

24 April 2017

KF110816- C015

Dr Mark Jackson
Jackson Environment & Planning
119 Willoughby Road
CROWS NEST 2065

Dear Mark,

Re SSD 5300 Resource Recovery Facility, 30 Wyllie Road, Kembla Grange

This letter replaces our advice dated 25 January 2017.

I understand that an application to modify SSD5300 is being prepared. The purpose of the application is to install a weighbridge office in order to increase the efficiency and safety of weighbridge operations.

Information provided by Mr Adam Blackwell indicates that the weighbridge office will be a prefabricated site shed with dimensions 12.0L x 3.0W x 2.99H. Roof area is 36m².

The site works necessary to install the weighbridge office include:

- Providing pier footings on which to place the prefabricated building.
- Local widening and minor realignment of the access carriageway.
- Installation of sub-soil drainage in order to prevent ponding of local runoff beneath the prefabricated building.
- Installation of a 500 litre rainwater tank to collect weighbridge office roof water.
- Installation of a 150mm dia uPVC pipe to convey rainwater tank overflow to the stormwater system.

The site works involved are of a very minor nature and will have the following effects:

- Increase in impervious area of 36m² due to the prefabricated shed (100% impervious)
- Increase in access carriageway of 321m² (recycled crushed concrete 80% impervious)

The total increase in impervious area will therefore be 293m². This represents an overall increase in the overall site impervious area of 0.85%.

I have reviewed the following documents prepared to support the application under SSD5300:

- a. Site Water Balance (KFW 5 May 2016)
- b. WSUD and Flood Analysis Report (KFW June 2014)

The stormwater model DRAINS was modified to include the additional impervious area draining to pit 1G.

As stated above, the overall increase in impervious area is insignificant.

Reference to Attachment #1 indicates the following:

- o Peak local runoff at pit 1G increases in from 0.153 m³/s to 0.155 m³/s during a 100yr ARI storm burst.
- o No increase in discharge from the detention basin. Site discharge remains at 0.359 m³/s with 0.007m³/s weir flow for a 100 year ARI storm burst. The additional 0.002m³/s from Pit 1G is routed through the detention basin and has no effect of site discharge.
- o The proposed weighbridge office and associated site works will not increase the peak runoff from the site.

The MUSIC model was modified to account for the additional impervious area and 500 litre rainwater tank associated with the new weighbridge office.

The modification to the MUSIC[#] model was as follows:

- Operational area reduced by 36m² (weighbridge office)
- Operational area reduced by 36m² and impervious increased by 1% (additional recycled concrete pavement)
- New source node for the weighbridge office with a new treatment node (500 litre rainwater tank)

Reference to Attachment #2 indicates the following

- ❖ Table A2.1 shows that there is no perceptible increase residual pollutant load.
- ❖ Table A2.2 shows that water reuse demand met from the permanent pool is largely unaffected. The apparent reduction (ie 75.1% to 74.8%) is due to the weighbridge rainwater tank intercepting runoff which would have otherwise been captured by the permanent pool.
- ❖ Table A2.3 shows that the installation of a 500 litre rainwater tank will provide a small but additional source of water for site operations and mitigate the increase in runoff volume.

It can be reasonably concluded without further modelling that the impact of the weighbridge office and associated site works is insignificant and imperceptible.

In relation to the letter from Wollongong Council dated 7 April 2017:

- ❖ Attachment #3 indicates that the weighbridge is well above the 1% AEP flood level and is above the 1% AEP flood level with allowance for climate change.
- ❖ Attachment #4 has been modified with a new swept path showing a heavy articulated vehicle entering the weigh bridge and moving off to the vehicle turning and backing area. The other swept paths presented on this drawing demonstrate that sufficient manoeuvring is available and the new weigh bridge does not restrict vehicle turning and manoeuvring on the site.

Yours faithfully,

K F WILLIAMS & ASSOCIATES PTY LTD


Wal Mullany

BE, Grad Dip LGE, ME(Hons), MIE Aust, CPEng, NER

Attachments:

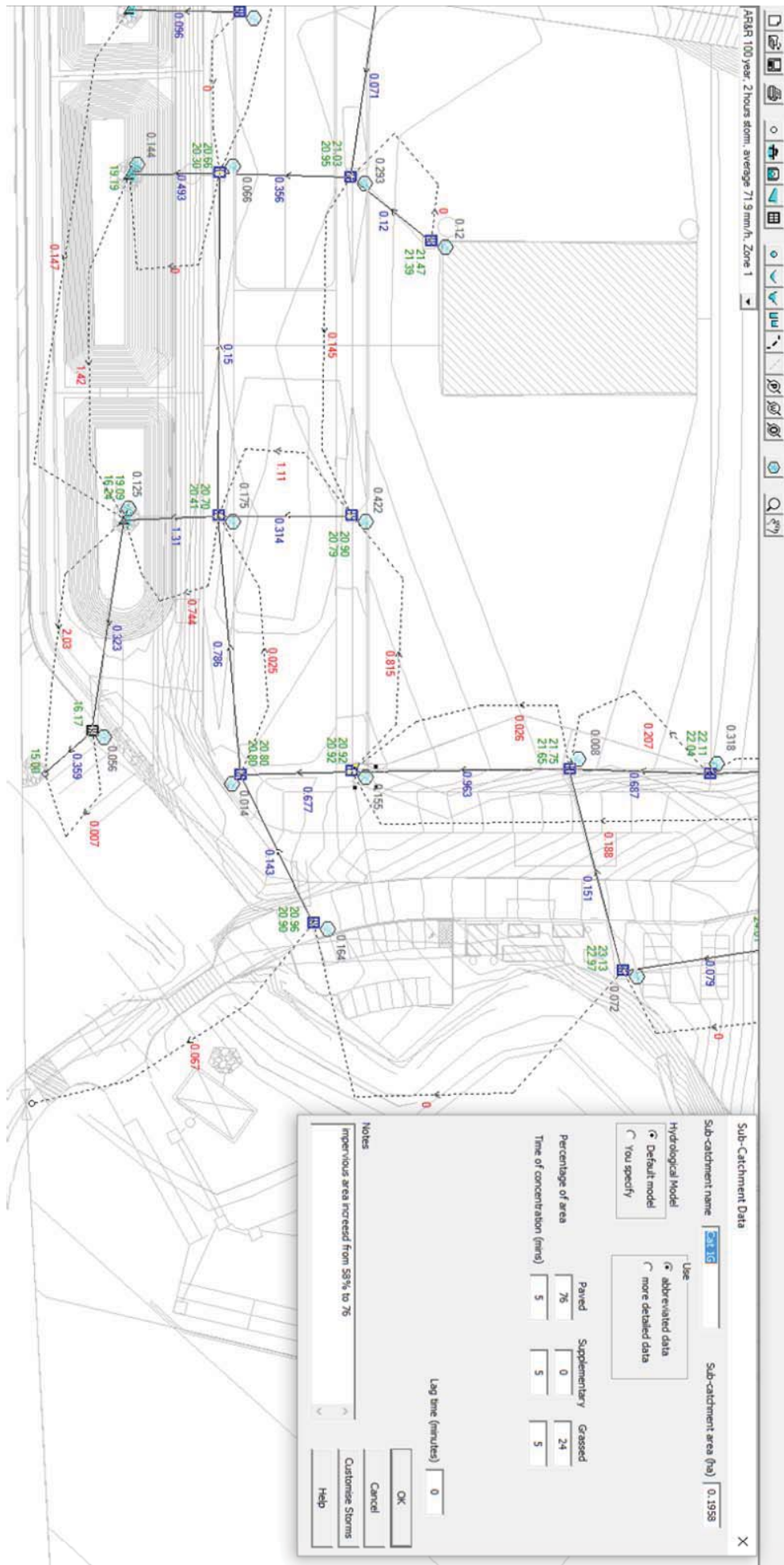
Attachment #1: Modified DRAINS stormwater model output

Attachment #2: Modified MUSIC model output

Attachment #3: Drawing KF110816 C301 Rev C

Attachment #4: Drawing KF110816 C305 Rev C

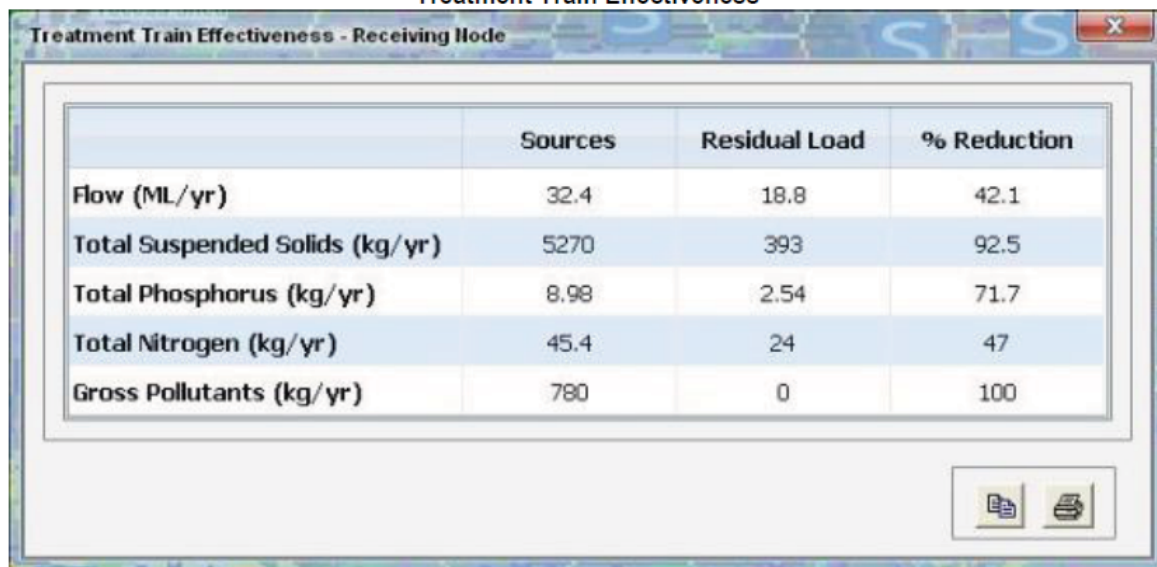




DRAINS Model
100yr ARI with new Weighbridge Office

A2.1 Treatment Train Effectiveness

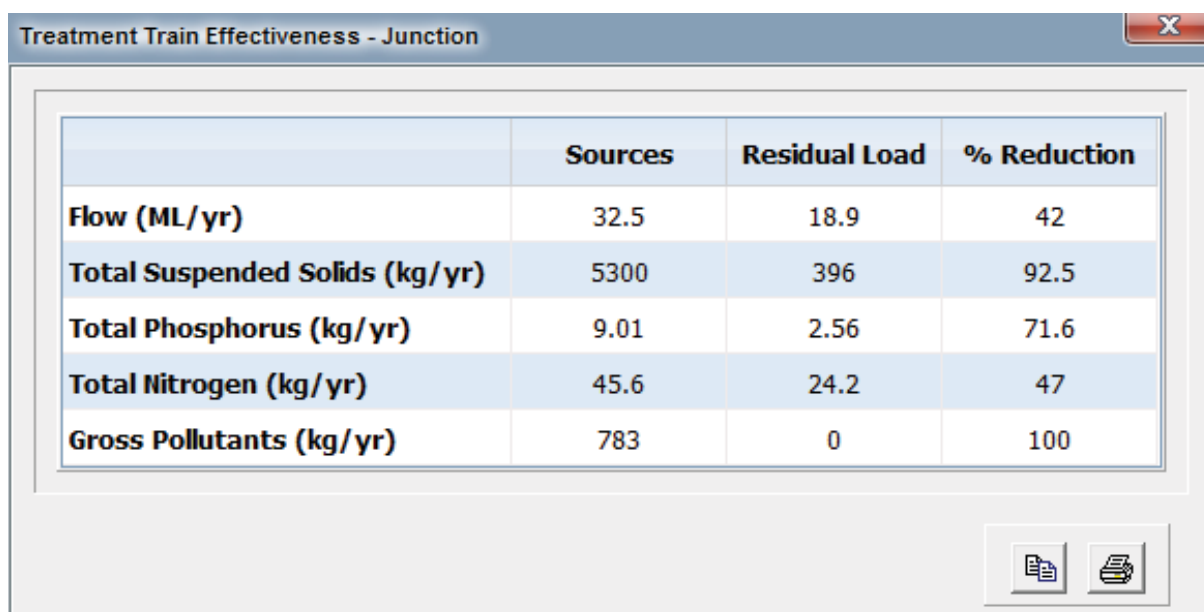
Table 4.6.1
Treatment Train Effectiveness



	Sources	Residual Load	% Reduction
Flow (ML/yr)	32.4	18.8	42.1
Total Suspended Solids (kg/yr)	5270	393	92.5
Total Phosphorus (kg/yr)	8.98	2.54	71.7
Total Nitrogen (kg/yr)	45.4	24	47
Gross Pollutants (kg/yr)	780	0	100

Table 4.6.1 extracted from WSUD Report

Table A2.1
Extracted from modified MUSIC[#] Model



	Sources	Residual Load	% Reduction
Flow (ML/yr)	32.5	18.9	42
Total Suspended Solids (kg/yr)	5300	396	92.5
Total Phosphorus (kg/yr)	9.01	2.56	71.6
Total Nitrogen (kg/yr)	45.6	24.2	47
Gross Pollutants (kg/yr)	783	0	100

Table 4.6.4
Water Balance Permanent Pool

	Flow (ML/yr)	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	GP (kg/yr)
Flow In	28.7	972.2	5.9	29.2	694.4
ET Loss	1.3	0.0	0.0	0.0	0.0
Infiltration Loss	0.0	0.0	0.0	0.0	0.0
Low Flow Bypass Out	0.0	0.0	0.0	0.0	0.0
High Flow Bypass Out	0.0	0.0	0.0	0.0	0.0
Pipe Out	6.6	133.6	0.9	8.6	0.0
Weir Out	9.5	214.1	1.4	11.6	0.0
Transfer Function Out	0.0	0.0	0.0	0.0	0.0
Reuse Supplied	10.8	223.2	1.5	16.1	0.0
Reuse Requested	14.4	0.0	0.0	0.0	0.0
% Reuse Demand Met	75.1	0.0	0.0	0.0	0.0
% Load Reduction	43.9	64.2	61.6	31.1	100.0

Decimal Places: 1

Table 4.6.4 extracted from WSUD Report

Table A2.2
Permanent Pool Water Balance
Extracted from Modified MUSIC[#] Model

	Flow (ML/yr)	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	GP (kg/yr)
Flow In	27.5	931.8	5.6	28.0	665.3
ET Loss	1.3	0.0	0.0	0.0	0.0
Infiltration Loss	0.0	0.0	0.0	0.0	0.0
Low Flow Bypass Out	0.0	0.0	0.0	0.0	0.0
High Flow Bypass Out	0.0	0.0	0.0	0.0	0.0
Pipe Out	6.2	127.1	0.8	8.2	0.0
Weir Out	8.7	195.5	1.3	10.6	0.0
Transfer Function Out	0.0	0.0	0.0	0.0	0.0
Reuse Supplied	10.8	225.6	1.5	15.6	0.0
Reuse Requested	14.4	0.0	0.0	0.0	0.0
% Reuse Demand Met	74.8	0.0	0.0	0.0	0.0
% Load Reduction	45.6	65.4	62.8	33.0	100.0

Decimal Places: 1

Table

Table A2.3
Weighbridge Rainwater Tank Water Balance
Extracted from Modified MUSIC[#] Model

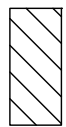
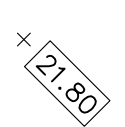
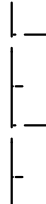
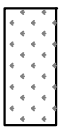
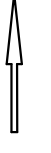
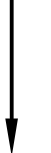
Node Water Balance - Weighbridge RWT					
	Flow (ML/yr)	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	GP (kg/yr)
Flow In	0.0	4.9	0.0	0.0	0.7
ET Loss	0.0	0.0	0.0	0.0	0.0
Infiltration Loss	0.0	0.0	0.0	0.0	0.0
Low Flow Bypass Out	0.0	0.0	0.0	0.0	0.0
High Flow Bypass Out	0.0	0.0	0.0	0.0	0.0
Pipe Out	0.0	1.5	0.0	0.0	0.0
Weir Out	0.0	0.0	0.0	0.0	0.0
Transfer Function Out	0.0	0.0	0.0	0.0	0.0
Reuse Supplied	0.0	0.4	0.0	0.0	0.0
Reuse Requested	0.1	0.0	0.0	0.0	0.0
% Reuse Demand Met	15.9	0.0	0.0	0.0	0.0
% Load Reduction	50.1	69.0	60.0	50.4	100.0

Decimal Places



1. RAINWATER TANKS TO HAVE FIRST FLUSH BYPASS SYSTEM

1. RAINWATER TANKS TO HAVE FIRST FLUSH BYPASS SYSTEM.
2. 2 x 100,000 LITRE TANKS WILL PROVIDE APPROXIMATELY 82% OF DAILY DEMAND OF 500 LITRES/DAY
3. PRIOR TO COMMENCING CONSTRUCTION WORK, THE OWNER/CONTRACTOR SHALL ENGAGE A REGISTERED SUPERVISOR TO ACQUAINT AND DELINEATE THE GAS PIPELINE BOUNDARY. IN ORDER TO PREVENT CONSTRUCTION PLANT FROM ENCROACHING ON TO THE GAS PIPELINE, THE OWNER/CONTRACTOR SHALL INSTALL A HIGH VISIBILITY ORANGE, PAPA-WITH FENCING OF 1.8M HIGH CHAINWIRE FENCE TO CLEARLY DELINEATE THE LIMIT OF WORK. THE FENCE SHALL NOT ENCROACH UPON THE GAS PIPELINE ASSEMENT AND SHALL BE INSTALLED 0.15 M OF THE EASEMENT BOUNDARY
4. WATER QUALITY/RECYCLING POND EMPARKMENT IS TO BE COMPACTED TO 100% MOD. COMPACTION UNDER LEVEL 2 GEOTECHNICAL CONTROL
5. DUST CONTROL TO BE ACHIEVED USING WATER CART. DEMAND ESTIMATED AT 40,000 L/DAY
6. LEACHATE COLLECTION TANKS PUMPED OUT BY SERVICE TANKER
7. BYPASS CONTROL PIT TO DIVERTE 220 l/sec TO WATER QUALITY POND DISCHARGE EXCEEDING 230 l/sec TO DRAIN DIRECT TO TREATMENT BASIN.
8. TREATMENT BASIN TO HAVE 195cm STORAGE WITH 675mm DIA PIPE OUTLET. WER PL @ APPROX 185mm.
9. WATER QUALITY/RECYCLING POND TO HAVE PERMANENT VOLUME OF 34.28 m³ WITH 673 m³ EXTENDED STORAGE. OVERFLOW PIPE TO BE 100mm DIA PIPE. OVERFLOW PIPE TO DISCHARGE TO TREATMENT BASIN.
10. SHEDDING RUNOFF POND. SHEDDING RUNOFF POND TO HAVE VOLUME OF 781m³ OVERFLOW PIPE TO BE DISCHARGING TO WATER QUALITY POND. OVERFLOW PIPE TO BE 100mm DIA.
11. NO STORAGE OF BUOYANT MATERIAL IN PAV. INUNDATION AREA. MINIMUM CRUSHED AGGREGATE SIZE IN PAV. INUNDATION AREA TO BE 75mm
12. GREEN WASTE TO BE COVERED BY TAAPULU TO PREVENT INFILTRATION OF RAINWATER WHEN STOPPED TO BE IN PLACE LONGER THAN 21 DAYS.
13. SEPTIC TANK SERVING OFFICE COMPLEX SHALL BE SERVED/PUMPED OUT WEEKLY UNDER SERVICE CONTRACT

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|--|---|
|  | DENOTES PROPOSED BUILDING |
|  | DENOTES EXISTING CONTOURS |
|  | DENOTES PROPOSED SURFACE LEVELS |
|  | DENOTES PROPOSED BATTER (1 IN 2) TO BE LANDSCAPED |
|  | DENOTES PROPOSED LANDSCAPING/BATTER PROTECTION |
|  | DENOTES 10m BUFFER LINE FROM TOP BANK |
|  | DENOTES 1% AEP FLOOD LIMIT |
|  | DENOTES SUBSOIL DRAINAGE |
|  | DENOTES CATCH DRAIN |
|  | DENOTES DIRECTION OF TRAFFIC FLOW |
|  | DENOTES STORMWATER FLOW |
|  | DENOTES HUMIDECTRON DOWNSTREAM DEFENDER |
|  | DENOTES BOLLARD & SIGNAGE |
|  | DENOTES STORMWATER PITS AND PIPES |
|  | DENOTES STAGE 1 LIMITS |
|  | DENOTES FUTURE STAGE LIMITS |
|  | DENOTES PROPOSED SUB SOIL LINE |
- CONSTRUCTIVE
TABLE DRAINAGE
WATER OUT

INSTALLED
SPALLS
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MIN. 1000 OF 200g IN
BE USED

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STRUCT TABLE DRAIN.

ER QUALITY/RECYCLING POI

Year	1950 Projection (%)	1980 Projection (%)
1950	7.0	7.0
1960	8.0	8.0
1970	9.0	9.0
1980	10.0	10.0
1990	11.0	12.0
2000	12.0	14.0
2010	13.0	16.0
2020	14.0	18.0
2030	15.0	19.0
2040	16.0	20.0
2050	17.0	20.0

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10-27

End

LANDSCAPE

MOUND

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16.73
16.86

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24 APRIL 2017	WN
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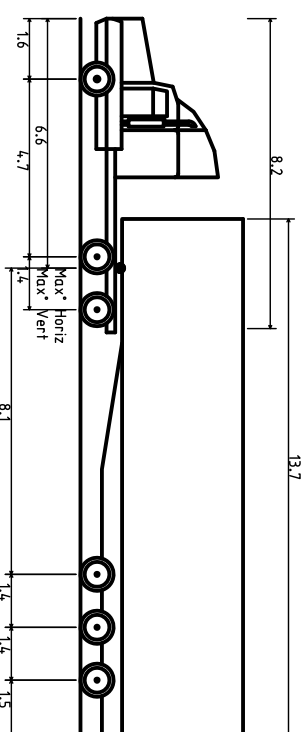
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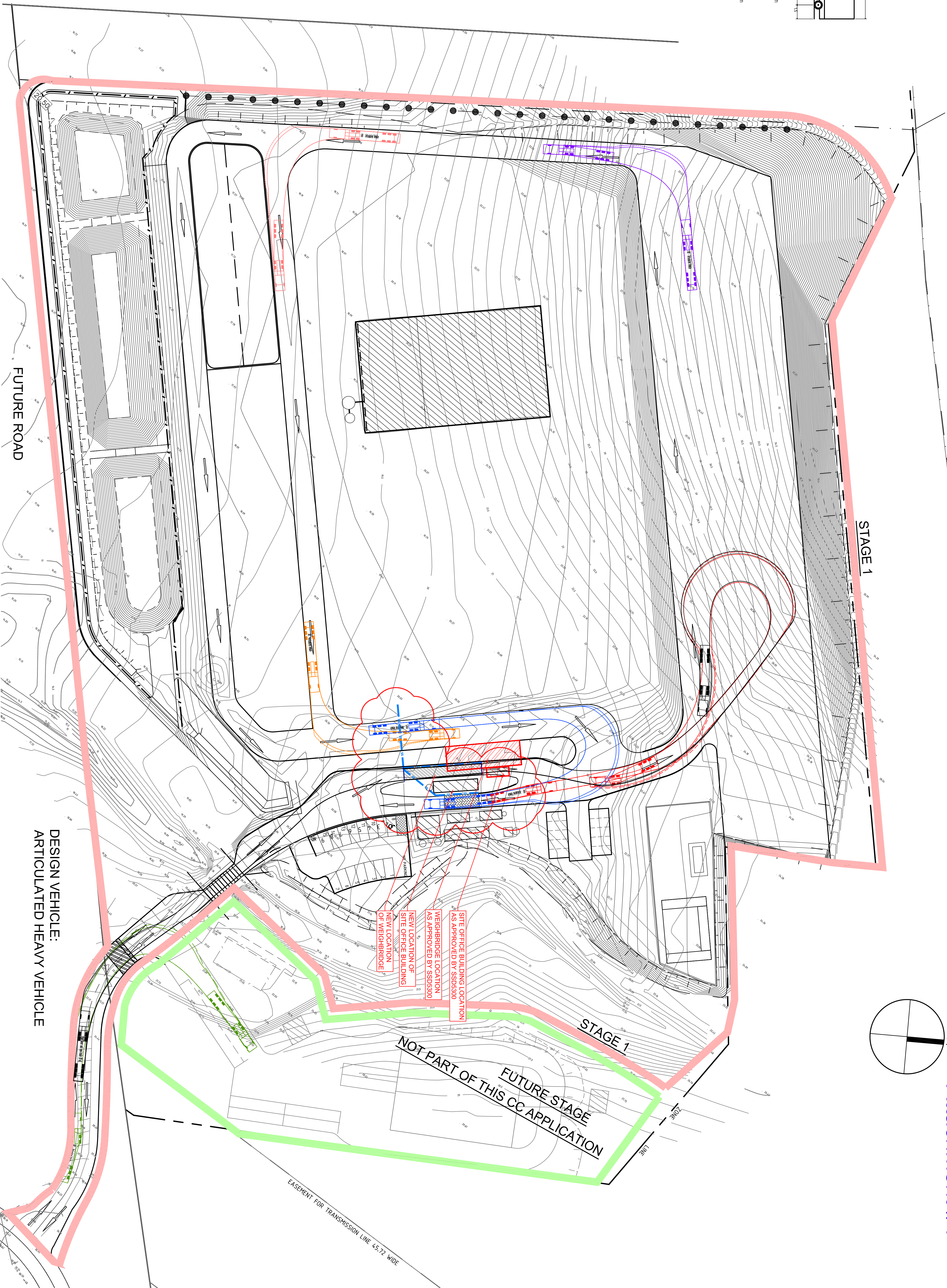
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AV – Articulated Vehicle	19,000m
Overall Length	2,500m
Overall Width	4,300m
Overall Body Height	0,418m
Min Body Ground Clearance	2,500m
Track Width	6,005
Lock-to-lock time	12,500m
Curb to Curb Turning Radius	

[illegible]