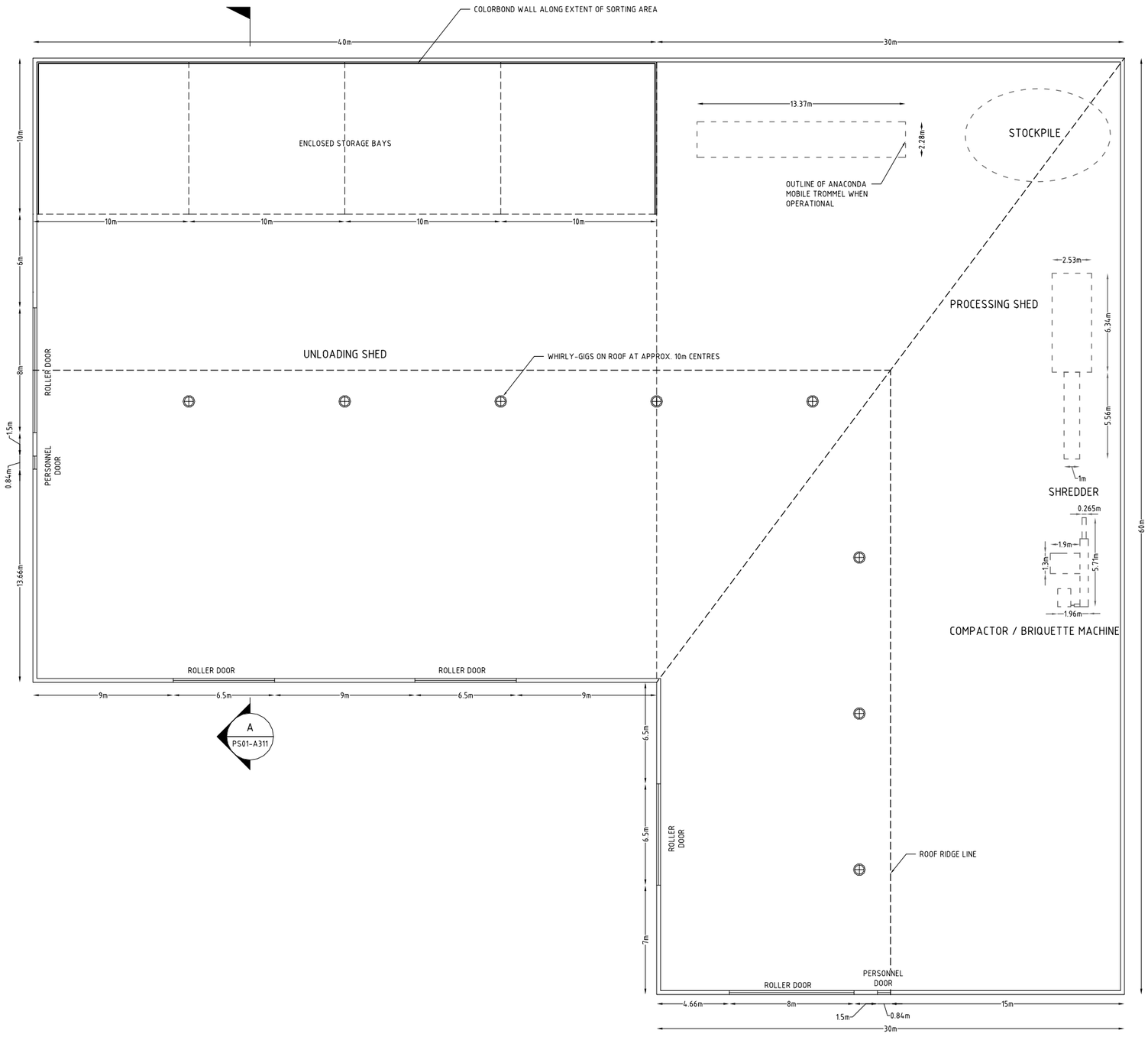
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



UNLOADING & PROCESSING SHED PLAN

SCALE 1:150

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
E	MINOR AMENDMENTS	01/07/2022	NN	AVG	SL	TH
D	MINOR AMENDMENTS	09/07/2020	LL	AW/AVG	SL	TH
C	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	12/06/2020	GM	AW	AW	TH
A	ADDED SHED DETAILS	05/06/2020	GM	AW	AW	TH

SCALE
0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 METRES
A1 (A3) 1:150 (1:300)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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CLIENT
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DRAWING TITLE
UNLOADING AND PROCESSING SHED PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-A310	F

DRAWING ID: P1907434-PS01-R16-A310

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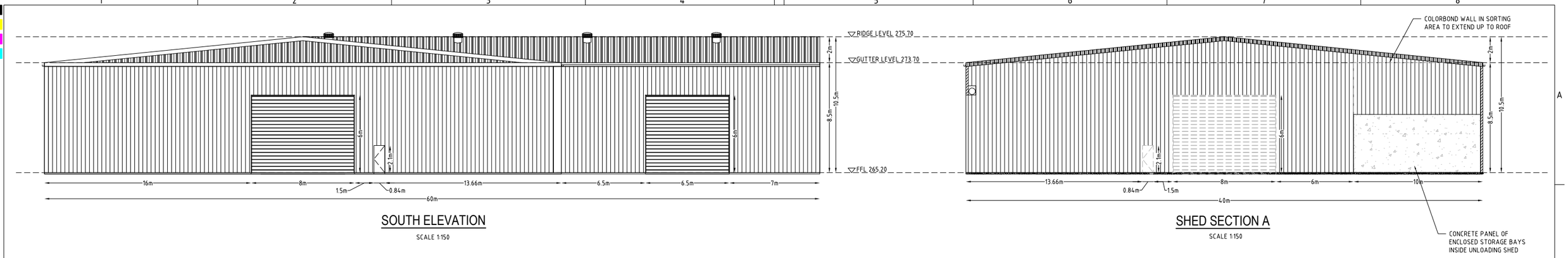
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

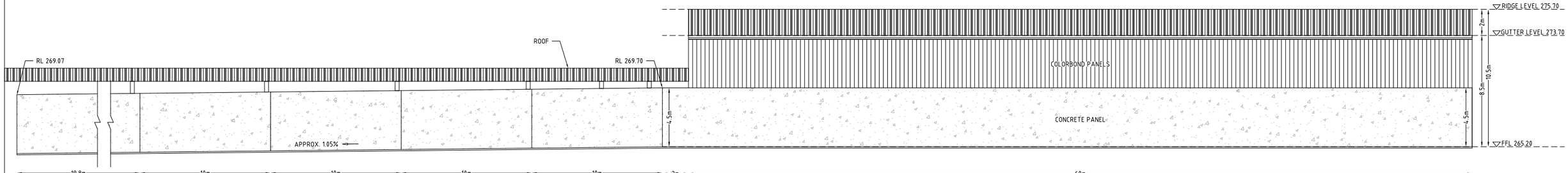


SOUTH ELEVATION

SCALE 1:150

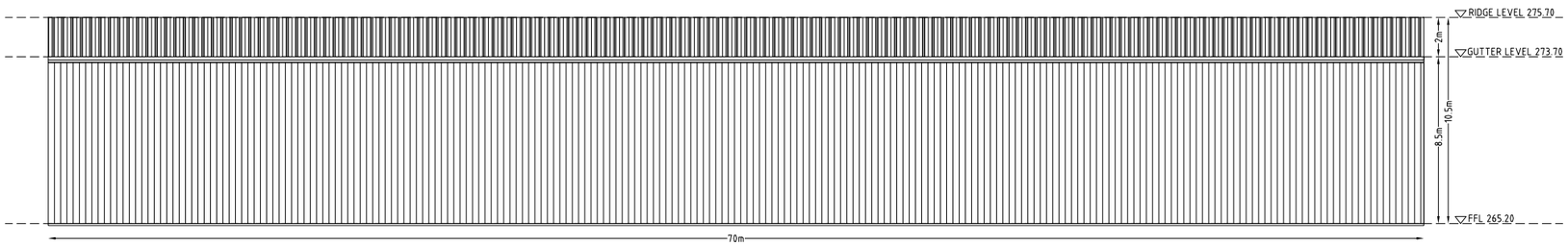
SHED SECTION A

SCALE 1:150



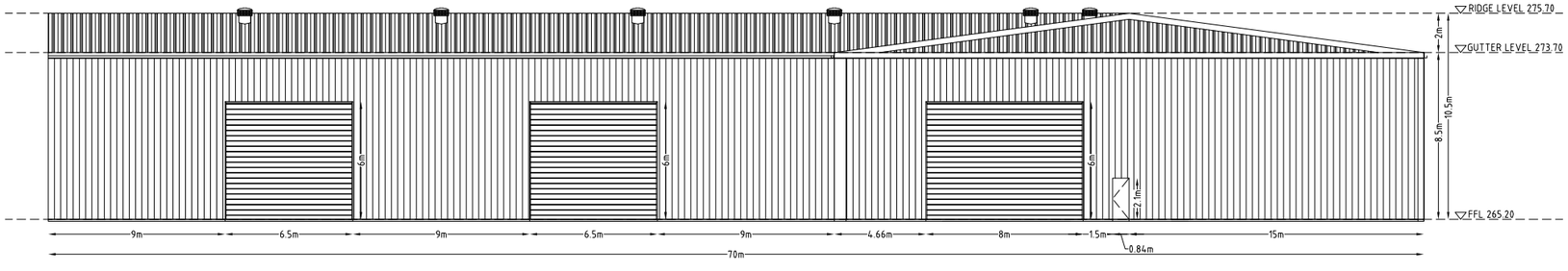
NORTH ELEVATION

SCALE 1:150



WEST ELEVATION

SCALE 1:150



EAST ELEVATION

SCALE 1:150

NOTE:

- SHEDS TO BE COLORBOND CLAD.
- STORAGE BAY WALLS TO BE CONCRETE TILT PANELS WITH COLORBOND CLAD

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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SCALE
0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 METRES
A1 (A3) 1:150 (1:300)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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CLIENT

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RESOURCE RECOVERY FACILITY

CONCEPT CIVIL WORKS

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DRAWING TITLE

UNLOADING AND PROCESSING SHED ELEVATIONS AND SECTION

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-A311	E

DRAWING ID: P1907434-PS01-R16-A311

PRINTED: ---- USER: MAYZAD

A1 / A3 LANDSCAPE (A1LC_v02.0.01)

NOTE:
- TO BE READ IN CONJUNCTION WITH SEDIMENT AND EROSION CONTROL DETAILS. PLEASE REFER TO PS01-B310.
- ALL EXCESS MATERIAL SHALL BE REMOVED FROM SITE.
- EROSION AND SEDIMENT CONTROLS TO BE IN PLACE AT ALL TIMES. CONTROLS TO BE INSPECTED, MAINTAINED AND REPLACED AS REQUIRED BY THE CONTRACTOR UNTIL WORKS ARE COMPLETED AND PERMANENT MEASURES HAVE BEEN ESTABLISHED.
- WHEEL WASH TO BE PROVIDED AT THE SITE ENTRY (BUILT IN SITU OR PORTABLE).

KEY:

- EXISTING CONTOURS
- SEDIMENT FENCE
- MESH AND GRAVEL INLET FILTER
- STRAW BALE FILTER
- INDICATIVE STOCKPILE
- EARTH BANK (LOW FLOW)
- STABILISED SITE ACCESS WITH SHAKER PAD
- EXISTING FEATURES TO BE REMOVED
- TREE TO BE REMOVED
- POWER POLE TO BE RELOCATED
- ELECTRICAL BOX TO BE RELOCATED

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
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C	MINOR AMENDMENTS	09/07/2020	LL	AW/AVG	SL	TH

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SCALE: 0 5 10 15 20 25 30 35 40 45 50 METRES — A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE: RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
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LOTS 1 AND 2 DP 1226992

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DRAWING TITLE: SEDIMENT, EROSION CONTROL & DEMOLITION PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-B300	J

A1 / A3 LANDSCAPE (A1LC_v02.0.01)

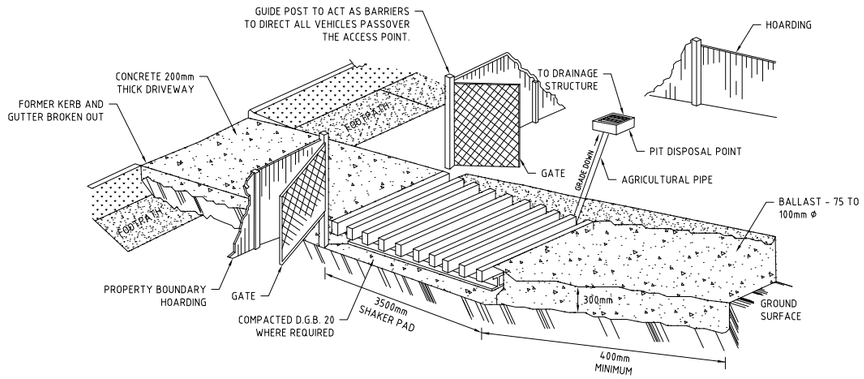
DRAWING ID: P1907434-PS01-R16-B300

STABILISED ACCESS POINT

TYPE II SAP

THE TYPE II SAP DESIGN IS MORE DEFINED IN THAT IT REQUIRES AN AREA OF BALLAST WITHIN THE SITE COMBINED WITH A SHAKER PAD; ADJACENT THE SHAKER PAD AND IN THE PUBLIC WAY IS A TEMPORARY (CONCRETE) VEHICULAR CROSSING. (SEE DIAGRAM)

STABILISED ACCESS POINT - TYPE 2



IN BOTH TYPE I AND TYPE II SAP'S, THE TEMPORARY VEHICULAR CROSSING MUST:

- CONNECT TO AN EXISTING GUTTER LAYBACK (WHERE THE KERB AND GUTTER EXIST) . IF A GUTTER LAYBACK DOES NOT EXIST THEN THE CONNECTION MUST BE MADE TO THE GUTTER BY REMOVING THE ADJCENT KERB SECTION ONLY.
- CONNECT TO A DISH CROSSING (WHERE KERB AND GUTTER DOES NOT EXIST). IF A DISH CROSSING DOES NOT EXIST, THEN IT MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS CONTAINED IN COUNCIL'S ISSUED FOOTPATH CROSSING LEVELS.

IT SHOULD BE NOTED THAT THESE TYPES OF SAPS ARE CONSIDERED TO BE APPLICABLE FOR THE MAJORITY OF ACTIVITIES HOWEVER SOME SITES MAY REQUIRE SPECIAL CONSIDERATION.

SHAKER PAD (CATTLE GRID)

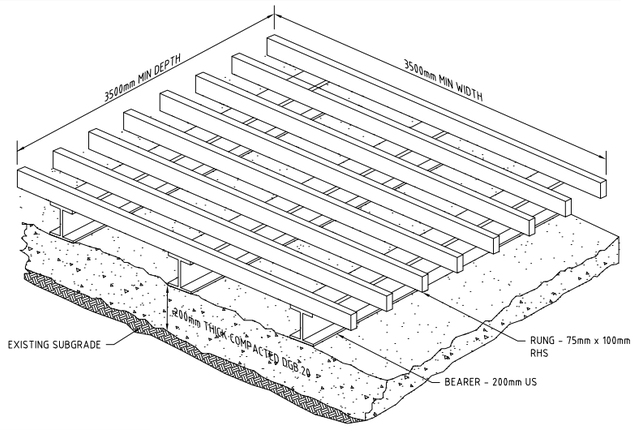
A CORRECTLY DESIGNED AND INSTALLED SHAKER PAD WILL ASSIST IN PREVENTING SEDIMENT TRANSFERE FROM A SITE. ANY STABILISED ACCESS POINT (SAP) CAN BE DESIGNED WITH A SHAKER PAD (COMPULSOPRY IN TYPE II SAP'S)

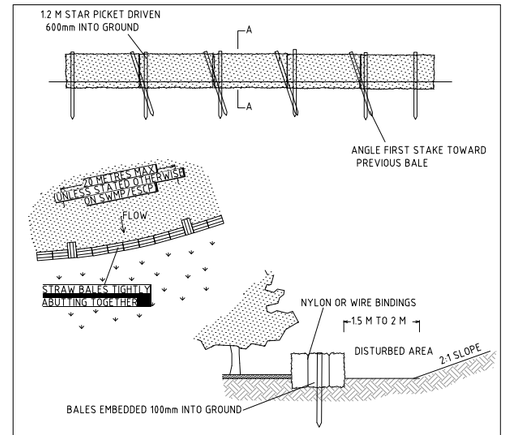
SHAKER PADS CAN BE DESIGNED AND CONSTRUCTED TO ENABLE RE-USE ON FUTURE PROJECTS.

THE SHAKER PAD:

- MUST BE DESIGNED AND CERTIFIED BY A PRACTICING STRUCTURAL ENGINEER. THE CERTIFIED DESIGN SHOULD BE SUBMITTED WITH THE RELEVENT APPLICATION.
- CAN BE CONSTRUCTED FROM ANY SUITABLE MATERIAL.
- MUST BE LOCATED ON A SUITABLY PREPARED AND COMPACTED SUB-GRADE/BASE MATERIAL.
- MUST BE SITUATED SUCH THAT THE RUNGS OF THE SHAKER PAD ARE LEVEL WITH THE ADJOINING NATURAL SURFACE.
- MUST BE A MINIMUM OF 3.5m IN LENGTH.
- MUST BE A MINIMUN OF 3.5m IN WIDTH.
- MUST HAVE CLEAR SPACING BETWEEN RUNGS OF 200 - 250mm.
- RUNGS MUST HAVE A MAXIMUM WIDTH (BEARING AREA) OF 75mm.
- MUST HAVE A MINIMUM CLEAR DEPTH OF 300mm IE FORM THE ROP OF THE RUNG TO THE FINISHED SUB-GRADE/BASE LEVEL.

THE SHAKER PAD MUST BE PROVIDED WITH SUITABLE BARRIERS AT THE SIDES TO ENSURE THAT ALL TYERS OF VEHICLES LEAVING THE SITE TRAVERSE THE DEVICE.

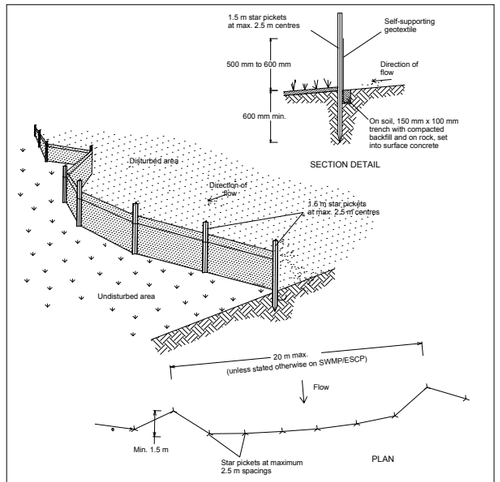




CONSTRUCTION NOTES

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE. 2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND. 3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE. 4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2 METRE STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS. 5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1 TO 2 METRES DOWNSLOPE FROM THE TOE. 6. ESTABLISH A MAINTENANCE PROGRAM THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

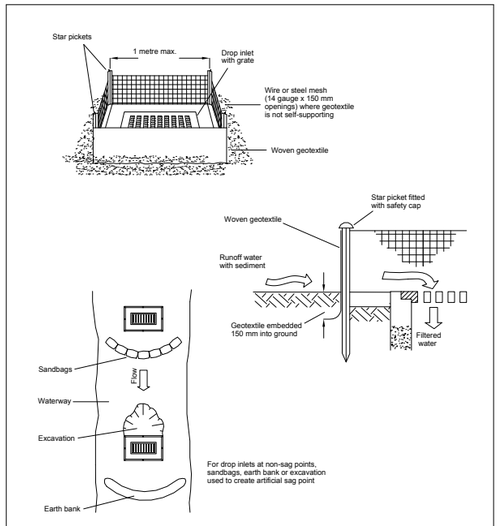
STRAW BALE FILTER SD 6-7



Construction Notes

1. Construct sediment fences as close as possible to being 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 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope 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 recommended 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 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

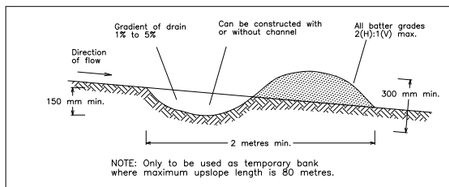
SEDIMENT FENCE SD 6-8



Construction Notes

1. Fabricate a sediment barrier made 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 1 metre 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.

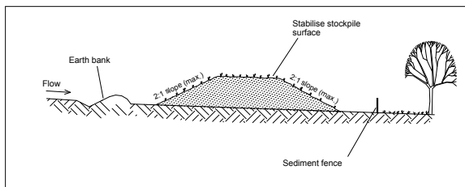
GEOTEXTILE INLET FILTER SD 6-12



Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) SD 5-5



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES SD 4-1

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE: RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: SEDIMENT & EROSION CONTROL DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-B310	A

DRAWING ID: P1907434-PS01-R16-B310

PRINTED: ---- - USER: MWZAD

A1 / A3 LANDSCAPE (ATLC_v02.0.01)

KEY

- EXISTING CONTOURS
- PROPOSED CONTOURS
- EARTHWORKS HINGE
- INTERFACE
- SITE BOUNDARY

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
H	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
G	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
F	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
E	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
D	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT
OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
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LOTS 1 AND 2 DP 1226992

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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
EARTHWORKS GRADING PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-C100	H

DRAWING ID: P1907434-PS01-R16-C100

PRINTED: ---- USER: NNKZAD
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

EARTHWORKS SUMMARY

	CUT	FILL
EARTHWORKS VOLUME (m^3)	371	4347
EARTHWORKS BALANCE (m^3)	-	3976

NOTE:
- EARTHWORKS CUT FILL ANALYSED FROM PROPOSED FINISH SURFACE TO EXISTING SURFACE BASED ON SURVEY.
- ROAD BOXING, PIPE TRENCHES, EXCAVATION, TOP SOIL STRIPPING, AND BULKING FACTOR ARE NOT CONSIDERED IN EARTHWORKS CALCULATIONS.

CUT-FILL DEPTH DESIGN TO EXISTING

LOWER THAN	-1.000	m	
-1.000	to -0.750	m	
-0.750	to -0.500	m	
-0.500	to -0.250	m	
-0.250	to -0.050	m	
-0.050	to 0.050	m	
0.050	to 0.250	m	
0.250	to 0.500	m	
0.500	to 0.750	m	
0.750	to 1.000	m	
GREATER THAN	1.000	m	

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
H	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
G	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
F	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
E	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
D	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

PRINTED: ..... USER: MWZAD
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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All measurements in millimetres unless otherwise specified.
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OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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DRAWING TITLE
EARTHWORKS CUT-FILL PLAN

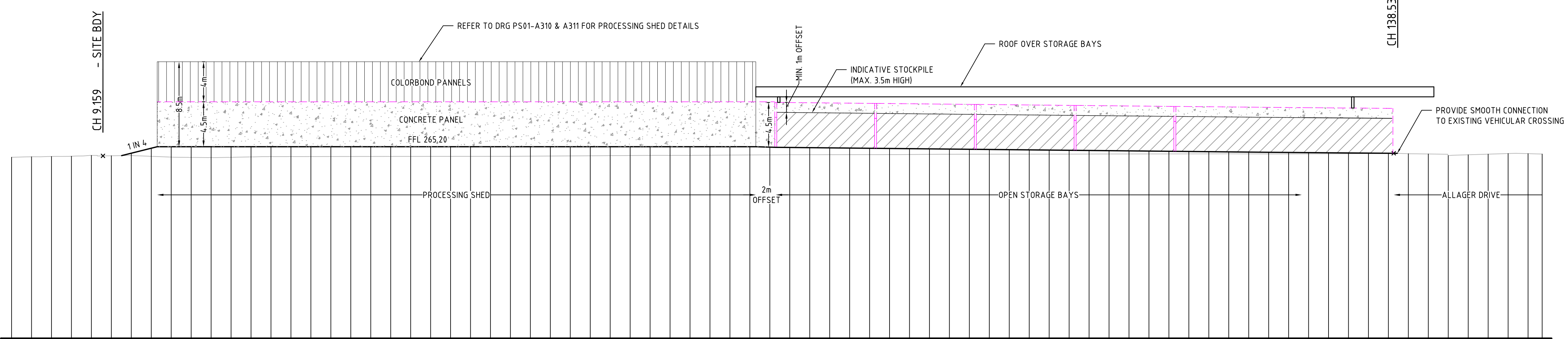
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-C500	H

DRAWING ID: P1907434-PS01-R16-C500

NOTE :

- STORAGE BAY WALLS TO BE CONCRETE TILT PANELS WITH COLORBOND CLAD.
- STOCKPILES TO BE IN ACCORDANCE WITH NSW GOVERNMENT "FIRE SAFETY IN WASTE FACILITIES".

PROCESSING SHED



DATUM RL 246.000

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS	CUT / FILL DEPTH
0.000		264.148	
2.000		264.193	
4.000		264.224	
6.000		264.246	
8.000		264.329	
10.000		264.294	
12.000	264.551	264.308	0.243
14.000	265.051	264.239	0.812
16.000	265.200	264.160	1.040
18.000	265.200	264.131	1.069
20.000	265.200	264.111	1.089
22.000	265.200	264.141	1.059
24.000	265.200	264.179	1.021
26.000	265.200	264.209	0.991
28.000	265.200	264.212	0.988
30.000	265.200	264.215	0.985
32.000	265.200	264.219	0.981
34.000	265.200	264.222	0.978
36.000	265.200	264.225	0.975
38.000	265.200	264.228	0.972
40.000	265.200	264.230	0.970
42.000	265.200	264.232	0.968
44.000	265.200	264.234	0.966
46.000	265.200	264.236	0.964
48.000	265.200	264.237	0.963
50.000	265.200	264.243	0.957
52.000	265.200	264.255	0.945
54.000	265.200	264.267	0.933
56.000	265.200	264.280	0.920
58.000	265.200	264.292	0.908
60.000	265.200	264.305	0.895
62.000	265.200	264.318	0.882
64.000	265.200	264.330	0.870
66.000	265.200	264.333	0.867
68.000	265.200	264.338	0.862
70.000	265.200	264.350	0.850
72.000	265.200	264.363	0.837
74.000	265.200	264.375	0.825
76.000	265.158	264.388	0.770
78.000	265.126	264.397	0.729
80.000	265.106	264.400	0.706
82.000	265.086	264.402	0.684
84.000	265.066	264.404	0.661
86.000	265.046	264.406	0.640
88.000	265.025	264.407	0.619
90.000	265.005	264.419	0.587
92.000	264.985	264.435	0.550
94.000	264.965	264.446	0.519
96.000	264.945	264.448	0.497
98.000	264.925	264.450	0.475
100.000	264.905	264.453	0.452
102.000	264.885	264.455	0.430
104.000	264.865	264.457	0.408
106.000	264.845	264.459	0.385
108.000	264.825	264.466	0.359
110.000	264.805	264.472	0.332
112.000	264.784	264.475	0.309
114.000	264.764	264.479	0.286
116.000	264.744	264.482	0.263
118.000	264.724	264.485	0.239
120.000	264.704	264.489	0.215
122.000	264.684	264.493	0.191
124.000	264.664	264.484	0.180
126.000	264.644	264.475	0.169
128.000	264.627	264.477	0.150
130.000	264.610	264.483	0.127
132.000	264.593	264.489	0.104
134.000	264.576	264.495	0.080
136.000	264.561	264.512	0.049
138.000	264.546	264.538	0.009
140.000		264.497	
142.000		264.474	
144.000		264.310	
146.000		264.394	
148.000		264.455	
150.000		264.517	
152.000		264.506	
153.412		264.466	

SECTION A

SCALE: HORIZONTAL - 1:250
VERTICAL - 1:250

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**01/07/2022**	**NN**	**AVG**	**SL**	**TH**
E	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
D	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENTS	09/07/2020	LL	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE
0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES
A1 (A3) 1:250 (1:500)

GRID: MGA
DATUM: mAHD
PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

martens & Associates Pty Ltd
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Environment
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Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

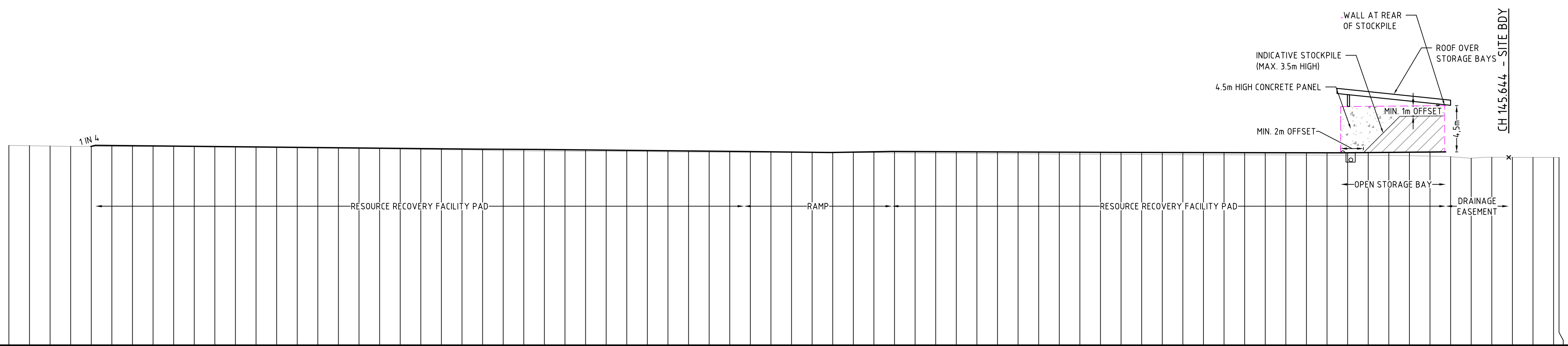
DRAWING TITLE
SITE SECTION A - PROCESSING SHED AND OPEN STORAGE BAYS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-C600	F

DRAWING ID: P1907434-PS01-R16-C600
A1 / A3 LANDSCAPE (A1LC_v02.0.01)
PRINTED: ---- - USER: NNIKZAD

NOTE :

- STORAGE BAY WALLS TO BE CONCRETE TILT PANELS WITH COLORBOND CLAD.
- STOCKPILES TO BE IN ACCORDANCE WITH NSW GOVERNMENT "FIRE SAFETY IN WASTE FACILITIES".



DATUM RL 246.000

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS	CUT / FILL DEPTH
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2.000		265.423	
4.000		265.390	
6.000		265.357	
8.000	265.362	265.353	0.009
10.000	265.445	265.355	0.090
12.000	265.425	265.357	0.068
14.000	265.405	265.359	0.046
16.000	265.385	265.354	0.031
18.000	265.365	265.335	0.030
20.000	265.345	265.301	0.044
22.000	265.325	265.285	0.041
24.000	265.305	265.263	0.042
26.000	265.285	265.242	0.044
28.000	265.265	265.220	0.045
30.000	265.245	265.198	0.047
32.000	265.225	265.176	0.048
34.000	265.205	265.155	0.050
36.000	265.185	265.132	0.052
38.000	265.165	265.101	0.064
40.000	265.145	265.069	0.075
42.000	265.125	265.038	0.087
44.000	265.105	265.020	0.084
46.000	265.089	264.986	0.103
48.000	265.078	264.935	0.143
50.000	265.068	264.925	0.143
52.000	265.055	264.908	0.147
54.000	265.035	264.891	0.144
56.000	265.015	264.866	0.148
58.000	264.995	264.882	0.112
60.000	264.975	264.864	0.111
62.000	264.955	264.846	0.109
64.000	264.935	264.823	0.112
66.000	264.915	264.810	0.105
68.000	264.895	264.800	0.094
70.000	264.875	264.791	0.083
72.000	264.854	264.782	0.071
74.000	264.830	264.784	0.046
76.000	264.807	264.785	0.022
78.000	264.783	264.787	-0.003
80.000	264.767	264.775	-0.008
82.000	264.802	264.764	0.038
84.000	264.836	264.750	0.086
86.000	264.865	264.719	0.146
88.000	264.856	264.712	0.144
90.000	264.847	264.698	0.149
92.000	264.839	264.684	0.155
94.000	264.831	264.666	0.164
96.000	264.822	264.654	0.168
98.000	264.814	264.646	0.167
100.000	264.805	264.634	0.171
102.000	264.797	264.621	0.176
104.000	264.790	264.609	0.181
106.000	264.782	264.597	0.185
108.000	264.776	264.584	0.191
110.000	264.771	264.572	0.199
112.000	264.766	264.559	0.207
114.000	264.761	264.550	0.212
116.000	264.757	264.546	0.211
118.000	264.753	264.542	0.211
120.000	264.749	264.538	0.211
122.000	264.745	264.534	0.211
124.000	264.742	264.531	0.211
126.000	264.739	264.522	0.217
128.000	264.735	264.509	0.227
130.000	264.739	264.497	0.242
132.000	264.757	264.486	0.271
134.000	264.774	264.475	0.300
136.000	264.792	264.456	0.336
138.000	264.809	264.412	0.398
140.000		264.355	
142.000		264.207	
144.000		264.299	
146.000		264.292	
148.000		264.285	
150.000		264.280	
150.528		264.278	

SECTION B

SCALE: HORIZONTAL - 1:250
VERTICAL - 1:250

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**01/07/2022**	**NN**	**AVG**	**SL**	**TH**
E	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
D	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENTS	09/07/2020	LL	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE
0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES
A1 (A3) 1:250 (1:500)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT
OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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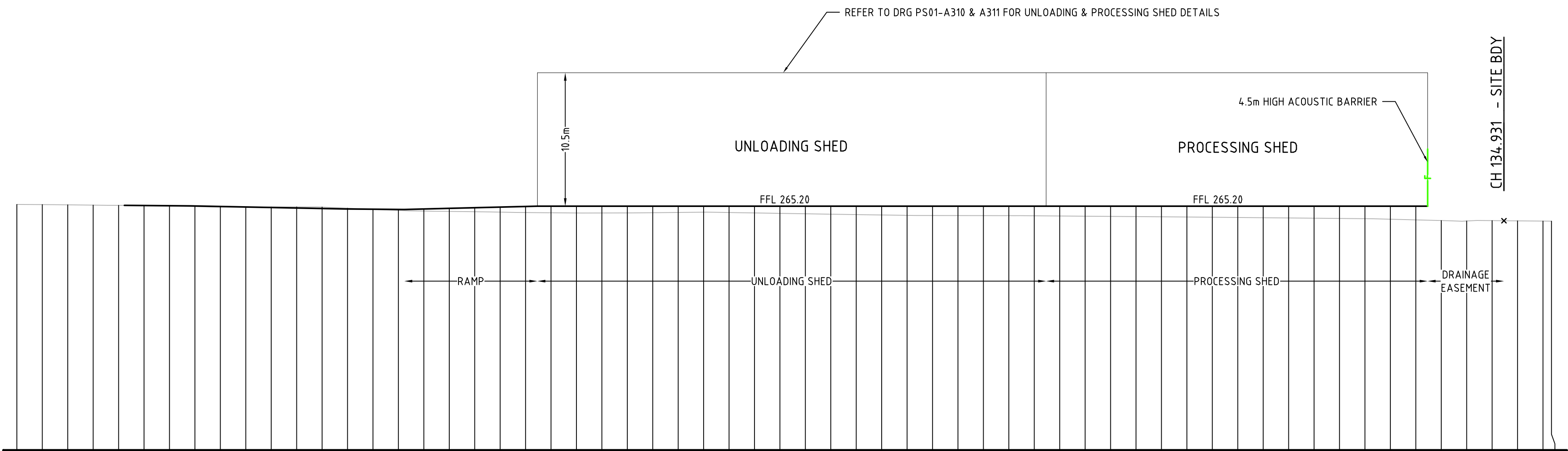
DRAWING TITLE
SITE SECTION B - OPEN STORAGE BAYS AND FACILITY PADS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-C601	F

DRAWING ID: P1907434-PS01-R16-C601
PRINTED: ---- - USER: NNIKZAD
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

NOTE :

- STORAGE BAY WALLS TO BE CONCRETE TILT PANELS WITH COLORBOND CLAD.
- STOCKPILES TO BE IN ACCORDANCE WITH NSW GOVERNMENT "FIRE SAFETY IN WASTE FACILITIES".



DATUM RL 246.000

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS	CUT / FILL DEPTH
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2.000		265.325	
4.000		265.306	
6.000		265.283	
8.000		265.265	
10.000	265.252	265.247	0.005
12.000	265.236	265.214	0.022
14.000	265.215	265.173	0.042
16.000	265.176	265.133	0.043
18.000	265.136	265.134	0.003
20.000	265.097	265.138	-0.041
22.000	265.057	265.141	-0.084
24.000	265.017	265.128	-0.110
26.000	264.979	265.040	-0.061
28.000	264.962	264.953	0.009
30.000	264.944	264.866	0.078
32.000	264.979	264.815	0.164
34.000	265.030	264.790	0.241
36.000	265.079	264.764	0.315
38.000	265.128	264.732	0.396
40.000	265.177	264.699	0.478
42.000	265.200	264.682	0.518
44.000	265.200	264.665	0.535
46.000	265.200	264.665	0.535
48.000	265.200	264.670	0.530
50.000	265.200	264.687	0.513
52.000	265.200	264.707	0.493
54.000	265.200	264.727	0.473
56.000	265.200	264.702	0.498
58.000	265.200	264.669	0.531
60.000	265.200	264.636	0.564
62.000	265.200	264.603	0.597
64.000	265.200	264.570	0.630
66.000	265.200	264.538	0.662
68.000	265.200	264.508	0.692
70.000	265.200	264.478	0.722
72.000	265.200	264.465	0.735
74.000	265.200	264.462	0.738
76.000	265.200	264.458	0.742
78.000	265.200	264.454	0.746
80.000	265.200	264.445	0.755
82.000	265.200	264.427	0.773
84.000	265.200	264.412	0.788
86.000	265.200	264.396	0.804
88.000	265.200	264.381	0.819
90.000	265.200	264.365	0.835
92.000	265.200	264.349	0.851
94.000	265.200	264.330	0.870
96.000	265.200	264.311	0.889
98.000	265.200	264.292	0.908
100.000	265.200	264.273	0.927
102.000	265.200	264.254	0.946
104.000	265.200	264.235	0.965
106.000	265.200	264.216	0.984
108.000	265.200	264.174	1.026
110.000	265.200	264.122	1.078
112.000		264.069	0.000
114.000		264.035	
116.000		264.064	
118.000		264.044	
120.000		264.027	
120.668		264.022	

SECTION C

SCALE: HORIZONTAL - 1:250
VERTICAL - 1:250

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**01/07/2022**	**NN**	**AVG**	**SL**	**TH**
E	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
D	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

PRINTED: ---- - USER: NNIKZAD

SCALE
0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES
A1 (A3) 1:250 (1:500)

GRID: MGA | DATUM: mAHD | PROJECT MANAGER: TH

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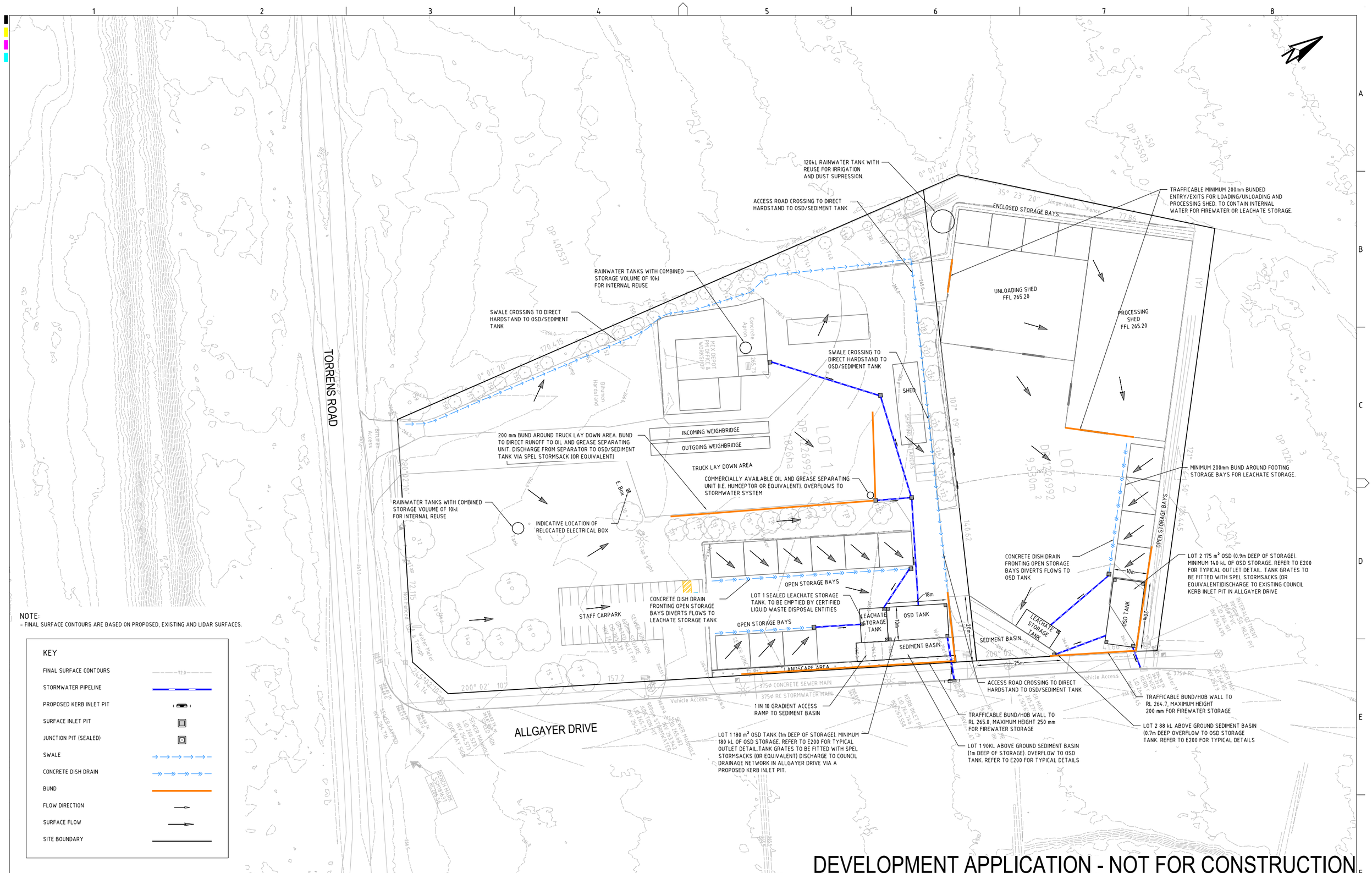
PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
SITE SECTION C - UNLOADING SHED, PROCESSING SHED AND TRUCK WASH DOWN AREA

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-C602	F



NOTE:
- FINAL SURFACE CONTOURS ARE BASED ON PROPOSED, EXISTING AND LIDAR SURFACES.

KEY

- FINAL SURFACE CONTOURS
- STORMWATER PIPELINE
- PROPOSED KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT (SEALED)
- SWALE
- CONCRETE DISH DRAIN
- BUND
- FLOW DIRECTION
- SURFACE FLOW
- SITE BOUNDARY

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
J	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
I	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
H	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
G	MINOR AMENDMENTS	03/11/2020	LL	AW/AVG	SL	TH
F	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
E	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
D	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENTS	09/07/2020	LL	AW/AVG	SL	TH

SCALE
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A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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DRAWING TITLE
DRAINAGE PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-E100	J

DRAWING ID: P1907434-PS01-R16-E100

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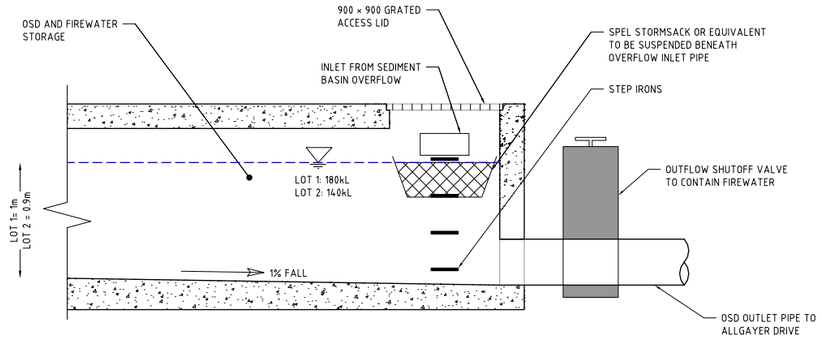
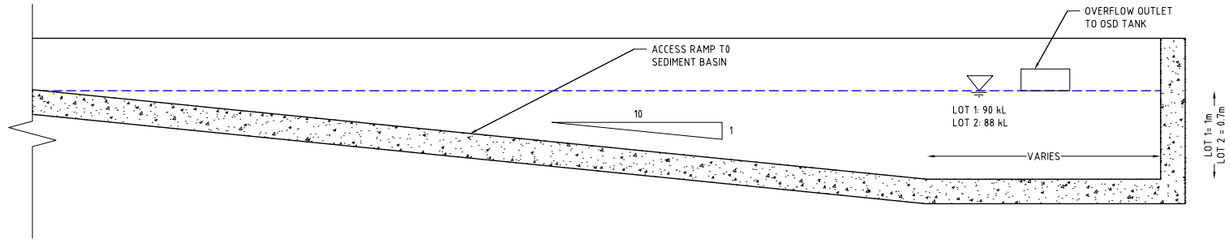


TYPICAL OSD TANK SECTION

SCALE: 1:25



TYPICAL SEDIMENT BASIN SECTION

SCALE: 1:25

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE: 0 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50 METRES
A1 (A3) 1:25 (1:50)

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

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CONCEPT CIVIL WORKS
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DRAWING TITLE: DRAINAGE DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-E200	B

DRAWING ID: P1907434-PS01-R16-E200

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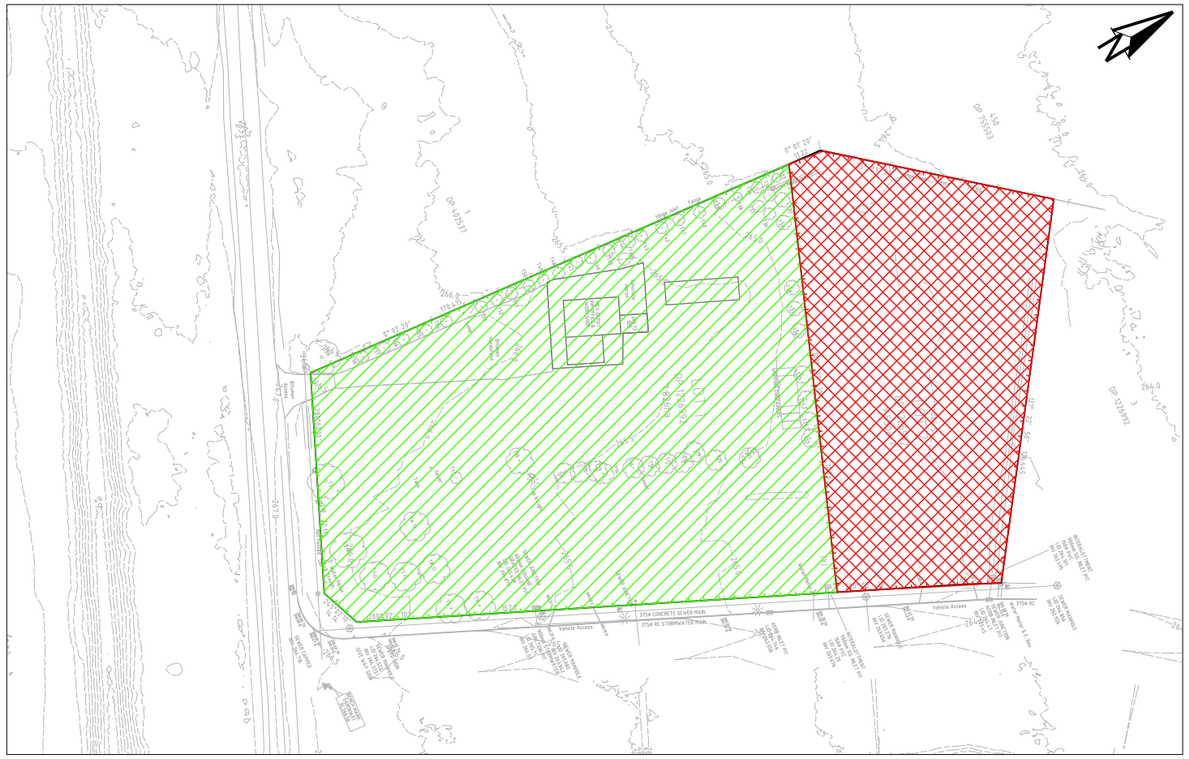
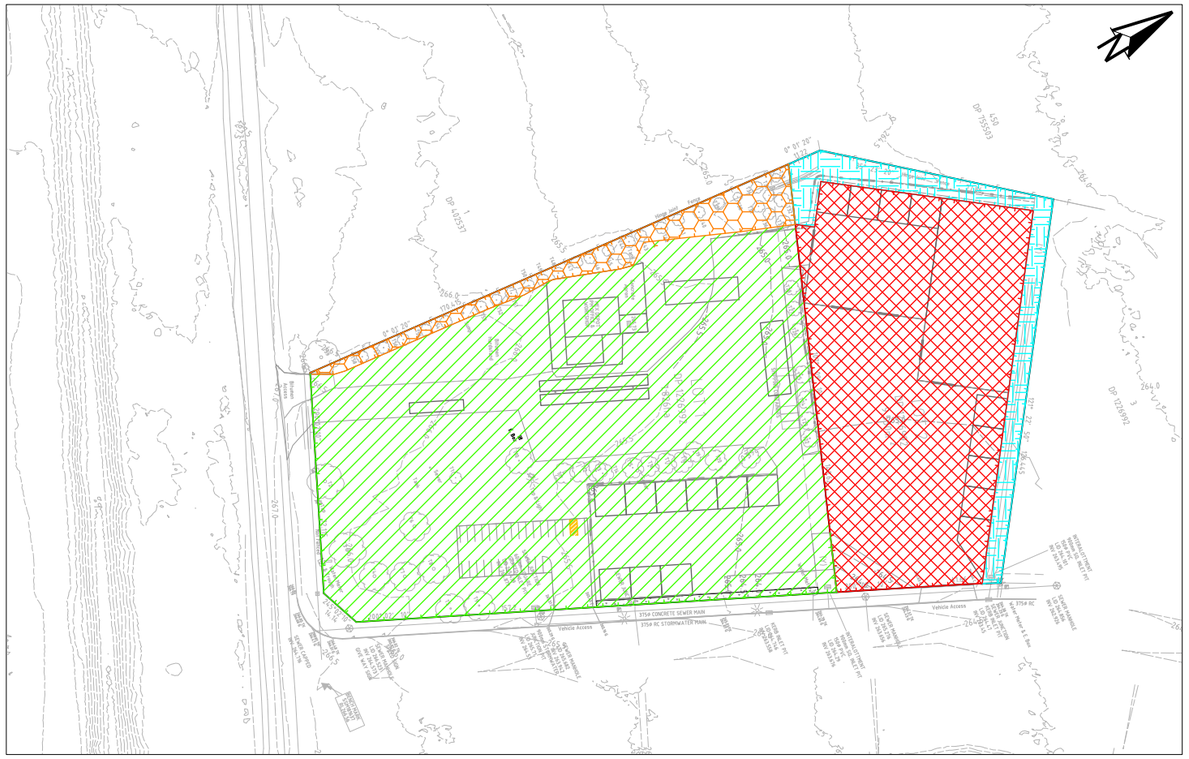
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



DRAINS MODEL LAYOUT

PRE-DEVELOPMENT OSD CATCHMENT PLAN

SCALE 1:1000



POST-DEVELOPMENT OSD CATCHMENT PLAN

SCALE 1:1000

PRE-DEVELOPMENT OSD CATCHMENT DETAILS (P1907434DRN01V02)			
KEY	DRAINS NODE	AREA (ha)	% PAVED
	Cat Lot 1 Pre	1.83	0.57
	Cat Lot 2 Pre	0.95	0.81
TOTAL AREA		2.79	= 100% OF TOTAL AREA
TOTAL IMPERVIOUS AREA		1.82	= %65 OF TOTAL AREA
TOTAL PERVIOUS AREA		0.97	= %35 OF TOTAL AREA

POST-DEVELOPMENT OSD CATCHMENT DETAILS (P1907434DRN01V02)			
KEY	DRAINS NODE	AREA (ha)	% PAVED
	Cat Lot 1 Post	1.71	70%
	Cat Lot 1 Bypass	0.12	0%
	Cat Lot 2 Post	0.8	100%
	Cat Lot 2 Bypass	0.15	0%
TOTAL AREA		2.79	= 100% OF TOTAL AREA
TOTAL IMPERVIOUS AREA		1.98	= %71 OF TOTAL AREA
TOTAL PERVIOUS AREA		0.8	= %29 OF TOTAL AREA

DRAINS RESULTS

Lot 1 - P1907434DRN01V02

0.2 EY			10% AEP			5% AEP			2% AEP			1% AEP		
Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference
0.347	0.221	-0.126	0.430	0.257	-0.173	0.526	0.303	-0.223	0.649	0.348	-0.301	0.752	0.360	-0.392

Lot 2 - P1907434DRN01V02

0.2 EY			10% AEP			5% AEP			2% AEP			1% AEP		
Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference	Pre Peak Flow (m^3/s)	Post Peak Flow (m^3/s)	Difference
0.219	0.124	-0.095	0.262	0.140	-0.122	0.311	0.158	-0.153	0.383	0.202	-0.181	0.436	0.228	-0.208

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
H	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
G	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
F	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
E	MINOR AMENDMENTS	03/11/2020	LL	AW/AVG	SL	TH
D	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
C	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE
0 10 20 30 40 50 60 70 80 90 100 METRES
A1 (A3) 1:1,000 (1:2,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
OSD CATCHMENT PLAN, MODEL LAYOUT & RESULT

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-E600	H

DRAWING ID: P1907434-PS01-R16-E600

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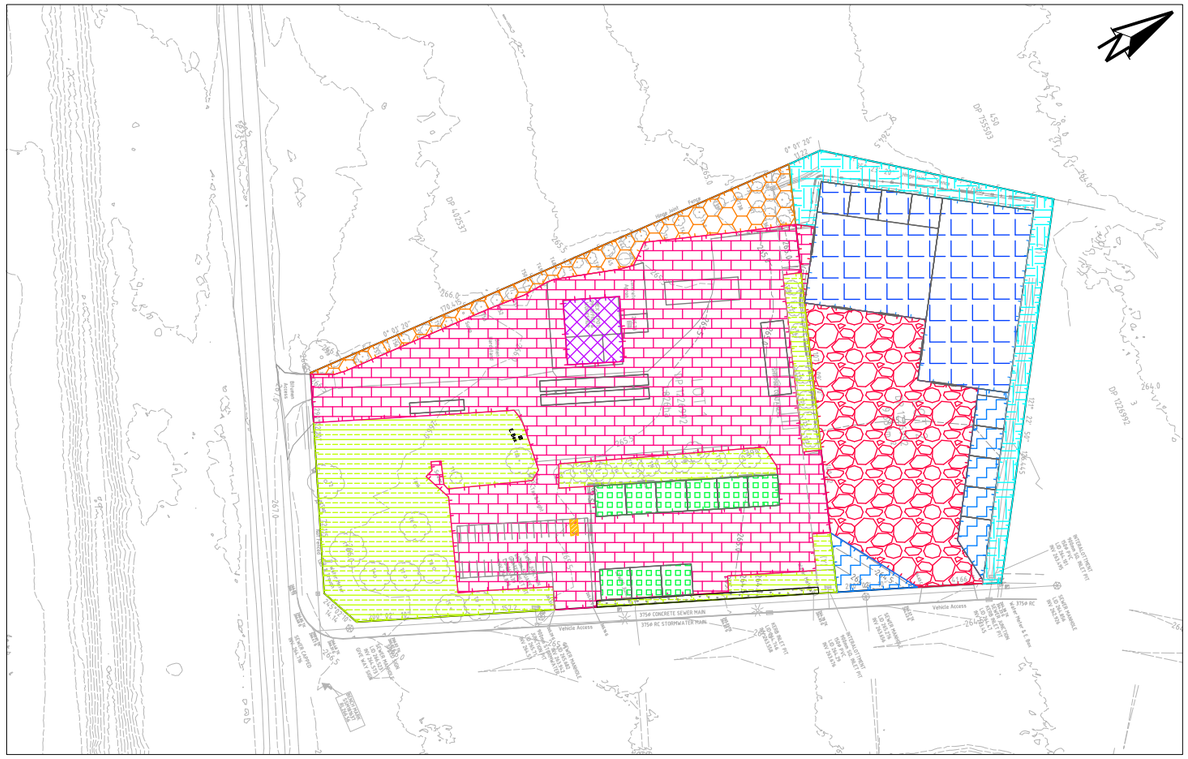
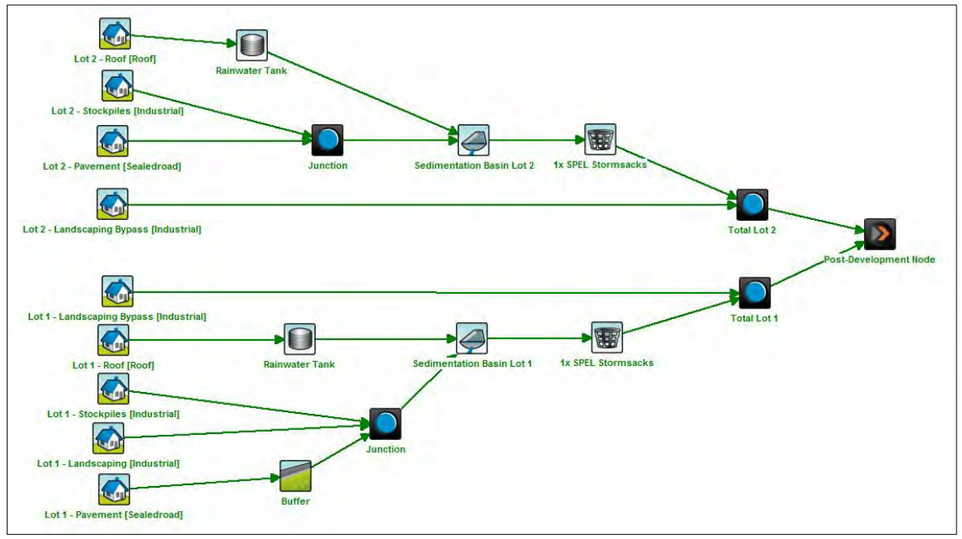
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



POST-DEVELOPMENT WATER QUALITY CATCHMENT PLAN

SCALE 1:1000



MUSIC MODEL LAYOUT (P1907434MUS01V03)

WATER QUALITY CATCHMENT DETAILS			
KEY	MUSIC NODE	AREA (ha)	% PAVED
	Lot 1 Roof	0.04	100%
	Lot 1 Pavement	1.08	100%
	Lot 1 Stockpiles	0.09	100%
	Lot 1 Landscaping	0.51	0%
	Lot 1 Landscaping Bypass	0.12	0%
	Lot 2 Roof	0.34	100%
	Lot 2 Pavement	0.38	100%
	Lot 2 Stockpiles	0.08	100%
	Lot 2 Landscaping Bypass	0.15	0%

Treatment Train Effectiveness - Total Lot 1

	Sources	Residual Load	% Reduction
Flow (ML/yr)	6.33	6.21	1.8
Total Suspended Solids (kg/yr)	2020	245	87.9
Total Phosphorus (kg/yr)	3.42	1.03	70
Total Nitrogen (kg/yr)	15	8.03	46.6
Gross Pollutants (kg/yr)	176	0	100

MUSIC MODEL RESULT LOT 1

Treatment Train Effectiveness - Total Lot 2

	Sources	Residual Load	% Reduction
Flow (ML/yr)	4.3	3.1	27.9
Total Suspended Solids (kg/yr)	760	103	86.4
Total Phosphorus (kg/yr)	1.49	0.45	69.8
Total Nitrogen (kg/yr)	9.76	3.66	62.5
Gross Pollutants (kg/yr)	125	0	100

MUSIC MODEL RESULT LOT 2

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
I	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
H	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
G	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
F	MINOR AMENDMENTS	03/11/2020	LL	AW/AVG	SL	TH
E	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
D	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENTS	09/07/2020	LL	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

SCALE
0 10 20 30 40 50 60 70 80 90 100 METRES
A1 (A3) 1:1,000 (1:2,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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LOTS 1 AND 2 DP 1226992

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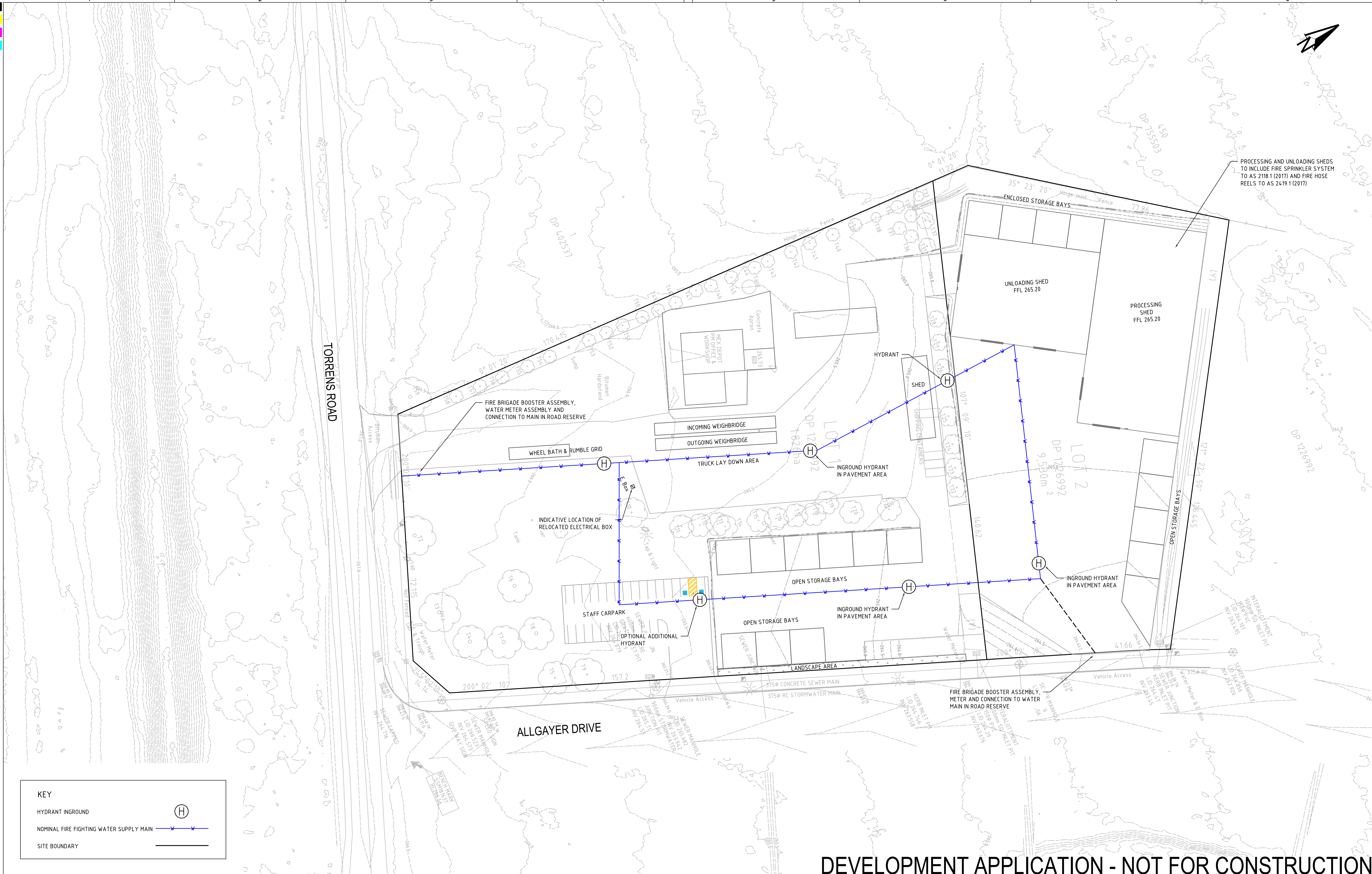
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
WATER QUALITY CATCHMENT PLAN, MODEL & RESULT

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-E700	I

DRAWING ID: P1907434-PS01-R16-E700



DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
C	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
B	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
A	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	JS	AW/AVG	SL	TH

SCALE: A1 (A3) 1:500 (1:1,000) — 0 5 10 15 20 25 30 35 40 45 50 METRES

GRID: MGA | DATUM: mAHD | PROJECT MANAGER: TH

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CONCEPT CIVIL WORKS
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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: CONCEPT WATER MAIN & FIRE FIGHTING HYDRANT PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-F300	C

DRAWING ID: P1907434-PS01-R16-F300

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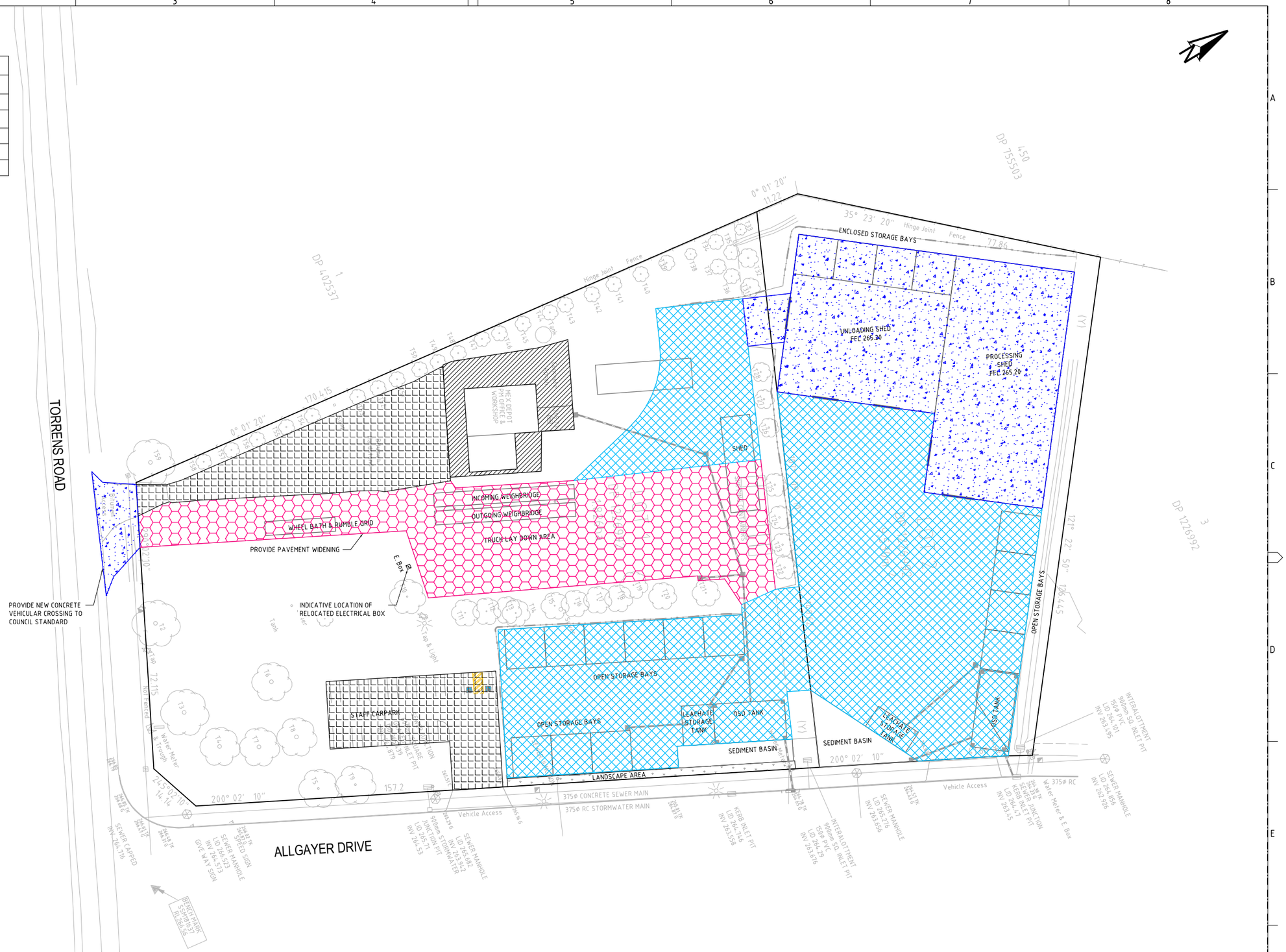
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

PAVEMENT DETAILS	
KEY	DESCRIPTION
	PROPOSED CONCRETE SURFACE, REFER TO PS01-C100 FOR PROPOSED GRADING
	PROPOSED ASPHALT SURFACE, REFER TO PS01-C100 FOR PROPOSED GRADING
	PROPOSED ASPHALT SURFACE, EXISTING GRADING TO BE RETAINED
	EXISTING BITUMEN SUFACE TO BE RETAINED
	EXISTING CONCRETE SUFACE TO BE RETAINED

NOTE:
- PAVEMENT DESIGN TO BE PROVIDED AT CC STAGE.



DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
H	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
G	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
F	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
E	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
D	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
C	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH
B	UPDATED AS PER CLIENT COMMENT	25/06/2020	GM	AW/AVG	SL	TH
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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DRAWING TITLE
PAVEMENT PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-G400	H

DRAWING ID: P1907434-PS01-R16-G400

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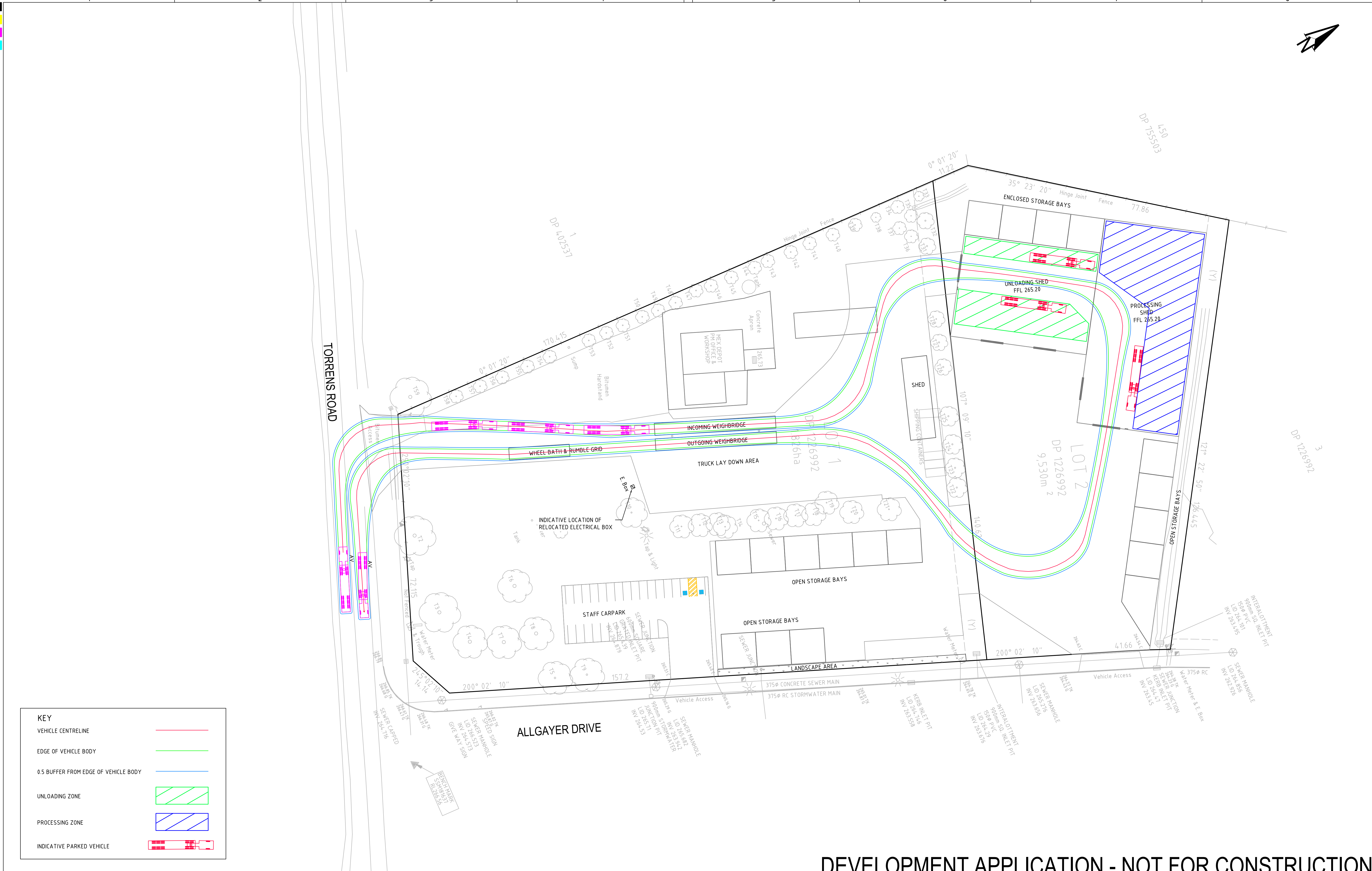

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
L	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
K	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
J	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
I	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
H	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
G	ADDITIONAL AND AMENDED SWEPT PATHS PROVIDED	25/08/20020	AW	AW	SL	TH
F	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
E	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH

SCALE 0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
SWEPT PATH ANALYSIS PLAN - AV

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-GZ00	L

DRAWING ID: P1907434-PS01-R16-GZ00

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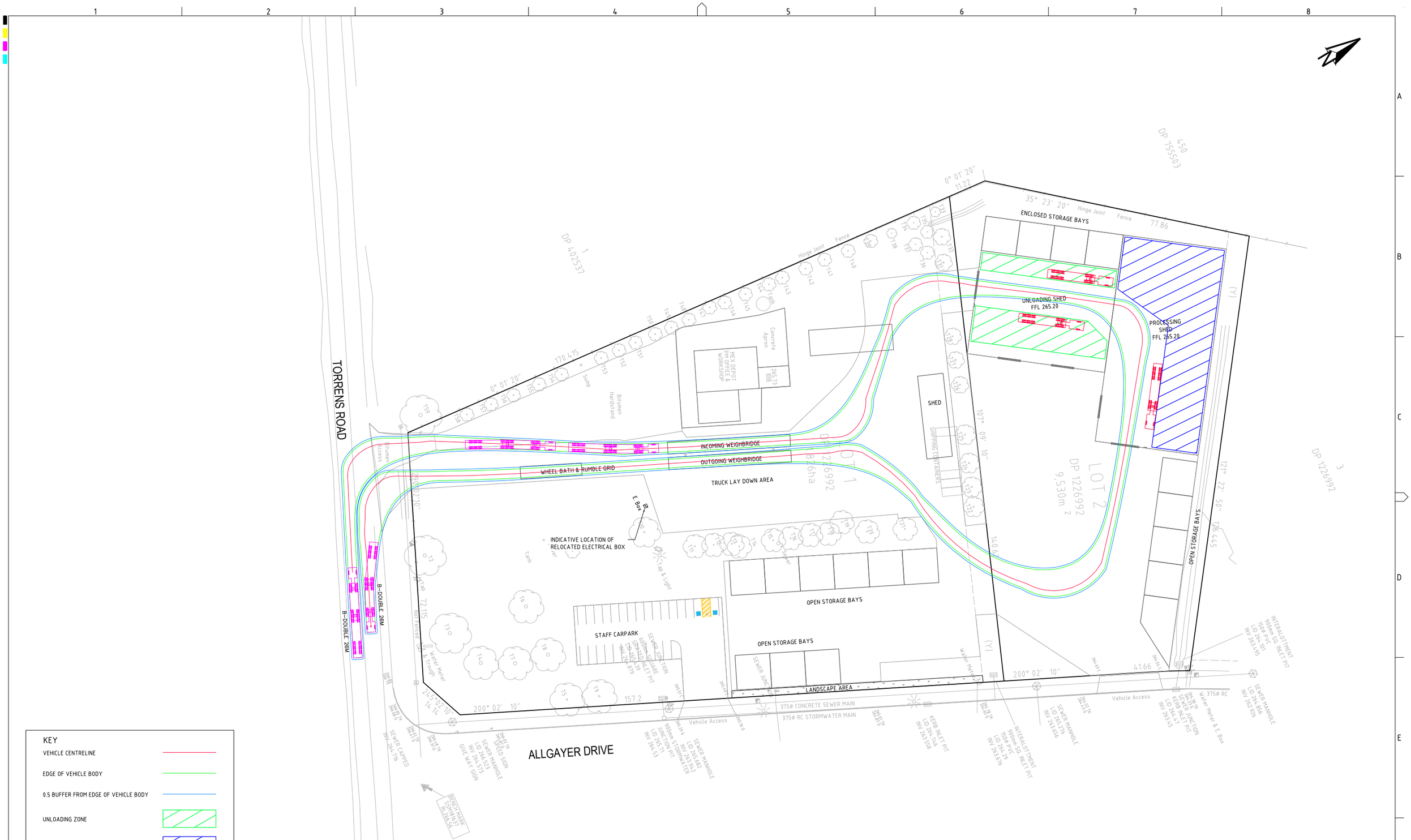

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
L	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
K	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
J	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
I	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
H	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
G	ADDITIONAL AND AMENDED SWEPT PATHS PROVIDED	25/08/20020	AW	AW	SL	TH
F	MINOR AMENDMENT	16/07/2020	RK	AW/AVG	SL	TH
E	MINOR AMENDMENT	14/07/2020	RK	AW/AVG	SL	TH

SCALE
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A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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CLIENT
OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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Consulting Engineers
Environment
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DRAWING TITLE
SWEPT PATH ANALYSIS PLAN - B DOUBLE

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-GZ10	L

DRAWING ID: P1907434-PS01-R16-GZ10

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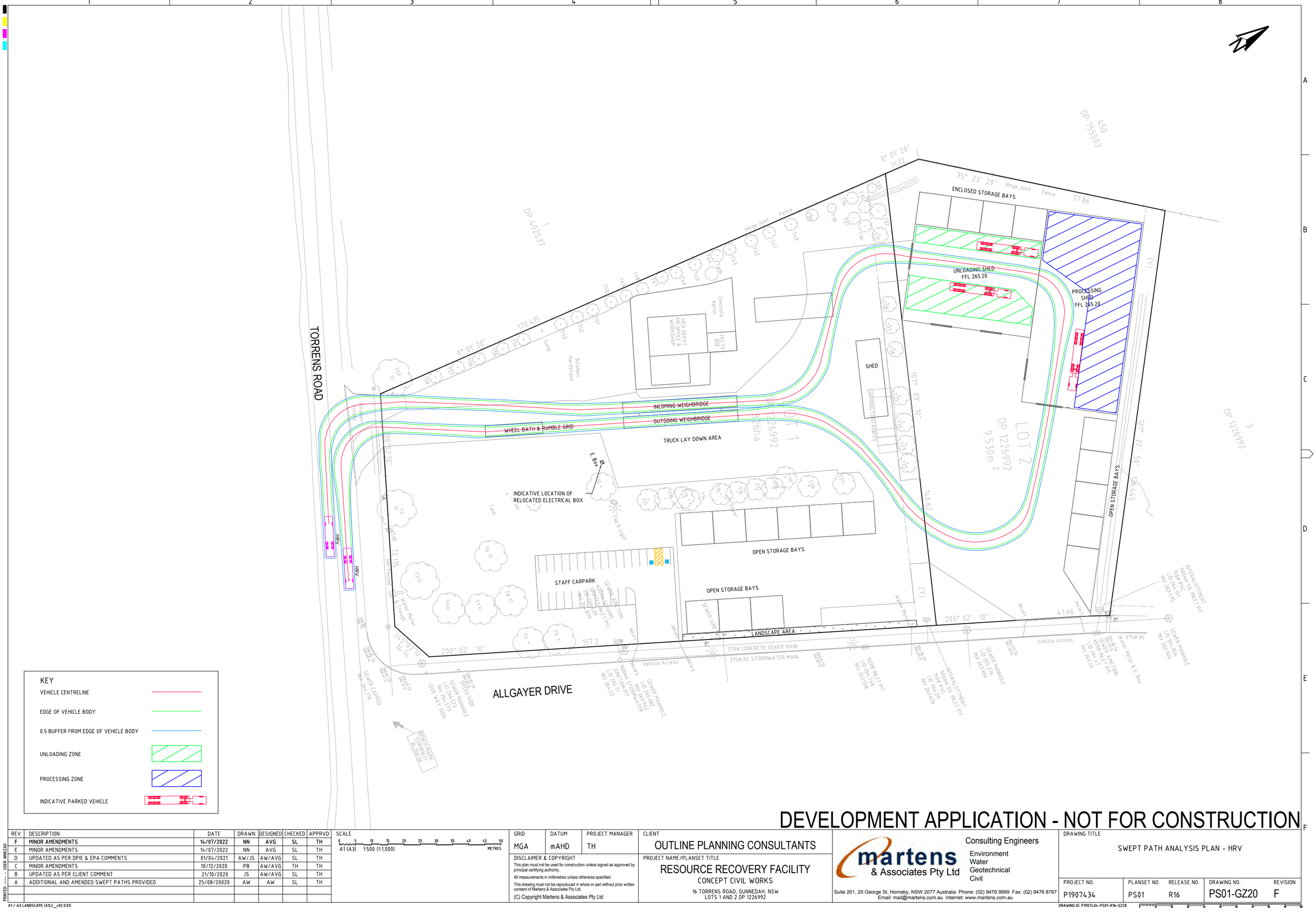

KEY

- VEHICLE CENTRELINE
- EDGE OF VEHICLE BODY
- 0.5 BUFFER FROM EDGE OF VEHICLE BODY
- UNLOADING ZONE
- PROCESSING ZONE
- INDICATIVE PARKED VEHICLE

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
E	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
D	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
C	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
B	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
A	ADDITIONAL AND AMENDED SWEPT PATHS PROVIDED	25/08/20020	AW	AW	SL	TH

SCALE: A1 (A3) 1:500 (1:1,000) — 0 5 10 15 20 25 30 35 40 45 50 METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE: RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
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DRAWING TITLE: SWEPT PATH ANALYSIS PLAN – HRV

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-GZ20	F

DRAWING ID: P1907434-PS01-R16-GZ20

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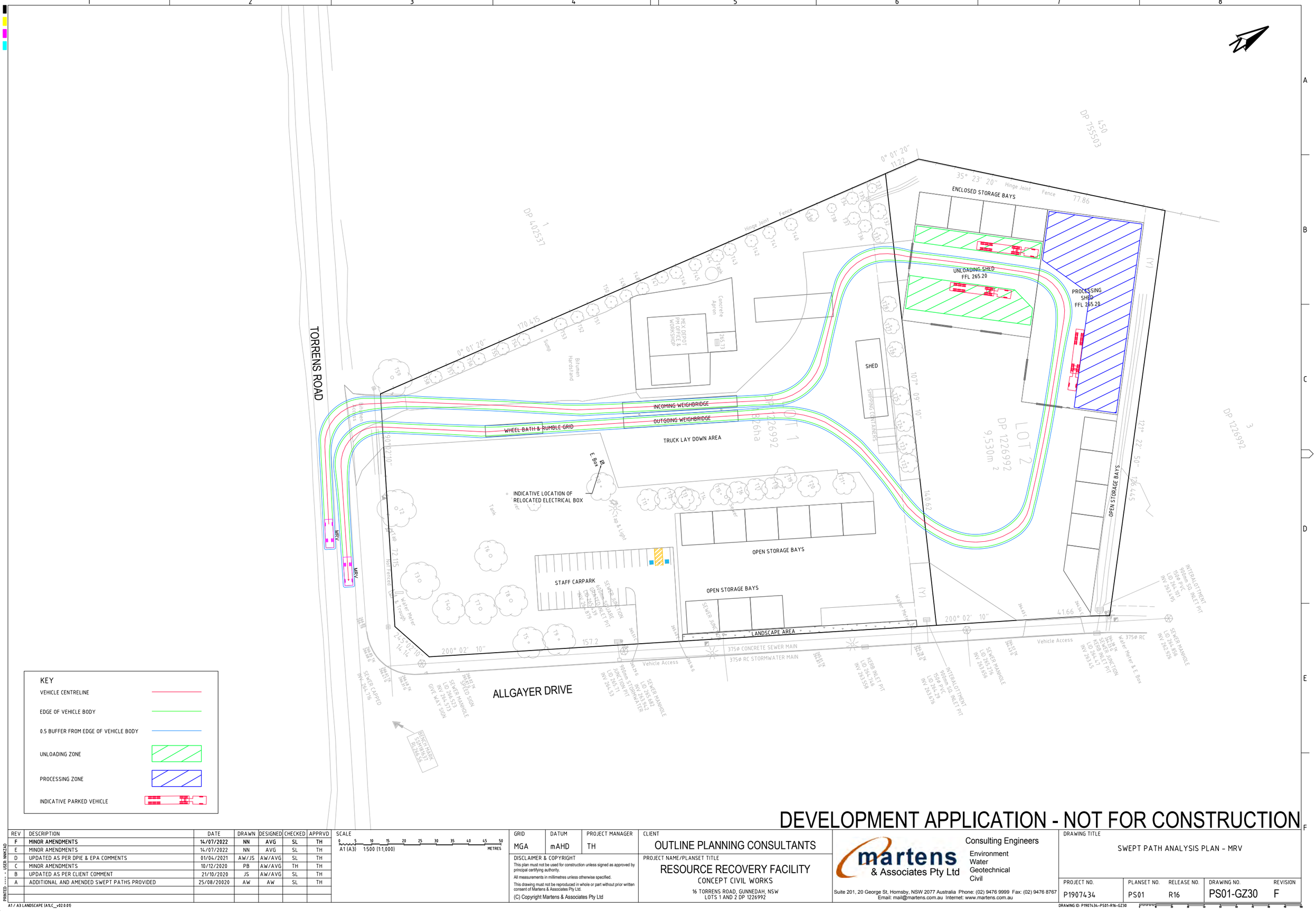

KEY

- VEHICLE CENTRELINE
- EDGE OF VEHICLE BODY
- 0.5 BUFFER FROM EDGE OF VEHICLE BODY
- UNLOADING ZONE
- PROCESSING ZONE
- INDICATIVE PARKED VEHICLE

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
E	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
D	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
C	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
B	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH
A	ADDITIONAL AND AMENDED SWEPT PATHS PROVIDED	25/08/20020	AW	AW	SL	TH

SCALE: A1 (A3) 1:500 (1:1,000) — 0 5 10 15 20 25 30 35 40 45 50 METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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DRAWING TITLE: SWEPT PATH ANALYSIS PLAN - MRV

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-GZ30	F

DRAWING ID: P1907434-PS01-R16-GZ30

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DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
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A	ADDITIONAL AND AMENDED SWEPT PATHS PROVIDED	25/08/20020	AW	AW	SL	TH

SCALE
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GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT
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PROJECT NAME/PLANSET TITLE
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CONCEPT CIVIL WORKS
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DRAWING TITLE
SWEPT PATH ANALYSIS PLAN - B99

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-GZ40	F

DRAWING ID: P1907434-PS01-R16-GZ40

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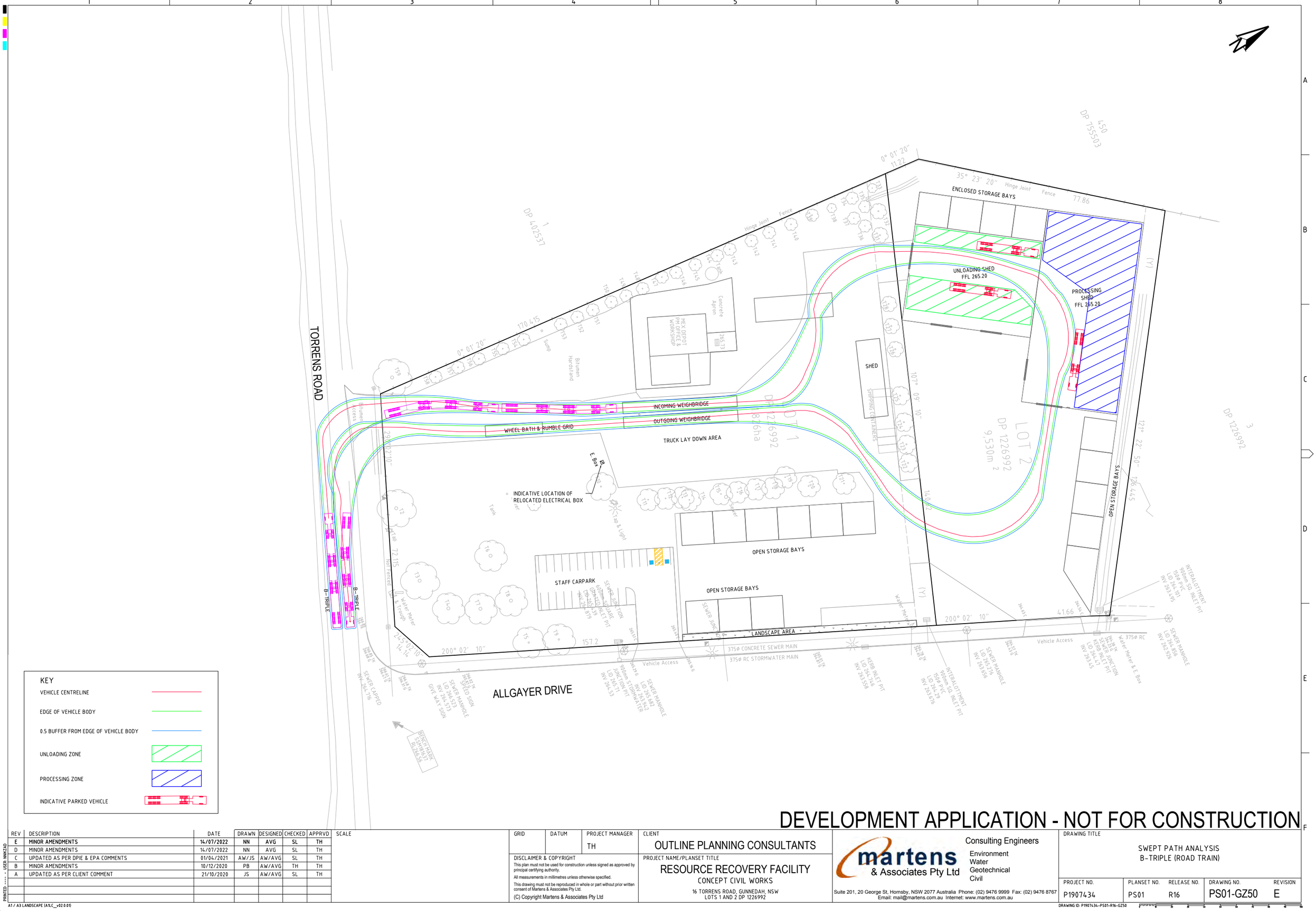

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
E	**MINOR AMENDMENTS**	**14/07/2022**	**NN**	**AVG**	**SL**	**TH**
D	MINOR AMENDMENTS	14/07/2022	NN	AVG	SL	TH
C	UPDATED AS PER DPIE & EPA COMMENTS	01/04/2021	AW/JS	AW/AVG	SL	TH
B	MINOR AMENDMENTS	10/12/2020	PB	AW/AVG	TH	TH
A	UPDATED AS PER CLIENT COMMENT	21/10/2020	JS	AW/AVG	SL	TH

SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
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DRAWING TITLE
SWEPT PATH ANALYSIS
B-TRIPLE (ROAD TRAIN)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-GZ50	E

DRAWING ID: P1907434-PS01-R16-GZ50

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GENERAL NOTES

1 ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH, AND THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE RELEVANT AUSTRALIAN STANDARDS, WSC COUNCIL SPECIFICATIONS, AND ALL PROJECT CONSULTANT'S PLANS AND REPORTS.

2 SURVEY INFORMATION SHOWN AND DESIGN LEVELS BASED ON SURVEY INFORMATION PROVIDED BY S. MARK BOWLER & ASSOCIATES AND MATTHEW FREEBURN SURVEYORS.

3 PRIOR TO COMMENCING ANY WORKS, THE CONTRACTOR SHALL CARRY OUT A "DIAL BEFORE YOU DIG" FOR A SERVICES SEARCH. THE CONTRACTOR SHALL THEN ARRANGE FOR ALL SERVICES TO BE PHYSICALLY LOCATED, IDENTIFIED AND CLEARLY MARKED WITHIN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SUCH SERVICES DURING THE COURSE OF THE WORKS. ANY SERVICE LOCATION SHOWN ON THE FOLLOWING DRAWINGS ARE INDICATIVE ONLY AND THE POSITION AND DEPTH INDICATED SHOULD NOT BE RELIED UPON.

4 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SPECIFICATIONS AND WRITTEN INSTRUCTIONS THAT MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. THE CONTRACTOR SHALL ENSURE THAT THEY HAVE THE LATEST DRAWING REVISION PRIOR TO COMMENCING ANY WORKS.

5 IF THE CONTRACTOR HAS ANY QUESTIONS, REQUIRES CLARIFICATION ON ANY ISSUE, OR FINDS ANY DISCREPANCIES WITHIN THESE DRAWINGS, THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT BEFORE PROCEEDING.

6 ALL SET OUT DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE WORK COMMENCES. DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

7 LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).

8 ALL MATERIALS AND WORKMANSHIP USED SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS, BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES OR GEOTECHNICAL ENGINEER'S SPECIFICATIONS, EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATIONS. WHERE THE CONTRACTOR BELIEVES THAT NECESSARY DIMENSIONS ARE NOT SHOWN, REFER THE MATTER TO THE DESIGN CONSULTANT.

9 CERTIFICATES ARE TO BE ISSUED ON COMPLETION CONFIRMING THAT THE WORKS COMPLY WITH THE CONSTRUCTION CERTIFICATE (IF ISSUED), ALL PLANS AND SPECIFICATIONS AND IN ACCORDANCE WITH THE REVIEW OF ENVIRONMENTAL FACTORS.

10 DURING CONSTRUCTION, THE WORKS SITE SHALL BE MAINTAINED DAILY IN A SAFE AND STABLE CONDITION. PERIMETER SAFETY FENCING, TEMPORARY BRACING, BENCHING OF EXCAVATIONS AND BATTERS SHALL BE PROVIDED BY THE CONTRACTOR TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.

11 THE CONTRACTOR IS TO NOTIFY THE SUPERINTENDENT AND ENGINEER IF IT BECOMES EVIDENT THAT CONDITIONS ON SITE (INCLUDING ENCOUNTERING OF GROUNDWATER) HAVE POTENTIAL TO NEGATIVELY IMPACT ON THE INTENDED ENGINEERING DESIGN.

12 ALL CONSTRUCTION WORK SHALL BE CARRIED OUT SO THAT AT ANY TIME THE AMENITY OF ADJOINING PROPERTIES ARE NOT COMPROMISED – I.E. DISCHARGE OF ADDITIONAL OR POLLUTED STORMWATER RUNOFF, ALL WEATHER ACCESS TO THE PROPERTY, NOISE, DUST, BUILDING WASTE ETC.

13 THE CONTRACTOR SHALL PLACE CONDUITS WHERE REQUIRED BY THE RELEVANT UTILITY SERVICE AUTHORITIES AND SHALL UNDERTAKE ALL UTILITY ADJUSTMENTS AS DIRECTED NECESSARY FOR THE COMPLETION OF THE WORKS.

14 THE CONTRACTOR SHALL MAINTAIN AND RESTORE ANY DAMAGE WHICH MAY HAVE BEEN CAUSED BY THE CONSTRUCTION OF THE "WORKS" TO EXISTING ROAD SURFACES, ROADSIDE DRAINAGE OR UTILITY SERVICES.

15 ALL DISTURBED AREAS OUTSIDE THE NOMINATED WORKS AREA SHALL BE REINSTATED BY THE CONTRACTOR TO THE DIRECTION OF THE SUPERINTENDENT.

16 THE CONTRACTOR SHALL ENSURE THAT A SMOOTH CONNECTION IS MADE TO ALL EXISTING ENGINEERING WORKS AND NATURAL SURFACES.

17 EROSION AND SEDIMENT CONTROLS IN ACCORDANCE WITH APPROVED EROSION SEDIMENT CONTROL PLAN ARE TO BE IN PLACE AT ALL TIMES. CONTROLS TO BE INSPECTED, MAINTAINED AND REPLACED AS REQUIRED BY THE CONTRACTOR UNTIL WORKS ARE COMPLETED AND PERMANENT MEASURES HAVE BEEN ESTABLISHED.

18 PROVISION IS TO BE MADE FOR MAINTAINING TRAFFIC FLOW IN PUBLIC ROADS AT ALL TIMES. TRAFFIC CONTROL MEASURES ARE TO BE IN ACCORDANCE WITH COUNCIL GUIDELINES AND ANY SPECIFIC APPROVED CONSTRUCTION TRAFFIC MANAGEMENT PLAN (CTMP) FOR THE WORKS.

19 THE CONTRACTOR IS TO ENSURE THAT NO BUILDING MATERIALS, STOCKPILES OR FILL ENCROACHES UPON ADJACENT PROPERTY OR RETAINED TREES FOR THE DURATION OF THE WORKS.

20 THE SUPERINTENDENT MUST BE NOTIFIED IMMEDIATELY, SHOULD THE PRESENCE OF ASBESTOS OR SOIL CONTAMINATION, BE IDENTIFIED DURING DEMOLITION OR CONSTRUCTION WORKS.

21 A SUFFICIENT SUPPLY OF APPROPRIATE SPILL CONTROL EQUIPMENT MUST BE KEPT ON THE PREMISES AT ALL TIMES. MATERIALS USED IN THE CLEAN UP OF A SPILL MUST BE DISPOSED OF TO AN APPROPRIATELY LICENSED WASTE FACILITY.

22 ALL ABOVE GROUND STORAGE'S OF HAZARDOUS MATERIALS, OILS, CHEMICALS OR FERTILISERS MUST BE BUNDED. THE BUND IS TO BE MADE FROM AN IMPERVIOUS MATERIAL AND MUST BE COVERED AND LARGE ENOUGH TO HOLD THE CONTENTS OF THE LARGEST CONTAINER PLUS 10%.

23 THE COST OF REPAIRING ANY DAMAGE CAUSED TO COUNCIL'S ASSETS AS A RESULT OF CONSTRUCTION WORKS ASSOCIATED WITH THE APPROVED DEVELOPMENT IS TO BE MET IN FULL BY THE CONTRACTOR PRIOR TO THE ISSUE OF A CERTIFICATE OF PRACTICAL COMPLETION.

24 TEMPORARY CLOSET ACCOMMODATION IS TO BE PROVIDED AT THE WORK SITE AT ALL TIMES AT THE RATE OF ONE CLOSET FOR EVERY 20 PERSONS AND BE LOCATED WHOLLY WITHIN THE BOUNDARIES OF THE PROPERTY. PERMANENT FACILITIES ARE TO BE PROVIDED IN ACCORDANCE WITH PART F2.1, F2.4 AND F 2.5 OF THE BUILDING CODE OF AUSTRALIA.

25 PROJECT PLANS AND SPECIFICATION TO BE READ IN CONJUNCTION WITH ALL ADVICE REGARDING THE SITE.

26 ANY VARIATIONS OR AMBIGUITY BETWEEN THIS SPECIFICATION, DESIGN DOCUMENTS, AUSTRALIAN STANDARDS AND OTHER RELEVANT DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO PROCEEDING WITH WORKS.

27 CONTRACTOR TO BE PROVIDED WITH A SINGLE 2D .DWG DESIGN FILE FOR CONSTRUCTION PURPOSES. PROVISION OF A DIGITAL SURFACE OR OTHER DIGITAL DATA SHOULD NOT BE ASSUMED BY THE CONTRACTOR.

28 WAE PLANS ARE TO BE PROVIDED BY THE CONTRACTOR THAT CLEARLY DELINEATES ALL ITEMS REFERRED TO IN THE DEVELOPMENT CONSENT CONDITIONS.

29 THE CONTRACTOR SHALL CONTACT COUNCIL IN WRITING A MINIMUM OF SEVEN (7) DAYS PRIOR TO COMMENCING WORK AND APPLY FOR A SECTION 138 CONSENT (SECTION 138 OF THE ROADS ACT FOR APPROVAL TO WORK ON A PUBLIC ROAD) AND INCLUDE COPIES OF CURRENT PUBLIC LIABILITY INSURANCE FOR A VALUE OF $20,000,000 AND PAYMENT OF THE CURRENT FEE. REFERENCES FOR PREVIOUS WORK EXPERIENCE MAY BE REQUESTED BY COUNCIL.

QUALITY ASSURANCE & OCCUPATIONAL HEALTH & SAFETY

1 THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN A QUALITY ASSURANCE SYSTEM WHICH COMPLIES WITH THE REQUIREMENTS OF A.S. 9001 (2000) AND AUS-SPEC COC & COS. THE QUALITY SYSTEM SHALL BE SUCH THAT RECORDS ARE KEPT OF ALL ASPECTS AND STAGES OF THE WORK.

2 THE RECORDS FOR EACH CONSTRUCTION TASK SHALL BE STAGED AND ITEMISED TO THE SATISFACTION OF THE SUPERINTENDENT. THE PRO-FORMERS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO ANY WORK BEING COMMENCED.

3 DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN ACCURATE AND UP TO DATE RECORDS (SUCH AS GOODS RECEIVED / REJECTED / RETURNED, ALL "ISSUED NOTICES / INSTRUCTIONS / CERTIFICATES", RETAIN ALL DRAWING REVISIONS, REPORTS, MARKED UP DRAWINGS OF EITHER AMENDMENTS OR "WAE"); AND SHALL MAKE SUCH RECORDS AVAILABLE TO THE SUPERINTENDENT IF REQUESTED. FAILURE TO MAINTAIN THE APPROPRIATE RECORDS MAY RESULT IN THE CONTRACTOR RE-INSPECTING COMPLETED WORKS IF INSTRUCTED BY THE SUPERINTENDENT.

4 AT COMPLETION OF EACH STAGE OF WORKS, THE CONTRACTOR SHALL CERTIFY THAT THOSE WORKS HAVE BEEN UNDERTAKEN AND COMPLETED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, AND INSTRUCTIONS ISSUED DURING THE COURSE OF THE CONTRACT.

5 THE CONTRACTOR SHALL OBTAIN AND KEEP ON SITE AT ALL RELEVANT MATERIAL SAFETY DATA SHEETS (MSDS) THAT ARE APPLICABLE FOR MATERIALS BEING USED ON THE SITE. ALL TRANSPORTATION, STORAGE, USE OF, AND DISPOSAL OF THESE MATERIALS SHALL BE IN ACCORDANCE WITH MSDS. THE LOCATION OF THESE MSDS SHALL BE MADE KNOWN TO ALL PERSONS DURING THE SITE INDUCTION AND ARE TO BE ACCESSIBLE AT ALL TIMES TO ALL SITE PERSONNEL.

6 ATTENTION IS DRAWN TO THE WORK HEALTH AND SAFETY (WHS) ACT 2011 (NSW) AND ITS REGULATIONS, WHICH REQUIRES THAT EMPLOYERS ENSURE THE HEALTH, SAFETY AND WELFARE OF ALL PERSONS WORKING ON OR VISITING THE SITE.

7 ANY REFERENCES TO THE OH&S ACT, OHS REGULATIONS, AND OHS IN THESE SPECIFICATIONS SHALL MEAN THE OCCUPATIONAL HEALTH AND SAFETY ACT 2000, OR THE WORK HEALTH AND SAFETY ACT (WHS) 2011 FROM THE TIME OF ITS ENACTMENT, OR ANY COMPARABLE REGULATION UNDER THE WORK HEALTH AND SAFETY ACT 2011.

8 THE CONTRACTOR SHALL AT ALL TIMES EXERCISE ALL NECESSARY AND REASONABLE SAFETY PRECAUTIONS APPROPRIATE TO ENSURE THE SAFETY OF ALL PERSONS ON THE WORK SITE OR IN THE VICINITY OF THE WORKS.

9 THE CONTRACTOR SHALL IMPLEMENT A WHS SYSTEM AND MAINTAIN ALL THE REQUIREMENTS OF THE RELEVANT WHS ACT, SUCH AS LOG BOOKS RECORDING OF: PERSONNEL INDUCTIONS, PERSONNEL SIGN-IN AND SIGN-OUT, INJURIES ETC, AND FIRST AID STATIONS AND TOOL BOX MEETINGS ETC.

10 THE CONTRACTOR SHALL PROVIDE A SECURE PERIMETER FENCE AROUND THE SITE TO EXCLUDE THE PUBLIC, PLUS SAFETY FENCING AROUND EXCAVATIONS WITHIN THE SITE, AND ANY OTHER FENCING THAT IS REQUIRED TO ENSURE THE SAFETY OF SITE PERSONNEL / VISITOR PEDESTRIANS, ANIMALS AND VEHICLES.

11 THE LAND AND ADJOINING AREAS ARE TO BE KEPT IN A CLEAN AND TIDY CONDITION AT ALL TIMES. LITTER AND RUBBISH SHALL BE PLACED IN CONTAINERS AND REMOVED FROM THE SITE. A WASTE STORAGE CONTAINER IS TO BE PROVIDED AT THE COMMENCEMENT OF THE BUILDING WORK.

12 THE WORK SITE IS TO BE KEPT LIT BETWEEN SUNSET AND SUNRISE IF IT IS LIKELY TO BE A SOURCE OF DANGER TO PERSONS USING A PUBLIC PLACE OR UPON INSTRUCTION BY THE SUPERINTENDENT TO ENHANCE THE SAFETY AND SECURITY OF THE AREA IN WHICH THE WORK IS LOCATED.

13 ANY HOARDING, FENCE OR AWNING IS TO BE REMOVED WHEN NO LONGER REQUIRED.

EXISTING SERVICES

1 PRIOR TO COMMENCING ANY WORKS, THE CONTRACTOR SHALL CARRY OUT A "DIAL BEFORE YOU DIG" FOR A SERVICES SEARCH. THE CONTRACTOR SHALL THEN ARRANGE FOR ALL SERVICES TO BE PHYSICALLY LOCATED, IDENTIFIED AND CLEARLY MARKED WITHIN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SUCH SERVICES DURING THE COURSE OF THE WORKS.

2 ANY SERVICE LOCATION SHOWN ON THE DESIGN PLANS ARE INDICATIVE ONLY AND THE POSITION AND DEPTH INDICATED SHOULD NOT BE RELIED UPON.

3 ALL CARE IS TO BE EXERCISED WHEN EXCAVATING NEAR EXISTING UTILITY SERVICES. MANUAL EXCAVATION PARALLEL TO THE SERVICE IS RECOMMENDED AND MECHANICAL DIGGING IS NOT TO BE CARRIED OUT OVER OR NEAR ANY ELECTRICAL / TELECOMMUNICATIONS CABLES OR GAS PIPES. EXCAVATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE NSW WORK COVER CODE OF EXCAVATION 2000.

4 DURING THE EXECUTION OF WORKS, THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXISTING UTILITY SERVICES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO THE EXISTING SERVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT UTILITY SERVICE PROVIDER, AT NO COST TO THE PRINCIPAL OR OTHER PROPERTY OWNER.

5 WHERE IT IS NECESSARY TO REMOVE, DIVERT OR CUT INTO ANY EXISTING UTILITY SERVICE, AND ON COMPLETION OF THE NEW "WORKS, THE CONTRACTOR SHALL GIVE AT LEAST THREE (3) DAYS NOTICE OF THE REQUIREMENTS TO THE SUPERINTENDENT, WHO WILL ADVISE WHAT ARRANGEMENTS SHOULD BE MADE FOR THE ALTERATION OF SUCH EXISTING WORKS.

6 PRIOR TO THE COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL OF THE PROGRAMME FOR THE RELOCATION / CONSTRUCTION OF TEMPORARY SERVICES.

7 ALL NEW OR EXCAVATED EXISTING UTILITY SERVICES THAT CROSS EXISTING AND FUTURE ROADS/PAVEMENTS SHALL HAVE APPROPRIATE WARNING TAPES AND/OR WIRES PLACED IN ACCORDANCE WITH THE RELEVANT STANDARDS AND THEN BE BACKFILLED WITH DGB20 MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD DENSITY RATIO, SUBJECT TO PRIOR APPROVAL FROM THE RELEVANT AUTHORITY.

8 ON COMPLETION OF SERVICES INSTILLATION, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, INCLUDING NATURE STRIPS, FOOTPATHS, CONCRETE AND GRAVEL AREAS, KERBS AND ROAD PAVEMENTS.

9 THE CONTRACTOR SHALL ALLOW FOR THE EXCAVATION, CAPPING OFF AND REMOVAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WITHIN THE CONTRACT AREA AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT. ALL SERVICES WORKS ARE TO BE COMPLETED TO REGULATORY AUTHORITY STANDARDS AND APPROVAL.

10 THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES AS REQUIRED TO MAINTAIN THAT SERVICE TO ANY PROPERTY OR BUILDING IN OPERATION DURING THE CONSTRUCTION WORKS, TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. WHEN ALL NEW WORKS / DIVERSIONS ARE COMPLETED, COMMISSIONED AND INSPECTED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY UTILITY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.

11 INTERRUPTION TO EXISTING UTILITY SERVICES SHALL BE CARRIED OUT SO AS NOT TO CAUSE ANY INCONVENIENCE OR DAMAGE TO ADJACENT PROPERTIES. THE CONTRACTOR IS RESPONSIBLE FOR GAINING PERMISSION OF THE SUPERINTENDENT FOR TIME OF INTERRUPTION.

12 THE CONTRACTOR SHALL MAINTAIN THE EXISTING STORMWATER DRAINAGE FLOWS THROUGH THE SITE AT ALL TIMES, AND MAKE DUE ALLOWANCE FOR ALL SUCH FLOWS AT ALL TIMES.

13 THE CONTRACTOR SHALL ENSURE THAT APPROPRIATE UTILITY SERVICES ABOVE GROUND MARKERS ARE PLACED IN ACCORDANCE WITH SERVICE PROVIDER AND COUNCIL SPECIFICATIONS.

14 ALL NEW AND REPLACEMENT UTILITY SERVICES SHALL BE LAID AT THE DEPTH AND POSITION WITHIN THE SERVICES TRENCH IN ACCORDANCE WITH RELEVANT AUTHORITY REQUIREMENTS AND SPECIFICATIONS OR AS DIRECTED IN THE DETAILED DRAWINGS.

15 SERVICES TRENCHES TO BE GRADED AT A MINIMUM OF 1% TO EITHER SUBSOIL OR STORMWATER DRAINAGE LINES.

16 THE CONTRACTOR SHALL ENSURE THAT ALL LOCATED AND NEW UTILITY SERVICES WITHIN AND OUTSIDE THE SITE ARE SURVEYED BY A DULY QUALIFIED SURVEYOR AS PART OF THE "WORK AS EXECUTED" RECORDS.

CONSTRUCTION MATERIALS

1 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS, COUNCIL SPECIFICATIONS AND WITH THE BY-LAWS AND ORDINANCE REQUIREMENTS OF THE RELEVANT BUILDING AUTHORITY, EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATIONS.

2 SUFFICIENT NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE SUPERINTENDENT TO ENABLE MATERIALS THAT ARE TO BE BROUGHT ON SITE TO BE EXAMINED AND TESTED AS REQUIRED. ALL MATERIALS ARE TO BE STACKED IN A SUITABLE MANNER TO FACILITATE EXAMINATION.

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	28/05/2020	GM	AW/AVG	SL	TH

SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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DRAWING TITLE
GENERAL LEGEND AND NOTES (SHEET 1)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-ZZ00	A

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

3 MATERIALS SUCH AS FILL / TOPSOIL / SAND SHALL HAVE A VALIDATION CERTIFICATE FROM AN APPROVED TESTING LABORATORY IF SUCH MATERIAL IS NOT PROCURED FROM THE SITE OR SUPPLIED OR ARRANGED BY THE SUPERINTENDENT.

4 WHERE THE CONTRACTOR SUPPLIES MATERIALS OF A MIXED OR POOR QUALITY, THE SUPERINTENDENT SHALL HAVE THE AUTHORITY TO REQUIRE THE CONTRACTOR TO PICK OUT AND STACK THOSE MATERIALS WHICH IN HIS OPINION ARE SUITABLE FOR THE WORKS, AND

TO HAVE THOSE WHICH ARE UNSUITABLE REMOVED FROM THE WORKS SITE AT THE CONTRACTOR'S COST.

5 ANY MATERIAL WHICH IS BROUGHT ONTO THE SITE AND PLACED IN SITU PRIOR TO ANY APPROVAL BY THE SUPERINTENDENT / ENGINEERS OR THEIR AGENTS SHALL BE REMOVED AND THE WORKS REMEDIATED TO THEIR PRIOR CONDITION BY THE CONTRACTOR AT HIS COST.

EARTHWORKS GENERAL

1 ALL EARTHWORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE GUIDELINES FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS AS SET OUT IN A.S. 3798.

2 FILLING WORKS ARE TO BE UNDERTAKEN UNDER LEVEL 1 SUPERVISION AND CUT OPERATIONS UNDER LEVEL 2 SUPERVISION AS DEFINED IN SECTION 8 OF AS 3798 (2007) AND IN ACCORDANCE WITH THE DEVELOPMENTS CONSENT CONDITIONS. LEVEL ONE TESTING WILL REQUIRE FULL TIME INSPECTION BY THE GEOTECHNICAL TESTING AUTHORITY.

3 GEOTECHNICAL TESTING AND INSPECTION AUTHORITY (GITA) TO BE ENGAGED BY THE PRINCIPLE (NOT THE EARTHWORKS CONTRACTOR).

4 THE CONTRACTOR SHALL ENSURE THAT ALL EXCAVATION WORKS COMPLY WITH THE NSW WORK COVER 'CODE OF PRACTICE: EXCAVATION 2000' OR THAT REQUIRED IN THE STATE WHERE THIS CONTRACT IS BEING UNDERTAKEN.

5 THE CONTRACTOR SHALL TAKE ALL DUE CARE THAT ONLY THE ABSOLUTE MINIMUM OF AREA FOR CONSTRUCTION IS USED AND THAT NO UNDUE DAMAGE IS DONE TO EXISTING VEGETATION.

6 THE CONTRACTOR SHALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE OR DETERIORATION IN ENGINEERING PROPERTIES OF SOIL RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT HIS COST.

7 THE CONTRACTOR SHALL BE DEEMED TO HAVE INVESTIGATED THE SITE AND BE SATISFIED AS TO THE QUANTITY AND TYPE OF MATERIAL TO BE EXCAVATED AND THE SUB-SURFACE CONDITIONS LIKELY TO BE ENCOUNTERED DURING BULK EARTHWORKS.

8 WORKS AREAS SHALL BE STRIPPED OF PAVEMENTS, VEGETATION (INCLUDING ROOT AFFECTED SOILS) AND OTHER DELETERIOUS MATERIAL. TOPSOIL IS TO BE STOCKPILED ON SITE FOR RE-USE. STOCKPILE LOCATION IS TO BE CONFIRMED ON SITE BY THE SUPERINTENDENT AND IN ACCORDANCE WITH THE SECP. STOCKPILES TO BE IN ACCORDANCE WITH APPROVED PROJECT SECP.

9 ALL GENERATED WASTE AND SPOIL TO BE MANAGED IN ACCORDANCE WITH THE APPROVED SITE WASTE MANAGEMENT PLAN AND/OR RELEVANT NSW DEC GUIDELINES. ANY SPOIL OR OTHER MATERIAL SUSPECTED OF BEING CONTAMINATED IS TO BE REFERRED TO THE SUPERINTENDENT.

10 EARTHWORKS SHALL INCLUDE THE EXCAVATION, PLACING AND COMPACTION OF CUT MATERIALS TO THE LEVELS AND PROFILES AS DETAILED ON THE BULK EARTHWORKS PLANS AND AS REQUIRED TO COMPLETE THE SPECIFIED WORKS. EXCESS SPOIL IS TO BE MANAGED AS DIRECTED BY THE SUPERINTENDENT.

11 THE PRINCIPAL RESERVES THE RIGHT TO AMEND ALL LEVELS SHOWN ON THE DRAWINGS AT ANY STAGE DURING THE CONTRACT PERIOD, PRIOR TO THE GRANTING OF PRACTICAL COMPLETION, SHOULD SUCH AMENDMENT BE DEEMED BY THE OWNER'S REPRESENTATIVE / SUPERINTENDENT PRIOR TO PLACEMENT.

12 ALL BATTERS SHALL BE GRADED / SHAPED IN ACCORDANCE WITH THE DESIGN CONTOURS DETAILED ON THE PLANS. THE MAXIMUM UNSUPPORTED BATTER SHALL BE 1V:2.5H UNLESS NOTED OTHERWISE.

13 ALL CONSTRUCTED BATTERS SHALL BE FREE OF LOOSE MATERIAL AND SHALL BE NEATLY TRIMMED AND ROLLED TO SEAL THE SURFACE BY THE CONTRACTOR PRIOR TO THE GRANTING OF PRACTICAL COMPLETION (AND PRIOR TO THE PLACEMENT OF ANY TOPSOIL / GROWING MEDIUMS OR ANY REVEGETATION WORKS BY OTHERS).

14 ALL FILL BATTERS SHALL BE CONSTRUCTED BY OVER PLACEMENT OF ENGINEERED FILL AND TRIMMING BACK TO THE FINAL DESIGN PROFILE AS REQUIRED. NO ALLOWANCE HAS BEEN MADE FOR THE OVER PLACEMENT OF FILL MATERIAL IN CALCULATING THE EARTHWORKS QUANTITIES / VOLUMES REQUIRED TO COMPLETE THE WORKS.

15 PROJECT PLANS AND SPECIFICATION TO BE READ IN CONJUNCTION WITH ALL GEOTECHNICAL ENGINEERING ADVICE REGARDING THE SITE. WHERE INCONSISTENCIES ARE IDENTIFIED THEY ARE TO BE BROUGHT TO THE ATTENTION OF THE PROJECT SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS.

EXCAVATION

1 THE EXCAVATION SHALL BE CARRIED OUT IN THE LOCATIONS SHOWN AND TO THE LEVELS, WIDTHS AND BATTER SLOPES INDICATED ON THE DRAWINGS.

2 EXCAVATED MATERIAL NOT MEETING THE SPECIFICATION FOR FILL MATERIAL AND CLASSIFIED AS UNSUITABLE FOR RE-USE AS TOPSOIL OR IN LANDSCAPING SHALL BE BURIED ONSITE IN AN APPROPRIATE MANNER AND AS DIRECTED BY THE SUPERINTENDENT.

3 ALL EXCAVATED MATERIAL REMOVED FROM THE SITE MUST BE CLASSIFIED IN ACCORDANCE WITH NSW DECC (2009) ENVIRONMENTAL GUIDELINES: ASSESSMENT, CLASSIFICATION AND MANAGEMENT OF LIQUID AND NON-LIQUID WASTES PRIOR TO DISPOSAL.

4 WHERE EXCAVATION WORK IS REQUIRED IN THE VICINITY OF EXISTING UTILITY SERVICES, THE CONTRACTOR SHALL SUPPORT ALL SUCH UTILITY SERVICES DURING THE WORKS. ON COMPLETION OF EXCAVATION WORKS SUCH UTILITY SERVICES SHALL BE BACK FILLED IN SUCH A MANNER AS TO RETAIN THE UTILITY SERVICE IN ITS ORIGINAL GRADE AND POSITION TO THE SATISFACTION OF THE SUPERINTENDENT AND UTILITY SERVICE PROVIDER.

5 WHERE EXCAVATED MATERIAL IS TO BE USED FOR FILLING, THE MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO USE.

6 WHERE ROCK IS EXPOSED DURING EXCAVATION, THE CONTRACTOR SHALL CEASE EXCAVATION AT THIS LOCALITY AND CONTACT THE SUPERINTENDENT WHO WILL THEN DEPENDING ON THE NATURE OF THE CONSTRUCTION, ADVISE ON THE LEVEL TO WHICH THE EXCAVATION IS TAKEN.

7 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MAINTENANCE OF ANY EXCAVATIONS AND IS LIABLE FOR ANY DAMAGE WHICH MAY BE CAUSED TO ANY WATER / SEWER PIPE / STORMWATER, PUBLIC UTILITY SERVICE OR STRUCTURES, CAUSED BY THE COLLAPSE OF THE EXCAVATION.

8 WHERE DIRECTED BY THE SUPERINTENDENT THE BOTTOM OF TRENCHES OR EXCAVATIONS SHALL BE COMPACTED PRIOR TO PLACING OF ANY PAVEMENT SUB-BASE, BEDDING OR CONCRETE MATERIALS. SHOULD THE FOUNDATION MATERIAL, IN THE OPINION OF THE SUPERINTENDENT, BE INCAPABLE OF EFFECTIVE COMPACTION, SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROPRIATE MATERIAL.

9 STRIPPED PAVEMENT SUBGRADES MUST BE PROOF ROLLED (PRIOR TO THE ADDITION OF SUITABLE FILL) BY A MINIMUM 12 TONNE MASS SMOOTH DRUM ROLLER WITHOUT VIBRATION UNDER THE SUPERVISION OF THE GEOTECHNICAL INSPECTION AND TESTING AUTHORITY (GITA) AND/OR GEOTECHNICAL ENGINEER.

10 ROAD SUBGRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300MM BELOW THE FINISHED SUBGRADE LEVEL.

11 IF APPROVED BY THE SUPERINTENDENT EXCAVATED MATERIAL MAY BE USED FOR BACKFILL OVER PIPES PROVIDED IT COMPLIES WITH RELEVANT BUILDING AND CONSTRUCTION CODES AND SPECIFICATIONS. THIS MATERIAL SHALL REMAIN THE PROPERTY OF THE PRINCIPAL AND ANY EXCESS SHALL BE SPOILED OR USED FOR FILLING WITHIN THE SITE AS DIRECTED BY THE SUPERINTENDENT.

12 ALL EXCAVATIONS MUST BE PROPERLY GUARDED AND PROTECTED TO PREVENT THEM FROM BEING DANGEROUS TO LIFE OR PROPERTY.

13 RETAINING WALLS OR OTHER APPROVED METHODS NECESSARY TO PREVENT THE MOVEMENT OF EXCAVATED OR FILLED GROUND, ARE TO BE CONSTRUCTED TOGETHER WITH ASSOCIATED STORMWATER DRAINAGE MEASURES PRIOR TO OCCUPATION OF THE DEVELOPMENT OR BEFORE WHERE SITE CONDITIONS REQUIRE.

14 NO BUSH ROCK IS TO BE REMOVED FROM THE SITE WITHOUT PRIOR APPROVAL FROM NSW DECC AND COUNCIL.

FILL

1 ANY IMPORTED SOILS TO THE SUBJECT SITE MUST BE VIRGIN EXCAVATED NATURAL MATERIAL (VENM) AS DEFINED IN SCHEDULE 1 OF THE PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.

2 A LOG BOOK SHALL BE MAINTAINED TO RECORD THE DAILY TRUCK LOADS OF FILL BROUGHT TO THE SITE. THIS LOG BOOK SHALL BE MADE AVAILABLE FOR PERUSAL TO AUTHORISED COUNCIL OFFICERS UPON REQUEST.

3 MATERIAL USED AS FILL SHOULD BE UNIFORM, WELL GRADED SOIL CONTAINING NO ROCK PARTICLES GREATER THAN 100 MM UNLESS OTHERWISE SPECIFIED IN THESE DRAWINGS AND SHALL CONTAIN NO BUILDING OR OTHER FOREIGN MATERIAL. IF A MIXED RANGE OF 'CLEAN ROCK' MATERIAL IS SPECIFIED IT SHALL BE UNIFORM AND WELL GRADED.

4 UNLESS OTHERWISE APPROVED OR SPECIFIED, ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:

- FREE FROM ORGANIC AND PERISHABLE MATTER AND OTHER DELETERIOUS / UNSUITABLE MATERIAL AS DEFINED BY AS 3798-2007.
- MAXIMUM PARTICLE SIZE 100 MM.
- MINIMUM CBR TO BE DETERMINED DURING CONSTRUCTION (IF REQUIRED) OR AS SPECIFIED ON THESE DRAWINGS.
- FILL TO BE COMPACTED IN 300MM THICK LOOSE LAYERS TO A MINIMUM DENSITY RATIO OF 95% STANDARD MAXIMUM DRY DENSITY (SMDD) NO WETTER/DRYER THAN – 2% SOMC OR AS SPECIFIED ELSEWHERE BY RELEVANT GEOTECHNICAL REPORT OR ON PLAN.

5 MATERIAL ACCEPTANCE AND SELECTION SHALL BE SUBJECT TO FULL TIME MONITORING BY THE GITA NOMINATED FOR THE PROJECT.

6 PRIOR TO ANY FILL BEING PLACED SUB-GRADE IS TO BE INSPECTED AND APPROVED BY THE SUPERINTENDENT.

7 WHERE FILL IS TO BE PLACED ON THE EXISTING SURFACE, THE EXISTING SURFACE WILL BE PREPARED IN ACCORDANCE WITH THIS SPECIFICATION THEN BE BENCHED TO ALLOW COMPACTION AND MATERIAL KEYING. ADJACENT BENCHES SHALL STEP NOT MORE THAN 0.4 M WITHOUT GEOTECHNICAL ENGINEERS APPROVAL.

8 DENSITY AND COMPACTION TESTING TO BE UNDERTAKEN ON EACH FILL LAYER BY A NATA REGISTERED LABORATORY AT RATES SPECIFIED BELOW.

9 SURFACE RUNOFF AND SCOUR MUST BE CONTROLLED AND THE SURFACE BETWEEN LAYERS GRADED WITH A 1% MINIMUM FREE DRAINING SLOPE.

10 DAM DECOMMISSIONING SHALL BE STAGED AND UNDERTAKEN WITH AN ECOLOGIST OR WIRES VOLUNTEER PRESENT TO ENABLE ANY AQUATIC FAUNA THAT MAY POTENTIALLY BE ULTILISING THESE AREAS AS HABITAT TO HAVE THE OPPORTUNITY TO SEEK ALTERNATIVE HABITAT OR ARE HUMANELY TRANSPORTED TO AN ALTERNATIVE SITE.

SUBGRADE PREPARATION

1 EXPOSED SUBGRADE EXHIBITING SHRINKAGE CRACKING TO BE WATERED AND ROLLED UNTIL NO SHRINKAGE CRACKS ARE EVIDENT.

2 SUBGRADE TO BE ROLLED WITH AT LEAST EIGHT PASSES OF 12 TONNE STATIC SMOOTH DRUM ROLLER.

3 FINAL PASS OF ROLLER TO BE UNDER SUPERVISION OF GEOTECHNICAL ENGINEER FOR THE DETECTION OF ANY HEAVING OR SOFT SPOTS.

4 WHERE HEAVING OR SOFT SPOTS ARE IDENTIFIED REFER TO THE GEOTECHNICAL ENGINEER FOR ADVICE.

5 TYPICALLY HEAVING AREAS SHOULD BE LOCALLY REMOVED TO A STABLE BASE AND REPLACED WITH ENGINEERED FILL TO THIS SPECIFICATION.

6 ALTERNATIVES TO THE FULL DEPTH REMOVAL OF UNSUITABLE MATERIAL MAY BE APPROVED BY THE GEOTECHNICAL ENGINEER AS REQUIRED.

7 WHERE SOIL SOFTENING OCCURS FOLLOWING RAINFALL SUBGRADE IS TO BE EXCAVATED TO A FIRM BASE AND REPLACED WITH ENGINEERED FILL AT THE CONTRACTORS EXPENSE.

EDGE COMPACTION

1 OUTER EDGE OF FILL LAYERS TO EXTEND A HORIZONTAL DISTANCE AT LEAST 1.0 M BEYOND THE DESIGN GEOMETRY.

2 ROLLER MUST EXTEND OVER THE EDGE OF EACH PLACED LAYER IN ORDER TO SEAL THE BATTER SURFACE.

3 ON COMPLETION OF FILLING, EXCESS UNDER-COMPACTED EDGE FILL TO BE TRIMMED BACK TO DESIGN GEOMETRY.

SERVICE TRENCHES

1 BACKFILLING OF SERVICE TRENCHES IS TO BE COMPLETED TO THE PROJECT ENGINEERING FILL SPECIFICATION EXCEPT AS AMENDED BELOW:

2 BACKFILL IS TO BE PLACED IN MAXIMUM 100 MM LOOSE LAYERS.

3 BACKFILL TO CONTAIN NO MATERIAL > 40 MM.

4 COMPACTION TO UTILISE TRENCH ROLLER OR A PAD FOOT ROLLER ON ATTACHMENT FITTED TO EXCAVATOR.

5 COMPACTION TESTING TO BE COMPLETED TO PROJECT SPECIFICATION.

COMPACTION TESTING

1 DENSITY TESTING IS TO BE UNDERTAKEN TO CONFIRM COMPACTION. LEVEL ONE (1) TESTING IS TO BE CARRIED OUT FOR ANY FILLING OPERATIONS CARRIED OUT IN ACCORDANCE WITH THE DEVELOPMENT CONSENT.

2 ANY FILLING SHALL BE TESTED TO ESTABLISH THE FIELD DRY DENSITY EVERY 300MM RISE IN VERTICAL HEIGHT.

3 STE FILL – THE MINIMUM COMPACTION REQUIREMENT IS 95% STANDARD COMPACTION. TEST SITES SHALL BE LOCATED RANDOMLY ACROSS THE FILL SITE WITH ONE (1) TEST PER 500M2 (MIN ONE (1) TEST PER 300MM LAYER). THIS EXCLUDES PAVEMENTS AND STRUCTURAL FILL UNDER AND AROUND STRUCTURES.

4 TRENCH BACKFILL – TESTING AT RATE OF AT LEAST 1 TEST PER TWO LAYER PER 40 LINEAR METRES OF TRENCH.

GITA REPORTING

1 A FORTNIGHTLY REPORT IS TO BE PREPARED BY THE GITA AND SUBMITTED TO THE GEOTECHNICAL ENGINEER FOR REVIEW.

2 REPORT IS TO DETAIL DAILY SITE REPORTS; NATA ENDORSED TESTING RESULTS AND COMPLETED LOT REPORTS SHOWING TESTING LOCATIONS.

3 FINAL LEVEL 1 SUPERVISION REPORT TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER TO CONFIRM CONFORMITY TO PROJECT SPECIFICATION.

4 ANY NON-CONFORMANCE TO THE PROJECT SPECIFICATIONS OR PLANS TO BE RECTIFIED BY THE CONTRACTOR AT THEIR SOLE COST TO THE DIRECTION AND SATISFACTION OF THE ENGINEER AND THE SUPERINTENDENT.

PAVEMENTS – GENERAL

1 PAVEMENT MATERIAL TYPES AND LAYER THICKNESSES SHALL BE AS SHOWN IN THE DESIGN DRAWINGS AND COMPLY WITH THE REQUIREMENTS OF COUNCIL'S ROADWORKS DESIGN AND CONSTRUCTION SPECIFICATION.

2 THE CONTRACTOR SHALL SUBMIT DETAILS OF ALL CONSTITUENTS OF THE PROPOSED BASE AND SUBBASE MATERIALS, INCLUDING SOURCE OF SUPPLY AND THE PROPOSED TYPE AND PROPORTION OF ANY BINDER, TO THE SUPERINTENDENT, SUPPORTED WITH TEST RESULTS FROM A NATA REGISTERED LABORATORY CONFIRMING THAT THE CONSTITUENTS COMPLY WITH COUNCIL REQUIREMENTS.

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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DRAWING TITLE
GENERAL LEGEND AND NOTES (SHEET 2)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907434	PS01	R16	PS01-ZZ01	A

DRAWING ID: P1907434-PS01-R16-ZZ01

3 THE CONTRACTOR MUST RECEIVE THE SUPERINTENDENT'S WRITTEN AUTHORITY TO PROCEED PRIOR TO DELIVERY OF PAVEMENT MATERIALS TO SITE.

4 FIELD DENSITY TESTS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS1289.5.3.1, OR, WITH THE SUPERINTENDENT'S CONCURRENCE, WITH A NUCLEAR DENSITY METER IN ACCORDANCE WITH RELEVANT STANDARDS.

5 TESTING OF THE SUBGRADE SHALL BE PERFORMED BY PROOF-ROLLING, UTILISING A MINIMUM 12 TONNE STATIC MASS SMOOTH DRUM ROLLER WITHOUT VIBRATION, UNDER THE SUPERVISION OF COUNCIL. ADEQUATE COMPACTION IS INDICATED BY NO VISIBLE DEFLECTION (WITH THE HUMAN EYE) DURING

EACH PASS OF THE ROLLER. SUBGRADE PROOF-ROLLING SHALL BE SUPPLEMENTED BY COMPACTIVE TESTING AS PER AS 3798.

6 PAVEMENT MATERIAL SHALL NOT BE SPREAD UPON AN UNDERLYING SUBGRADE OR PAVEMENT LAYER THAT HAS NOT RECEIVED THE APPROPRIATE COMPACTION CERTIFICATION.

7 UNBOUND MATERIALS SHALL NOT BE SPREAD UPON AN UNDERLYING PAVEMENT LAYER WHICH HAS A MOISTURE CONTENT EXCEEDING 90%, THE LABORATORY OPTIMUM MOISTURE CONTENT OR WHICH HAS BECOME RUTTED OR MIXED WITH FOREIGN MATTER. THE UNDERLYING LAYER SHALL BE CORRECTED TO COMPLY BEFORE SPREADING THE NEXT LAYER OF PAVEMENT.

8 THE COST OF CORRECTING AN UNDERLYING LAYER TO COMPLY SHALL BE BORNE BY THE CONTRACTOR.

9 EACH LAYER OF MATERIAL SHALL BE DEPOSITED AND SPREAD IN A CONCURRENT OPERATION AND, AFTER COMPACTION, THE FINISHED SURFACE LEVELS OF THE BASE AND SUBBASE COURSES SHALL BE WITHIN THE PERMITTED TOLERANCES STATED IN COUNCILS SPECIFICATION WITHOUT SUBSEQUENT ADDITION OF MATERIAL. THE THICKNESS OF EACH COMPACTED LAYER SHALL BE NEITHER LESS THAN 100MM NOR MORE THAN 150MM FOR ALL PAVEMENT LAYER TYPES, UNLESS APPROVED BY THE SUPERINTENDENT.

10 WHEN SPREAD FOR COMPACTION PROCESS THE MOISTURE CONTENT OF THE BASE OR SUBBASE MATERIALS SHALL BE IN THE RANGE OF 60-90% OF LABORATORY OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289.5.2.

11 EACH LAYER OF THE BASE AND SUBBASE COURSES SHALL BE UNIFORMLY COMPACTED OVER ITS ENTIRE AREA AND DEPTH TO SATISFY THE REQUIREMENT OF RELATIVE COMPACTION SET OUT IN COUNCILS ROADWORKS SPECIFICATION.

12 WATERING AND COMPACTION PLANT SHALL NOT BE ALLOWED TO STAND ON THE PAVEMENT BEING COMPACTED.

13 ON SECTIONS OF PAVEMENT WITH ONE-WAY CROSSFALL, COMPACTION SHALL BEGIN AT THE LOW SIDE OF THE PAVEMENT AND PROGRESS TO THE HIGH SIDE. ON CROWNED SECTIONS, COMPACTION SHALL BEGIN AT THE SIDES AND PROGRESS TOWARDS THE CROWN. EACH PASS OF THE ROLLERS SHALL BE PARALLEL WITH THE ROADWAY CENTRELINE AND UNIFORMLY OVERLAP EACH PRECEDING PASS. THE OUTER METRE OF BOTH SIDES OF THE PAVEMENT SHALL RECEIVE AT LEAST TWO MORE PASSES BY THE COMPACTION PLANT THAN THE REMAINDER OF THE PAVEMENT.

14 AT LOCATIONS WHERE IT WOULD BE IMPRACTICABLE TO USE SELF PROPELLED COMPACTION PLANT, COMPACTION SHALL BE ACHIEVED BY HAND-OPERATED PLANT APPROVED BY THE SUPERINTENDENT.

15 IF ANY UNSTABLE AREAS DEVELOP DURING ROLLING, THE UNSTABLE MATERIAL SHALL BE REJECTED AND REMOVED FOR THE FULL DEPTH OF THE LAYER, DISPOSED OF AND REPLACED WITH FRESH MATERIAL. THIS OPERATION WILL BE AT THE COST OF THE CONTRACTOR.

16 THE PLACEMENT OF SUBSEQUENT LAYERS SHALL NOT BE ALLOWED UNTIL THE REQUISITE TESTING HAS BEEN COMPLETED AND THE TEST RESULTS FOR EACH LAYER HAVE BEEN ACCEPTED BY THE SUPERINTENDENT.

17 ANY UNBOUND MATERIAL IN A LAYER THAT HAS ATTAINED THE SPECIFIED RELATIVE COMPACTION BUT SUBSEQUENTLY BECOMES WETTED UP SHALL BE DRIED OUT AND, IF NECESSARY, UNIFORMLY RECOMPACTED AND TRIMMED TO MEET THE SPECIFIED DENSITY REQUIREMENTS AND LEVEL TOLERANCES.

18 COVER/LIVE LOADING REQUIREMENTS IN ACCORDANCE WITH AS/NZS 3725:2007. MINIMUM 500MM COMPACTED FILL REQUIRED OVER CLASS 3 PIPE PRIOR TO ACCESS BY 15TONNE EXCAVATOR AND COMPACTION WHEEL. 550MM FOR 10 TONNE VIBRATORY SMOOTH DRUM ROLLER.

19 THE CONTRACTOR IS TO UNDERTAKE ALL PAVEMENT SEALING WORKS IN ACCORDANCE WITH THE PAVEMENT DESIGN WITHIN THE CIVIL WORKS ENGINEERING PLANS AND COUNCIL'S SPECIFICATION FOR ROADWORKS.

PAVEMENT - ACCEPTANCE OF COMPACTED LAYERS

1 ACCEPTANCE OF WORK, WITH RESPECT TO COMPACTION, SHALL BE BASED ON DENSITY TESTING OF THE WORK IN 'LOTS' WITH A LOT DEFINED AS:

- COVERING A SINGLE LAYER OF WORK CONSTRUCTED UNDER UNIFORM CONDITIONS IN A CONTINUOUS OPERATION;
- FOR UNBOUND MATERIALS MAY BE EQUAL TO A DAYS OUTPUT USING THE SAME MATERIAL.

2 THE SUPERINTENDENT SHALL ASSESS COMPACTION OF EACH LOT BASED ON RANDOM SAMPLING OF TEST LOCATIONS FOR IN-SITU DRY DENSITY TESTING.

3 THE CONTRACTOR SHALL ARRANGE FOR TESTING TO ASSESS COMPACTION ON THE BASIS OF 10 TESTS PER 5000 SQ.M WITH A MINIMUM OF 6 TESTS PER LOT, AND PRESENT THE RESULTS TO THE SUPERINTENDENT FOR APPROVAL.

4 THE COSTS OF ALL TESTING FOR COMPACTION ASSESSMENT SHALL BE BORNE BY THE CONTRACTOR.

5 ACCEPTABLE COMPACTION PERFORMANCE STANDARDS ARE SUMMARISED AS FOLLOWS:

- BASE AND SUBBASE MIN 98 % MODIFIED COMPACTIVE EFFORT. REFER TO COUNCILS SPECIFICATION FOR ROADWORK & DRAINAGE ASSOCIATED WITH SUBDIVISION OR OTHER DEVELOPMENT.
- SUBGRADE TO BE 100 % STANDARD COMPACTIVE EFFORT.
- FILL TO BE 95 % STANDARD COMPACTIVE EFFORT.

PAVEMENT - PROPERTY ENTRANCE

3 CONCRETE SLAB SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING THICKNESS:

FOR MORE THAN TWO DEWELLINGS,

COMMERCIAL AND LIGHT INDUSTRIAL 32MPA CONCRETE, 150MM THICK + 1 LAYER OF F72 FABRIC ON 150MM DGB20 SUB-BASE.

4 REINFORCING SHALL HAVE APPROXIMATELY 40MM TOP COVER AND SHOULD BE SUPPORTED DURING CONSTRUCTION BY BAR CHAIRS AT 1 METER CENTRES. THE REINFORMENT SHOULD NOT BE CONTINUOUS THROUGH A CONTROL JOINT.

5 A 150MM THICK COMPACTED, GRANULAR SUB-BASE SHALL BE PROVIDED FOR ALL COMMERICAL FOOTWAY CROSSINGS. A 50MM THICK COMPACTED, GRANULAR SUB-BASE SHALL BE PROVIDED UNDER ALL OTHER CONCRETE FOOTWAY CROSSINGS.

6 MASTIC JOINTS 5MM THICK ARE TO BE PROVIDED AT THE PROPOERTY BOUNDARY AND AT THE REAR OF THE GUTTER CROSSING (LAYBACK). DUMMY JOINTS SHALL BE PROVIDED AT EITHER SIDE OF THE FOOTWAY WHERE APPLICABLE.

7 CONCRETE CROSSOVERS SHOULD USUALLY HAVE A BROOM FINISH UNLESS IT HAS A GRADIENT STEEPER THAN 1 (VERTICAL) TO 5 (HORIZONTAL) WHEN IT SHOULD BE FINSIHED WITH A WOODEN FLOAT. THE FINISH IS TO BE A UNIFORM, NON-SLIP SURFACE. ALL EDGES ARE TO BE ROUNDED WITH A 5MM EDGING TOOL.

8 ANY DAMAGED, DEFACED OR OTHERWISE UNSATISFACTORY SECTION SHALL BE REMOVED AND REPLACED.

UTILITIES

1 TELSTRA AND ELECTRICAL SERVICES LOCATIONS SHOWN ON CIVIL PLANS AND ARE INDICATIVE ONLY.

2 CONTRACTOR TO ENSURE THAT DETAILED ELECTRICAL AND SERVICE DESIGNS AND REQUIREMENTS ARE OBTAINED PRIOR TO CONSTRUCTION.

3 ALL UTILITY WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS, SERVICE PROVIDER REQUIREMENTS AND COUNCIL SPECIFICATIONS.

4 CONTRACTOR TO ENSURE THAT RELEVANT AGREEMENTS AND ARRANGEMENTS ARE IN PLACE BETWEEN REQUIRED AGENCIES AND SERVICE PROVIDERS (E.G. TELSTRA, AUSGRID, COUNCIL) FOR ALL WORKS.

5 CONTRACTOR SHALL ENSURE THAT APPROPRIATE UTILITY SERVICES ABOVE GROUND MARKERS AND BELOW GROUND PROTECTION / IDENTIFICATION MEASURES ARE PLACED IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS, SERVICE PROVIDER REQUIREMENTS AND COUNCIL SPECIFICATIONS.

6 BASE OF SERVICES TRENCHES TO BE GRADED AT A MINIMUM OF 1% TO EITHER SUBSOIL OR STORMWATER DRAINAGE LINES.

7 CONTRACTOR SHALL ENSURE THAT ALL LOCATED AND NEW UTILITY SERVICES WITHIN AND OUTSIDE THE SITE ARE SURVEYED BY A DULY QUALIFIED SURVEYOR AS PART OF THE "WORK AS EXECUTED" RECORDS.

STORMWATER

1 STORMWATER TO BE IN ACCORDANCE WITH COUNCIL REQUIREMENTS AND THE LATEST VERSION OF THE FOLLOWING APPLICABLE STANDARDS:

A AS/NZS 3500 (ALL PARTS)
B AS/NZS 2566.1
C AS/NZS 2566.2
D AS/NZS 5065
E AS1597.1 OR AS1597.2
F AS 4139
G AS 3725
H AS/NZS 1254
I AS/NZS 2032

2 ALL PIPES TO BE SPIGOT AND SOCKET, RUBBER RING JOINTED WITH MINIMUM GRADE OF SN4. CULVERTS TO BE IN ACCORDANCE WITH COUNCIL SPECIFICATIONS.

3 PIPELINES AND DRAINAGE LINES IN ROADS AND TRAFFICABLE AREAS MUST BE BACKFILLED WITH APPROVED GRANULAR MATERIAL UNLESS OTHERWISE APPROVED BY COUNCIL/ENGINEER.

4 THREE (3) METRES OF SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE STOCKING MUST BE PROVIDED TO ALL DOWNSTREAM PITS & HEADWALLS

5 ALL PITS MUST BE BENCHED AND STREAMLINED. PROVIDE SL72 REINFORCEMENT AND GALVANISED STEP IRONS IN ALL PITS OVER 1.2-METRES DEEP AS MEASURED FROM THE TOP OF GRATE TO THE PIT INVERT.

6 CONCRETE TO HAVE MINIMUM COMPRESSIVE STRENGTH OF 32MPA AT 28-DAYS UNLESS OTHERWISE APPROVED BY COUNCIL ENGINEER.

7 ADEQUATE PROVISION IS TO BE MADE TO PREVENT SCOURING AND SEDIMENTATION FOR ALL DRAINAGE WORKS IN ACCORDANCE WITH COUNCIL'S REQUIREMENTS.

8 CATCH DRAINS MUST BE CONSTRUCTED AS REQUIRED BY THE APPROVED PLANS OR PCA.

9 SOIL AND WATER MANAGEMENT PLANS ARE TO BE FOLLOWED FOR ALL DISTURBED SITES AND ADHERED TO AT ALL TIMES DURING THE CONSTRUCTION AND MAINTENANCE PERIODS.

10 REFER TO COUNCIL'S STANDARD DRAWING WSC.D5.6 AND WSC.D5.11 FOR CONSTRUCTION DETAIL.

REVEGETATION OF DISTURBED AREAS

1 ALL EARTHWORK AREAS ARE TO BE REINSTATED BY THE CONTRACTOR TO THE DIRECTION AND SATISFACTION OF THE SUPERINTENDENT. AS A MINIMUM, ALL AREAS EXCLUDING PAVEMENT AND ROCK LINED AREAS OR OTHER AREAS NOMINATED FOR SPECIFIC LANDSCAPING ARE TO BE FINISHED WITH 150 MM THICK LAYER OF SITE SOURCED (OR APPROVED EXTERNAL SUPPLY TOPSOIL) AND SPRAY GRASSED OR TURFED ASAP FOLLOWING COMPLETION OF WORKS IN ANY ONE AREA.

2 ALL TRAFFIC IS TO BE EXCLUDED FROM NEWLY RE-VEGETATED AREAS BY THE ERECTION OF SUITABLE TEMPORARY BARRIER FENCING.

3 SITE SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE MAINTAINED UNTIL THE VEGETATION IS ESTABLISHED OR OTHERWISE DIRECTED BY THE SUPERINTENDENT OR ENGINEER.

4 THE CONTRACTOR IS RESPONSIBLE FOR THE REVEGETATED AREAS FOR THE PERIOD SPECIFIED IN THE CONTRACT.

TREES

1 ALL TREE PROTECTION REQUIREMENTS IF OUTLINED IN A PROJECT BIODIVERSITY AND CONSERVATION MANAGEMENT PLAN (BCMP) OR VEGETATION MANAGEMENT PLAN (VMP) ARE TO BE COMPLIED WITH ALONG WITH THE REQUIREMENTS OF THE PROJECT REF.

2 A TREE RETENTION PLAN IS TO BE KEPT ON SITE INDICATING TREES TO BE RETAINED AND AREAS LEFT UNDISTURBED THAT ARE TO BE CORDONED OFF FROM CONSTRUCTION WORKS.

3 PRIOR TO WORK COMMENCING, TREE PROTECTION FENCING MUST BE ERECTED AROUND THE TREES THAT ARE TO BE RETAINED AT A 3M SETBACK. THE TREE FENCING MUST BE CONSTRUCTED OF 1.8 METRE CYCLONE CHAINMESH FENCE'. THE TREE PROTECTION FENCING MUST BE MAINTAINED IN GOOD WORKING ORDER UNTIL THE COMPLETION OF ALL BUILDING OR DEVELOPMENT WORKS. A STATEMENT OF COMPLIANCE FROM A QUALIFIED TREE SURGEON OR ENVIRONMENTAL CONSULTANT SHALL BE SUBMITTED TO THE PCA PRIOR TO THE ISSUE OF THE CONSTRUCTION CERTIFICATE. PENALTIES APPLY FOR NON-COMPLIANCE.

4 TO PREVENT DAMAGE TO TREE ROOTS, EXCAVATION (FOR SERVICES AND OTHER WORKS), CHANGE OF SOIL LEVEL (CUT OR FILL), PARKING (VEHICLES OR PLANT), OR PLACEMENT OF BUILDING MATERIALS (INCLUDING DISPOSAL OF CEMENT SLURRY AND WASTE WATER) WITHIN THE SPECIFIED TREE PROTECTION SETBACKS, AND WITHIN 3M OF ALL OTHER TREES TO BE RETAINED ONSITE, IS STRICTLY FORBIDDEN. NO TREE ROOTS LOCATED WITHIN THE SPECIFIED TREE SETBACK/S, SHALL BE SEVERED OR INJURED IN THE PROCESS OF ANY SITE WORKS DURING THE CONSTRUCTION OR LANDSCAPING PHASES OF THE APPROVED PROJECT. THE APPLICANT SHALL ENSURE THAT ALL UNDERGROUND SERVICES (I.E. WATER, DRAINAGE, GAS, AND SEWER) SHALL NOT BE LAID WITHIN 3M OF ANY TREE LOCATED ON THE PROPERTY PROTECTED UNDER COUNCIL'S TREE PRESERVATION ORDER OR LISTED FOR PROTECTION IN THE APPROVED PROJECT BCMP/VMP.

SIGNAGE & LINE MARKING

1 ON-SITE SIGNAGE IS REQUIRED TO CLEARLY IDENTIFY THE PCA AND THE PRINCIPAL CONTRACTOR (THE COORDINATOR OF THE BUILDING WORK) PURSUANT TO THE ENVIRONMENTAL PLANNING AND ASSESSMENT AMENDMENT (QUALITY OF CONSTRUCTION).

2 ALL SIGNAGE REQUIREMENTS AS SPECIFIED IN THE CTMP ARE TO BE IMPLEMENTED PRIOR TO AND DURING CONSTRUCTION WORKS.

3 WHERE TEMPORARY SIGNS ARE TO BE REUSED THEY ARE TO BE WASHED AND CLEANED WHERE REQUIRED.

4 ALL EXISTING SIGNS WHICH ARE DAMAGED AND NON LEGIBLE ARE TO BE REPLACED.

5 PERMANENT ROAD SIGNPOSTING AND LINE MARKING SHALL CONFORM TO AS1742.2 'TRAFFIC CONTROL DEVICES FOR GENERAL USE'. RAISED RETRO-REFLECTIVE PAVEMENT MARKERS TO CONFORM TO AS1906 'RETRO-REFLECTIVE MATERIALS AND DEVICES FOR ROAD TRAFFIC CONTROL PURPOSES'. ALL APRONS AND KERB FACES ON ISLANDS TO BE DELINEATED BY REFLECTIVE WHITE MARKING. INSTALLATION TO BE IN ACCORDANCE WITH PLAN APPROVED BY LOCAL TRAFFIC COMMITTEE AND TO COUNCIL SPECIFICATIONS.

6 CONTRACTOR TO INSTALL STREET SIGNS TO COUNCIL STANDARD.

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
16 TORRENS ROAD, GUNNEDAH, NSW
LOTS 1 AND 2 DP 1226992

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DRAWING TITLE: GENERAL LEGEND AND NOTES (SHEET 3)

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

SOIL AND WATER MANAGEMENT (SEDIMENT AND EROSION CONTROL PLAN)

1 TEMPORARY SEDIMENTATION AND EROSION CONTROLS (SEC) ARE TO BE CONSTRUCTED PRIOR TO COMMENCEMENT OF ANY WORK TO ELIMINATE THE DISCHARGE OF SEDIMENT FROM THE SITE. THE CONTROLS ARE TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF LANDCOM'S "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION", VOLUME 1, 4TH EDITION, MARCH 2004, (THE BLUE BOOK).

2 THE CONTRACTOR IS TO INFORM ALL SUBCONTRACTORS OF THEIR RESPONSIBILITIES IN RELATION TO SEC.

3 THE CONTRACTOR SHALL REGULARLY MAINTAIN SEC DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES BEFORE NO MORE THAN 60% OF THEIR SEDIMENT STORAGE CAPACITY IS LOST. ALL THE SILT REMOVED SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT.

4 NO SILT IS TO BE PLACED OUTSIDE THE LIMIT OF WORKS. THE PERIOD FOR MAINTAINING THESE DEVICES SHALL BE AT LEAST UNTIL ALL DISTURBED AREAS ARE REVEGETATED AND FURTHER AS MAY BE DIRECTED BY THE SUPERINTENDENT OR ENGINEER.

5 AREAS OF SITE DISTURBANCE ARE TO BE MINIMISED AT ANY ONE TIME WITH DEVELOPMENT STAGED SUCH THAT A NEW AREA IS NOT TO COMMENCE UNTIL THE PREVIOUS DISTURBED AREA IS FULLY STABILISED.

6 ALL WORKS MUST BE PERFORMED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.

7 THE CONTRACTOR SHALL PROTECT OVERLAND FLOW PATHS, DRAINS, ADJOINING LAND AND DOWNSTREAM WATER QUALITY FROM SEDIMENTATION. ACCORDINGLY, SEDIMENT AND EROSION CONTROL MEASURES MUST BE IMPLEMENTED PRIOR TO EXCAVATION, AND MAINTAINED DURING CONSTRUCTION.

8 ACCESS TO AND EXIT FROM THE SITE SHALL BE RESTRICTED TO ONE DESIGNATED APPROVED AREA. INCLUDE ADEQUATE MEASURES TO REMOVE SOIL FROM VEHICLES LEAVING THE SITE SO AS TO MAINTAIN PUBLIC ROADS IN A CLEAN CONDITION.

9 VEGETATION NOT DIRECTLY AFFECTED BY THE PROPOSAL MUST BE PROTECTED BY A "NO GO" BOUNDARY TO FACILITATE THE FILTRATION AND COLLECTION OF RUNOFF POLLUTION EMANATING FROM THE WORKS. CONTRACTOR TO ENSURE THAT NO SPOIL OR FILL ENCROACHES UPON ADJACENT BUSHLAND FOR THE DURATION OF THE WORKS.

10 ALL DISTURBED AREAS ARE TO BE STABILISED BY TURFING, MULCHING, PAVING OR OTHERWISE SUITABLY STABILISED WITHIN 30 DAYS OF COMPLETION.

11 DISTURBED AREAS OUTSIDE THE SPECIFIED WORKS AREAS SHALL BE REHABILITATED/REINSTATED BY THE CONTRACTOR USING APPROVED METHODS OF EROSION MITIGATION SUCH AS MULCHING WITH INDIGENOUS PLANT SPECIES OR OTHER SUITABLE APPROVED STABILISING PROCESSES WITHIN SEVEN DAYS AS DIRECTED BY THE SUPERINTENDENT.

12 TOPSOIL IS TO BE LIGHTLY ROLLED TO AVOID EROSION.

13 THE FOLLOWING SEDIMENT CONTROL MEASURES ARE REQUIRED TO BE PROVIDED IN CONJUNCTION WITH THE ATTACHED SEDIMENT AND EROSION CONTROL PLAN.

B ALL RUNOFF AND EROSION CONTROLS ARE TO BE INSTALLED BEFORE ANY WORKS ARE CARRIED OUT AT THE SITE.

C ALL CONTAMINATED SURFACE WATERS AND DEBRIS FROM THE SITE MUST BE SCREENED, COLLECTED AND POLLUTANTS CAPTURED WITHIN THE SITE.

D STORMWATER INLETS AND DRAINS RECEIVING STORMWATER MUST BE PROTECTED AT ALL TIMES DURING WORK ON SITE.

E MOVEMENT OF WATER MUST BE CONTROLLED BY DIVERTING UPSLOPE CLEAN SURFACE RUNOFF (VIA DIVERSION DRAINS AND SEDIMENT FENCING) AROUND THE DISTURBED AREAS.

F CONTAMINATION OF SURFACE WATERS ON DOWNSLOPE LANDS MUST BE MITIGATED BY INSTALLING SEDIMENT CONTROL FENCES DOWNSLOPE OF THE DISTURBED AREAS TO CAPTURE SEDIMENT AND DEBRIS ESCAPING FROM THE SITE.

G GEOFABRIC SEDIMENT FENCING MUST BE INSTALLED PARALLEL TO THE PROPOSED WORKS OR ALONG THE NATURAL CONTOURS OF THE SITE.

H SEDIMENT FENCING MUST BE SECURED BY POST (WHERE METAL STAR PICKETS ARE USED, PLASTIC SAFETY CAPS SHALL BE USED) AT TWO-METRE INTERVALS WITH THE GEOTEXTILE FABRIC EMBEDDED 200MM INTO SOIL. ONE METRE RETURNS MUST BE INSTALLED AT TWENTY-METRE INTERVALS ALONG THE SEDIMENT FENCING.

I STOCKPILES OF TOPSOIL, SAND, AGGREGATE, SPOIL OR OTHER MATERIAL SHALL BE STORED CLEAR OF ANY DRAINAGE PATH OR EASEMENT, NATURAL WATERCOURSE, FOOTPATH, KERB OR ROAD SURFACE AND SHALL HAVE MEASURES IN PLACE TO THE SATISFACTION OF THE SUPERINTENDENT ACTING REASONABLY, TO PREVENT THE MOVEMENT OF SUCH MATERIAL OFF SITE.

J DRIVEWAY ACCESS PATHS MUST BE STABILISED WITH NEEDLE-PUNCHED GEOTEXTILE COVERED BY A MINIMUM 150MM THICK LAYER OF COARSE GRAVEL, AGGREGATE, OR RECYCLED CRUSHED CONCRETE.

K SEDIMENT TRAPS ARE TO BE INSTALLED DOWNSLOPE OF THE SITE TO FACILITATE THE CAPTURE OF SEDIMENT.

L STREET SWEEPING MUST BE UNDERTAKEN AS REQUIRED DURING AND AFTER EXCAVATION AND CONSTRUCTION UNTIL THE SITE IS FULLY ESTABLISHED.

M THE CONTRACTOR SHALL MAINTAIN DUST CONTROL UNTIL FINAL COMPLETION OF WORKS.

N DURING WINDY WEATHER, LARGE, DISTURBED, UNPROTECTED AREAS SHALL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

O EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED IN GOOD WORKING ORDER, AND BE REPAIRED OR REPLACED THROUGHOUT THE COURSE OF WORKS ON SITE.

P THE CONTRACTOR'S RESPONSIBILITY IS TO ENSURE ALL NECESSARY MEASURES ARE TAKEN SO AS TO PROTECT ALL DISTURBED AREA. ALL ADDITIONAL COSTS ARE TO BE REFLECTED IN THE CONTRACT PRICE EVEN IF SUCH MEASURES ARE NOT INDICATED ON THE SEDIMENT AND EROSION CONTROL PLAN.

Q THE CONTRACTOR MUST COMMENCE REHABILITATION IMMEDIATELY FOLLOWING ANY SITE DISTURBANCE INCLUDING REGRADING, FORMATION AND REVEGETATION WORKS.

R THE CONTRACTOR SHALL REGULARLY WATER REVEGETATED AREAS UNTIL EFFECTIVE COVER HAS PROPERLY ESTABLISHED AND VEGETATION IS GROWING VIGOROUSLY. MAINTENANCE IS TO CONTINUE UNTIL ALL VEGETATION IS WELL ESTABLISHED AND INDEPENDENT OF FURTHER WATER APPLICATIONS.

S KIKUYU NOT TO BE USED FOR TURFING OF ANY DISTURBED AREA.

GEOTEXTILES

1 GEOTEXTILES SHALL BE NON-WOVEN, NEEDLE PUNCHED, CONTINUOUS FILAMENT AND POLYESTER.

2 ALL GEOTEXTILE USED ARE TO COMPLY WITH AS 3706.

3 GEOTEXTILES WITH THE FOLLOWING MINIMUM PROPERTIES TO RTA R63 SHALL BE USED WHERE SPECIFIED WITHIN THE PLANS:-

CLASS	GRAB TENSILE STRENGTH (N) Q	TRAPEZOIDAL TEAR STRENGTH (N) Q	CBR BURST STRENGTH (N)	G RATING (-) Q	PORE SIZE (UM) MEAN	FLOW RATE (L/M²/S) MEAN
A	500	180	1720	900	≤ 120	>50
B	700	250	2250	1350	≤ 120	>50
C	900	350	3200	2000	≤ 120	>50
D	1200	450	4400	3000	≤ 120	>50
E	1600	650	6400	4500	≤ 120	>50

4 GEOTEXTILE MUST BE DELIVERED TO THE SITE AT LEAST 14 DAYS PRIOR TO COMMENCEMENT OF INSTALLATION.

5 CONTRACTOR TO PROVIDE A CERTIFICATE OF COMPLIANCE THAT THE GEOTEXTILE COMPLIES WITH TEST RESULTS REPORTED ON NATA ENDORSED TEST DOCUMENTS; THE CERTIFICATE MUST NOT BE MORE THAN 12 MONTHS OLD.

6 AT ALL JOINS GEOTEXTILES ARE TO BE LAPPED BY NOT LESS THAN 300 MM OR GREATER IF SPECIFIED BY MANUFACTURER. WHERE UNDERLYING MATERIAL IS < CBR 2 LAP IS TO BE INCREASED AS SPECIFIED BY ENGINEER OR SUPPLIER.

7 WHERE INITIAL LAYER OVER GEOTEXTILE HAS D50<150 MM THE INITIAL LAYER OF PLACED LOOSE MATERIAL IS TO BE A MINIMUM OF 300 MM OR 3 TIMES THE D50 (WHICHEVER THE GREATER).

8 WHERE INITIAL LAYER OVER GEOTEXTILE HAS D50>150 MM THE INITIAL LAYER OF PLACED LOOSE MATERIAL IS TO BE A MINIMUM OF 500 MM OR 2 TIMES THE D50 (WHICHEVER THE GREATER).

9 PLANT AND EQUIPMENT ARE NOT TO TRAVERSE PLACED GEOTEXTILE WITHOUT SUPERINTENDENTS PERMISSION UNTIL FIRST LAYER OF COVER MATERIAL IS PLACED.

PRE-COMMENCEMENT BRIEFING

1 A PRE-CONSTRUCTION MEETING IS TO BE HELD BETWEEN PROJECT ENGINEERS, THE SUPERINTENDENT AND CONTRACTOR SO ALL PARTIES INVOLVED UNDERSTAND EARTHWORK REQUIREMENTS AND POTENTIAL DIFFICULTIES.

2 LINES OF COMMUNICATION ARE TO BE CLEARLY DEFINED AT THIS MEETING.

HERITAGE

1 SHOULD ANY POTENTIAL ARCHAEOLOGICAL DEPOSIT LIKELY TO CONTAIN ABORIGINAL ARTEFACTS BE IDENTIFIED DURING THE PLANNING OR HISTORICAL ASSESSMENT STAGE, APPLICATION SHALL BE MADE BY A SUITABLY QUALIFIED ARCHAEOLOGIST TO THE NATIONAL PARKS AND WILDLIFE SERVICE (NPWS) FOR AN EXCAVATION PERMIT FOR ABORIGINAL RELICS.

2 THE APPLICANT SHALL COMPLY WITH THE CONDITIONS AND REQUIREMENTS OF ANY EXCAVATION PERMIT REQUIRED, AND ARE TO ENSURE THAT ALLOWANCE FOR COMPLIANCE WITH THESE CONDITIONS AND REQUIREMENTS INTO THE DEVELOPMENT PROGRAM.

3 SHOULD ANY HISTORICAL RELICS BE UNEXPECTEDLY DISCOVERED IN ANY AREAS OF THE SITE, THEN ALL EXCAVATION OR DISTURBANCE TO THE AREA IS TO STOP IMMEDIATELY AND THE HERITAGE COUNCIL OF NSW SHOULD BE INFORMED IN ACCORDANCE WITH SECTION 146 OF THE HERITAGE ACT 1977.

4 SHOULD ANY ABORIGINAL RELICS BE UNEXPECTEDLY DISCOVERED IN ANY AREAS OF THE SITE, THEN ALL EXCAVATION OR DISTURBANCE TO THE AREA IS TO STOP IMMEDIATELY AND THE NATIONAL PARK AND WILDLIFE SERVICE (NPWS) SHOULD BE INFORMED IN ACCORDANCE WITH SECTION 91 OF THE NATIONAL PARK AND HERITAGE ACT, 1974.

5 IN THE UNLIKELY EVENT THAT SKELETAL REMIANS ARE IDENTIFIED, WORK MUST CEASE IMMEDIATELY IN THE VICINITY OF THE REMAINS AND THE AREA CORDONED OFF. THE PROPONENT WILL NEED TO CONTACT THE NSW POLICE CORONER TO DETERMINE IF THE MATERIAL IS OF ABORIGINAL ORIGIN. IF DETERMINED TO BE ABORIGINAL, THE PROPONENT MUST CONTACT THE OEH ENVIROLINE 131555, A SUITABLY QUALIFIED ARCHAEOLOGIST AND REPRESENTATIVES OF THE LOCAL REGISTERED ABORIGINAL PARTIES TO DETERMINE AN ACTION PLAN FOR THE MANAGEMENT OF SKELETAL REMAINS, FORMULATE MANAGEMENT RECOMMENDATIONS AND TO ASCERTAIN WHEN WORK CAN RECOMMENCE.

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SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: OUTLINE PLANNING CONSULTANTS

PROJECT NAME/PLANSET TITLE
RESOURCE RECOVERY FACILITY
CONCEPT CIVIL WORKS
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LOTS 1 AND 2 DP 1226992

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