

Appendix 15.

SLR Consulting Australia (2020f) *Rum Jungle Rehabilitation – Stage 2A- Geotechnical Investigation Waste Storage Facilities and Borrow Areas*. Report to the Department of Mines and Energy, Northern Territory. PART G.

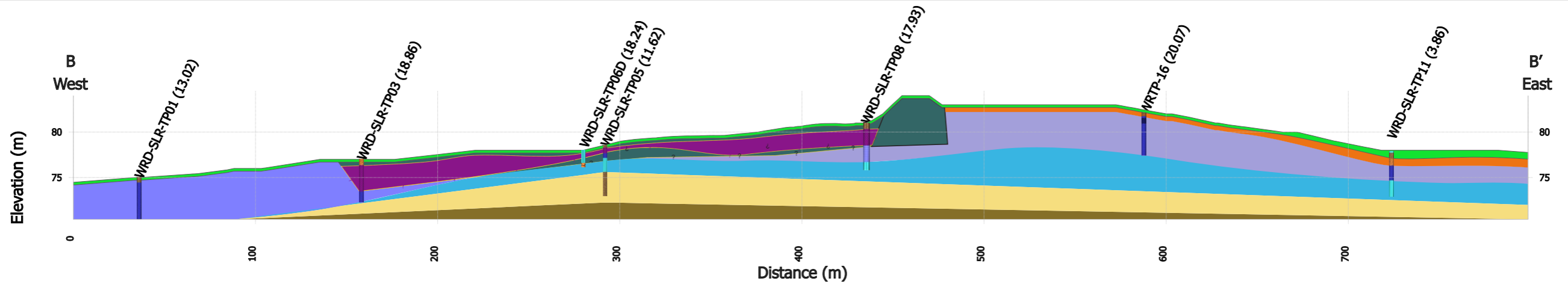
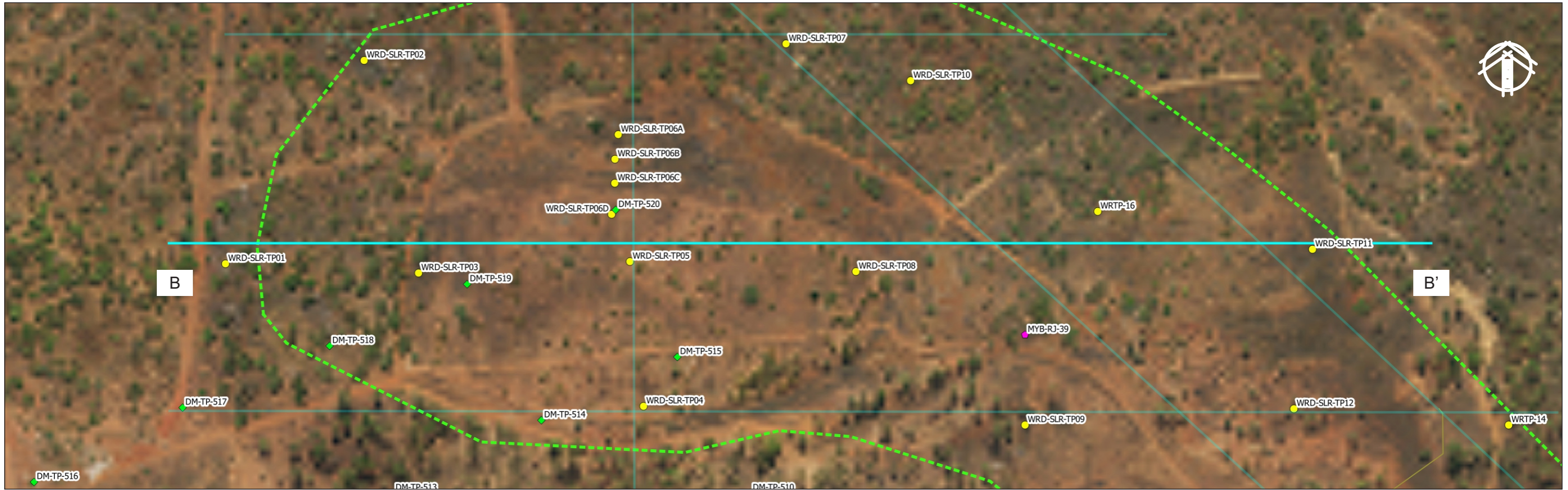


APPENDIX G

Geotechnical Cross Sections



Title:	WSF East Section Lines	Drawn:	BT
Client:	Department of Primary Industries and Resources	Reviewed:	DO
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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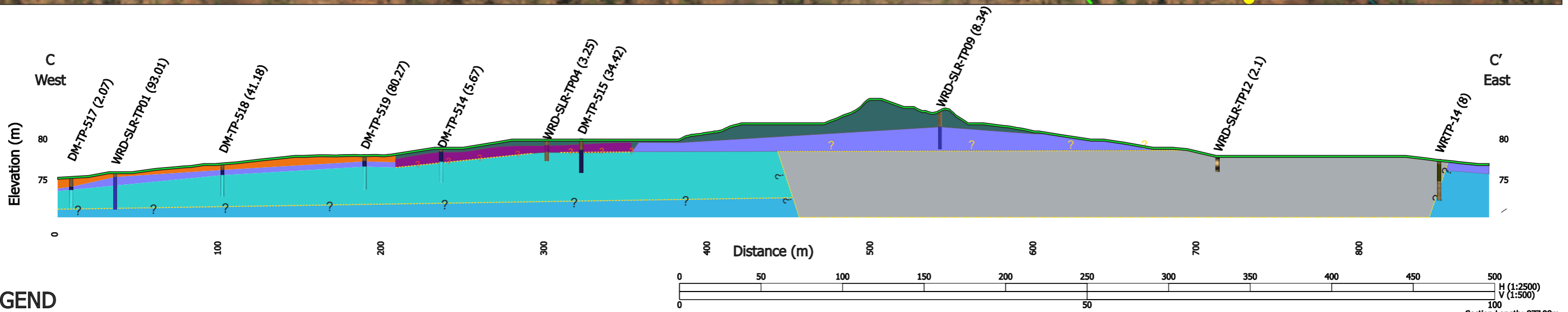
- Topsoil
 - Laterite Sand and Gravel
 - Saprolite Sand and Gravel
 - Fill - Filter Cake
 - Weathered Granite
 - ? Inferred Boundary
 - SLR Test Pit (2019)
 - Alluvium
 - Laterite Clays
 - Saprolite Clays
 - Fill - Reworked Material
 - Weathered Shale
 - ◆ Meehan Burgess & Yeates Test Pit (1982)
 - Laterite Silts
 - Saprolite Silts
 - - - Inferred Groundwater Level
 - Weathered Breccia
 - ◆ Dames and Moore Test Pit (1983)
 - Weathered Dolostone
 - - - Boundary of Proposed WSF
- Section Length: 798.69m
H (1:2500)
V (1:500)

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Title:	B-B' Section	Drawn:	FC
Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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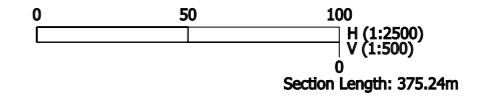
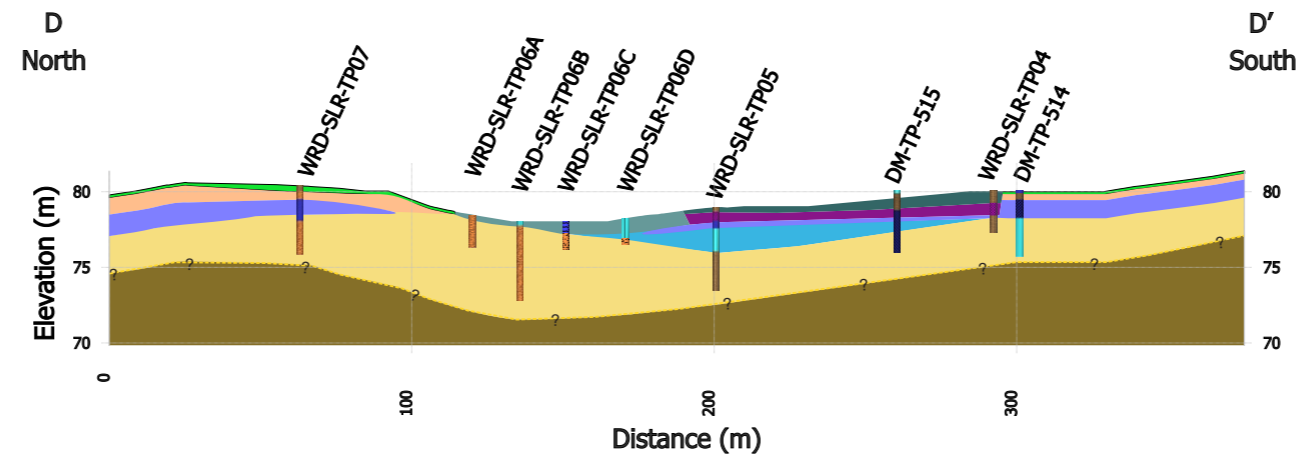
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|----------------|--------------------------|----------------------------|--------------------------|--------------------------|---------------------------------|---|
| Topsoil | Laterite Sand and Gravel | Saprolite Sand and Gravel | Fill - Filter Cake | Weathered Granite | Inferred Boundary | SLR Test Pit (2019) |
| Alluvium | Laterite Clays | Saprolite Clays | Fill - Reworked Material | Weathered Shale | Existing Ground Level | Meehan Burgess & Yeates Test Pit (1982) |
| Laterite Silts | Saprolite Silts | Inferred Groundwater Level | Weathered Breccia | Boundary of Proposed WSF | Dames and Moore Test Pit (1983) | |
| | | | Weathered Dolostone | | | |



Title:	C-C' Section	Drawn:	FC
Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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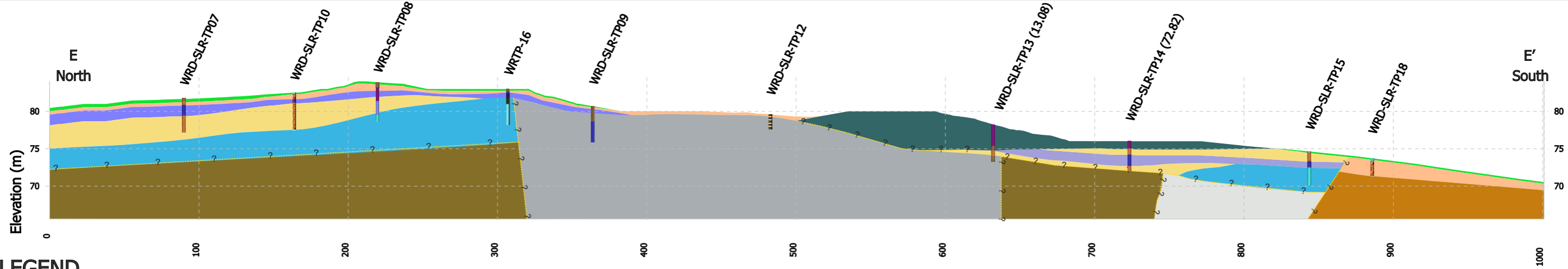
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- Laterite Sand and Gravel
- Saprolite Sand and Gravel
- Fill - Filter Cake
- Weathered Granite
- ⋯ Inferred Boundary
- SLR Test Pit (2019)
- Alluvium
- Laterite Clays
- Saprolite Clays
- Fill - Reworked Material
- Weathered Shale
- ◆ Meehan Burgess & Yeates Test Pit (1982)
- Laterite Silts
- Saprolite Silts
- - - Inferred Groundwater Level
- Weathered Breccia
- ◆ Dames and Moore Test Pit (1983)
- Weathered Dolostone
- ⋯ Boundary of Proposed WSF

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Title:	D-D' Section	Drawn:	FC
Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		

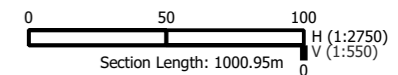


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- Topsoil
- Laterite Sand and Gravel
- Sapolite Sand and Gravel
- Fill - Filter Cake
- Weathered Granite
- ? Inferred Boundary
- SLR Test Pit (2019)
- Alluvium
- Laterite Clays
- Sapolite Clays
- Fill - Reworked Material
- Weathered Shale
- Meehan Burgess & Yeates Test Pit (1982)
- Laterite Silts
- Sapolite Silts
- - - Inferred Groundwater Level
- Weathered Breccia
- ◆ Dames and Moore Test Pit (1983)
- Weathered Dolostone
- - - Boundary of Proposed WSF

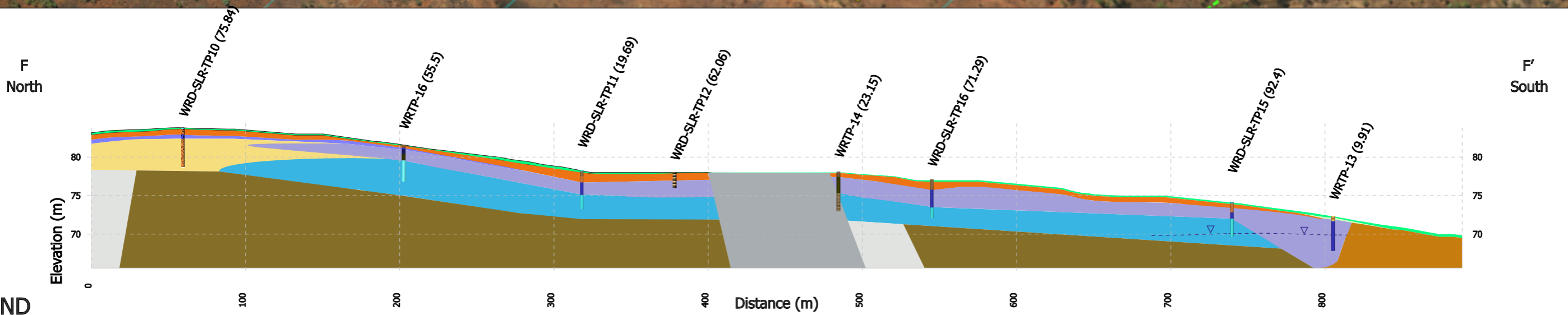


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Title:	E-E' Section	Drawn:	FC
Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		

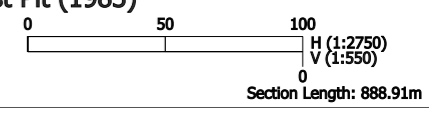


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- Topsoil
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- Saprolite Sand and Gravel
- Fill - Filter Cake
- Weathered Granite
- Alluvium
- Laterite Clays
- Saprolite Clays
- Fill - Reworked Material
- Weathered Shale
- Laterite Silts
- Saprolite Silts
- Inferred Groundwater Level
- Weathered Breccia
- Weathered Dolostone
- Inferred Boundary
- Existing Ground Level
- Boundary of Proposed WSF
- SLR Test Pit (2019)
- Meehan Burgess & Yeates Test Pit (1982)
- Dames and Moore Test Pit (1983)

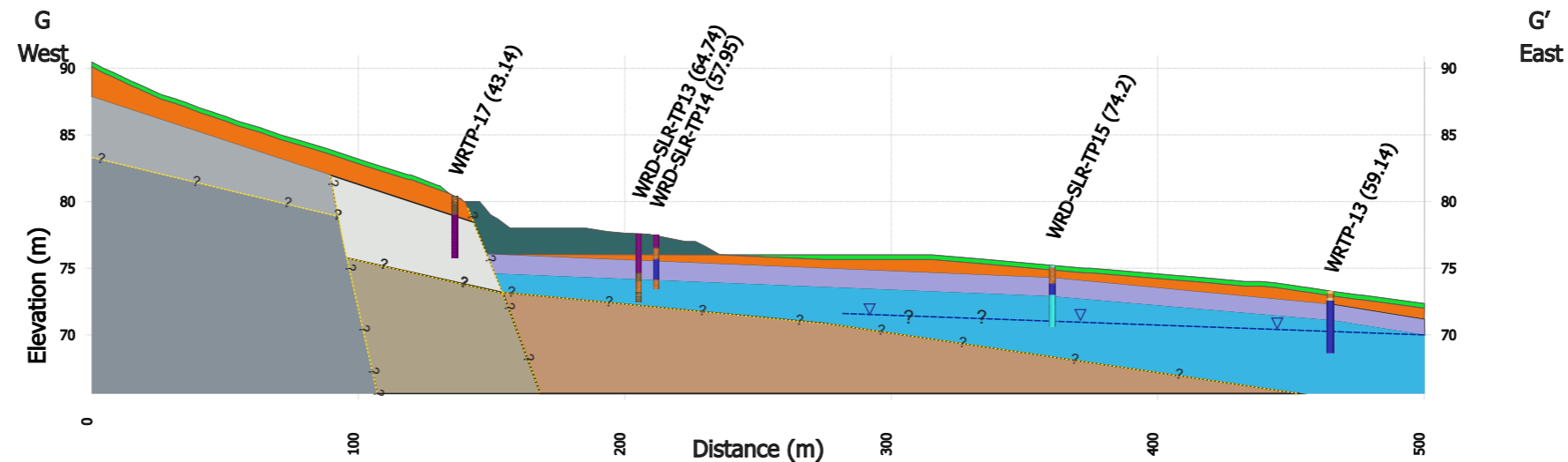


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Title:	F-F' Section	Drawn:	FC
Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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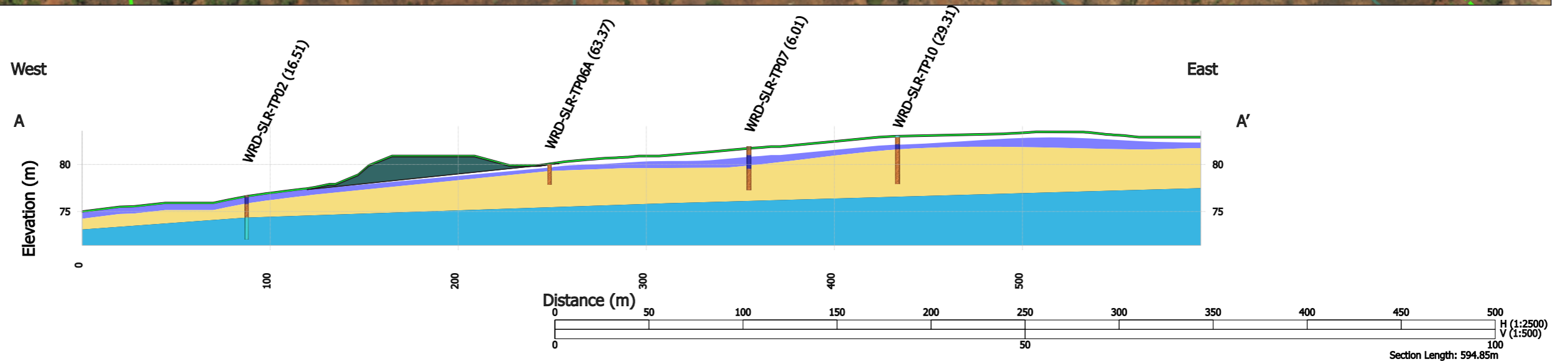
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| Alluvium | Laterite Clays | Saprolite Clays | Fill - Reworked Material | Weathered Shale | Existing Ground Level | Meehan Burgess & Yeates Test Pit (1982) |
| Laterite Silts | Saprolite Silts | Saprolite Silts | Inferred Groundwater Level | Weathered Breccia | Boundary of Proposed WSF | Dames and Moore Test Pit (1983) |
| | | | | Shale | Breccia | |

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Title:	G-G' Section	Drawn:	FC
Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		





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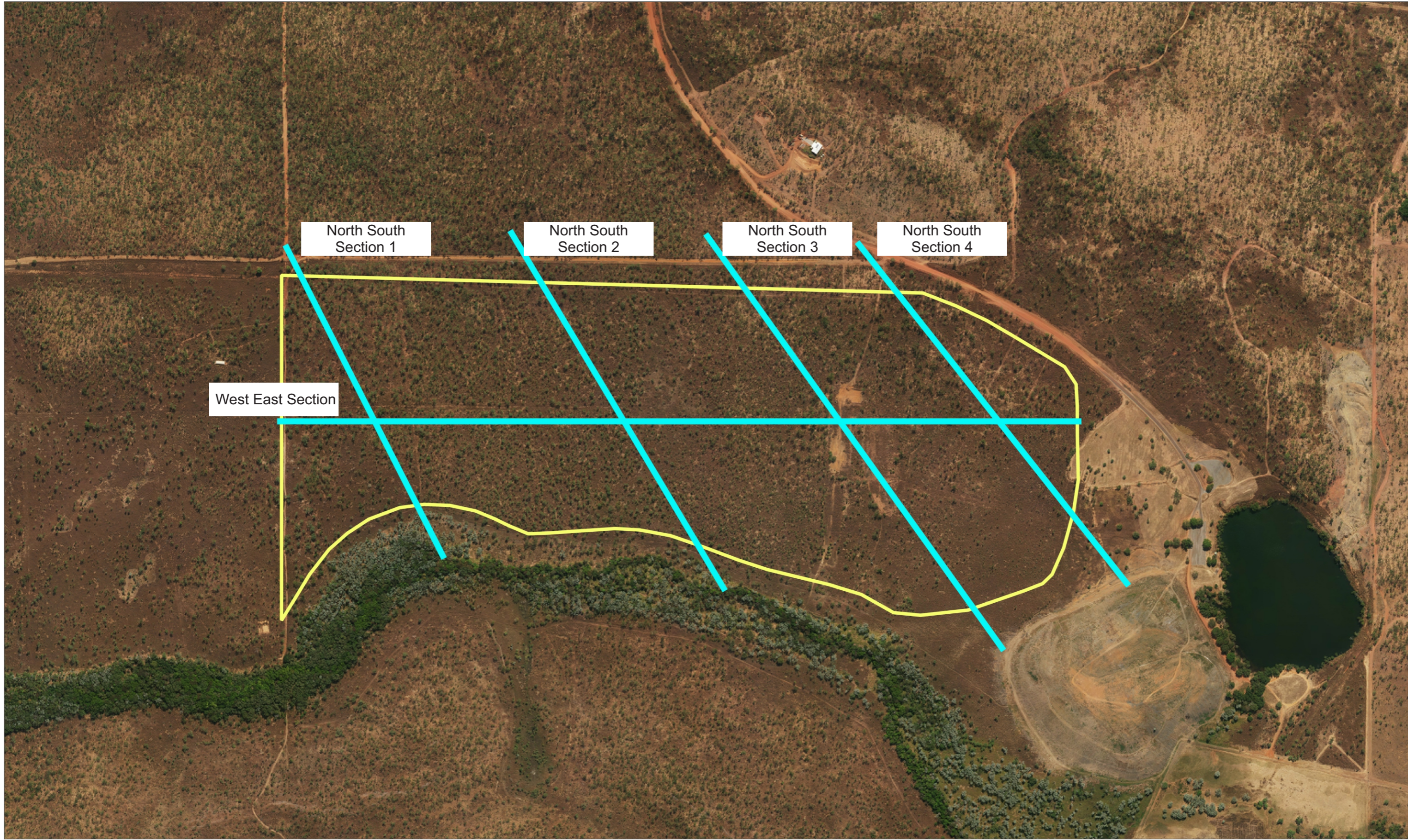
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- Alluvium
- Laterite Sand and Gravel
- Laterite Clays
- Laterite Silts
- Saproelite Sand and Gravel
- Saproelite Clays
- Saproelite Silts
- Fill - Filter Cake
- Fill - Reworked Material
- Inferred Groundwater Level
- Weathered Granite
- Weathered Shale
- Weathered Breccia
- Weathered Dolostone
- Inferred Boundary
- Existing Ground Level
- Boundary of Proposed WSF
- SLR Test Pit (2019)
- Meehan Burgess & Yeates Test Pit (1982)
- Dames and Moore Test Pit (1983)


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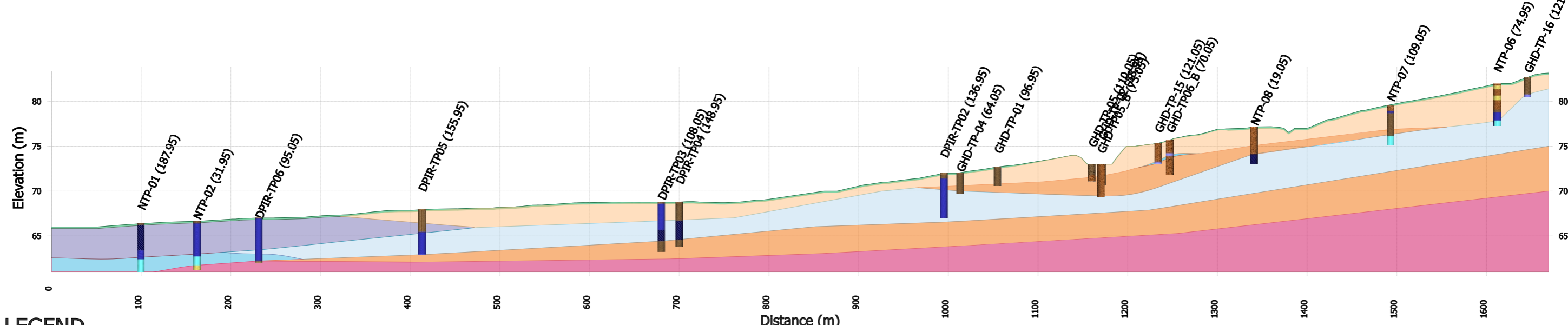
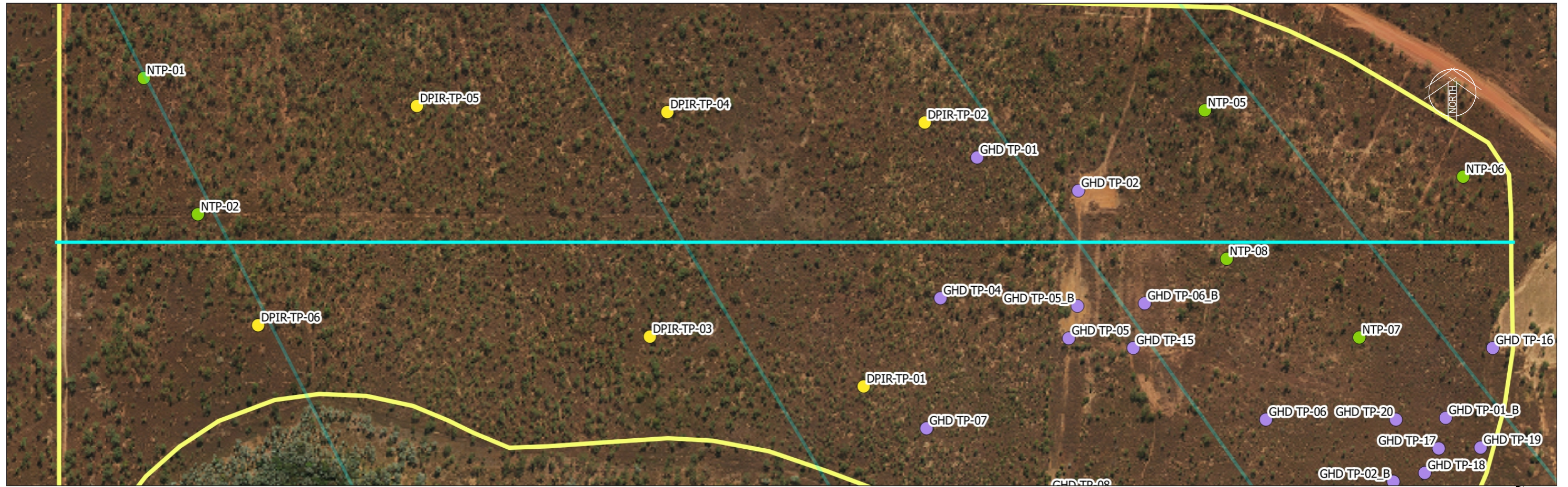
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Client:	Department of Primary Industries and Resources	Reviewed:	BT
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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Title:	Borrow Area A	Drawn:	BT
Client:	Department of Primary Industries and Resources	Reviewed:	DO
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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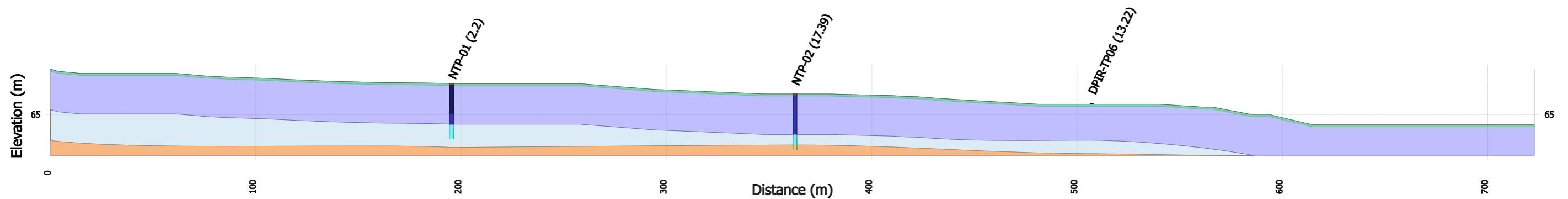
- Topsoil
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- Fill - Filter Cake
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- Alluvium
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- Sapolite Clays
- Inferred Groundwater Level
- Laterite Silts
- Sapolite Silts
- GHD Test Pit (2019)

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Title:	East West Section	Drawn:	BT
Client:	Department of Primary Industries and Resources	Reviewed:	DO
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		

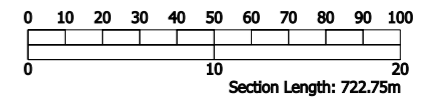


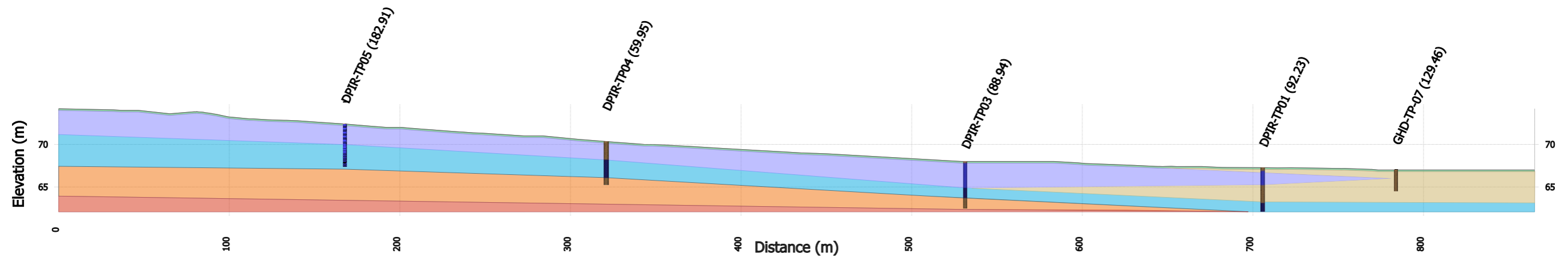
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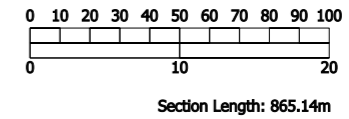
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- Alluvium
- Laterite Sand and Gravel
- Laterite Clays
- Laterite Silts
- Saprolite Sand and Gravel
- Saprolite Clays
- Saprolite Silts
- Fill - Filter Cake
- Inferred Groundwater Level
- SLR Test Pit (2019)
- DPIR Test Pit (2019)
- GHD Test Pit (2019)





LEGEND

- Topsoil
- Laterite Sand and Gravel
- Sapolite Sand and Gravel
- Fill - Filter Cake
- SLR Test Pit (2019)
- Alluvium
- Laterite Clays
- Sapolite Clays
- DPIP Test Pit (2019)
- Laterite Silts
- Sapolite Silts
- Inferred Groundwater Level
- GHD Test Pit (2019)

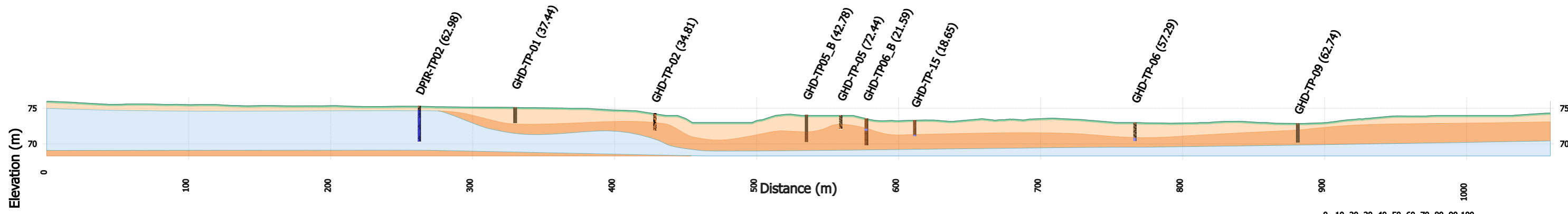


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Title:	North South Section 2	Drawn:	BT
Client:	Department of Primary Industries and Resources	Reviewed:	DO
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		

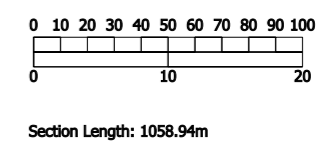


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LEGEND

- Topsoil
- Alluvium
- Laterite Sand and Gravel
- Laterite Clays
- Laterite Silts
- Saprolite Sand and Gravel
- Saprolite Clays
- Saprolite Silts
- Fill - Filter Cake
- Inferred Groundwater Level
- SLR Test Pit (2019)
- DPIP Test Pit (2019)
- GHD Test Pit (2019)

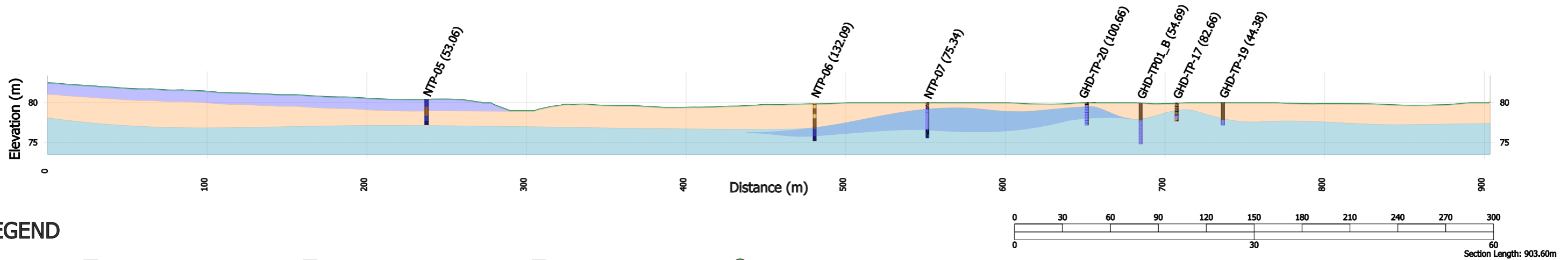
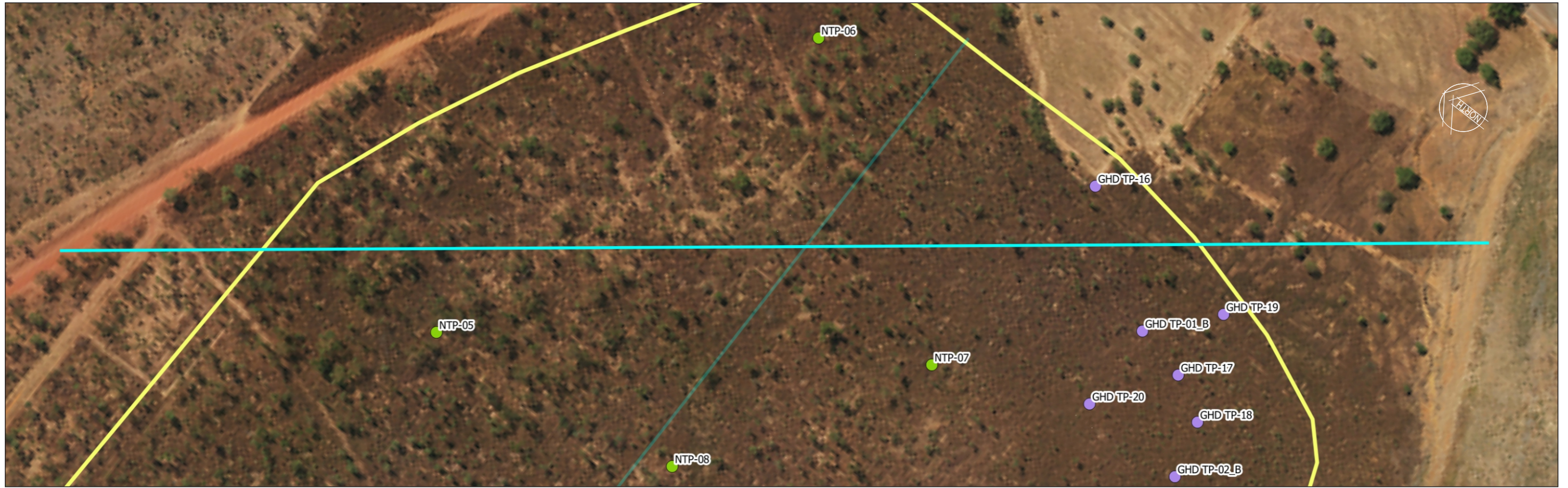


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Title:	North South Section 3	Drawn:	BT
Client:	Department of Primary Industries and Resources	Reviewed:	DO
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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LEGEND

- Topsoil
- Laterite Sand and Gravel
- Saprolite Sand and Gravel
- Fill - Filter Cake
- SLR Test Pit (2019)
- Alluvium
- Laterite Clays
- Saprolite Clays
- GHD Test Pit (2019)
- Laterite Silts
- Saprolite Silts
- Inferred Groundwater Level

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Title:	North South Section 4	Drawn:	BT
Client:	Department of Primary Industries and Resources	Reviewed:	DO
Project:	Rum Jungle Rehabilitation	Size:	A3
Project No.:	680.10421	Datum:	AHD
Status:	Geotechnical Investigation	Version:	1.0
Date:	12/12/2019		



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APPENDIX H

SALI Database Soil Profile Descriptions

Attribute	Description	Description	Description	Description	Description
Location:	E: -1256142.596, N: 8502275.983	E: -1256627.943, N: 8502454.046	E: -1252685.820, N: 8503684.654	E: -1258391.038, N: 8509097.332	E: -1258542.266, N: 8502176.567
Survey:	Gamba Grass Carbon Project, Batchelor, Charles Darwin University	Gamba Grass Carbon Project, Batchelor, Charles Darwin University	Report on the Land Units of the Batchelor Township Area	A Report on the Land Units on and surrounding Mr. E. Kerle's Property near Batchelor	A Report on the Land Units on and surrounding Mr. E. Kerle's Property near Batchelor
Survey Code:	BATCH14	BATCH14	BATCH25	EKERL10	EKERL10
Site No.:	2	1	4	20	26
Date Described:	25-Nov-2014	25-Nov-2014	14-Sep-1976	19-Sep-1976	20-Sep-1976
Date Entered into Database:	04-Dec-2014	04-Dec-2014	07-Jul-2005	06-Jul-2005	08-Jul-2005
Accuracy:	Accuracy estimated to be within a radius of 0-30 metres	Accuracy estimated to be within a radius of 0-30 metres	Accuracy estimated to be within a radius of 30-100 metres	Accuracy estimated to be within a radius of 30-100 metres	Accuracy estimated to be within a radius of 30-100 metres
Landform Element:	Plain	Plain	Plain	Not Described	Not Described
Landform Pattern:	Plain	Plain	Not Described	Not Described	Not Described
Land System:	Woodcutter (Wdc)	Woodcutter (Wdc)	Woodcutter (Wdc)	Woodcutter (Wdc)	Woodcutter (Wdc)
Slope:	0.5%	0.5%	-	-	-
Drainage:	Well drained	Imperfectly drained	Well drained	Well drained	Imperfectly drained
Permeability:	Highly permeable	Moderately permeable	Highly permeable	Moderately permeable	Slowly permeable
Runoff:	Slow	Slow	Very slow	Not Described	Rapid
Surface rock:	0%	0%	0%	0%	
ASC:	Kandosol	Kandosol	Kandosol	Kandosol	Kandosol
Substrate:	Not Described	Not Described	Not Described	Not Described	Quartz
Horizon:	A1	A1	A1	A1	A11
Depth:	0 - 0.12 m	0 - 0.07 m	0 - 0.1 m	0 - 0.1m	0 - 0.1 m
Texture:	Sandy loam	Sandy clay loam	Sandy loam	Sandy loam	Loam
Colour:	Dark reddish brown	Dark brown	Dark brown	Dark reddish brown	Very dark greyish brown
Fabric:	Sandy (grains prominent)	Earthy	Earthy	Earthy	Earthy
Pedality:	Massive	Massive	Massive	Massive	Massive
pH:	4.9	4.5	5.5	6	6
Horizon:	A3	A2	A2	B1	A12
Depth:	0.12 - 0.3 m	0.07 - 0.2 m	0.1 - 0.4 m	0.1 - 0.6 m	0.1 - 0.2 m
Texture:	Sandy loam	Clay loam, sandy	Sandy clay loam	Sandy clay loam	Loam
Colour:	Reddish brown	Brown	Dark yellowish brown	Dark red	Very dark greyish brown
Fabric:	Sandy (grains prominent)	Earthy	Earthy	Earthy	Earthy
Pedality:	Massive	Massive	Massive	Massive	Massive
pH:	5.1	4.9	5.8	6	6
Horizon:	B21	B1	B21	B21	A2
Depth:	0.3 - 0.4 m	0.2 - 0.8 m	0.4 - 0.8 m	0.6 - 1 m	0.2 - 0.4 m
Texture:	Sandy clay loam	Clay loam, sandy	Sandy clay loam	Clay loam	Sandy loam
Colour:	Red	Yellowish red	Strong brown	Dark red	Dark yellowish brown
Fabric:	Sandy (grains prominent)	Earthy	Earthy	Earthy	Earthy
Pedality:	Massive	Massive	Massive	Massive	Massive
pH:	5	5.2	6	5.5	5.8
Horizon:	B22	B21	B22c	B22	B1
Depth:	0.4 - 0.7 m	0.8 - 1.25 m	0.8 - 1.5 m	1 - 1.6 m	0.4 - 0.6 m
Texture:	Sandy clay loam	Light medium clay	Light clay	Clay loam	Sandy clay loam
Colour:	Dark red	Red	Yellowish red	Dark red	Strong brown
Fabric:	Sandy (grains prominent)	Earthy	Earthy	Earthy	Earthy
Pedality:	Massive	Moderate	Massive	Massive	Massive
pH:	5.4	5.1	5.8	5.5	6
Horizon:	B23	B22	-	-	B2
Depth:	0.7 - 0.9 m	1.25 - 1.4 m	-	-	0.6 - 0.9 m
Texture:	Sandy clay loam	Light clay	-	-	Clay loam
Colour:	Dark red	Red	-	-	Yellowish red
Fabric:	Sandy (grains prominent)	Earthy	-	-	Earthy
Pedality:	Massive	Moderate	-	-	Massive
pH:	5	5.4	-	-	5.5

APPENDIX I

Historical Laboratory Data for SALI Database Kandosols Described in Appendix H

Depth (cm)	pH (1:5)	C.E.C. m.eq. %	E.C. µmhos cm ⁻¹	T.S.S. %	Total %			Phos. Ext. S(ppm)	Org. N %	Org. C	Bicarb.		Exch. Cations m.eq. %				D.T.P.A.		Total	
					P	K	S				P	K	Ca	Mg	Na	K	Cu	Zn	Cu	Zn
SANDY RED EARTH																				
0- 10	5.8	6.2	15.8	.006	.015	.10	.0072	.2	.058	2.01	-	35	0.9	1.2	.2	.1	6.2	0.5	23	12
10- 35	5.9	5.0	9.6	.004	.015	.10	.0165	.1	.034	0.75	-	10	0.2	1.3	.1	.1	5.0	0.4	33	13
35-150	5.8	5.0	5.1	.002	.018	.10	.0043	.1	-	-	-	-	0.1	2.0	.1	.1	5.0	0.1	27	21
LOAMY RED EARTH																				
0- 15	6.2	8.0	27.8	.015	.02	.27	.023	.22	.07	1.27	1.2	85	1.9	1.8	.15	.22	1.8	.7	+1	27
15- 50	5.8	6.2	9.4	.004	.018	.30	.014	.8	-	-	-	47	0.2	2.1	.15	.15	.35	.5	60	30
50-150	5.6	5.1	5.9	.002	.017	.37	.01	.6	-	-	4.5	30	0.1	2.5	.2	.1	.15	.6	87	30

Source: Wood and Day [26]

APPENDIX J

Laboratory Results on Representative Test Pit Samples

Area	Site	Depth	Texture	pH (1:5 water)		pH (CaCl2)		Acid Neutralising Capacity			Exchange Acidity		Exchangeable Cations (cmol/kg)				Cation Exchange Capacity (cmol/kg)		ESP		Ca/Mg Ratio		Mg/K Ratio	
				Value	Rating	Value	Rating	H2SO4	CaCO3	Fizz Rating	Exg. Acidity	Exg. Aluminium	Ca	Mg	K	Na	Value	Rating	Value	Rating	Value	Rating	Value	Rating
STP	5	0-50	Silty Gravelly Sand	5.0	Very Strongly Acidic	4.4	Very Strongly Acidic	<0.5	<0.1	0	1	0.8	<0.1	0.5	0.1	<0.1	1.8	Very Low	1.9	Non sodic	<0.1	Mg deficient	14.6	-
STP	7	0-50	Sand	5.5	Strongly Acidic	4.5	Very Strongly Acidic	2.4	0.2	0	0.6	0.5	<0.1	0.2	<0.1	<0.1	1.0	Very Low	6.7	Marginally Sodic	<0.1	Mg deficient	-	-
WRTP	2	0-50	Gravelly Clay	4.8	Very Strongly Acidic	4.3	Very Strongly Acidic	4.8	0.5	0	1.2	1	1.3	2.7	<0.1	<0.1	5.4	Very Low	0.4	Non sodic	0.5	Ca deficient	-	-
WRTP	15	10-20	Sandy Gravel	6.2	Slightly Acidic	5.2	Strongly Acidic	3.6	0.4	0	-	-	0.5	2.6	<0.1	<0.1	3.2	Very Low	0.7	Non sodic	0.2	Ca deficient	-	-
WRTP	12	40-50	Clayey Gravel	6.0	Moderately Acidic	5.2	Strongly Acidic	1.9	0.2	0	0.5	<0.1	0.8	0.3	<0.1	<0.1	1.7	Very Low	1.2	Non sodic	2.7	Ca low	-	-
WRTP	14	40-60	Clayey Sand	6.0	Moderately Acidic	5.4	Strongly Acidic	3.5	0.4	0	<0.1	<0.1	3.0	0.8	<0.1	<0.1	3.8	Very Low	0.6	Non sodic	3.8	Ca low	-	-
STP	3	40-60	Gravelly Sand	5.3	Strongly Acidic	4.3	Very Strongly Acidic	2.1	0.2	0	0.7	0.6	<0.1	0.2	<0.1	<0.1	1.1	Very Low	4.8	Non sodic	<0.1	Mg deficient	-	-
STP	5	50-60	Clayey Sand	5.5	Strongly Acidic	4.5	Very Strongly Acidic	3.1	0.3	0	0.6	0.5	<0.1	2.2	0.1	<0.1	3.1	Very Low	1.3	Non sodic	<0.1	Mg deficient	5	-
NTP	1	60-80	Sandy Clay	6.7	Neutral	6.0	Moderately Acidic	2.6	0.3	0	<0.1	<0.1	2.3	1.0	0.2	<0.1	3.6	Very Low	0.3	Non sodic	2.3	Ca low	4.8	-
STP	6	70-90	Gravelly Sand	5.8	Moderately Acidic	5.3	Strongly Acidic	2.2	0.2	0	<0.1	0.1	<0.1	0.8	<0.1	<0.1	1.0	Very Low	3.3	Non sodic	<0.1	Mg deficient	-	-
WRTP	4	80-100	Clayey Gravel	6.3	Slightly Acidic	6.0	Moderately Acidic	0.9	<0.1	0	<0.1	0.1	0.6	0.1	<0.1	<0.1	0.8	Very Low	0.1	Non sodic	6.0	Balanced	-	-
STP	7	90-100	Clayey Sand	5.4	Strongly Acidic	4.4	Very Strongly Acidic	0.6	<0.1	0	0.9	0.8	<0.1	0.8	<0.1	<0.1	2.0	Very Low	4.3	Non sodic	<0.1	Mg deficient	-	-
NTP	5	150-170	Clayey Gravel	6.2	Slightly Acidic	5.9	Moderately Acidic	4.4	0.4	0	-	-	1.2	2.6	<0.1	<0.1	3.8	Very Low	0.5	Non sodic	0.5	Ca deficient	-	-
NTP	7	380-400	Silty Sandy Clay	7.4	Mildly Alkaline	6.7	Neutral	7.6	0.8	0	-	-	7.3	30.2	0.2	0.2	37.9	High	0.5	Non sodic	0.2	Ca deficient	171	-
NTP	1	530-540	Silty Clay	6.3	Slightly Acidic	5.4	Strongly Acidic	7.6	0.8	0	-	-	7.8	8.6	0.2	<0.1	16.6	Moderate	0.2	Non sodic	0.9	Ca deficient	41.7	-

Area	Site	Depth	Texture	EC (1:5, µS/cm)		Chloride (mg/kg)	Sulfur (mg/kg)	Bicarbonate Extractable K (mg/kg)	Silicon (mg/kg)	Boron (mg/kg)	Extractable Metals				Total Metals (mg/kg)										Mercury (mg/kg)	Hexavalent Chromium (mg/kg)	Total Cyanide (mg/kg)				
				Value	Rating						Value	Value	Value	Value	Cu	Fe	Mn	Zn	As	Ba	Be	B	Cd	Cr				Co	Cu	Pb	Mn
STP	5	0-50	Silty Gravelly Sand	5.0	-	<10	<10	137	5	<0.2	<1.00	2.25	<1.00	<1.00	<5	10	<1	<50	<1	<2	<2	<5	5	7	<2	<5	9	<5	<0.1	<0.5	<1
STP	7	0-50	Sand	1.0	-	<10	10	<100	10	<0.2	<1.00	5.55	<1.00	<1.00	<5	<10	<1	<50	<1	<2	<2	<5	<5	<5	<2	<5	<5	<0.1	<0.5	<1	
WRTP	2	0-50	Gravelly Clay	38.0	-	<10	923	102	7	<0.2	22.2	53.3	3.46	<1.00	12	20	<1	<50	<1	32	7	307	62	41	12	<5	64	14	0.1	<0.5	<1
WRTP	15	10-20	Sandy Gravel	3.0	-	<10	33	<100	7	<0.2	<1.00	18.9	5.54	<1.00	5	30	1	<50	<1	102	6	<5	9	94	9	<5	121	<5	<0.1	<0.5	<1
WRTP	12	40-50	Clayey Gravel	2.0	-	<10	11	<100	8	<0.2	<1.00	7.58	<1.00	<1.00	8	<10	<1	<50	<1	14	<2	<5	<5	52	<2	<5	40	<5	<0.1	<0.5	<1
WRTP	14	40-60	Clayey Sand	5.0	-	<10	39	<100	22	<0.2	<1.00	15	18.4	<1.00	<5	40	<1	<50	<1	33	4	8	6	341	5	<5	65	<5	<0.1	<0.5	<1
STP	3	40-60	Gravelly Sand	2.0	-	<10	<10	102	10	<0.2	<1.00	4.41	<1.00	<1.00	<5	<10	<1	<50	<1	<2	<2	<5	<5	<5	<2	<5	<5	<0.1	<0.5	<1	
STP	5	50-60	Clayey Sand	2.0	-	<10	20	<100	6	<0.2	<1.00	9.23	<1.00	<1.00	<5	10	<1	<50	<1	5	<2	<5	<5	<5	<2	<5	8	<5	<0.1	<0.5	<1
NTP	1	60-80	Sandy Clay	4.0	-	<10	<10	188	4	<0.2	<1.00	5.14	<1.00	<1.00	9	20	<1	<50	<1	72	8	10	19	290	6	<5	110	<5	<0.1	1.3	<1
STP	6	70-90	Gravelly Sand	2.0	-	<10	<10	<100	6	<0.2	<1.00	2.74	<1.00	<1.00	<5	<10	<1	<50	<1	57	<2	<5	<5	11	<2	<5	22	<5	<0.1	<0.5	<1
WRTP	4	80-100	Clayey Gravel	5.0	-	<10	19	<100	6	<0.2	30.5	7.63	<1.00	<1.00	<5	<10	<1	<50	<1	11	4	72	<5	16	5	<5	9	<5	<0.1	<0.5	<1
STP	7	90-100	Clayey Sand	4.0	-	<10	<10	105	9	<0.2	<1.00	3.84	<1.00	<1.00	<5	10	<1	<50	<1	8	<2	<5	14	<5	<2	<5	31	<5	<0.1	<0.5	<1
NTP	5	150-170	Clayey Gravel	3.0	-	<10	<10	<100	6	<0.2	<1.00	8.42	5.92	<1.00	<5	80	1	<50	<1	21	17	<5	8	1440	15	<5	36	<5	<0.1	<0.5	<1
NTP	7	380-400	Silty Sandy Clay	36.0	-	20	11	109	25	<0.2	<1.00	5.2	<1.00	<1.00	<5	370	2	<50	<1	24	68	93	9	1900	50	<5	151	<5	<0.1	<0.5	<1
NTP	1	530-540	Silty Clay	3.0	-	<10	<10	161	17	<0.2	<1.00	13.6	22.6	<1.00	16	220	4	<50	<1	40	19	59	<5	2230	71	<5	55	17	<0.1	<0.5	<1

			Phosphorus (mg/kg)				Nitrogen (mg/kg)						Total Carbon (%)		TOC (%)		OM (%)		C:N Ratio		Moisture Content (%)
Area	Site	Depth	Texture	Total Phosphorus	Bicarb. Extrac	Rating	Ammonia	Nitrite	Nitrate	Nitrite & Nitrate (Sol.)	Total Kjeldahl Nitrogen	Total Nitrogen	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value
STP	5	0-50	Silty Gravelly Sand	60	<5	Very Low	<20	<0.1	<0.1	<0.1	430	430	0.13	-	<0.5	Very Low	0.8	-	10.8	-	3.3
STP	7	0-50	Sand	36	<5	Very Low	<20	<0.1	<0.1	<0.1	170	170	0.09	-	<0.5	Very Low	<0.5	-	<0.02	-	1.8
WRTP	2	0-50	Gravelly Clay	58	40	Moderate	<20	<0.1	0.5	0.5	90	90	0.36	-	<0.5	Very Low	0.7	-	44.9	-	10.8
WRTP	15	10-20	Sandy Gravel	221	<5	Very Low	<20	<0.1	<0.1	<0.1	300	300	0.83	-	0.6	Very Low	1	-	19.3	-	5.6
WRTP	12	40-50	Clayey Gravel	135	<5	Very Low	<20	<0.1	<0.1	<0.1	180	180	0.13	-	<0.5	Very Low	0.7	-	22.6	-	6.6
WRTP	14	40-60	Clayey Sand	74	<5	Very Low	<20	<0.1	0.1	0.1	390	390	0.35	-	<0.5	Very Low	0.8	-	11.9	-	9.7
STP	3	40-60	Gravelly Sand	55	<5	Very Low	<20	<0.1	<0.1	<0.1	140	140	0.07	-	<0.5	Very Low	<0.5	-	<0.02	-	3.4
STP	5	50-60	Clayey Sand	60	<5	Very Low	<20	<0.1	<0.1	<0.1	130	130	0.03	-	<0.5	Very Low	<0.5	-	<0.02	-	7.4
NTP	1	60-80	Sandy Clay	85	<5	Very Low	<20	<0.1	<0.1	<0.1	190	190	0.07	-	<0.5	Very Low	<0.5	-	<0.02	-	13.1
STP	6	70-90	Gravelly Sand	67	<5	Very Low	<20	<0.1	<0.1	<0.1	90	90	0.06	-	<0.5	Very Low	<0.5	-	<0.02	-	5
WRTP	4	80-100	Clayey Gravel	73	<5	Very Low	<20	<0.1	<0.1	<0.1	50	50	0.07	-	<0.5	Very Low	<0.5	-	<0.02	-	4.2
STP	7	90-100	Clayey Sand	80	<5	Very Low	<20	<0.1	0.2	0.2	130	130	0.03	-	<0.5	Very Low	<0.5	-	<0.02	-	15.9
NTP	5	150-170	Clayey Gravel	180	<5	Very Low	<20	<0.1	<0.1	<0.1	130	130	0.07	-	<0.5	Very Low	<0.5	-	<0.02	-	9.9
NTP	7	380-400	Silty Sandy Clay	25	<5	Very Low	<20	<0.1	<0.1	<0.1	<20	<20	0.19	-	<0.5	Very Low	<0.5	-	-	-	27.8
NTP	1	530-540	Silty Clay	21	<5	Very Low	<20	<0.1	<0.1	<0.1	40	40	0.05	-	<0.5	Very Low	<0.5	-	<0.02	-	24.5

APPENDIX K

Volumes of Soil Materials Available and Required for the Growth Medium on the WSF

Kandosol Growth Material Layers by Depth from Surface (cm)	Soil Texture Classification		Approximate Preferred Particle Size Distribution Ranges (%)	Soil Structure	Potential Source		Total Volume (m ³)		Range of Depths By Horizon (m)	Volume of Growth Material Required for WSF By Gradient Option														
	Approximate USGS	NCST (2009) (Preferred, Excl Gravel)			Area	Zone	Area	Horizon		1V:2.5H & 1V:3.5H			1V:2.0H & 1V:3.0H			1V:4H & 1V:6.25H								
										Surface Area (m ²)		Total Volume of Material Required (m ³)	Surplus/Deficit (m ³)	Surface Area (m ²)		Total Volume of Material Required (m ³)	Surplus/Deficit (m ³)	Surface Area (m ²)		Total Volume of Material Required (m ³)	Surplus/Deficit (m ³)			
										WSF (East)	WSF (West)			Total of WSFs	WSF (East)			WSF (West)	Total of WSFs			WSF (East)	WSF (West)	Total of WSFs
0-20 (A1 horizon) and 20-60 (A2 horizon)	Clayey Silty Sand to Silty Clayey Sand, Non-Plastic	Sandy Loam (SL)	Clay: 8-20 Silt: 2-10 Sand: 71-91	Massive	Borrow Area A	1	100,964	152,001	0.4	273,485	245,885	519,370	207,748	-14,305	282,958	252,937	535,895	214,358	-20,915	277,922	249,230	527,152	210,861	-17,418
						2	11,760																	
						3	14,670																	
						4	9,300																	
						5	14,690																	
						Stripped	618																	
		Sandy Clay Loam (SCL)	Clay: 18-33 Silt: 2-8 Sand: 65-82	Massive	Borrow Area B	2	34,702	41,441	0.5	273,485	245,885	519,370	259,685	-66,242	282,958	252,937	535,895	267,948	-74,505	277,922	249,230	527,152	263,576	-70,133
						3	6,739																	
						B	2,437																	
		Clay Loam, Sandy (CL,S)	Clay: 21-35 Silt: 6-15 Sand: 50-70	Massive	WSF (East)	F (Nth)	3,924	No Longer Available	0.6	273,485	245,885	519,370	311,622	-118,179	282,958	252,937	535,895	321,537	-128,094	277,922	249,230	527,152	316,291	-122,848
						H,I,K	2,345																	
						K	8,076																	
60-120 (B21 horizon)	Clayey Sandy Silt to Sandy Clayey Silt, Very Low to Low Plasticity	Clay Loam, Sandy (CL,S)	Clay: 21-35 Silt: 6-15 Sand: 50-70	Massive to Weak	Borrow Area A	1	310,533	1,111,886	0.6	273,485	245,885	519,370	311,622	2,843,068	282,958	252,937	535,895	321,537	2,833,153	277,922	249,230	527,152	316,291	2,838,398
						2	346,377																	
						3	32,754																	
						4	125,897																	
						5	283,328																	
						Stripped	12,997																	
		Sandy Light Clay (SLC)	Clay: 27-40 Silt: 2-20 Sand: 40-71	Massive to Weak	Borrow Area B	1	1,553,003	2,042,804	0.7	273,485	245,885	519,370	363,559	2,791,131	282,958	252,937	535,895	375,127	2,779,563	277,922	249,230	527,152	369,006	2,785,683
						2	486,640																	
						3	3,160																	
		Sandy Light Clay (SLC)	Clay: 27-40 Silt: 2-20 Sand: 40-71	Massive to Weak	WSF (East)	B	3,389	No Longer Available	0.8	273,485	245,885	519,370	415,496	2,739,194	282,958	252,937	535,895	428,716	2,725,974	277,922	249,230	527,152	421,722	2,732,968
						F (Nth)	7,872																	
						F (Sth)	49,639																	
120-200 (B22 horizon)	Silty Sandy Clay to Sandy Silty Clay, Low to Medium Plasticity	Sandy Light Clay (SLC)	Clay: 27-40 Silt: 2-20 Sand: 40-71	Weak to Moderate	Borrow Area A	1	331,646	802,532	0.8	273,485	245,885	519,370	415,496	387,036	282,958	252,937	535,895	428,716	373,816	277,922	249,230	527,152	421,722	380,810
						2	319,475																	
						3	79,409																	
						4	68,536																	
						Stripped	3,465																	
						Sandy Light Medium Clay (SLMC)	Clay: 40-45 Silt: 2-20 Sand: 35-58																	
		F (Nth)	47,665																					
		K	12,114																					
		Sandy Light Medium Clay (SLMC)	Clay: 40-45 Silt: 2-20 Sand: 35-58	Weak to Moderate	WSF (East)	F (Sth)	16,209	No Longer Available	1.0	273,485	245,885	519,370	519,370	283,162	282,958	252,937	535,895	535,895	266,637	277,922	249,230	527,152	527,152	275,380
						I,F (Sth)	26,055																	

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