

LEACHATE CONTROL NOTES

1. Working surfaces
- To ensure storage areas, active composting surfaces, and associated access roads are constructed to the satisfaction of the Council, the following measures shall be implemented:
- All storage areas, active composting surfaces, and access roads shall be constructed to the satisfaction of the Council.
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Minimum Design Requirement is met as follows:

The green waste shredding area will have an impervious concrete or asphalt concrete layer to prevent infiltration from the shredding surface.

The green waste shredding area has a perimeter drain to collect and direct runoff to the green waste runoff collection pond.

Composting and storage will be undertaken in a weatherproof shed which will have a concrete floor.

2. Leachate barrier system

EPA Goal

To prevent the pollution by leachate of subsoil, groundwater and surface water, the following measures shall be implemented:

- All storage areas, active composting surfaces, and access roads shall be constructed to the satisfaction of the Council.
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Minimum Design Requirement is met as follows:

The green waste shredding area has an impervious layer to prevent infiltration from the shredding surface. The impervious layer will be made of asphalt cement (AC) pad of a thickness of at least 100 mm is to be constructed

The concrete or AC pavement will be designed for a traffic loading of 1 x 100 kN/m². Assuming a GR of 5, the pavement thickness will be in the order of 340 mm including a minimum of 100 mm concrete of AC thickness.

A 100mm concrete or AC layer will withstand the loads from all machines, vehicles and equipment that are required to operate the facility.

3. Leachate collection system

EPA Goal

To ensure that leachate is collected efficiently at the composting and related processing facility for further management, thereby avoiding water pollution and/or other problems.

Minimum Design Requirement is met as follows:

The composting process will occur under cover in a weather-proof building and will produce no or at worst a small volume of leachate.

The composting process shed will have a concrete floor underlain by a polyethylene membrane in order to prevent leachate infiltration into the groundwater.

The compost process leachate collection system will consist of the following:

- A primary concrete tank with a volume of 5,000 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.

- A secondary concrete tank with a volume of 2,500 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.

- The secondary tank will be connected to the primary tank at the level where the primary tank is at 4,000 litre storage (80%) capacity.

- The primary collection tank will be fitted with a sensor to indicate 75% capacity ie 3,750 litres. At this point the site manager shall arrange to have the primary tank pumped out by a liquid waste tanker and disposed of at an appropriate treatment facility.

4. Leachate storage system

EPA Goal

To ensure that leachate is stored efficiently at the composting and related processing facility for further management, thereby avoiding water pollution and/or other problems.

Minimum Design Requirement is met as follows:

The compost process leachate collection and storage system will consist of the following:

- A primary concrete tank with a volume of 5,000 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.

- A secondary concrete tank with a volume of 2,500 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.

- The secondary tank will be connected to the primary tank at the level where the primary tank is at 4,000 litre storage (80%) capacity.

- The primary collection tank will be fitted with a storage level sensor to indicate 75% capacity ie 3,750 litres. At this point the site manager shall arrange to have the primary tank pumped out by a liquid waste tanker and disposed of at an appropriate treatment facility.

A weekly inspection of the level in the leachate storage tank is to be performed.

Six monthly testing of the storage level sensor is to be performed.

It is noted that above ground tanks are preferred, however underground tanks are proposed in this case because the composting area is within a weather-proof shed which will mean that the generation of leachate will be nil or very small.

The composting process will be undertaken in a weatherproof shed. There will therefore be no need to make provision for rainwater inflow to the leachate storage system. It is noted that rainwater from the weatherproof shed will be harvested for use on site for dust suppression.

5. Surface water controls

Goal

To avoid the generation of excessive leachate and to prevent any sediment or pollutants from being carried off the premises.

Minimum Design Requirements met as follows:

The surface water controls must at least meet the following requirements:

For composting and storage, prevention of surface water mixing with organics will be achieved by undertaking the composting process within a weatherproof building. The building will effectively prevent surface water mixing with the composting material.

For green waste shredding prevention of surface water mixing with organics will be achieved by:

- > elevating the green waste shredding area above the internal road system in order to ensure that surface water does not run onto the green waste shredding area.

- > the internal road and stormwater system is designed to collect and divert surface water away from the green waste shredding area. The internal road has a central V drain in order to ensure that surface water runs away from the shredding area.

For composting contamination of runoff will be prevented by undertaking the composting process and storage within a weatherproof building. The building will effectively prevent surface water mixing with the composting material.

For green waste shredding handling and treatment of leachate will be achieved by:

- elevating the green waste shredding area above the internal road system in order to ensure that surface water does not run onto the green waste shredding area.

- the internal road and stormwater system is designed to collect and divert surface water away from the green waste shredding area. The building will effectively prevent surface water mixing with the composting material. water runs away from the shredding area.

For composting the management of surface water generated from the design of a 1-in-10 year, 24-hour-period storm event will not be required because the composting operations are within a weatherproof building. The building will effectively prevent surface water mixing with the composting material.

For green waste shredding management of surface water generated from the design of a 1-in-10 year, 24-hour-period storm event will be achieved by minimising the area of green waste exposed to rainfall and ensuring the shredding leachate pond has sufficient volume.

The internal road and stormwater system is designed to collect and divert surface water away from the green waste shredding area. The internal road has a central V drain in order to ensure that surface water runs away from the shredding area.

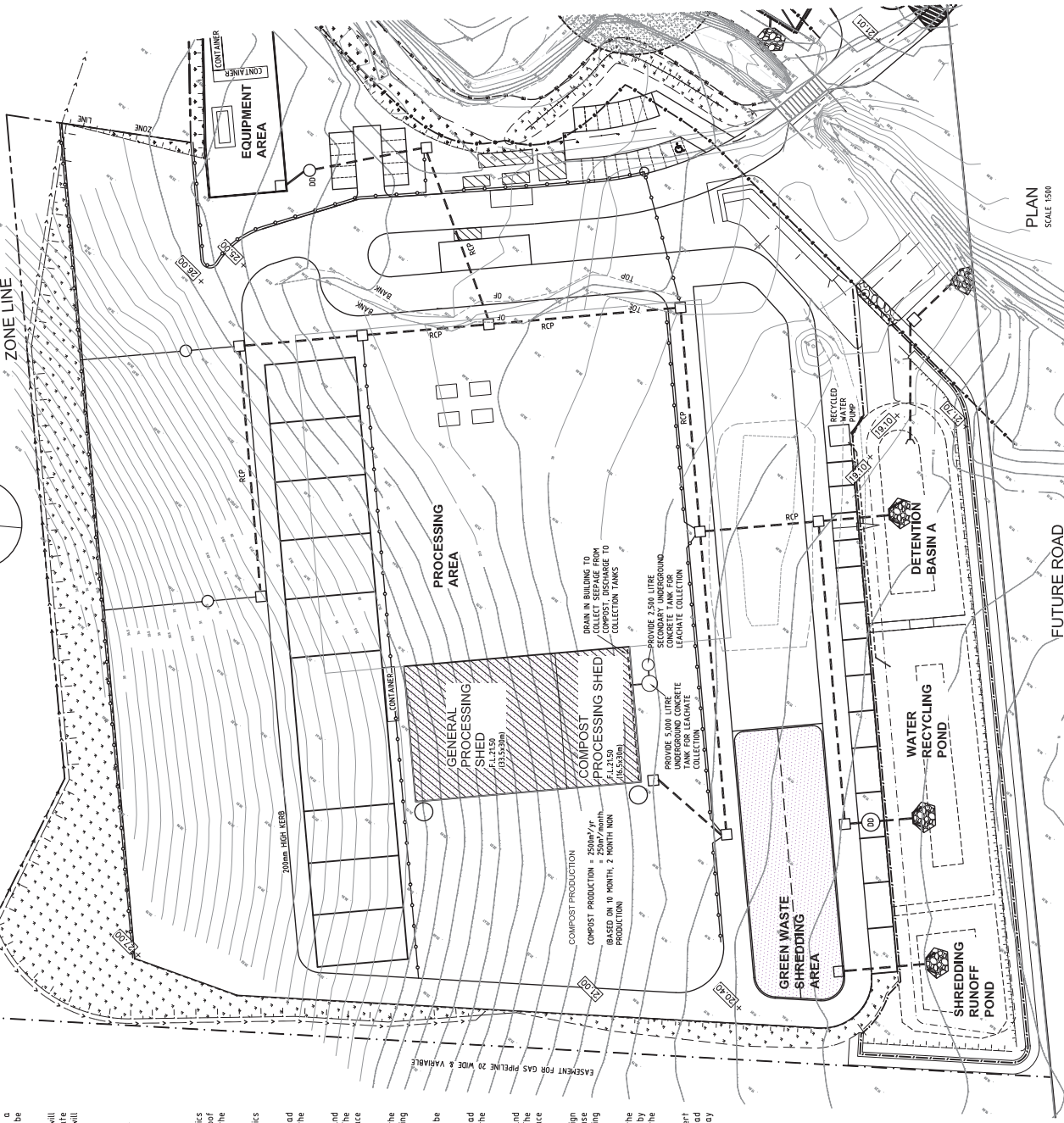
LEGEND

- DENOTES PROPOSED BUILDING
- DENOTES EXISTING CONTOURS
- DENOTES PROPOSED SURFACE LEVELS
- DENOTES HINCEPPOINT DOWNSTREAM DEFENDER
- COMPOSTING AND STORAGE SHED, CONCRETE FLOOR, DRAIN TO UNDERGROUND LEACHATE COLLECTION TANKS
- GREEN WASTE SHREDDING AREA, CONCRETE OR ASPHALT SURFACE, REFER TO DRAWING #F108/K/C17
- DETENTION POND
- DENOTES STORMWATER PITS AND PIPES



EASEMENT FOR TRANSMISSION LINE 45.72 MIDE

ZONE LINE



PLAN
SCALE 1:500

FUTURE ROAD

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ACEMENT FOR TRANSMISSION LINE 45.72 WIDE

LEGEND

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|---|--|
|  | IDENTIFIES PROPOSED BUILDING |
|  | IDENTIFIES PROPOSED BATTER (1 IN 2) TO BE LANDSCAPED |
|  | IDENTIFIES PROPOSED LANDSCAPING/BATTER PROTECTION |
|  | IDENTIFIES 10' BUFFER LINE FROM TOP BANK |
|  | IDENTIFIES SUBSOIL DRAINAGE |
|  | IDENTIFIES CATCH DRAIN |
|  | IDENTIFIES STORMWATER FLOW |
|  | IDENTIFIES HUMPECKTOP FOR DOWNSTREAM DEFENDER |
|  | IDENTIFIES Q_{100} FLOODLINE |
|  | IDENTIFIES Q_{100} 100% BLOCKED FLOODLINE |
|  | IDENTIFIES Q_{100} CLIMATE CHANGE FLOODLINE |
|  | IDENTIFIES Q_{100} PRE DEVELOPMENT FLOODLINE |
|  | IDENTIFIES STORMWATER PITS AND PIPES |



PLAN
SCALE 1:500

FUTURE ROAD

[illegible]

APPENDIX 2

OSD Calculations
DRAINS Input
DRAINS Output

PIT / NODE DETAILS

Version 1.1

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	Part Full Shock Loss Hydrograph	Inflow
Dummy #2	OnGrade	Sink	Unlimited	Entry	1.5	18		0	0	703.333	-479.167	No	249	No
Area 2 Outlet	Node					19.5		0		690.833	-633.333		12	
Area #2 Pit	OnGrade	Sink	Unlimited	Entry	1.5	25		0	0	662	-183	No	13	No
Area #1 Pit	OnGrade	Sink	Unlimited	Entry	0	25		0	0	26.8	-416.8	No	18	No
Dummy #1b	OnGrade	Sink	Unlimited	Entry	1.5	17.5		0	0	389.2	-694	No	268790	No
Area 1 Outlet	Node					16		0		455.2	-744.4		26	
Dummy #1	OnGrade	Sink	Unlimited	Entry	1.5	17.5		0	0	382.5	-540.833	No	240	No
Forest Pit	OnGrade	Sink	Unlimited	Entry	0	25		0	0	296.8	-360.4	No	261200	No
Collection Pit	OnGrade	Sink	Unlimited	Entry	1.5	20		0	0	1280.8	-361.6	No	917779	No
N7949	Node					19.5		0		1232.8	-512.8		917781	

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Init Vol. (cu)	Outlet Typ	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng'id
Basin 2	18	100	0	Orifice		500	18.25			815	-329	No		10
	19	100												
	20	100												
	21	100												
Basin 1	16.1	326	0	Culvert	0.5					434	-379	No		23
	19.1	976												

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%)	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor
Eastern Area_Post	Basin 2	1.6983	20	80	0	5	15	5										0
Eastern Area 2_Pre	Area #2 Pit	1.6983	0	100	0	5	15	0										0
Western Area_Pre	Area #1 Pit	7.389	0	100	0	5	20	0										0
Western Area_Post	Basin 1	4.299	71	29	0	5	12	0										0
Forest_Diversion	Forest Pit	3.089	0	100	0	5	20	0										0
Compost Area	Collection Pit	0.1173	100	0	0	5	5	5										0

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Paved Rough	Grass Rough	Supp Rough	Chg (m)	RL (m)
Pipe3	Basin 2	Dummy #2	10	18	17	10	Concrete, t	600	600	0.3	NewFixed	1	Basin 2	0					
Pipe25	Dummy #2	Area 2 Outlet	5	17	16.9	2	Concrete, t	750	750	0.3	New	2	Dummy #2	0					
Pipe4	Area #2 Pit	Dummy #2	50	24	17	14	Concrete, t	600	600	0.3	NewFixed	1	Area #2 Pit	0					
Pipe5	Area #1 Pit	Dummy #1b	50	24	15.5	17	Concrete, t	750	750	0.3	New	5	Area #1 Pit	0					
Pipe2925	Dummy #1b	Area 1 Outlet	5	15.5	15	10	Concrete, t	750	750	0.3	New	5	Dummy #1b	0					
Basin 1 out	Basin 1	Dummy #1	20	16.1	16	0.5	Concrete, t	675	675	0.3	NewFixed	1	Basin 1	0					
Pipe24	Dummy #1	Dummy #1b	5	16	15.5	10	Concrete, t	675	675	0.3	New	5	Dummy #1	0					
Forest	Forest Pit	Dummy #1	50	24	16	16	Concrete, t	600	600	0.3	New	1	Forest Pit	0					
Compost Pipe	Collection Pit	N7949	5	19	18.5	10	Concrete, t	300	300	0.3	New	1	Collection Pit	0					

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of SChg (m)	Bottom Elev (m)	Height of SChg (m)	Bottom Elev (m)	Height of Setc (m)	etc
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CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed
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OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Gross Section	Safe Major Stor (m)	Depth Minor Stor (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id
Basin Outflow	Basin 2	Dummy #2	5	20.35	2	1.7	Dummy us	0.2	0.05	0.6	1	0	60
OF Pre #2	Dummy #2	Area 2 Outlet	1				Dummy us	0.2	0.05	0.6	1	0	2750
OF Pre #1	Area #2 Pit	Area 2 Outlet	5				Dummy us	0.2	0.05	0.6	1	0	49
OF6542	Area #1 Pit	Dummy #1b	5				Dummy us	0.2	0.05	0.6	1	0	426
	Dummy #1b	Area 1 Outlet	1				Dummy us	0.2	0.05	0.6	1	0	1062239
Basin 1 OF	Basin 1	Dummy #1	5	18.85	3	1.7	Dummy us	0.2	0.05	0.6	1	0	244
OF489	Dummy #1	Dummy #1b	1				Dummy us	0.2	0.05	0.6	1	0	2752
Forest OF	Forest Pit	Dummy #1	5				Dummy us	0.2	0.05	0.6	1	0	268802

5 Year ARI

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
Dummy #2	17.46		0		0.54	0	None
Area 2 Outlet	17.15		0				
Area #2 Pit	24.48		0.489		0.52	0	None
Area #1 Pit	24.13		1.786		0.87	0	None
Dummy #1b	16.04		0		1.46	0	None
Area 1 Outlet	15.21		0				
Dummy #1	16.38		0		1.12	0	None
Forest Pit	24.2		0.747		0.8	0	None
Collection Pit	19.19		0.058		0.81		None
N7949	18.58		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Eastern Area_Post	0.496	0.167	0.391	5	15	5	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Eastern Area 2_Pre	0.489	0	0.489	5	15	0	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Western Area_Pre	1.786	0	1.786	5	20	0	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Western Area_Post	1.795	1.502	0.412	5	12	0	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Forest_Diversion	0.747	0	0.747	5	20	0	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Compost Area	0.058	0.058	0	5	5	5	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1

Outflow Volumes for Total Catchment (3.51 impervious + 14.8 pervious = 18.3 total ha)

Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)
AR&R 5 year, 2 hours storm, average 41.0	14998.54	9511.80 (63.4%)	2702.12 (93.9%)	6809.67 (56.2%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe3	0.444	6.41	18.176	17.46	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Pipe25	0.933	3.54	17.254	17.154	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Pipe4	0.489	7.43	24.17	17.46	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Pipe5	1.786	7.03	24.129	16.04	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Pipe2925	3.552	7.12	15.708	15.208	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Basin 1 out	1.087	3.18	16.813	16.614	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Pipe24	1.768	5.91	16.151	16.04	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Forest	0.747	8.79	24.204	16.378	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1
Compost Pipe	0.058	3.93	19.079	18.579	AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
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OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
Basin Outflow	0	0	0.256	0	0	0	0	
OF487	0	0	0.256	0	0	0	0	
OF Pre #2	0	0	0.256	0	0	0	0	
OF Pre #1	0	0	0.256	0	0	0	0	
OF6542	0	0	0.256	0	0	0	0	
Basin 1 OF	0	0	0.256	0	0	0	0	
OF489	0	0	0.256	0	0	0	0	
Forest OF	0	0	0.256	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin 2	18.88	88.7	0.444	0.444	0
Basin 1	17.64	719.8	1.087	1.087	0

CONTINUITY CHECK for AR&R 5 year, 2 hours storm, average 41.0 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Change (cu.m)	Difference %
Basin 2	888.5	886.96	1.54	0
Dummy #2	1670.57	1670.98	0	0
Area 2 Outlet	1670.98	1670.98	0	0
Area #2 Pit	783.7	783.61	0	0
Area #1 Pit	3400.96	3401.42	0	0
Dummy #1b	7734.11	7736.82	0	0
Area 1 Outlet	7736.82	7736.82	0	0
Basin 1	2926.53	2908.71	17.82	0
Dummy #1	4330.66	4332.71	0	0
Forest Pit	1421.78	1421.95	0	0
Collection Pit	90.32	90.33	0	0
N7949	90.33	90.33	0	0

Run Log for KF110816_Basin Capacity Model_17 July 13 run at 15:36:25 on 10/6/2014

No water upwelling from any pit. Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

10 Year ARI

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
Dummy #2	17.5		0		0.5	0	None
Area 2 Outlet	17.18		0				
Area #2 Pit	24.54		0.574		0.46	0	None
Area #1 Pit	24.14		2.181		0.86	0	None
Dummy #1b	16.1		0		1.4	0	None
Area 1 Outlet	15.23		0				
Dummy #1	16.42		0		1.08	0	None
Forest Pit	24.23		0.912		0.77	0	None
Collection Pit	19.21		0.066		0.79		None
N7949	18.58		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Eastern Area_Post	0.587	0.192	0.459	5	15	5	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Eastern Area 2_Pre	0.574	0	0.574	5	15	0	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Western Area_Pre	2.181	0	2.181	5	20	0	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Western Area_Post	2.112	1.729	0.483	5	12	0	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Forest_Diversion	0.912	0	0.912	5	20	0	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Compost Area	0.066	0.066	0	5	5	5	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1

Outflow Volumes for Total Catchment (3.51 impervious + 14.8 pervious = 18.3 total ha)

Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)
AR&R 10 year, 2 hours storm, average 47.2	17266.91	11760.89 (68.1%)	3137.33 (94.7%)	8623.57 (61.8%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe3	0.519	6.7	18.191	17.505	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Pipe25	1.093	3.7	17.276	17.179	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Pipe4	0.574	7.78	24.184	17.505	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Pipe5	2.181	7.46	24.143	16.104	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Pipe2925	4.224	7.48	15.727	15.227	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Basin 1 out	1.187	3.42	16.873	16.63	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Pipe24	2.103	6.24	16.164	16.104	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Forest	0.912	9.29	24.227	16.416	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1
Compost Pipe	0.067	4.08	19.085	18.585	AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
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OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
Basin Outflow	0	0	0.256	0	0	0	0	
OF487	0	0	0.256	0	0	0	0	
OF Pre #2	0	0	0.256	0	0	0	0	
OF Pre #1	0	0	0.256	0	0	0	0	
OF6542	0	0	0.256	0	0	0	0	
Basin 1 OF	0	0	0.256	0	0	0	0	
OF489	0	0	0.256	0	0	0	0	
Forest OF	0	0	0.256	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin 2	19.15	115.9	0.519	0.519	0
Basin 1	17.88	872.8	1.187	1.187	0

CONTINUITY CHECK for AR&R 10 year, 2 hours storm, average 47.2 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Change (cu.m)	Difference %
Basin 2	1097.56	1096	1.55	0
Dummy #2	2088.21	2088.58	0	0
Area 2 Outlet	2088.58	2088.58	0	0
Area #2 Pit	992.37	992.21	0	0
Area #1 Pit	4307.08	4307.27	0	0
Dummy #1b	9548.78	9550.8	0	0
Area 1 Outlet	9550.8	9550.8	0	0
Basin 1	3458.43	3440.45	17.98	0
Dummy #1	5241.17	5241.5	0	0
Forest Pit	1800.59	1800.72	0	0
Collection Pit	104.87	104.89	0	0
N7949	104.89	104.89	0	0

Run Log for KF110816_Basin Capacity Model_17 July 13 run at 15:37:18 on 10/6/2014

No water upwelling from any pit. Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

100 Year ARI

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
Dummy #2	17.66		0.004		0.34	0	None
Area 2 Outlet	17.25		0.002				
Area #2 Pit	24.98		0.884		0.02	0.002	Inlet Capacity
Area #1 Pit	24.18		3.589		0.82	0	None
Dummy #1b	16.45		0		1.05	0	None
Area 1 Outlet	15.29		0				
Dummy #1	16.67		0		0.83	0	None
Forest Pit	24.3		1.5		0.7	0	None
Collection Pit	19.27		0.097		0.73		None
N7949	18.6		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Eastern Area_Post	0.911	0.281	0.708	5	15	5	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Eastern Area 2_Pre	0.884	0	0.884	5	15	0	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Western Area_Pre	3.589	0	3.589	5	20	0	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Western Area_Post	3.124	2.525	0.741	5	12	0	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Forest_Diversion	1.5	0	1.5	5	20	0	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Compost Area	0.097	0.097	0	5	5	5	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1

Outflow Volumes for Total Catchment (3.51 impervious + 14.8 pervious = 18.3 total ha)

Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)
AR&R 100 year, 2 hours storm, average 74	27180.74	21633.30 (79.6%)	5039.37 (96.6%)	16593.93 (75.5%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe3	0.774	7.48	18.236	17.658	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Pipe25	1.655	4.13	17.348	17.248	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Pipe4	0.882	8.77	24.231	17.658	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Pipe5	3.59	8.63	24.183	16.448	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Pipe2925	6.502	8.4	15.786	15.288	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Basin 1 out	1.454	4.07	17.078	16.669	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Pipe24	2.971	2.27	16.463	16.448	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Forest	1.501	10.58	24.301	16.669	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
Compost Pipe	0.098	4.55	19.103	18.603	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
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OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
Basin Outflow	0.004	0.004	7.665	0.011	0	3.74	0.21	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
OF487	0	0	7.665	0	0	0	0	
OF Pre #2	0.002	0.002	7.665	0.009	0	2.84	0.19	AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1
OF Pre #1	0	0	7.665	0	0	0	0	
OF6542	0	0	7.665	0	0	0	0	
Basin 1 OF	0	0	7.665	0	0	0	0	
OF489	0	0	7.665	0	0	0	0	
Forest OF	0	0	7.665	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin 2	20.36	237.3	0.778	0.774	0.004
Basin 1	18.8	1593.8	1.454	1.454	0

CONTINUITY CHECK for AR&R 100 year, 2 hours storm, average 74.3 mm/h, Zone 1

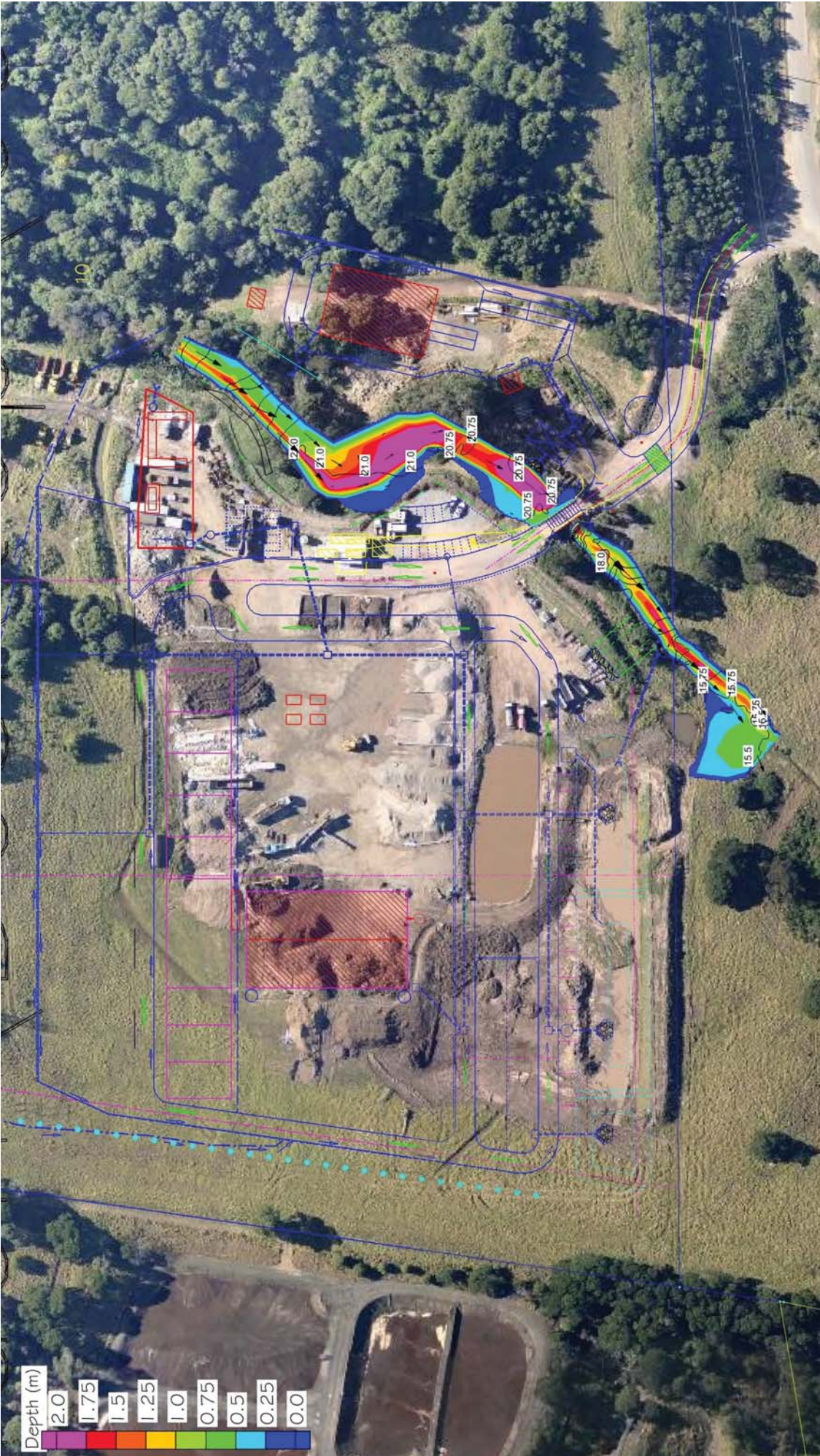
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Change (cu.m)	Difference %
Basin 2	2014.74	2013.15	1.59	0
Dummy #2	3921.56	3922.16	0	0
Area 2 Outlet	3922.28	3922.28	0	0
Area #2 Pit	1908.72	1908.52	0	0
Area #1 Pit	8289.93	8290.68	0	0
Dummy #1b	17526.15	17529.49	0	0
Area 1 Outlet	17529.49	17529.49	0	0
Basin 1	5785.83	5767.24	18.58	0
Dummy #1	9233.26	9235.5	0	0
Forest Pit	3465.64	3466.01	0	0
Collection Pit	168.45	168.59	0	-0.1
N7949	168.59	168.59	0	0

Run Log for KF110816_Basin Capacity Model_17 July 13 run at 15:37:45 on 10/6/2014

No water upwelling from any pit.
Flows were safe in all overflow routes.

APPENDIX 3

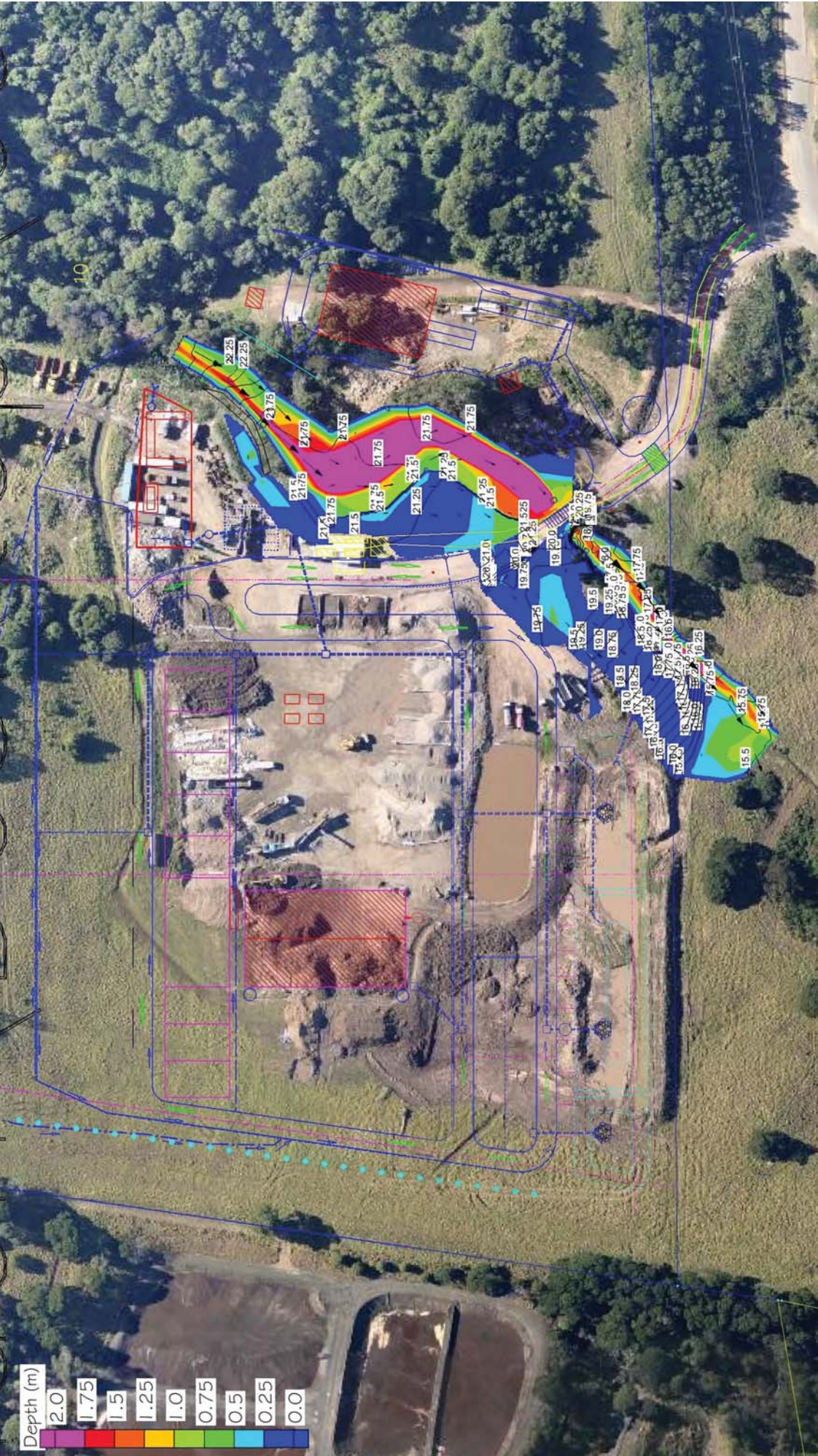
Flood Inundation Maps
Depth
Depth Difference



50 WYLLIE ROAD, KEMBLA GRANGE – ADDENDUM REPORT				
Conditions	Flood Event	Coverage	Revision	Job
Post-Developed Unblocked	100yr	Flood Depth	A	KF110816



50 WYLLIE ROAD, KEMBLA GRANGE – ADDENDUM REPORT				
Conditions	Flood Event	Coverage	Revision	Job
Post-Developed Blocked	100yr	Flood Depth	A	KF110816



50 WYLLIE ROAD, KEMBLA GRANGE – ADDENDUM REPORT				
Conditions	Flood Event	Coverage	Revision	Job
Post-Developed Blocked with 30% Climate Change	100yr	Flood Depth	A	KF110816





50 WYLLIE ROAD, KEMBLA GRANGE - ADDENDUM REPORT				
Conditions	Flood Event	Coverage	Revision	Job
Post(Unblocked) - Pre	100yr	Difference	A	KF110816

