



SCALE 1 : 250,000

0 10 km

-  Site Locality Boundary
-  Existing Road Access (Highlight)

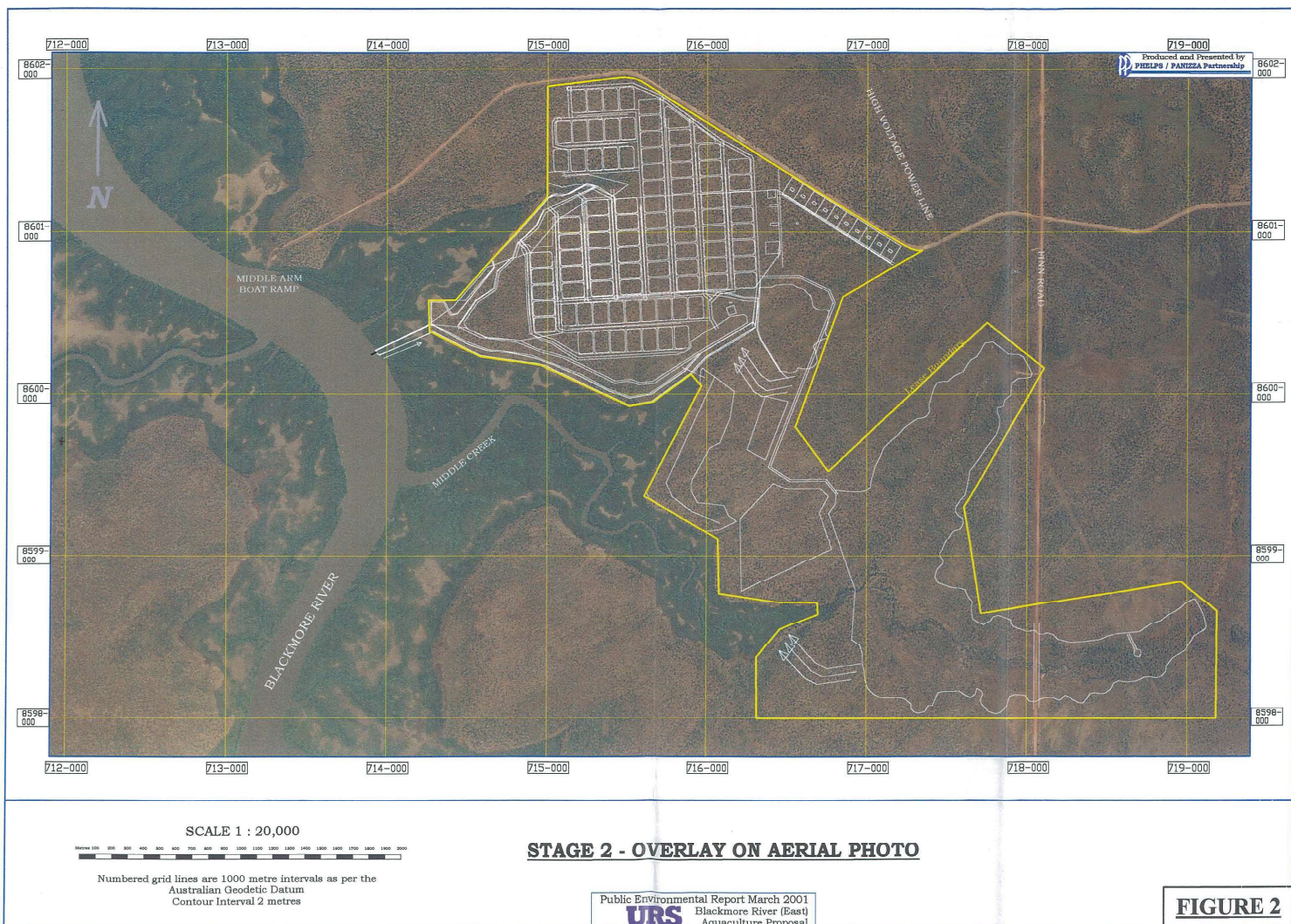
SITE LOCALITY PLAN

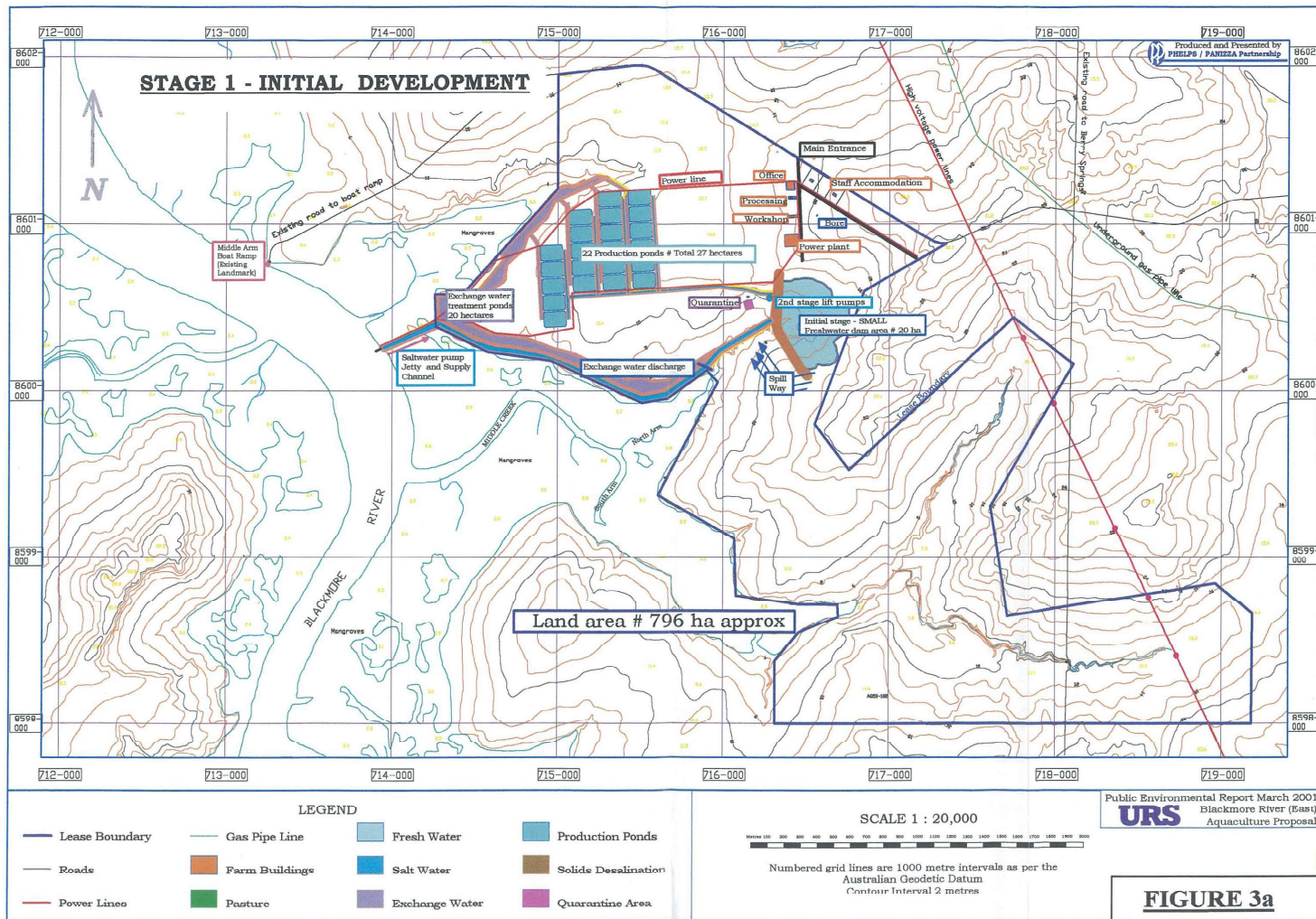
FIGURE 1

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Blackmore River (East)
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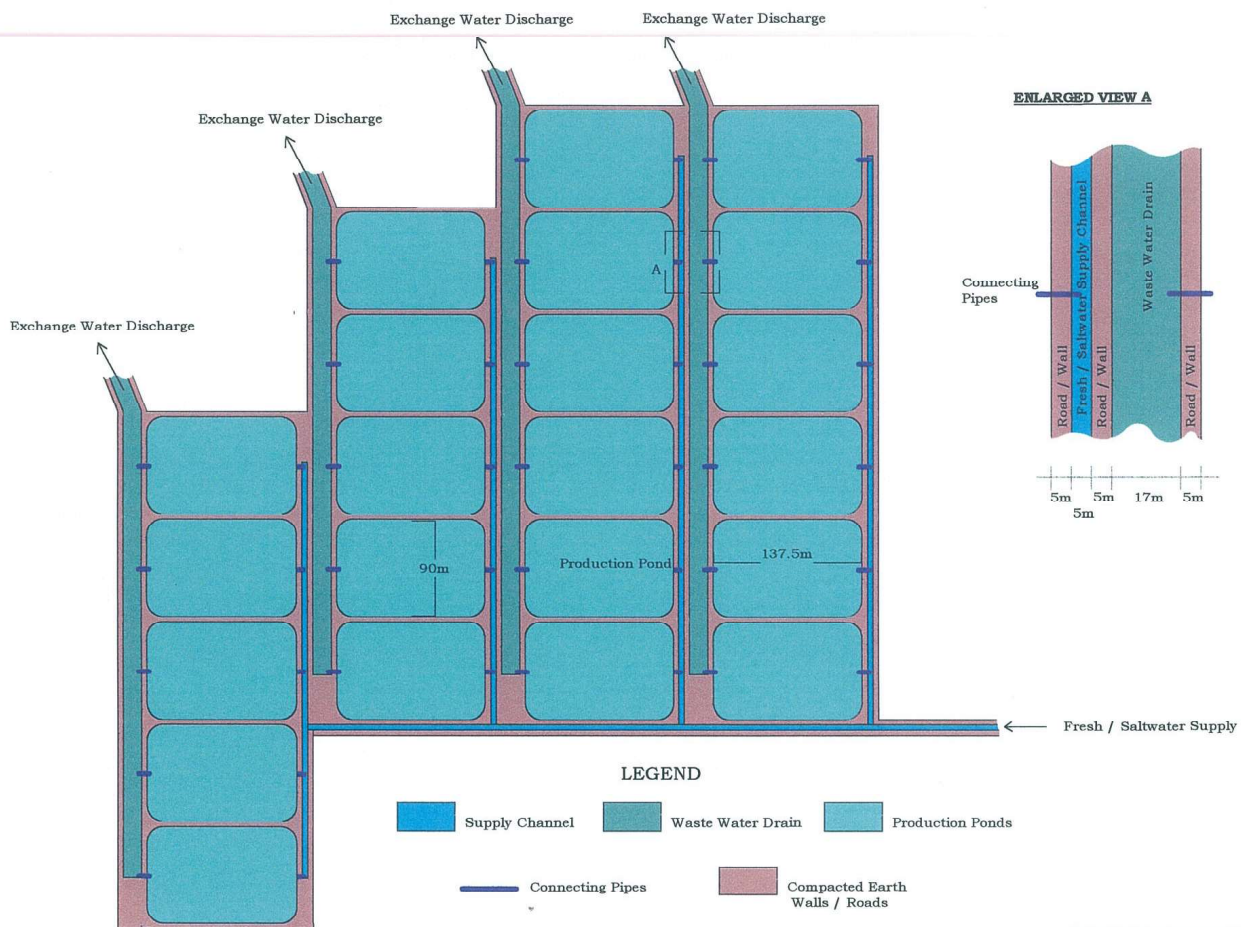




STAGE 1 - 22 PRODUCTION PONDS



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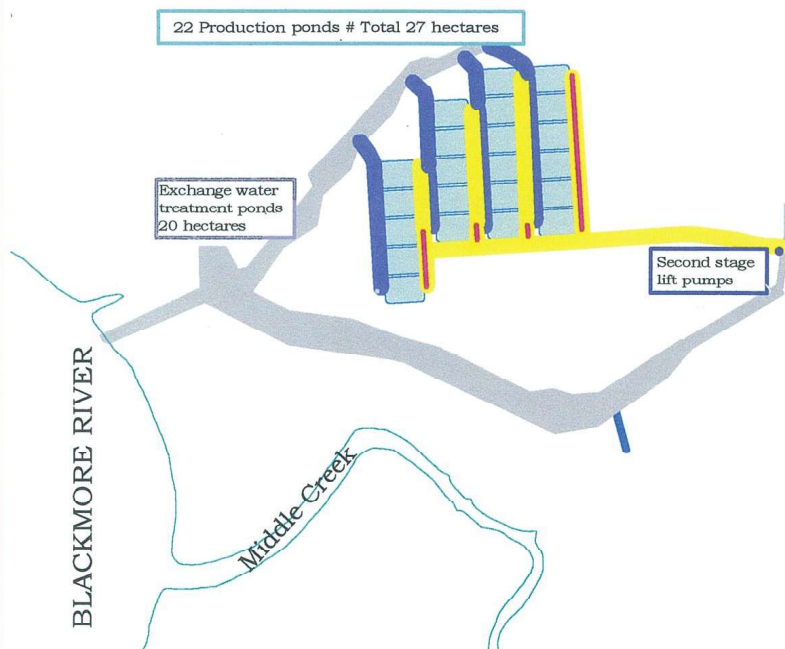


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FIGURE 3b

STAGE 1 - Supply & Drainage System to Ponds / Volumes

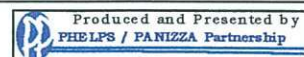
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EARTH WORK DETAILS

- FILL - SUPPLY CHANNEL only
2,280 metres x 30 m²
TOTAL # 68,400 m³
- LESS 50% filled by Cut
from adjacent ponds
783 m x 15 m²
DEDUCT 11,745 m³
NET TOTAL # 56,655 m³
- CUT - DRAINAGE CHANNEL only
1,175 metres x 18.5 m²
TOTAL # 21,738 m³
Use this CUT to FILL
Supply Channel Above
- ■ SUPPLY DRAINAGE COMBINED -
CUT ex Drainage channel
used to FILL Supply channel wall
1,110 metres x 18.5 m²
TOTAL # 20,535 m³
Other Supply wall
filled from POND

INDIVIDUAL POND VOLUMES :



CALCULATIONS ARE BASED ON ZERO NATURAL SLOPE

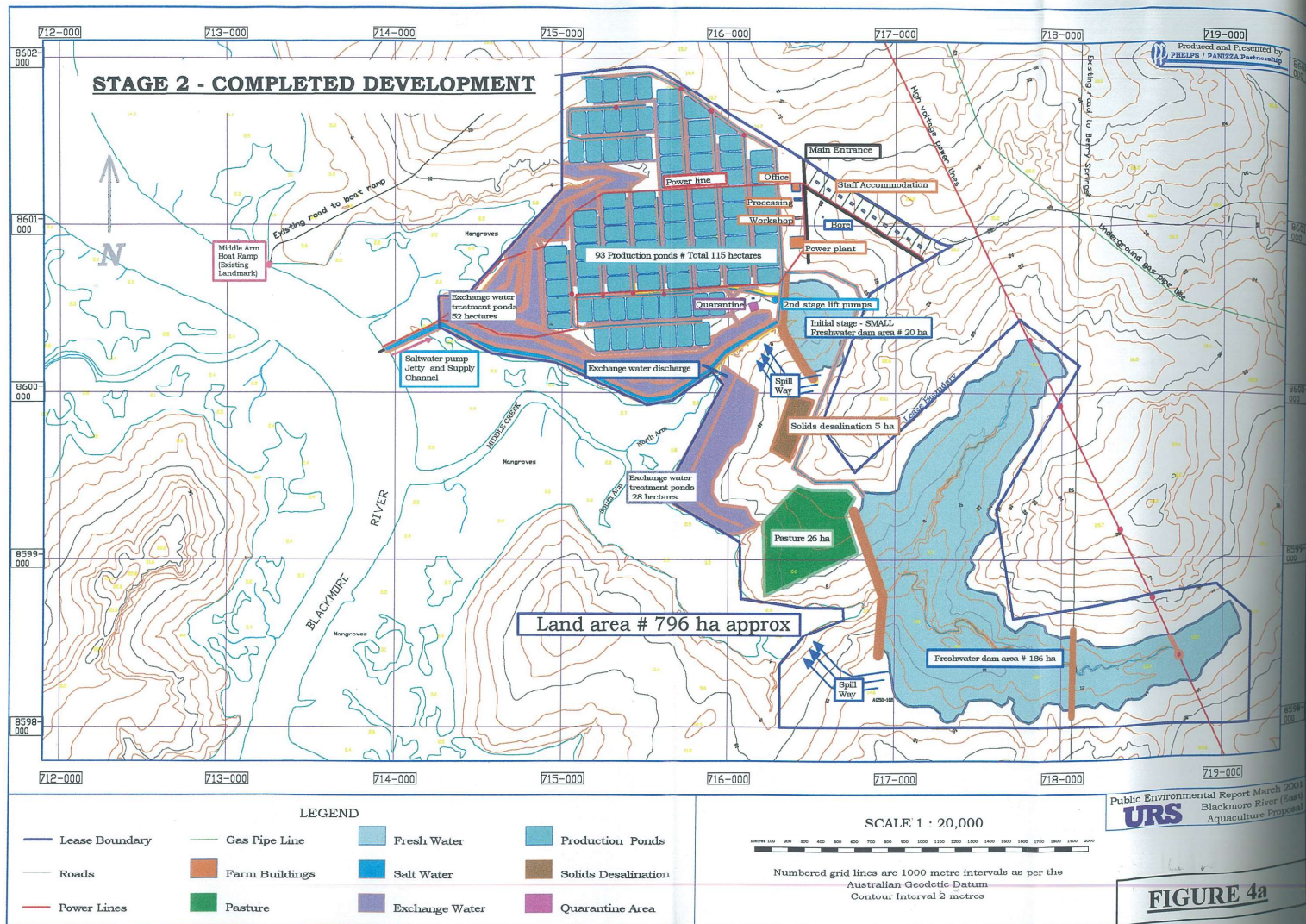
		M	Total length of walls :	455.00	M	Inside pond area :	12,375 sqM
AVERAGE Water depth :	1.75		Centre to centre distances			Area at top water level :	11,970 sqM
Internal batters " " to 1 :	1.50		Supply to drainage wall roads:	142.50	M	Pond area at base :	10,823 sqM
Suggested depth of cut :	0.500		Side to side wall roads :	95.00	M	Avg water area :	11,396 sqM
Fall in pond length	0.50		Centre to centre area :	13,537.50	sqM	Water volume :	19,943 cuM
SIDE WALL / 1 :							
Worked on Average depth - 1.75			Inside length of side wall / 1 :	137.50		Side wall / 1 :	
			Height of side wall / 1 above water level :	0.50		Total height above base :	2.25 M
			Width of side wall / 1 road :	5.00		Height above Gr/level :	1.75 M
Part of this wall figured in this pond (for fill required) :				50%		Vol of fill per lm:	13.34 cuM
						Total fill for wall :	1,834.77 cuM
						FILL EX THIS POND :	917.38 cuM
SIDE WALL / 2 :							
Worked on Average depth - 1.75			Inside length of side wall / 2 :	137.50		Side wall / 2 :	
			Height of side wall / 2 above water level :	0.50		Total height above base :	2.25 M
			Width of side wall / 2 road :	5.00		Height above Gr/level :	1.75 M
Part of this wall figured in this pond (for fill required) :				50%		Vol of fill per lm:	13.34 cuM
						Total fill for wall :	1,834.77 cuM
						FILL EX THIS POND :	917.38 cuM
SUPPLY END WALL :							
Worked on Shallow End - 1.50			Inside length of supply end wall :	90.00		Supply end wall :	
			Height of supply wall above water level :	1.00		Total height above base :	2.50 M
			Road width :	5.00		Height above Gr/level :	2.00 M
Batter down to SUPPLY Channel / to 1 :				1.50		Vol of fill per lm:	16.00 cuM
Part of this wall figured in this pond (for fill required) :				100%		Total fill for wall :	1,440.00 cuM
						FILL EX THIS POND :	1,440.00 cuM
DRAINAGE END WALL :							
Worked on Deeper End - 2.00			Inside length of supply end wall :	90.00		Drainage end wall :	
			Height of supply wall above water level :	0.50		Total height above base :	2.50 M
			Road width :	5.00		Height above Gr/level :	2.00 M
Batter down to DRAINAGE Channel / to 1 :				1.50		Vol of fill per lm:	16.00 cuM
Part of this wall figured in this pond (for fill required) :				1.00		Total fill for wall :	1,440.00 cuM
						FILL EX THIS POND :	1,440.00 cuM
Approx. fill requir'd - corners				% ex this pond	NOTE: There will be some extra fill available in the corners from channel excavation from the cnr section and overlapping int batters. These extras to be used in rounding.		
2 corners at supply end :	50.00	100.00		50%	Fill ex this pond	50.00	
2 corners at drainage end :	50.00	100.00		50%		50.00	
TOTAL CUT AND FILL FIGURES :				Fill ex this pond	CUT FIGURES :		
	Total fill				Avg'd cut area / pond floor :	10,965.75	sqM
Side wall / 1 :	1,834.77	917.38	cuM		Depth of cut (as entered) :	0.500	M
Side wall / 2:	1,834.77	917.38	"		CUT ex Pond floor :	5,482.88	cuM
Supply wall :	1,440.00	1,440.00	"		Total cut available :	5,482.88	"
Drainage wall :	1,440.00	1,440.00	"		CUT to FILL RATIO	1.14	
Corners :	200.00	100.00					
	6,749.53	4,814.77					

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FIGURE 3d



STAGE 2 - Supply & Drainage System to Ponds / Volumes

93 Production ponds # Total 115 hectares

Exchange water
treatment ponds
4 ponds
Approx 80 ha

2nd stage lift pumps

EARTH WORK DETAIL

INITIAL DEVELOPMENT

FILL - SUPPLY CHANNEL only
 2,520 metres x 30 m²
 TOTAL # 75,600 m³

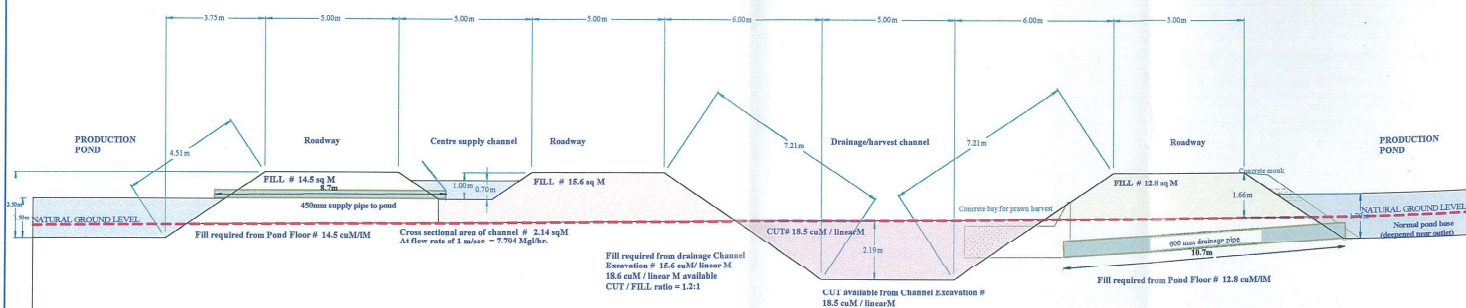
LESS 50% filled by Cut
 from adjacent ponds
 1,400 m x 15 m²
 DEDUCT 21,000 m³
 NET TOTAL # 54,600 m³

CUT - DRAINAGE CHANNEL only
 2,180 metres x 18.5 m²
 TOTAL # 40,330 m³
 Use this CUT to FILL
 Supply Channel Above

SUPPLY DRAINAGE COMBINED
 CUT ex Drainage channel
 used to FILL Supply channel wall
 4,725 metres x 18.5 m²
 TOTAL # 87,413 m³
 Other Supply wall
 filled from POND

FIGURE 4b

POND SUPPLY & DRAINAGE CHANNELS VOLUMES / SECTION



INTERNAL POND BATTERS ARE # 1.5:1
INTERNAL CHANNEL BATTERS ARE # 1.5:1

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Aquaculture Proposal

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FIGURE 5

STAGE 1 FRESHWATER DAM

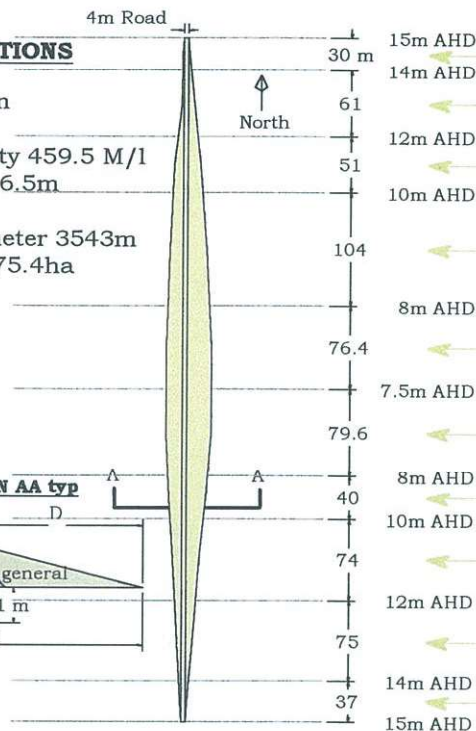
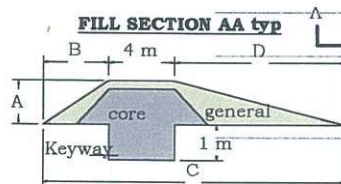


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DAM SPECIFICATIONS

Perimeter 1,720m
Area 20ha
Maximum capacity 459.5 M/1
Maximum depth 6.5m

Catchment perimeter 3543m
Catchment area 75.4ha



DAM WALL EARTH VOLUMES

A=.5m B=1m C=6.5m D=1.5m
Cross section core fill area 6.25 m² x 30m = 187.5 m³
Cross section general fill area .38 m² x 30m = 11.4 m³

A=2m B=4m C=14m D=6m
Cross section core fill area 16 m² x 61m = 976 m³
Cross section general fill area 6 m² x 61m = 366 m³

A=4m B=8m C=24m D=12m
Cross section core fill area 20.25 m² x 51m = 1,032.75 m³
Cross section general fill area 39.76 m² x 51m = 2,027.76 m³

A=6m B=12m C=34m D=18m
Cross section core fill area 42.25 m² x 104m = 4,394 m³
Cross section general fill area 75.77 m² x 104m = 7,880.08 m³

A=7.5m B=15m C=41.5m D=22.5m
Cross section core fill area 64 m² x 76.4m = 4,889.6 m³
Cross section general fill area 110.65 m² x 76.4m = 8,453.66 m³

A=7.5m B=15m C=41.5m D=22.5m
Cross section core fill area 64 m² x 79.6m = 5,094.40 m³
Cross section general fill area 110.65 m² x 79.6m = 8,807.74 m³

A=6m B=12m C=34m D=18m
Cross section core fill area 42.25 m² x 40m = 1,690 m³
Cross section general fill area 75.77 m² x 40m = 3,030.80 m³

A=4m B=8m C=24m D=12m
Cross section core fill area 20.25 m² x 74m = 1,498.5 m³
Cross section general fill area 39.76 m² x 74m = 2,942.24 m³

A=2m B=4m C=14m D=6m
Cross section core fill area 16 m² x 75m = 1,200 m³
Cross section general fill area 6 m² x 75m = 450 m³

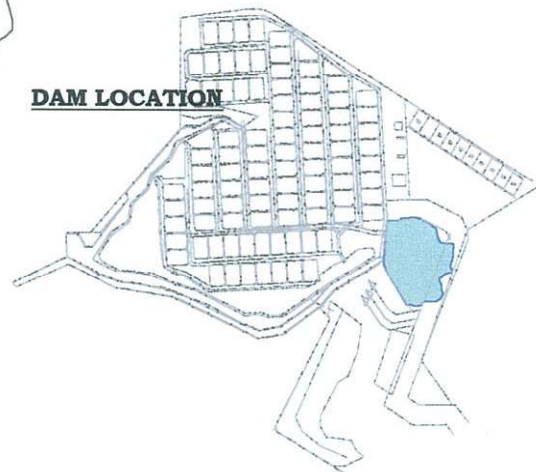
A=.5m B=1m C=6.5m D=1.5m
Cross section core fill area 6.25 m² x 37m = 231.25 m³
Cross section general fill area .38 m² x 37m = 14.06 m³

TOTAL CORE FILL REQUIRED 21,194 m³
TOTAL GENERAL FILL REQUIRED 33,983.74 m³
TOTAL FILL 55,177.74 m³

LEGEND

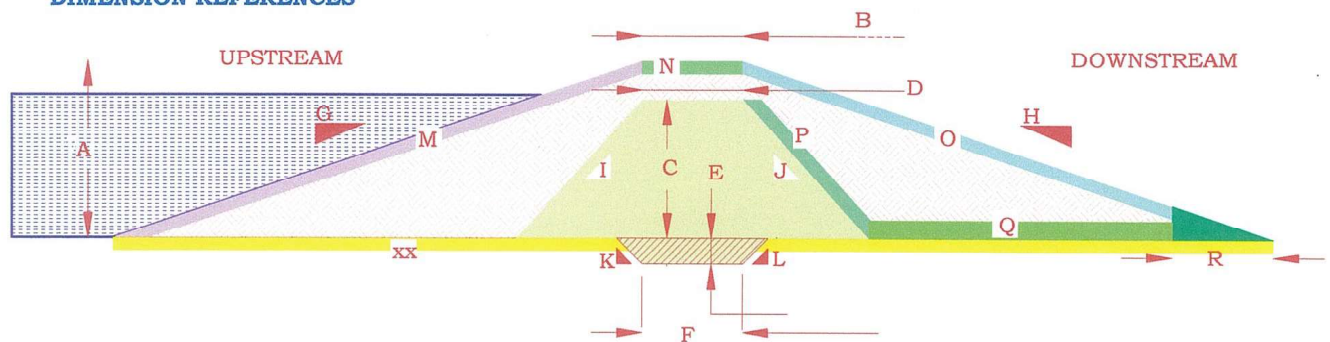
- Dam wall construction
- Fresh Water
- Lease Boundary

DAM LOCATION

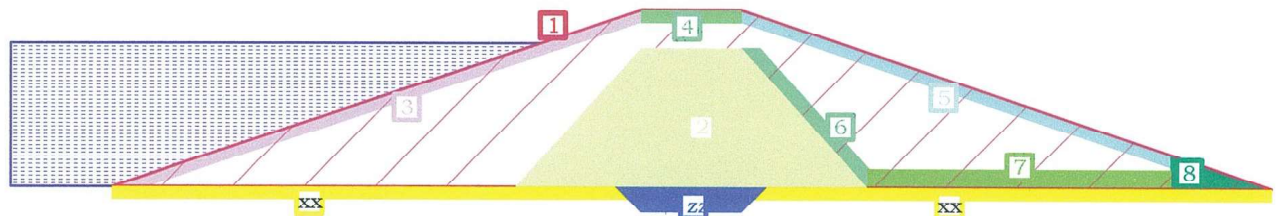


FRESHWATER DAM WALL - Typical Fill Zones

DIMENSION REFERENCES



FILL ZONE REFERENCES



STAGE 1 DAM / VOLUME CALCULATIONS

SITE REFERENCE: BLACKMORE RIVER (EAST) _ INITIAL SMALL DAM

For DIMENSION and ZONE references - note drawing "Freshwater Damwall - Fill Zones"

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DAM WALL AVERAGE DIMENSIONS AT DEEPEST POINT				AHD avg and range through Deepest Section	
Height of dam wall - A:				7.5	7.0 to 8.0
Width of road - B:				4.0	
Height of wall core - C:				5.0	
Top width of wall core - D:				4.0	
Depth of keyway - E:				1.0	
Width of keyway base - F:				4.0	
Depth of prestrip - xx:				0.5	
Material type				Material type descriptions	
Depth of upstream rip-rap - M:				0.5	RR
Depth of road surface - N:				0.5	RM
Depth of outside rip-rap - O:				0.5	TS
Thickness of filter wall - P:				1.0	GF
Depth of filter base - Q:				1.0	GF
Length of external filter toe - R:				2.0	GF
				GC Gravelly clay from within Dam area	
				CC Clayey Sand Gravel sub soil	
				RR Rip-rap - rock	
				TS Topsoil	
				GF Gravel for filter	
				RM Road material	

ZONES	
1	All - total fill above ground level
2	Clay core section above ground level
3	Internal (upstream) Rip Rap
4	Road surface section on wall
5	External (down stream) rip rap(or other)
6	External filter - vertical
7	External filter - base
8	External filter - toe
Balance	"All" less other above ground sections
xx	Pre-strip section - below ground level
zz	Keyway section - below ground level

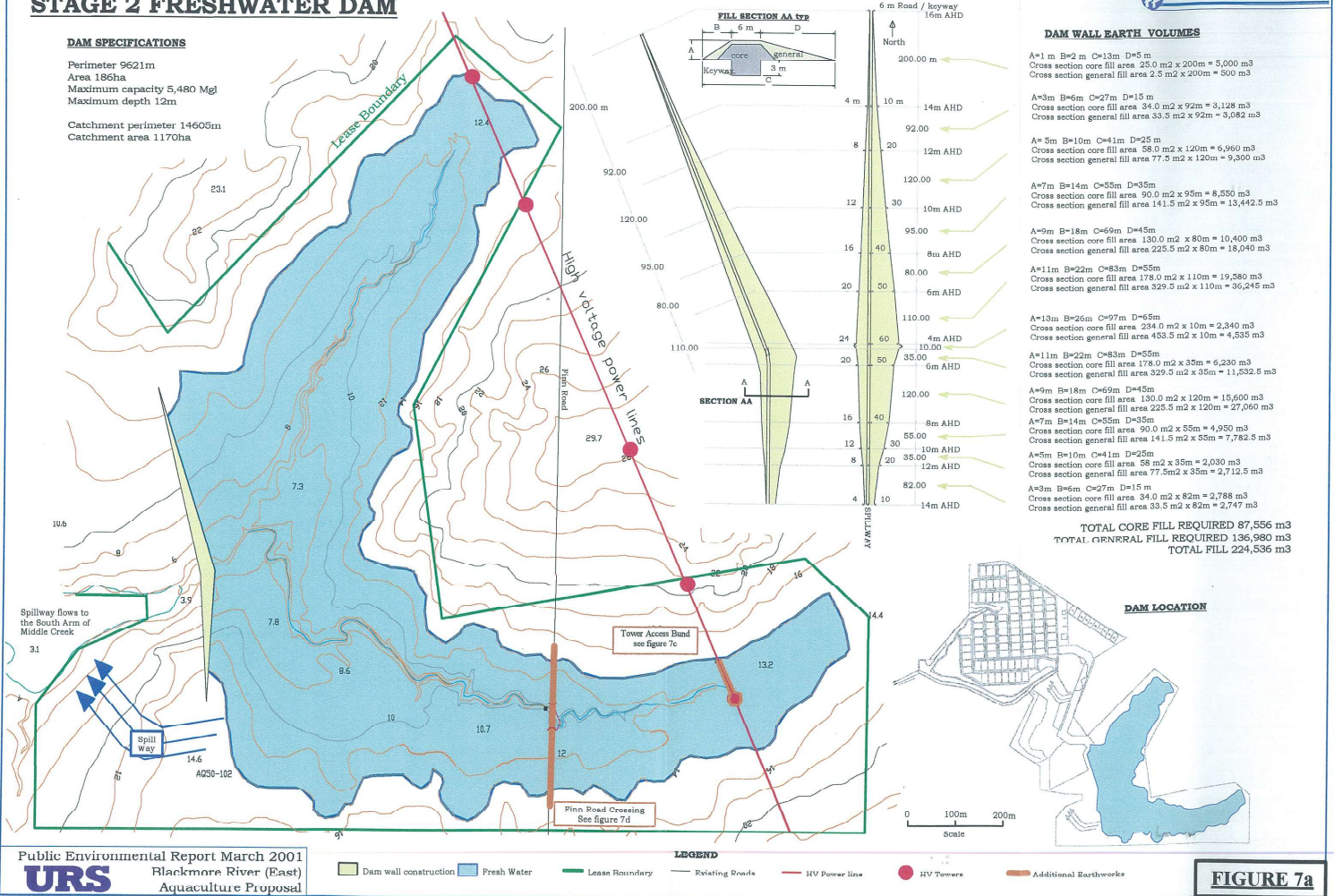
AHD range 7.5-8.0				AHD range 8.0-10.0				AHD range 10.0-12.0				AHD range 12.0-14.0				AHD range 14.0-15.0			
Centre >> 156				<N & S> 40				<N & S> 74				<N & S> 75				30			
Deepest sect'n Avg/AHD 7.5				Section 2 - avg AHD: 9.0				Section 3 - avg AHD: 11.0				Section 4 - avg AHD: 13.0				Section 5 - avg AHD: 14.5			
Length of section 156				Length of section 144				Length of section 125				Length of section 136				Length of section 67			
m³ per linear M				m³ per linear M				m³ per linear M				m³ per linear M				m³ per linear M			
Total m³ this section				Total m³ this section				Total m³ this section				Total m³ this section				Total m³ this section			
Zone				Zone				Zone				Zone				Zone			
1 - ALL				1 - ALL				1 - ALL				1 - ALL				1 - ALL			
170.63				114.00				56.00				18.00				2.63			
26,618				16,416				7,000				2,448				176			
2				2				2				2				2			
45.00				26.25				8.25				-1.75				-4.00			
7,020				3,780				1,031				-238				-268			
3				3				3				3				3			
11.86				9.49				6.32				3.16				0.79			
1,850				1,366				791				430				53			
4				4				4				4				4			
2.00				2.00				2.00				2.00				2.00			
312				288				250				272				134			
5				5				5				5				5			
8.39				6.71				4.47				2.24				0.56			
1,308				966				559				304				37			
6				6				6				6				6			
7.07				4.95				2.12				0.71				2.83			
1,103				713				265				96				190			
7				7				7				7				7			
10.61				8.49				5.66				2.83				0.71			
1,655				1,222				707				385				47			
8				8				8				8				8			
8.00				6.50				4.50				2.50				1.00			
1,248				936				563				340				67			
Balance				Balance				Balance				Balance				Balance			
77.70				49.62				22.68				6.32				-1.26			
12,122				7,145				2,834				859				-84			
xx				xx				xx				xx				xx			
17.75				14				9				4				0.25			
2,769				2,016				1,125				544				17			
zz				zz				zz				zz				zz			
5.00				5.00				5.00				5.00				5.00			
780				720				625				660				335			
zz				zz				zz				zz				zz			
5.00				5.00				5.00				5.00				5.00			
335				319.37				36.5				0				0			

DAM WATER VOLUME																	
Area of this section / ha :		0.50	Area of this section / ha :		3.60	Area of this section / ha :		10.00	Area of this section / ha :		18.00	Area of this section / ha :		0.00	Area of this section / ha :		0.00
Freeboard / metres:		1.00	Avg water depth :		6.50	Avg water depth :		5.00	Avg water depth :		3.00	Avg water depth :		1.00	Avg water depth :		-0.50
Total Ml :		459.50	Volume in this section /Ml :		32.50	Volume in this section /Ml :		155.00	Volume in this section /Ml :		192.00	Volume in this section /Ml :		80.00	Volume in this section /Ml :		0.00

STAGE 2 FRESHWATER DAM

DAM SPECIFICATIONS

Perimeter 9621m
Area 186ha
Maximum capacity 5,480 Mgl
Maximum depth 12m
Catchment perimeter 14605m
Catchment area 1170ha



STAGE 2 DAM / VOLUME CALCULATIONS

SITE REFERENCE: BLACKMORE RIVER (EAST) 186 HA FRESHWATER DAM
For DIMENSION and ZONE references - note drawing "Freshwater Damwall - Fill Zones"

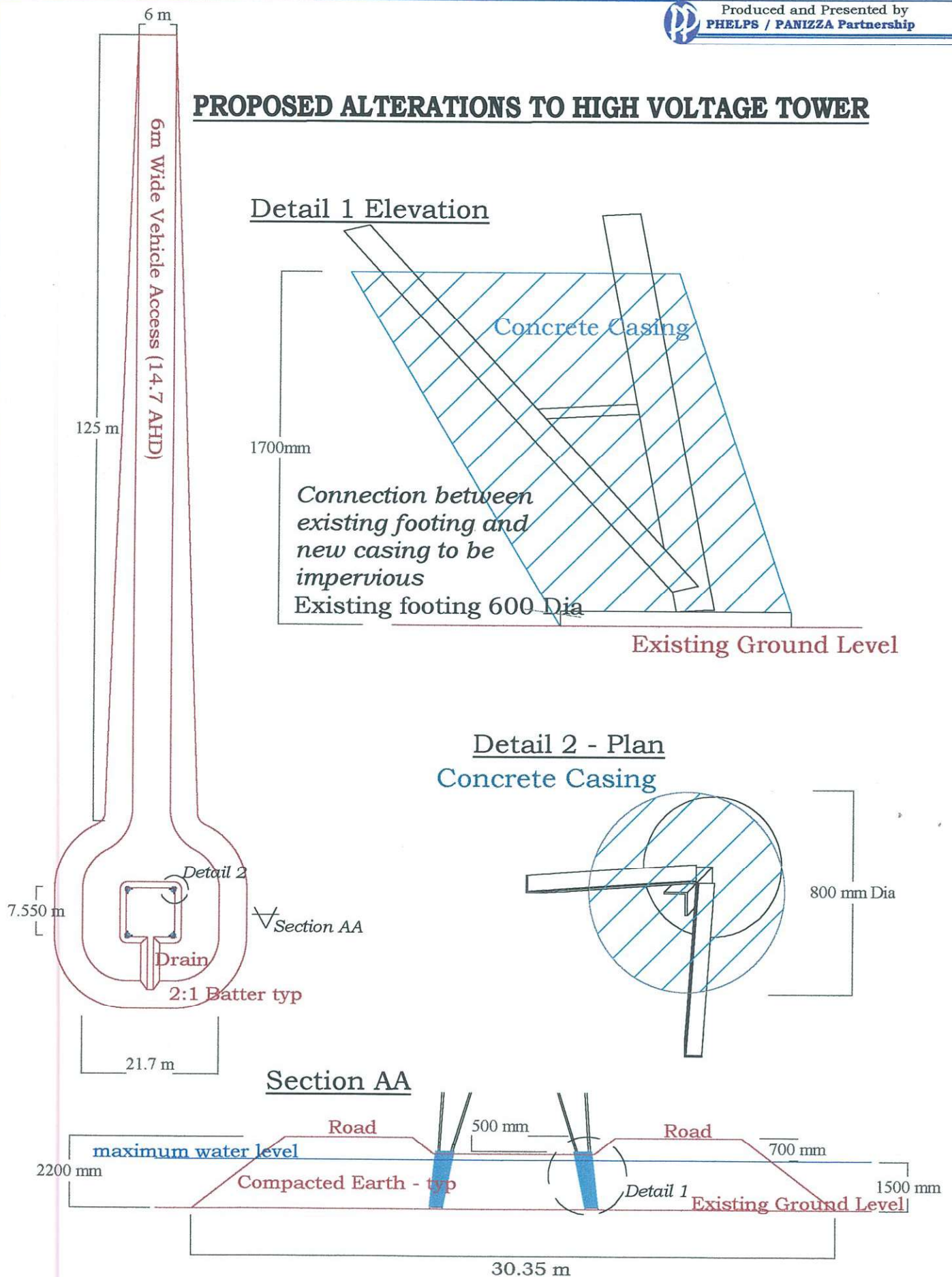


FOR DIMENSION AND ZONE references - note drawing "Freshwater Damwall - Fill Zones"				ZONES	
DAM WALL AVERAGE DIMENSIONS AT DEEPEST POINT				AHD avg and range through Deepest Section	
Height of dam wall - A:		13.0	Inside batter to 1 - C:		5.0
Width of road - B:		6.0	Outside batter to 1 - H:		2.0
Height of wall core - C:		12.0	Clay core inside batter to 1 - I:		1.0
Top width of wall core - D:		6.0	Clay core outside batter to 1 - J:		1.0
Depth of keyway - E:		3.0	Keyway inside batter to 1 - K:		Balance
Width of keyway base - F:		6.0	Keyway outside batter to 1 - L:		
Depth of prestrip - xx:		0			xx
					zz

AHD range 3.0-4.0			AHD range 4.0-6.0			AHD range 6.0-8.0			AHD range 8.0-10.0			AHD range 10.0-12.0			AHD range 12.0-14.0			AHD range 14.0-16.0		
Centre >>			<N & S>			<N & S>			<N & S>			<N & S>			<N & S>			<N & S>		
Deepest sect'n Avg/AHD:			Section 2 - avg AHD:			Section 3 - avg AHD:			Section 4 - avg AHD:			Section 5 - avg AHD:			Section 6 - avg AHD:			Section 6 - avg AHD:		
Length of section			Length of section			Length of section			Length of section			Length of section			Length of section			Length of section		
m³ per linear M			m³ per linear M			m³ per linear M			m³ per linear M			m³ per linear M			m³ per linear M			m³ per linear M		
Total m³			Total m³			Total m³			Total m³			Total m³			Total m³			Total m³		
Balance			Balance			Balance			Balance			Balance			Balance			Balance		
Area of this section / ha:			Area of this section / ha:			Area of this section / ha:			Area of this section / ha:			Area of this section / ha:			Area of this section / ha:			Area of this section / ha:		
Avg water depth:			Avg water depth:			Avg water depth:			Avg water depth:			Avg water depth:			Avg water depth:			Avg water depth:		
Volume in this section / ML:			Volume in this section / ML:			Volume in this section / ML:			Volume in this section / ML:			Volume in this section / ML:			Volume in this section / ML:			Volume in this section / ML:		



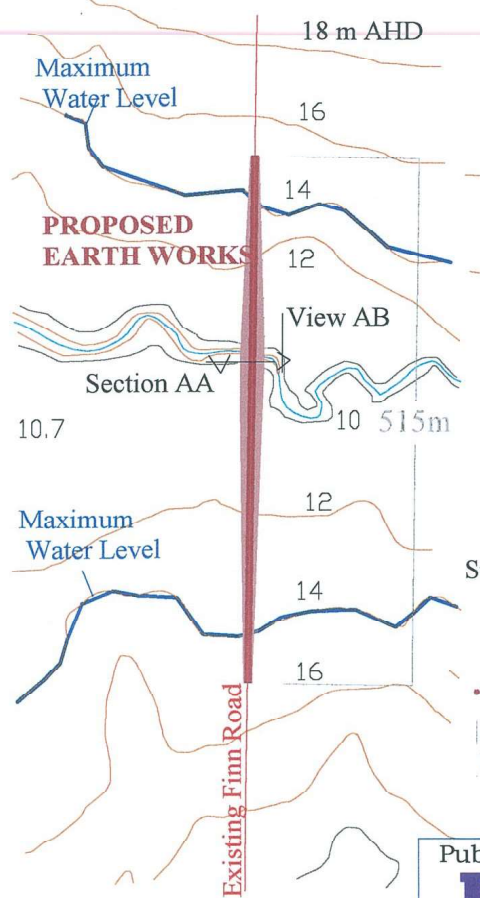
PROPOSED ALTERATIONS TO HIGH VOLTAGE TOWER



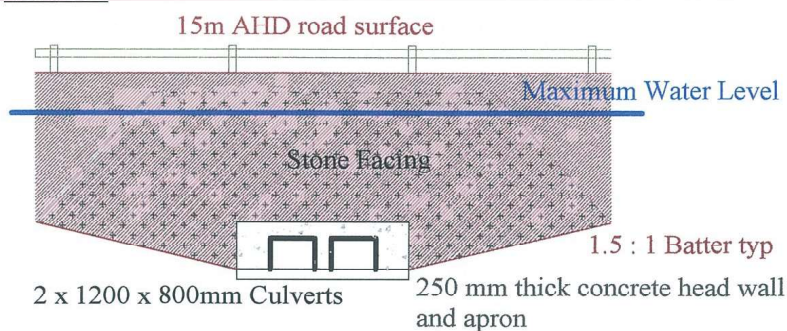
PROPOSED EARTH WORKS TO FINN ROAD CROSSING



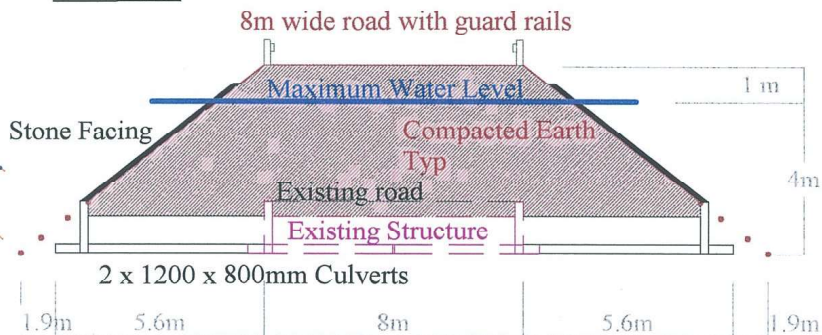
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View AB



Section AA



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FIGURE 7d



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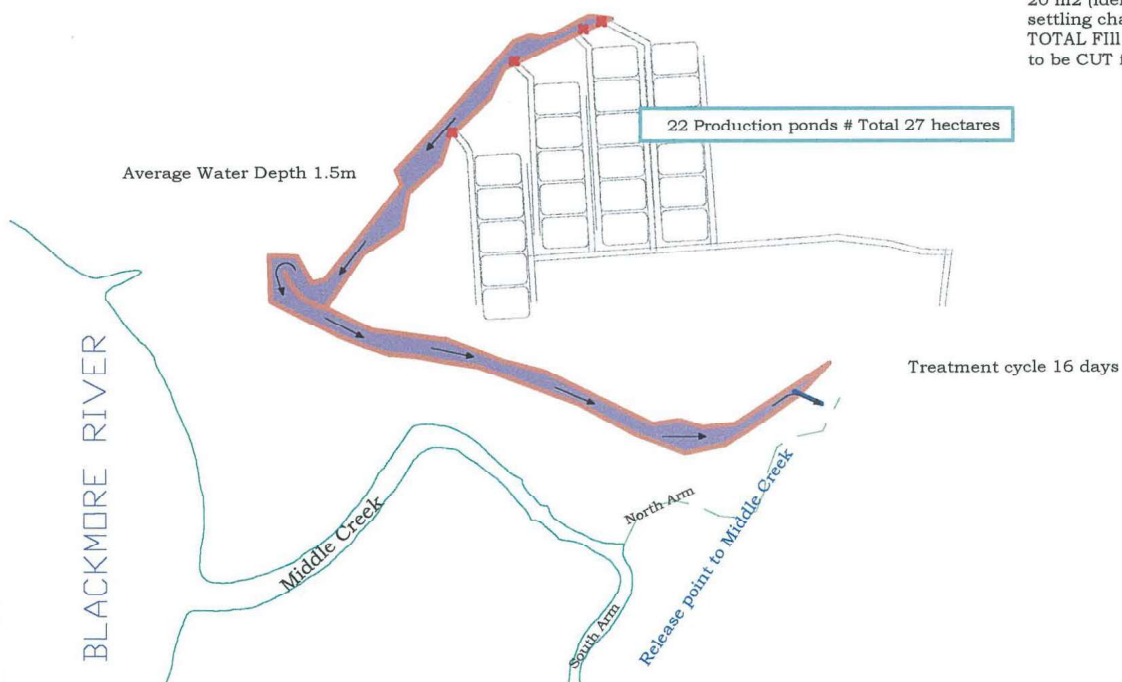
STAGE 1 - EXCHANGE WATER TREATMENT LOCATION / VOLUMES

LEGEND

- Direction of water flow
- Release points into treatment ponds
- Pond floor 5m AHD

EARTH WORK DETAILS

STAGE 1
EXCHANGE WATER
TREATMENT POND
- 20 ha
Wall length 6,400 metres
Pond length 3,200 m x
20 m2 (identical to
settling channel)
TOTAL FILL # 64,000 m3
to be CUT from within pond area



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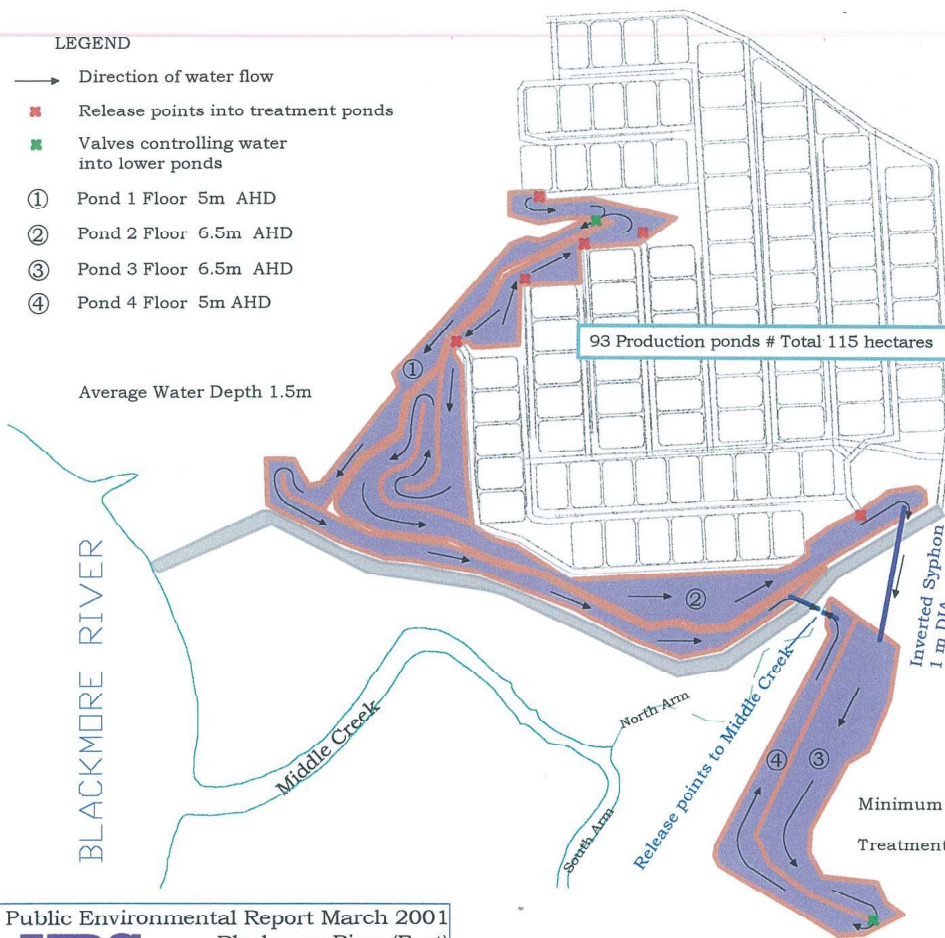
FIGURE 8

STAGE 2 - EXCHANGE WATER TREATMENT PONDS

LEGEND

- Direction of water flow
- Release points into treatment ponds
- Valves controlling water into lower ponds
- ① Pond 1 Floor 5m AHD
- ② Pond 2 Floor 6.5m AHD
- ③ Pond 3 Floor 6.5m AHD
- ④ Pond 4 Floor 5m AHD

Average Water Depth 1.5m



EARTH WORK DETAILS

STAGE 1
EXCHANGE WATER
TREATMENT POND
- 20 ha
Wall length 6,400 metres
Pond length 3,200 metres x
20 m2 (identical to
settling channel)
TOTAL Fill # 64,000 m3
to be CUT from within pond area

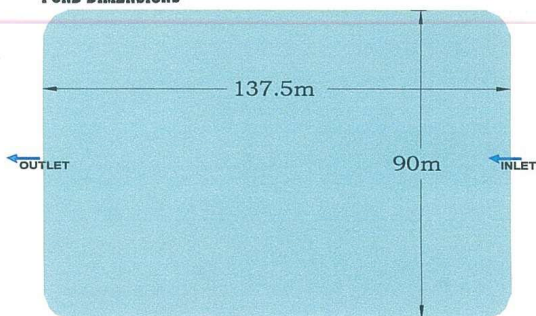
STAGE 2
EXCHANGE WATER
TREATMENT PONDS
- 60 ha
Wall length 11800 metres
Pond length 5900 metres x
20 m2 (identical to
settling channel)
TOTAL Fill # 118,000 m3
to be CUT from within pond area

TOTAL
EXCHANGE WATER
TREATMENT PONDS
- 80 ha
Wall length 18,200 metres
Pond length 9,100 metres x
20 m2 (identical to
settling channel)
TOTAL Fill # 182,000 m3
to be CUT from within pond area

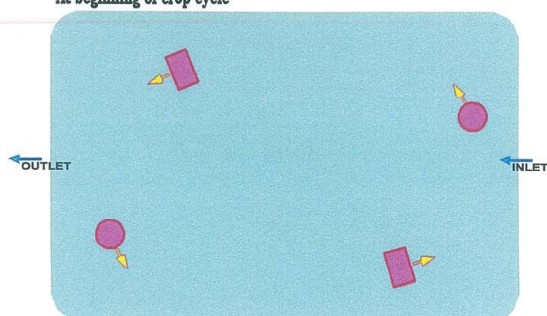
AERATOR PLACEMENT

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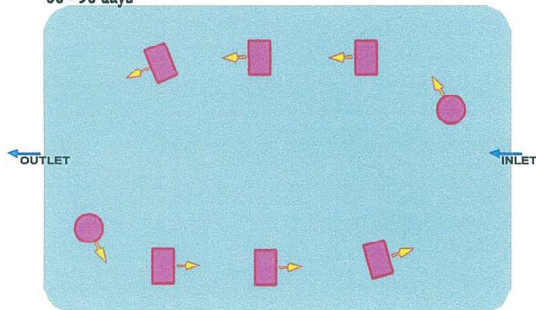
POND DIMENSIONS



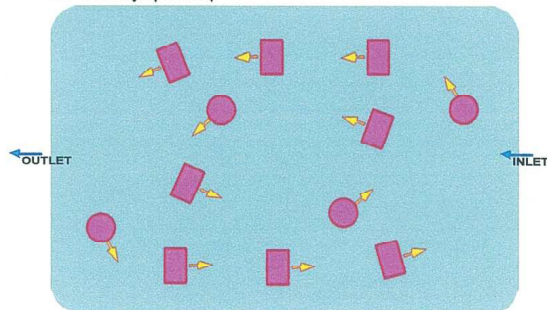
AERATOR PLACEMENT At beginning of crop cycle



AERATOR PLACEMENT 60 - 90 days



AERATOR PLACEMENT 90 - 130 days (harvest)

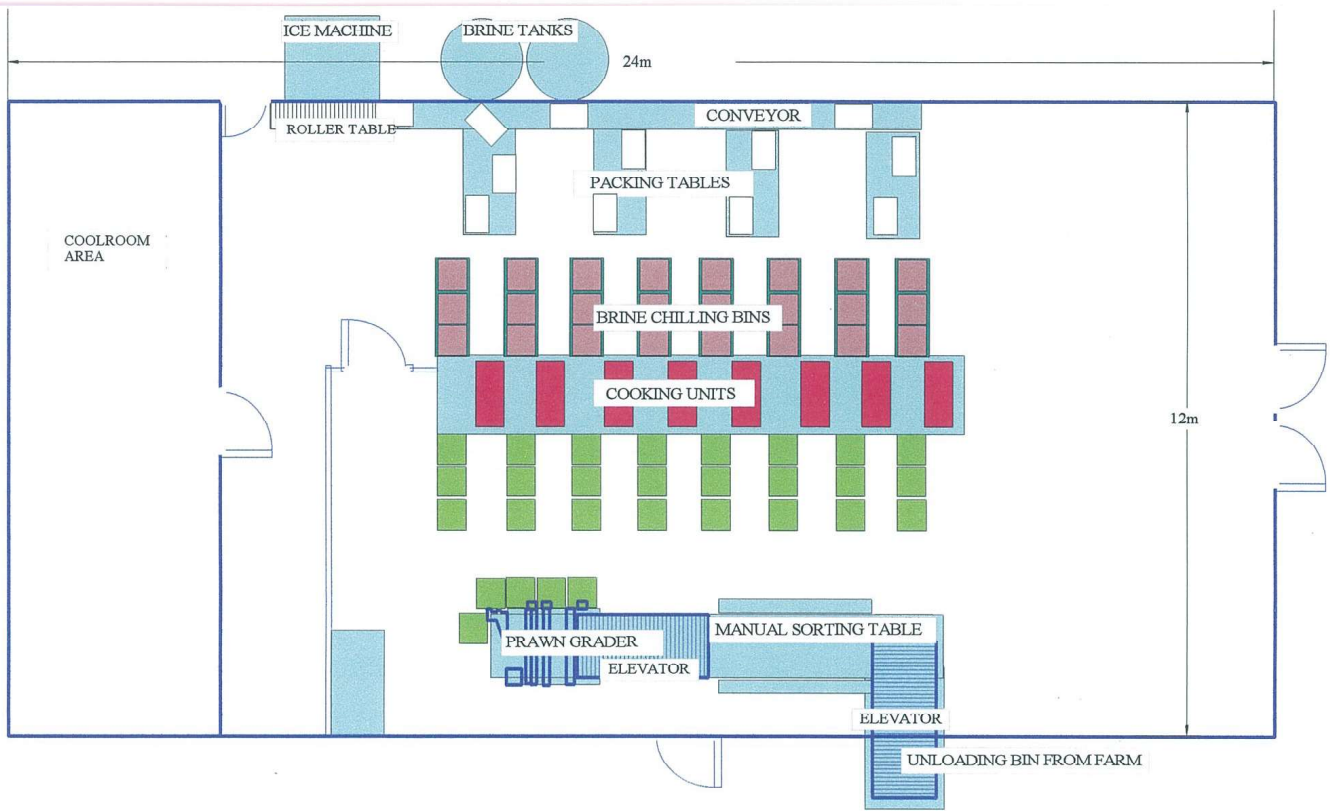


1.5 kw PADDLEWHEEL AERATOR
(arrow indicates direction of water flow)

1.5 kw AIRJET (aspirator) AERATOR
(arrow indicates direction of water flow)

PRAWN COOKING AND PACKING SHED

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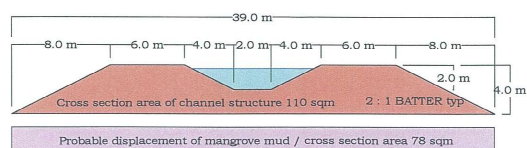
- Raw prawn bins
- Cooked prawn bins
- Packed cases of prawns

0 1 2 3 4 5 metres

FIGURE 11

SALTWATER SUPPLY JETTY, PUMPS, SUPPLY & SETTLING CHANNEL

SECTION AA - SALTWATER SUPPLY CHANNEL

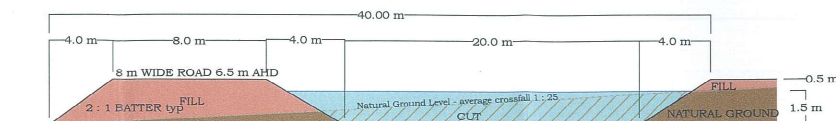


TOTAL EARTH FILL
Channel fill & mangrove mud 183 sqm
Channel length 350 m
= 64,050 cubic metres of fill

MAXIMUM WATER FLOW
Water area = 14 sqm
Flowrate = 1 m / sec
= 50.4 Mega litres / hour

Note
Maximum flow rates are calculated on the basis that exceeding 1 metre / sec would cause damage to earth channel.
The average farm requirement would not exceed 12 Mega litres / hour therefore both channels are adequate.

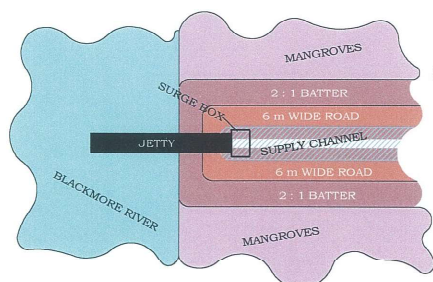
SECTION BB - SALTWATER SETTLING CHANNEL



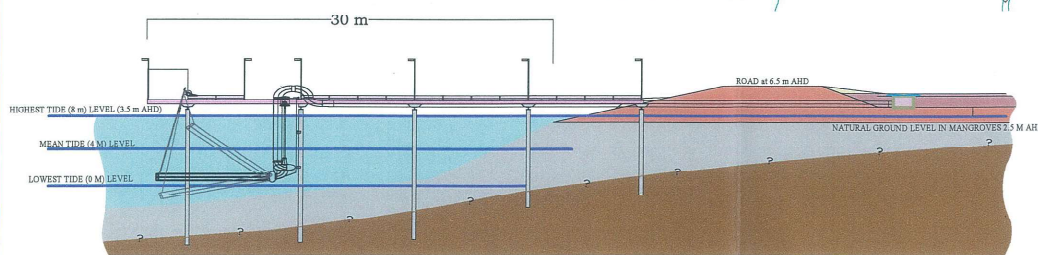
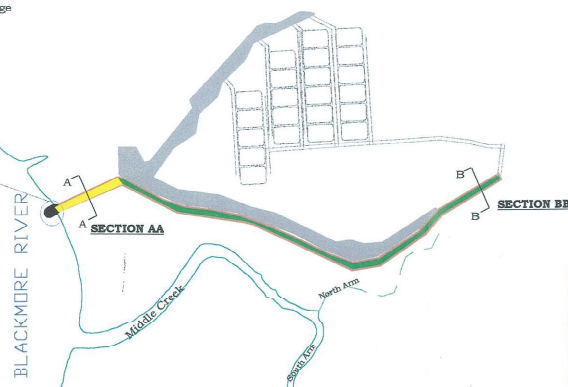
TOTAL EARTH FILL
Fill required 20 cubic metres
Cut required 22 cubic metres
Cut to Fill ratio = 1.1 : 1

MAXIMUM WATER FLOW
Water area = 34.5 sqm
Flowrate = 1 m / sec
= 124 Mega litres / hour

MAXIMUM WATER VOLUME
Channel length 1,300 m
Water area = 34.5 sqm
= 44.85 Mega litres
50% useable = 22.4 Mega litres

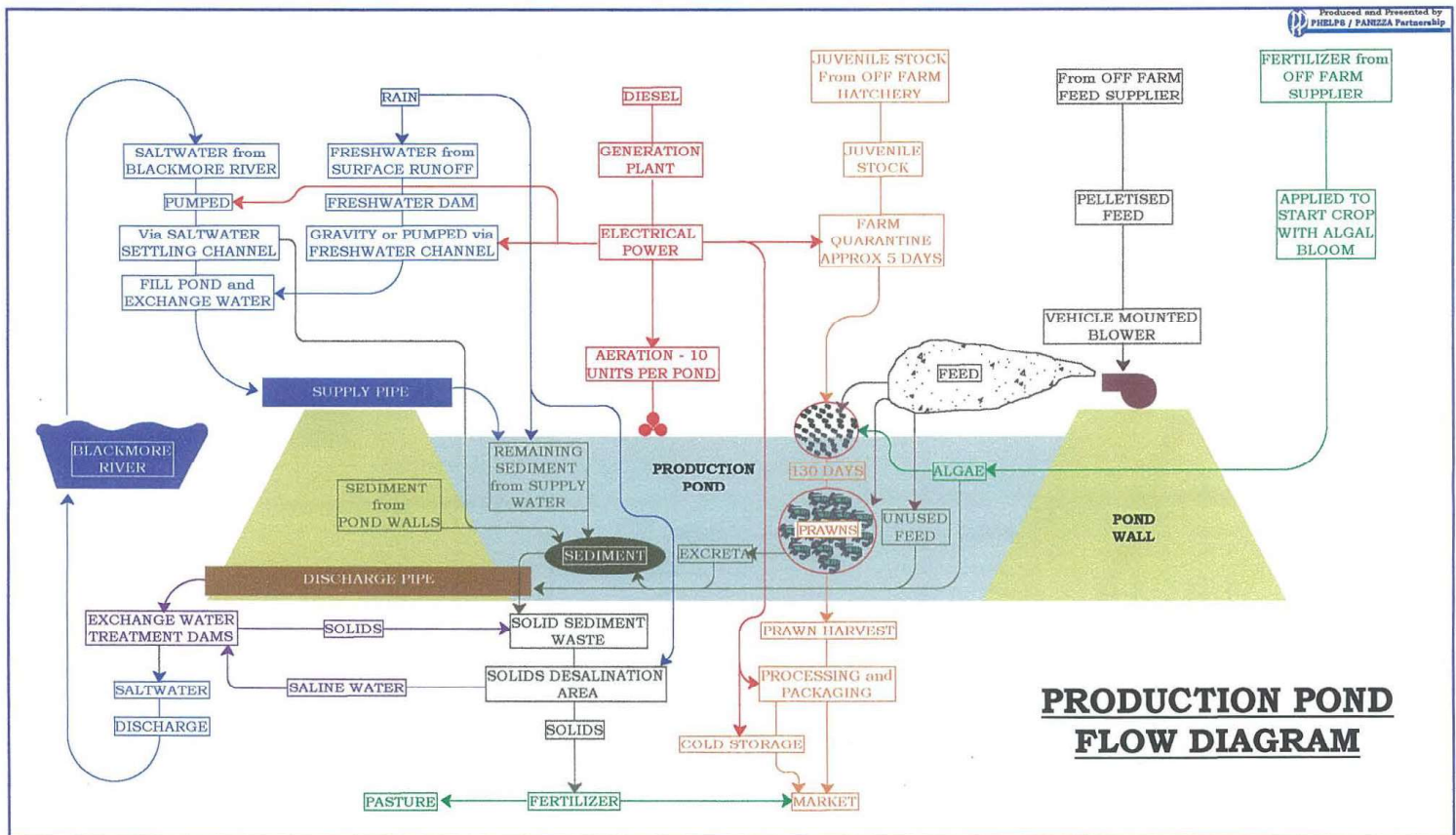


ELEVATION



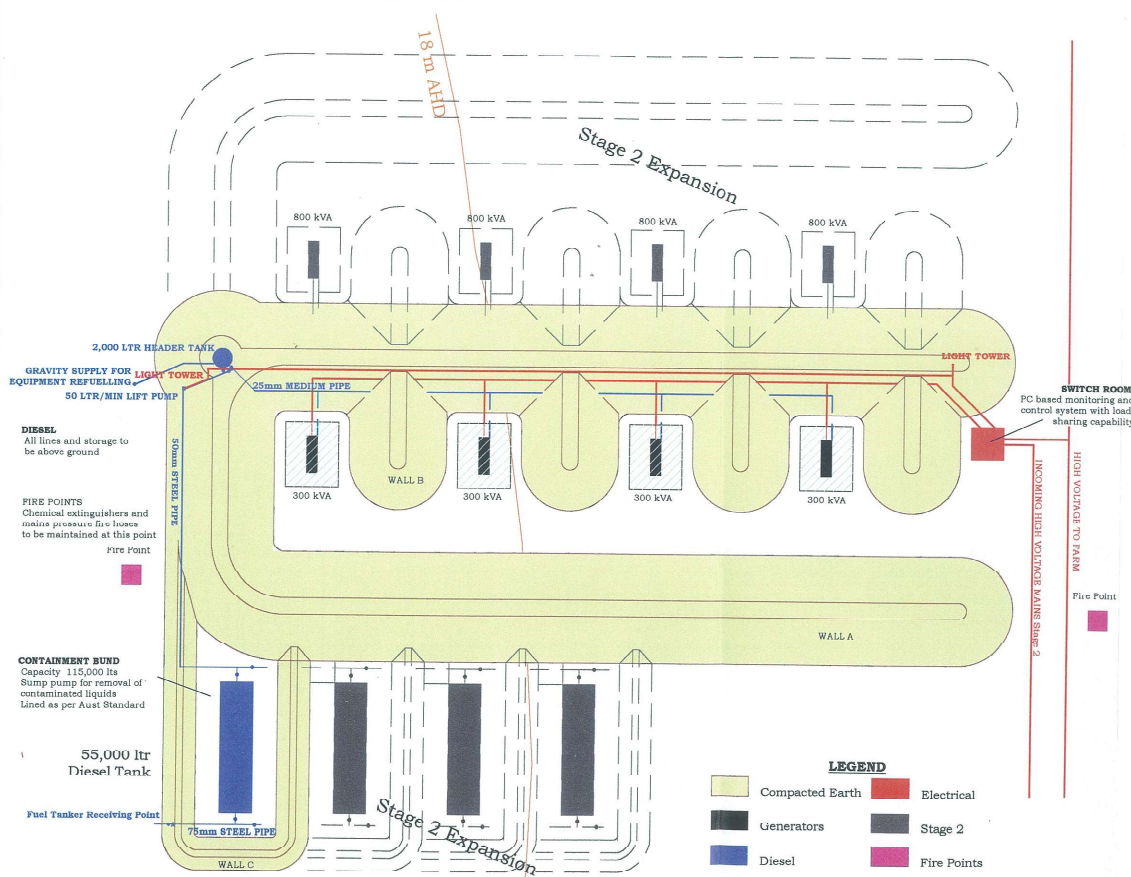
LEGEND

- Saltwater Settling Channel 1,300 m
- Saltwater Supply Channel 350 m
- Earth Fill
- Clayey gravelly sand
- Saltwater
- Mangroves
- River
- Mangrove clay

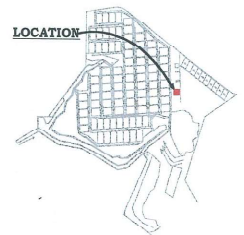
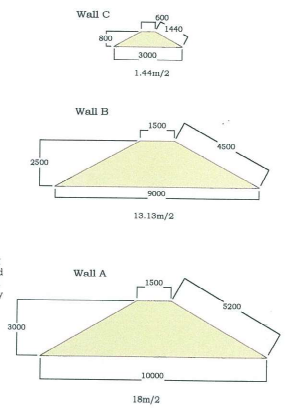


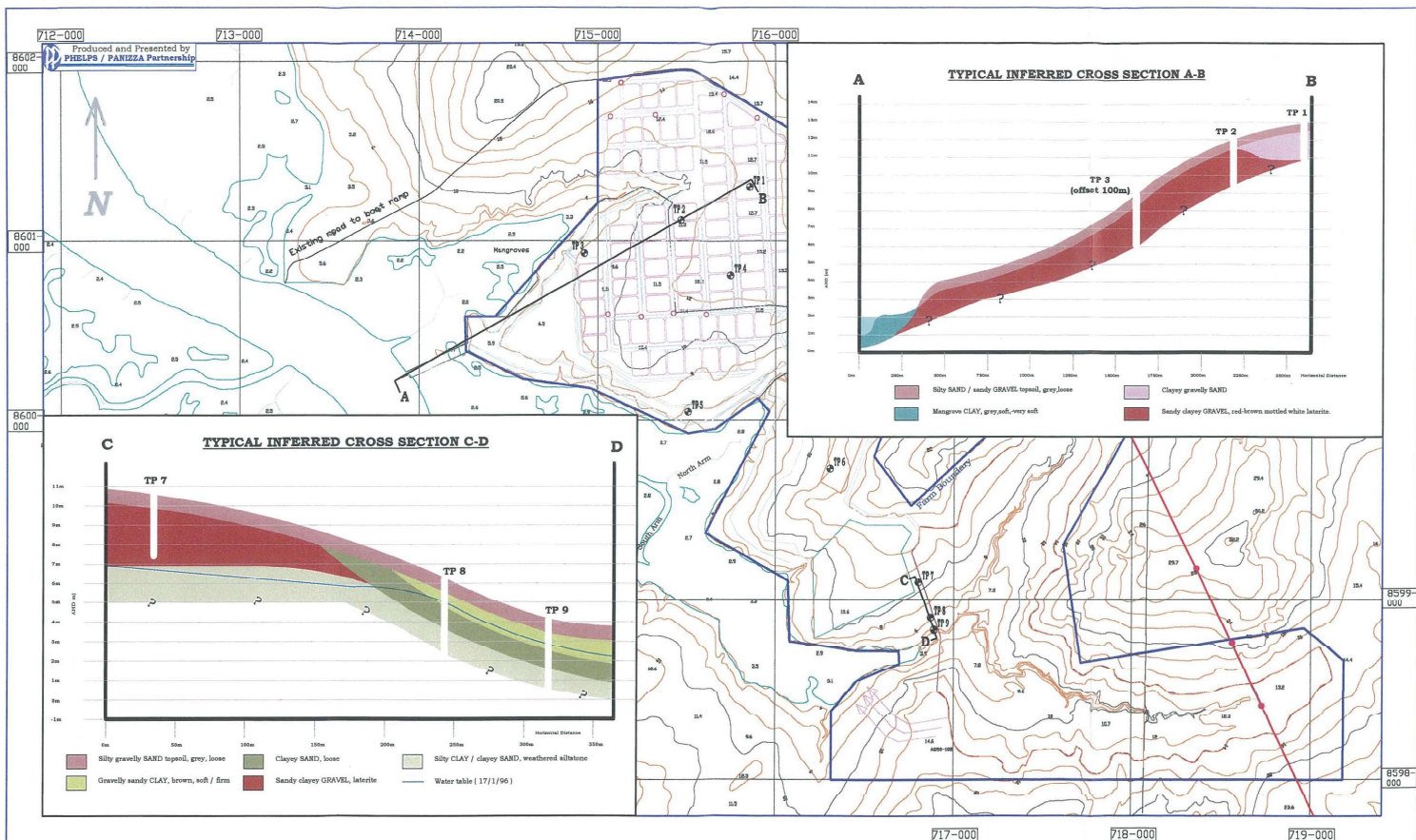
FARM GENERATION AND FUEL STORAGE

SCALE 1:350



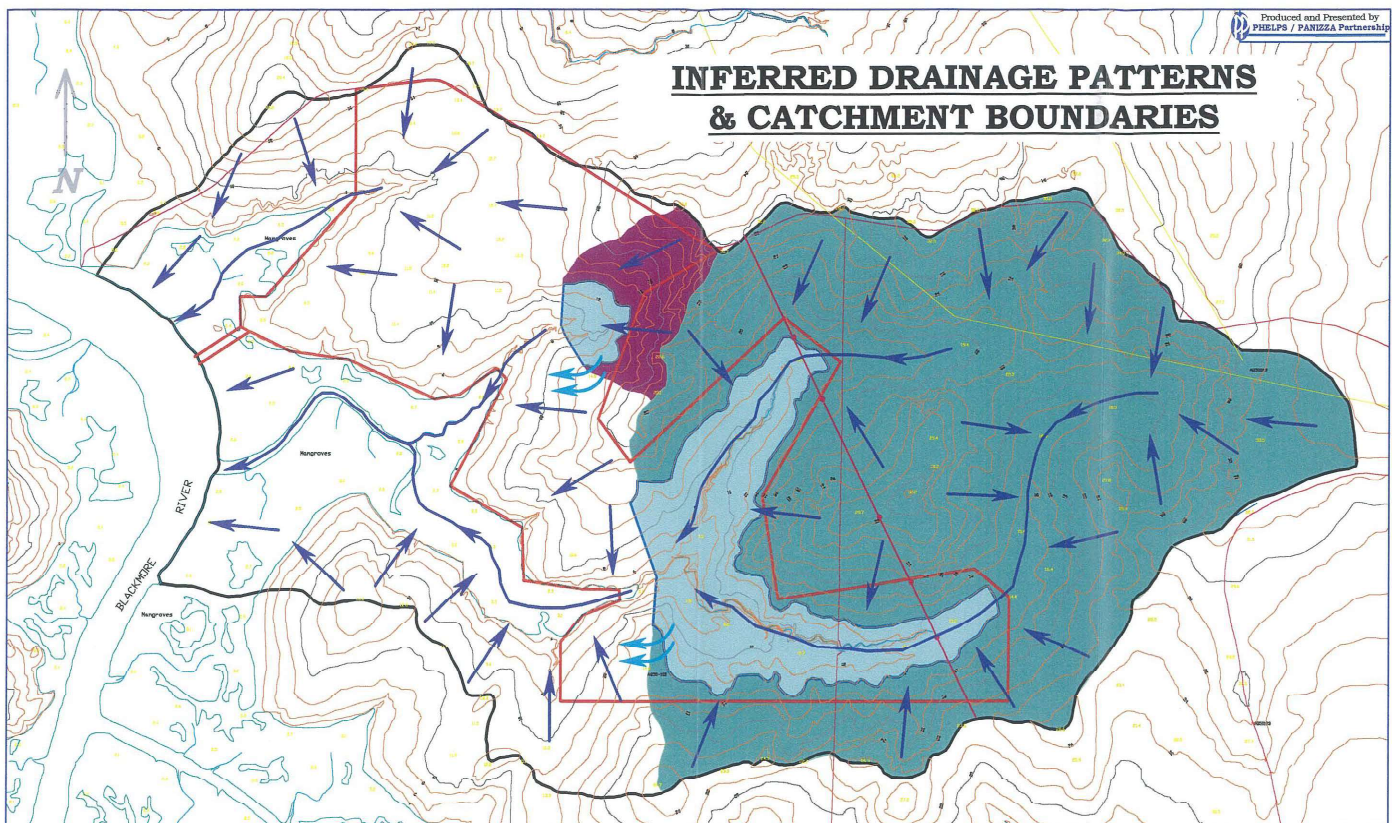
Earth Wall Dimensions





SOIL INVESTIGATION LOCATIONS / INFERRED STRATIGRAPHY

INFERRED DRAINAGE PATTERNS & CATCHMENT BOUNDARIES



LEGEND

— Lease Boundary

— Maximum Dam Water Level

— Inferred Drainage Boundary

→ Inferred Drainage

→ Spillway

Large Dam Catchment Area
Perimeter 14,605 m
Area 1,170 ha

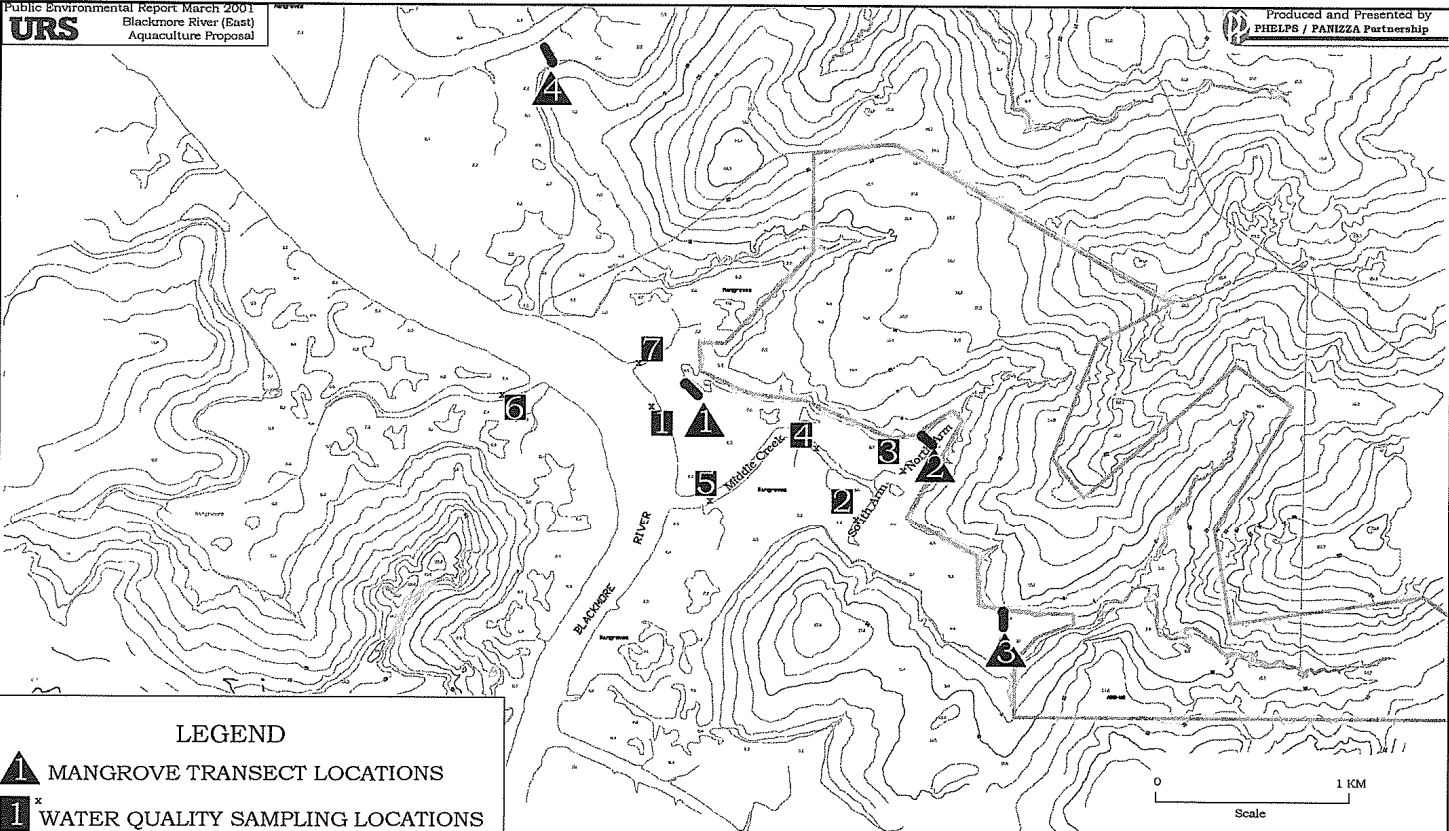
Small Dam Catchment Area
Perimeter 3543m
Area 75.4 ha

Note - area and perimeter calculations include dam area

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FIGURE 16



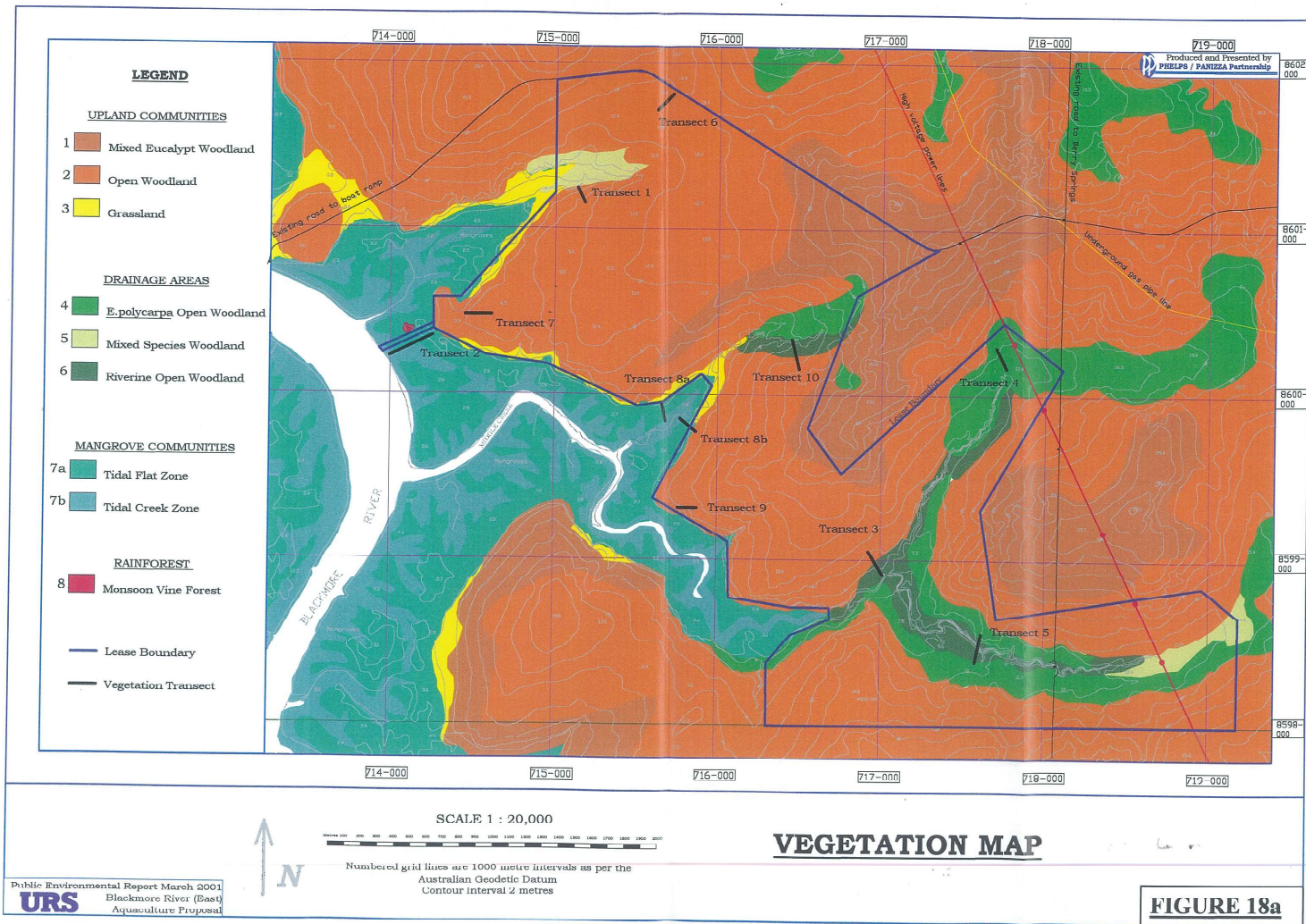
LEGEND

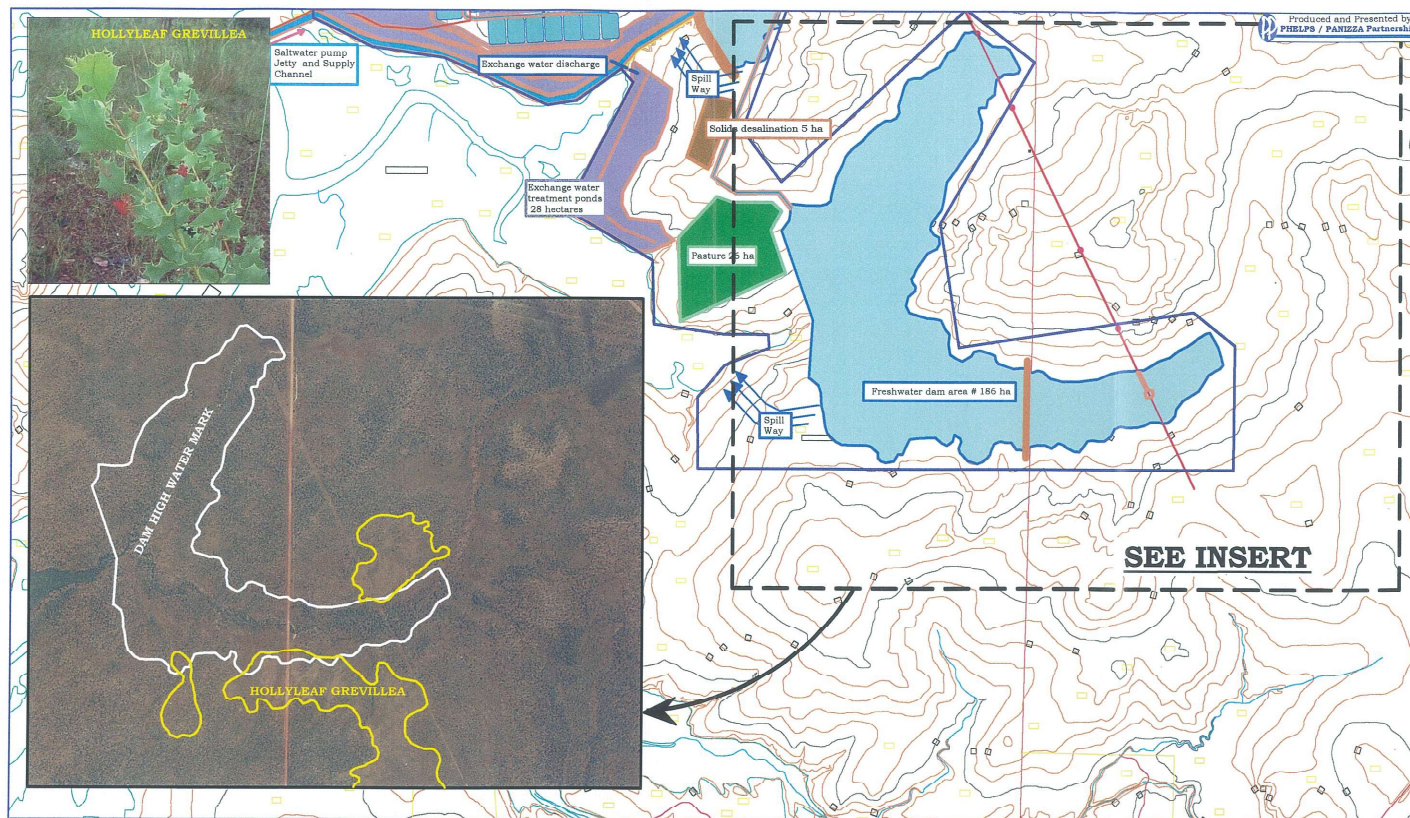
-  MANGROVE TRANSECT LOCATIONS
-  WATER QUALITY SAMPLING LOCATIONS

MT - 1 100 m Transect adjacent to Supply Channel 714180 E / 8600300 N 140 degrees 100 metres	MT - 2 100 m Transect adjacent to Growout Ponds & Discharge 715690E / 8599950N 140 degrees 100 metres	MT - 3 100 m Transect downstream from Freshwater Dam 716210 E / 8598740 N 180 degrees 100 metres	MT - 4 100 m CONTROL Transect 713320E / 8602500N 320 degrees 100 metres	WQS - 1 713935E / 8600235N	WQS - 2 715565E / 8599220N	WQS - 3 715460E / 8599715N	WQS - 4 714928E / 8599946N
				WQS - 5 714315E / 8599485N	WQS - 6 713012E / 8600206N	WQS - 7 713940E / 8600400N	

WATER & MANGROVE MONITORING LOCATIONS

FIGURE 17





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LEGEND

- | | | | |
|------------------|----------------|-------------|---------------------|
| — Lease Boundary | Exchange Water | Fresh Water | Production Ponds |
| — Roads | Pasture | Salt Water | Solids Desalination |
| — Power Lines | | | |

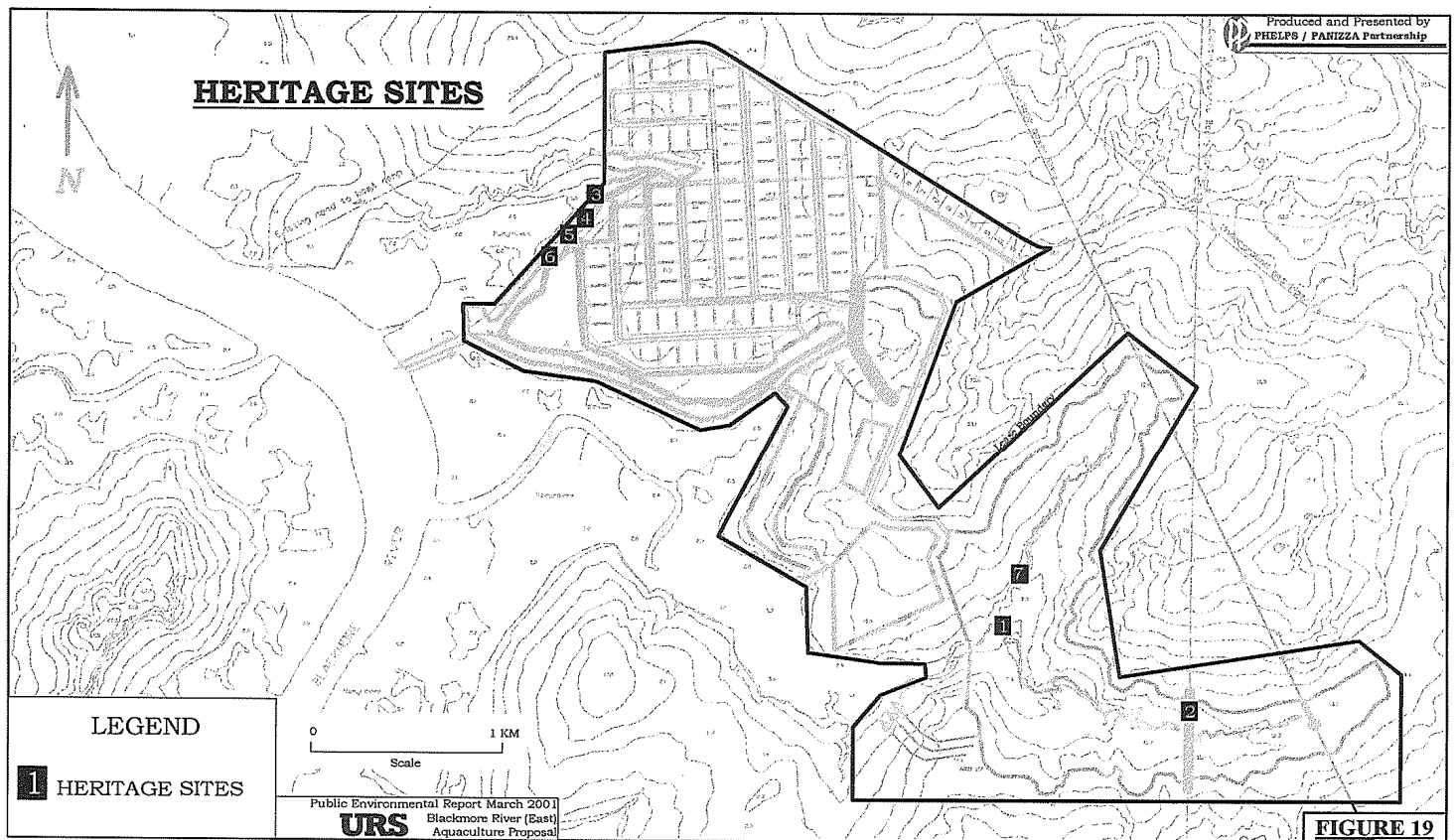
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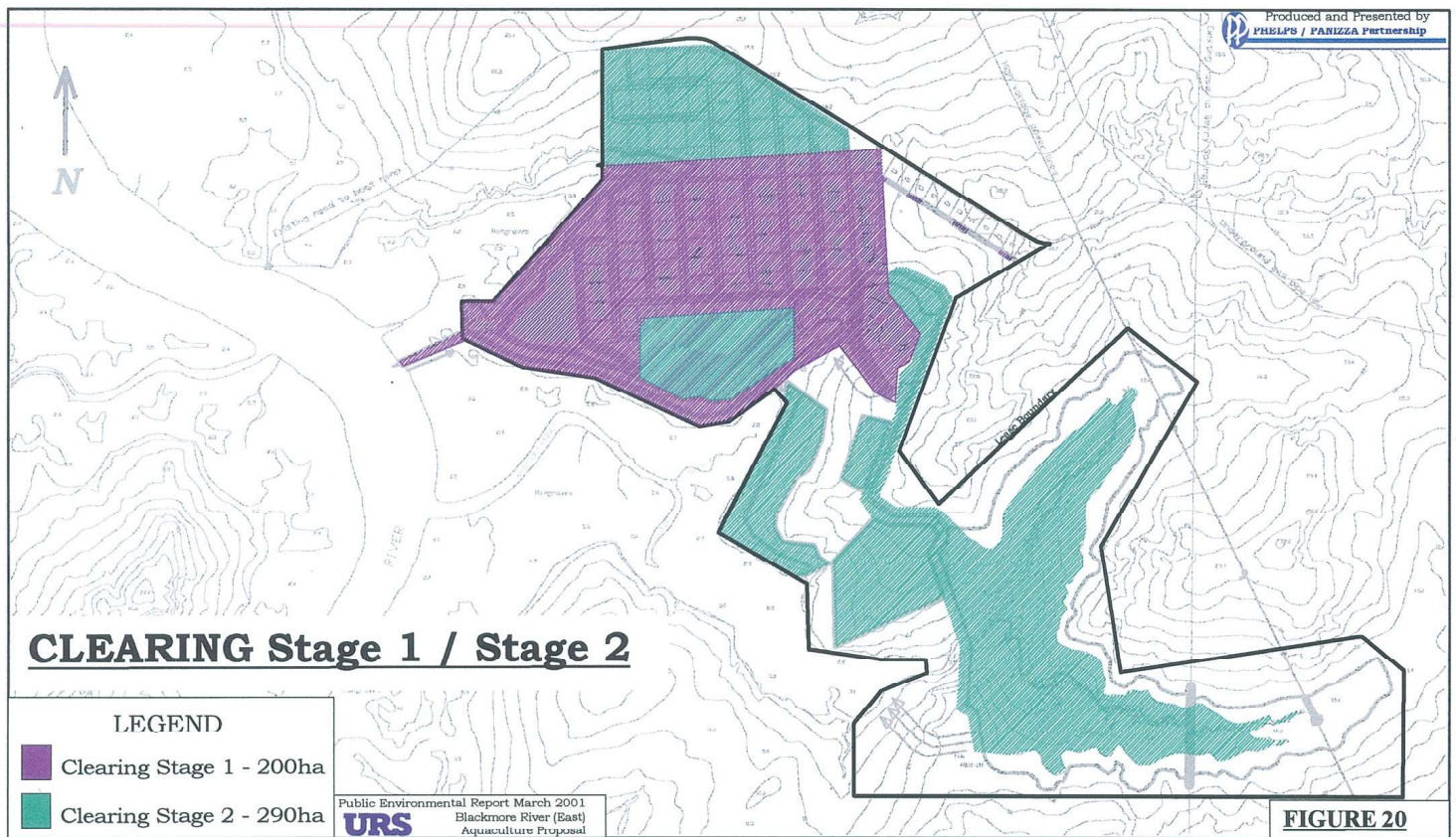
HOLLYLEAF GREVILLEA DISTRIBUTION MAP

(*Grevillea longicuspis*)

Note - Preliminary survey only

FIGURE 18b





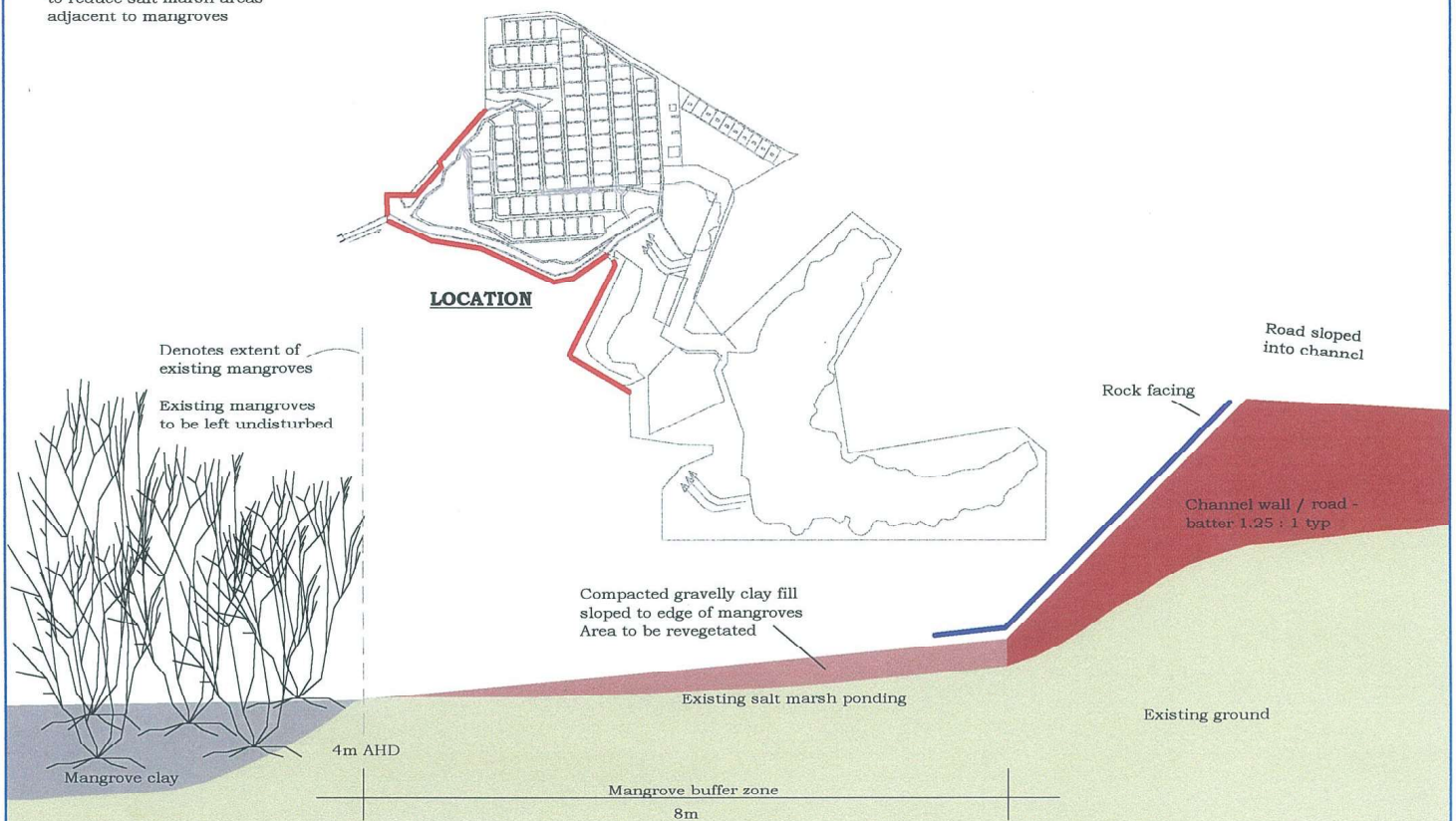
MOSQUITO CONTROL MEASURE / MANGROVE PROTECTION



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Pond / channel wall designed
to reduce salt marsh areas
adjacent to mangroves

LOCATION



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FIGURE 21