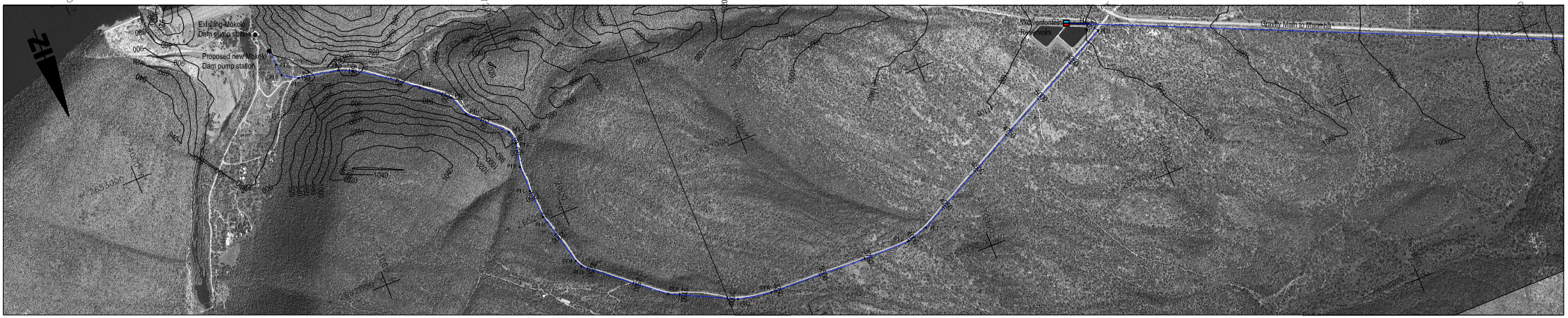
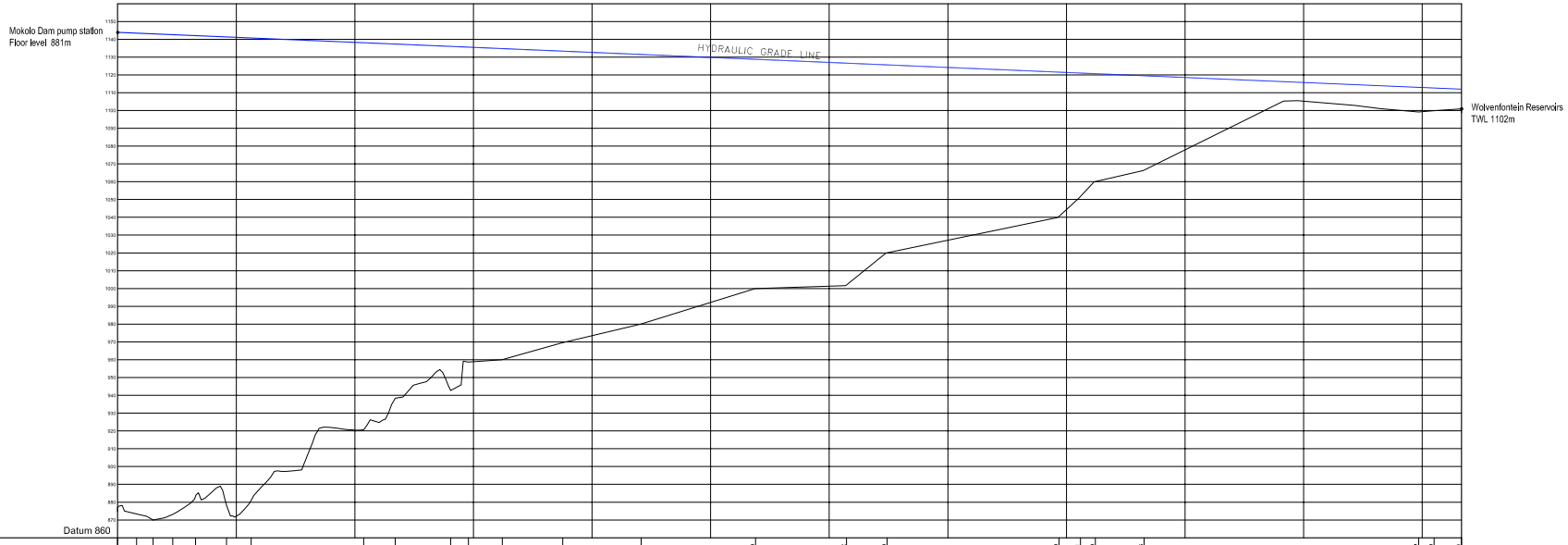


Plan Scale 1:7500



Ground Level	881	873	870	873	883	878	881	921	938	943	959	960
Chainage	0.00	80	150	232	328	459	563	1037	1170	1404	1479	1622
Node Name	MOKOLO PUMP STATION	PIA	PI B	PI C	PI D	PI E	PI F	PI G	PI H	PI I	PI J	PI K
Link Type / Link Size	STEEL GRADE X42 NOMINAL DIAMETER = 900mm											
Flow through new pipeline (Phase 1 water requirement)	AAD = 38.7 m3/a, PEAK FLOW = 1502.1 l/s											
Velocity	2.37 m/s											
Crossings				GRAVEL ROAD CROSSING								

Ground Level	970	980	1000	1002	1020	1040	1051	1060	1066	1099	1100	1100
Chainage	1876	2207	2689	3073	3244	3968	4060	4122	4327	5485	5550	5695
Node Name	PI L	PI M	PI N	PI O	PI P	PI Q	PI R	PI S	PI T	PI U	PI V	WOLVENFONTEIN RESERVOIRS
Link Type / Link Size												
Flow through new pipeline (Phase 1 water requirement)												
Velocity												
Crossings											GRAVEL ROAD CROSSING	

Mokolo Dam Pump Station to Wolvenfontein Reservoir

Horizontal Scale 1:7500
Vertical Scale 1:1000

AFRICON IN ASSOCIATION WITH VELAVKE AND KWEZI V3

SCALES:

LONGITUDINAL SECTION

VERT: 0 5 10 25 50 m
SCALE 1:500

HOR: 0 75 150 375 750 m
SCALE 1:7500

SETTING OUT POINTS:

LOCATION / NUMBER	Y	X	LEVEL (masl)

REVISION

MOD No.	DATE	DESCRIPTION	FOR	DWAF
A	06/11/08	FOR FEASIBILITY REPORT – DRAFT1	XXX	
B	01/05/09	FOR FEASIBILITY REPORT – FINAL	XXX	

DEPARTMENT OF WATER AFFAIRS AND FORESTRY
HEAD OFFICE
DIRECTORATE: OPTIONS ANALYSIS
PRIVATE BAG X313
PRETORIA 0001

P. YAKO
DIRECTOR GENERAL

DESIGN: N.J.
TRACED: J.v.d.M.
DRAWN: W.v.S.
CHECKED: J.v.d.M.
APPROVED
SIGNATURE RANK
ENGINEER: J.v.d.M.

D. SMOOK
CHIEF ENGINEER

DIRECTOR

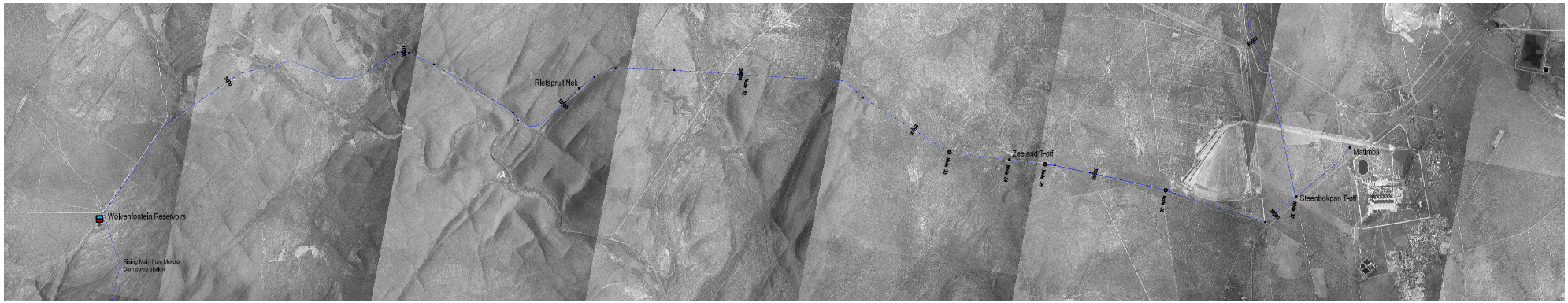
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
REPUBLIC OF SOUTH AFRICA

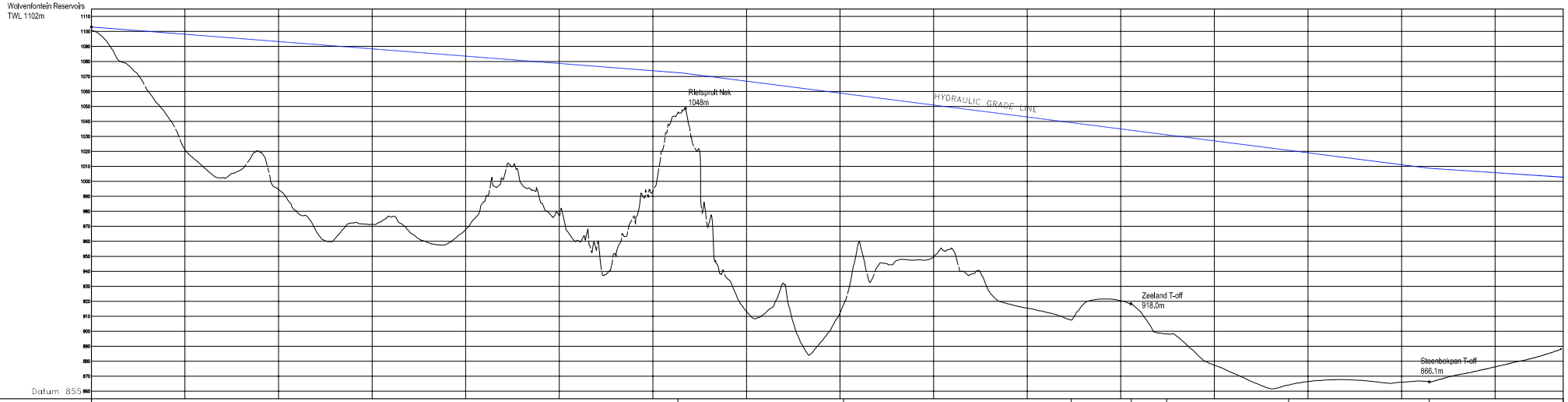
MOKOLO–CROCODILE WATER AUGMENTATION PROJECT

PHASE 1: PIPELINE FROM MOKOLO DAM (FEASIBILITY STAGE)

HYDRAULIC GRADIENT : MOKOLO DAM RISING MAIN

PROVINCE: LIMPOPO
DISTRICT: WATERBERG
KEYCODES:
OTHER No.
TENDER No. .
CONTRACT No. WP9528
DRAWING No. WP9528/LS/MTS/001/B
SHEET 2 OF 4
REG. No.





Ground Level	1100			1048		917	908	918	898	864	866		
Chainage	0.00	270	6792	15830	19659	20089	26171	27784	28720	31866	35768	37580	39124
Node Name	WOLVENFONTEIN RESERVOIRS			RIETSPRUITNEK		NODE 32	NODE 33	ZEELAND T-OFF	NODE 35	NODE 36	STEENBOKPAN T-OFF		
Link Type / Link Size	STEEL GRADE X42 NOMINAL DIAMETER = 1100mm			STEEL GRADE X42 NOMINAL DIAMETER = 1000mm							STEEL GRADE X42 NOMINAL DIAMETER = 900mm		
Flow through new pipeline (Phase 1 water requirement)	AAD = 38.7 m3/a (2014 PEAK REQUIREMENT), PEAK FLOW = 1502 l/s			AAD = 38.7 m3/a, PEAK FLOW = 1502 l/s							AAD = 21.0 m3/a, PEAK FLOW = 815.07 l/s		
Velocity	1.58 m/s			1.9 m/s							1.28 m/s		
Crossings		MAJOR GRAVEL ROAD CROSSING	PROVINCIAL ROAD CROSSING		MAJOR GRAVEL ROAD CROSSING							ESKOM CONVEYOR CROSSING	MAJOR GRAVEL ROAD CROSSING

AFRICON IN ASSOCIATION WITH VELAVKE AND KWEZI V3

SCALES:

LONGITUDINAL SECTION

VERT: 0 10 20 50 100 m
SCALE 1:1000

HOR: 0 400 800 2000 4000 m
SCALE 1:40 000

SETTING OUT POINTS:

LOCATION / NUMBER	Y	X	LEVEL (masl)

REVISION

MOD No.	DATE	DESCRIPTION	FOR	DWAF
A	06/11/08	FOR FEASIBILITY REPORT – DRAFT1	XXX	
B	01/05/09	FOR FEASIBILITY REPORT – FINAL	XXX	

DEPARTMENT OF WATER AFFAIRS AND FORESTRY
HEAD OFFICE
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PRIVATE BAG X313
PRETORIA 0001

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ENGINEER: J.v.d.M.

D. SMOOK
CHIEF ENGINEER

DIRECTOR

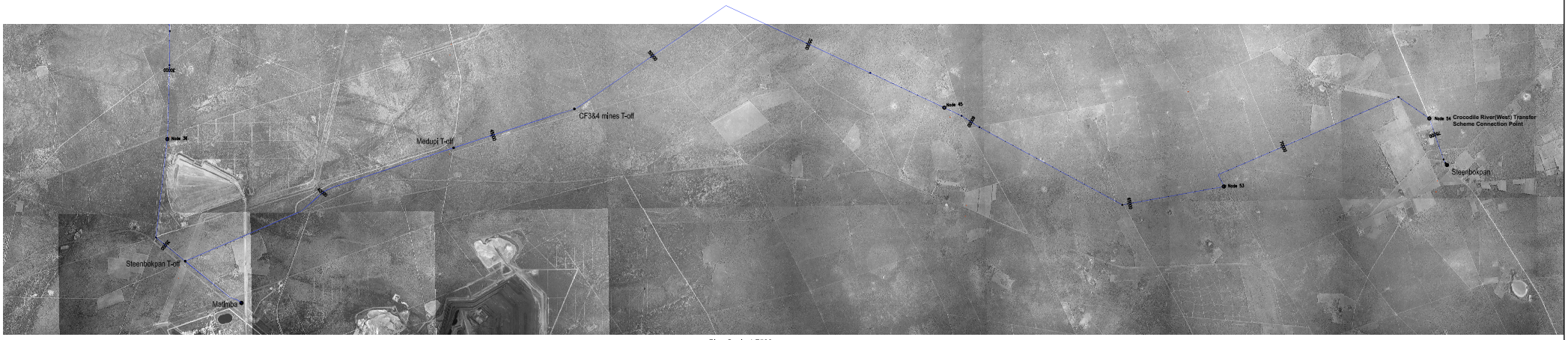
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
REPUBLIC OF SOUTH AFRICA

MOKOLO–CROCODILE WATER AUGMENTATION PROJECT

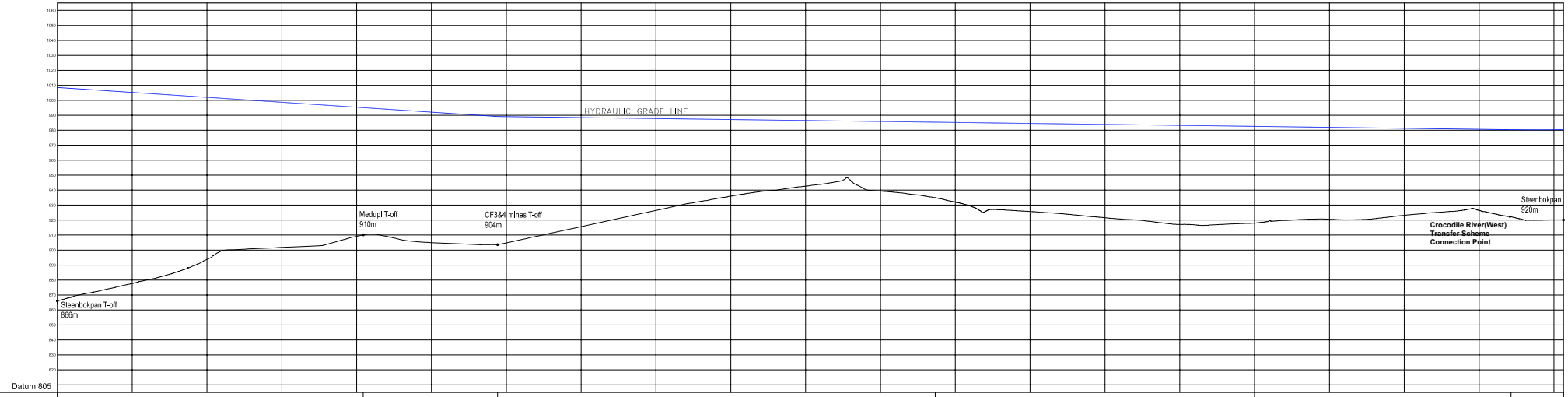
PHASE 1: PIPELINE FROM MOKOLO DAM (FEASIBILITY STAGE)

HYDRAULIC GRADIENT FROM WOLVENFONTEIN TO STEENBOKPAN TEE–OFF

PROVINCE: LIMPOPO
DISTRICT: WATERBERG
KEYCODES:
OTHER No.
TENDER No. .
CONTRACT No. WP9528
DRAWING No. WP9528/LS/MTS/002/B
SHEET 3 OF 4
REG. No.



Plan Scale 1:7500



Ground Level	866			910	904		935	918	922	920
Chainage	35768	37580	39124	43944	47534	52614	59232	67764	74623	76022
Node Name	STEENBOKPAN T-OFF			MEDUPI T-OFF	CF3&4 MINES T-OFF		NODE 45	NODE 53	NODE 54	STEENBOKPAN
Link Type / Link Size	STEEL GRADE X42 NOMINAL DIAMETER = 900mm				STEEL GRADE X42 NOMINAL DIAMETER = 1100mm				STEEL GRADE X42 NOMINAL DIAMETER = 1900mm	
Flow through new pipeline (Phase 1 water requirement)	AAD = 21.0 m3/a, PEAK FLOW = 815.1 l/s				AAD = 15.7 m3/a, PEAK FLOW = 609.4 l/s				AAD = 15.7 m3/a, PEAK FLOW = 609.4 l/s	
Velocity	1.28 m/s				0.64 m/s				0.21 m/s	
Crossings		ESKOM CONVEYOR CROSSING	MAJOR GRAVEL ROAD CROSSING			RAILWAY CROSSING			MAJOR GRAVEL ROAD CROSSING	

Steenbokpan T-off to Steenbokpan

Horizontal Scale 1:40000
Vertical Scale 1:1000

AFRICON IN ASSOCIATION WITH VELAVKE AND KWEZI V3

SCALES:

LONGITUDINAL SECTION

VERT: 0 10 20 50 100 m
SCALE 1:1000

HOR: 0 400 800 2000 4000 m
SCALE 1:40 000

SETTING OUT POINTS:

LOCATION / NUMBER	Y	X	LEVEL (masl)

REVISION

MOD No.	DATE	DESCRIPTION	FOR	DWAF
A	06/11/08	FOR FEASIBILITY REPORT – DRAFT1	XXX	
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CHIEF ENGINEER

DEPARTMENT OF WATER AFFAIRS AND FORESTRY
REPUBLIC OF SOUTH AFRICA

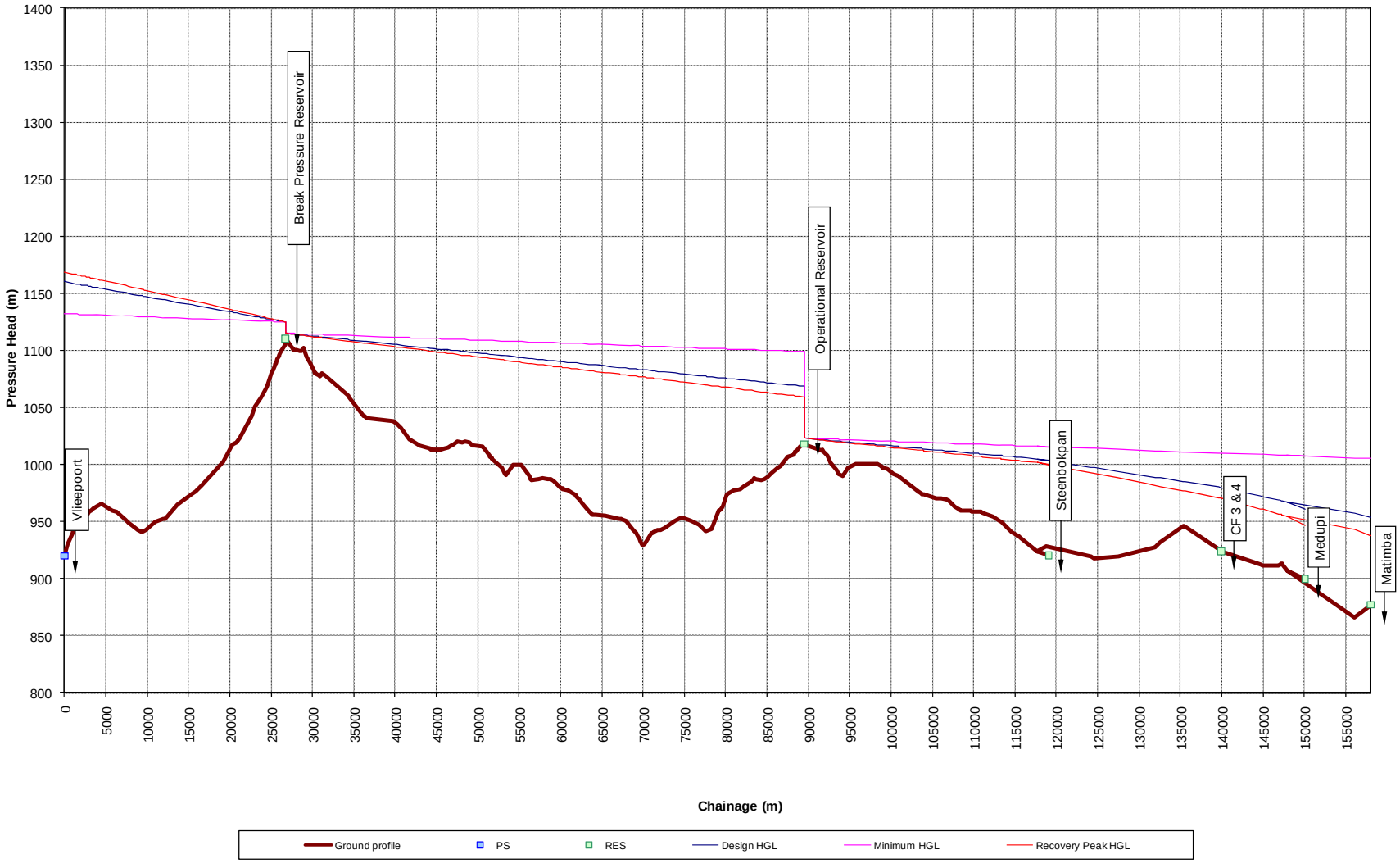
MOKOLO–CROCODILE WATER AUGMENTATION PROJECT

PHASE 1: PIPELINE FROM MOKOLO DAM (FEASIBILITY STAGE)

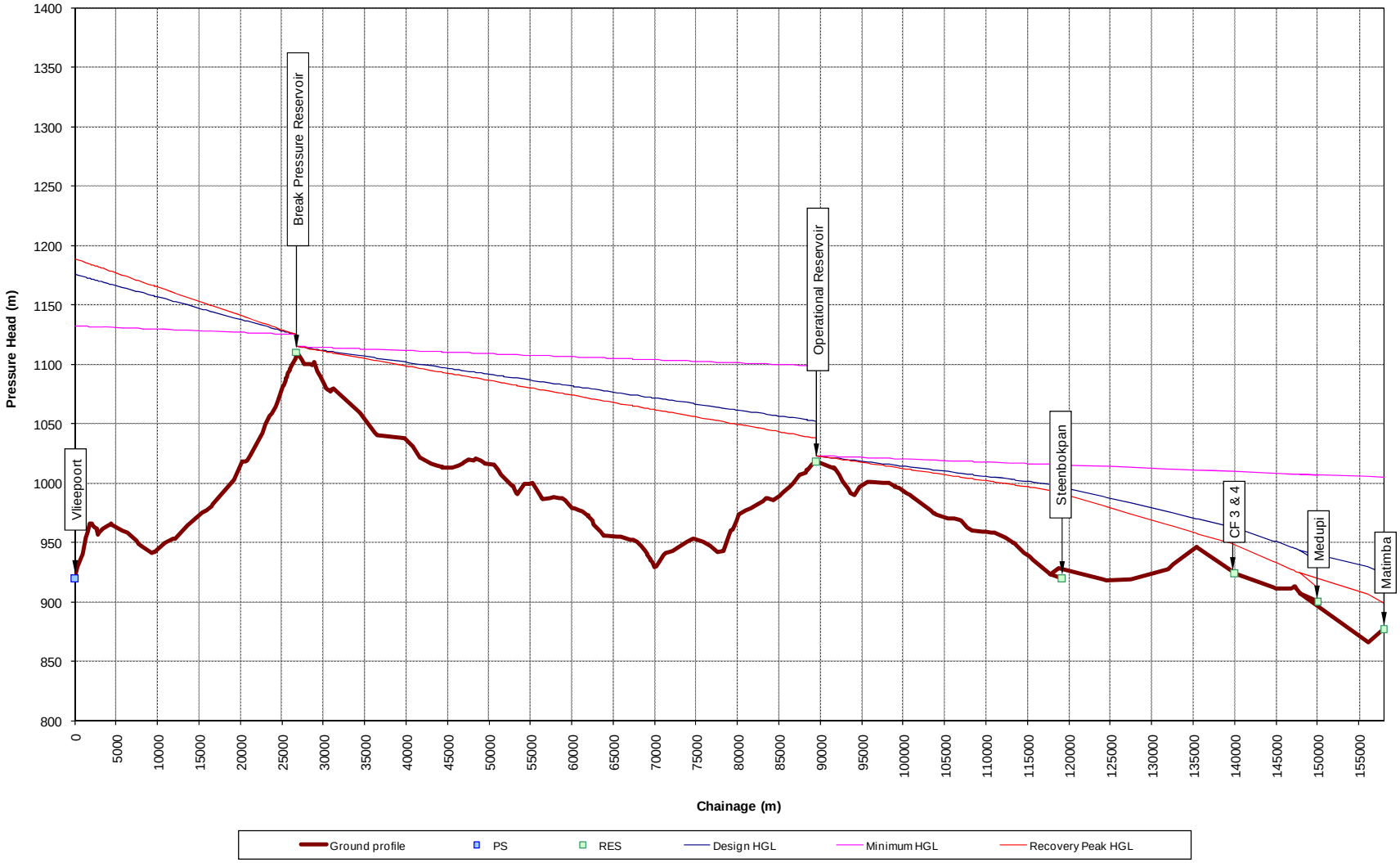
HYDRAULIC GRADIENT FROM STEENBOKPAN TEE–OFF TO STEENBOKPAN

PROVINCE: LIMPOPO
DISTRICT: WATERBERG
KEYCODES:
OTHER No.
TENDER No. .
CONTRACT No. WP9528
DIRECTOR
DRAWING No. WP9528/LS/MTS/003/B
SHEET 4 OF 4
REG. No.

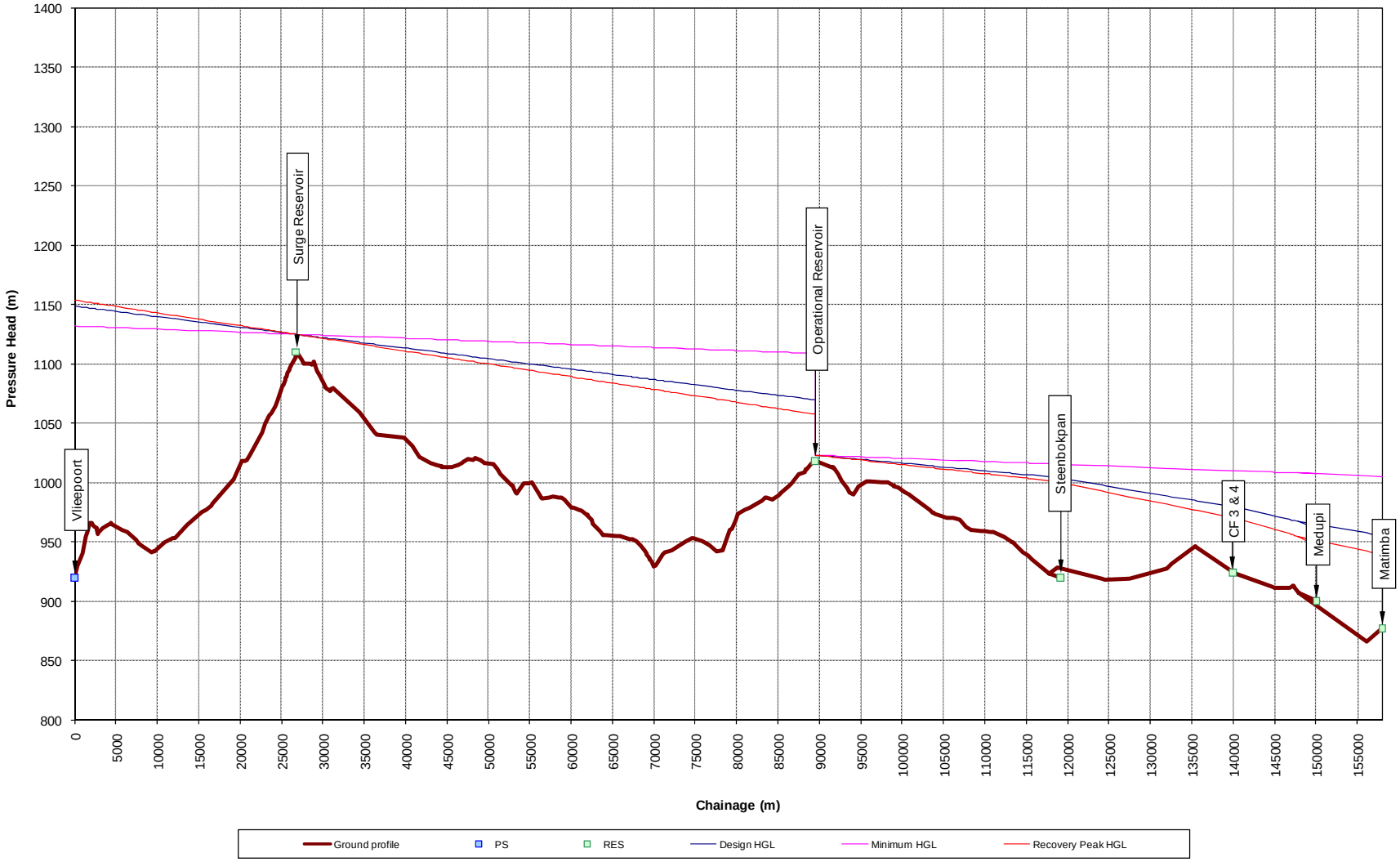
MOKOLO AND CROCODILE (WEST) WATER AUGMENTATION PROJECT
HYDRAULIC ASSESSMENT - 1A (ks = 0.05mm)



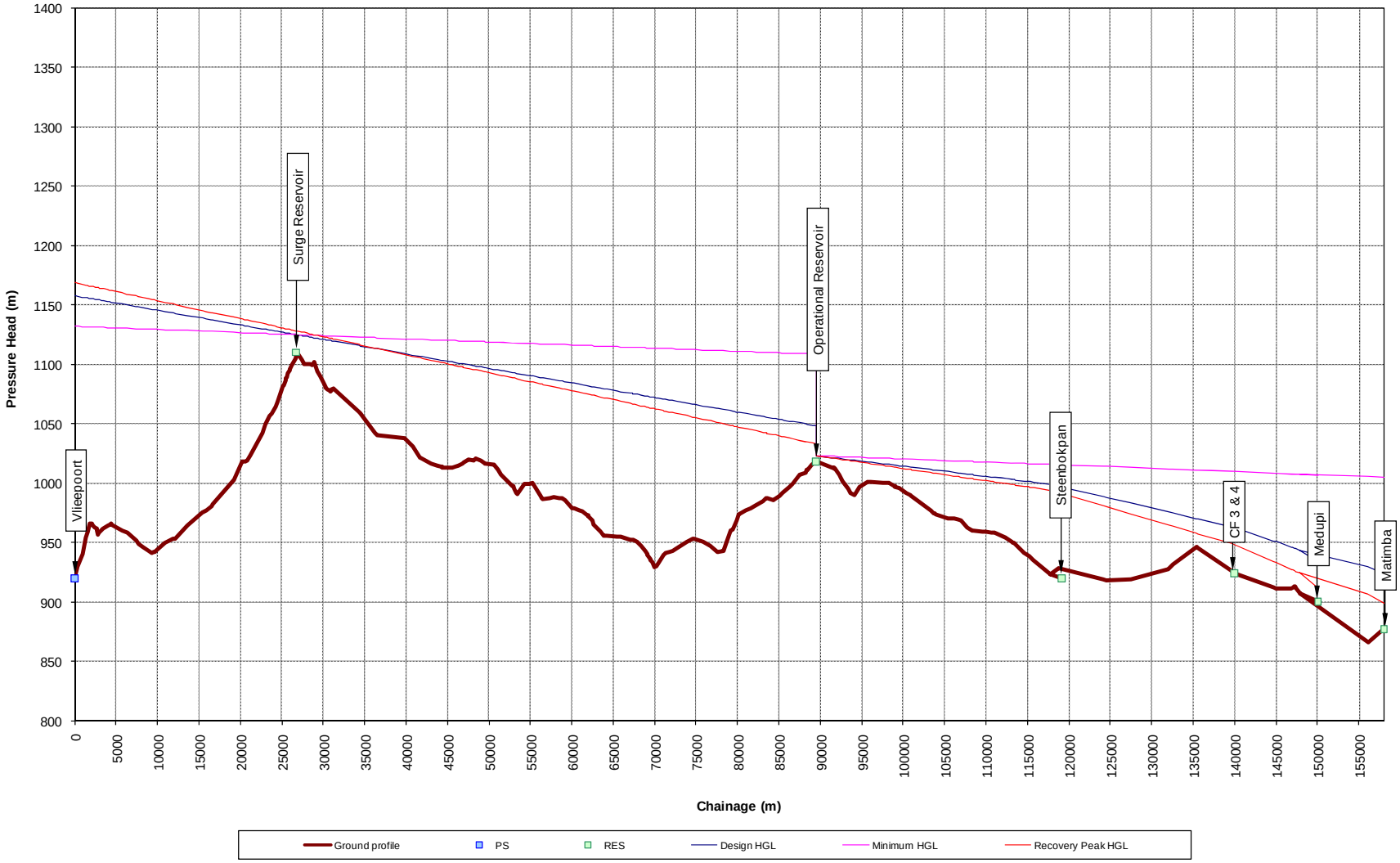
MOKOLO AND CROCODILE (WEST) WATER AUGMENTATION PROJECT
HYDRAULIC ASSESSMENT - 1A (ks = 0.5mm)



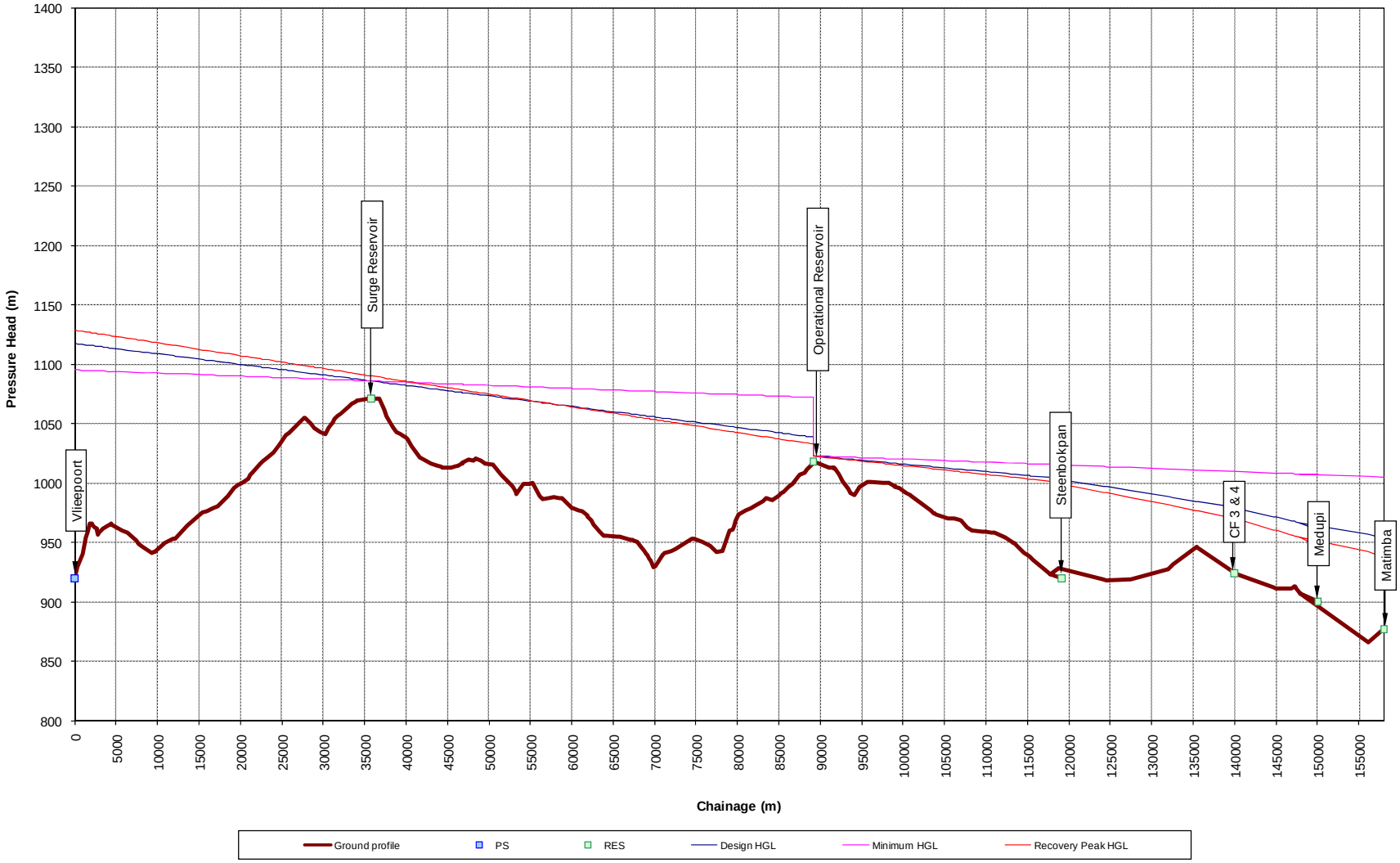
MOKOLO AND CROCODILE (WEST) WATER AUGMENTATION PROJECT
HYDRAULIC ASSESSMENT - 1B (ks = 0.05mm)



MOKOLO AND CROCODILE (WEST) WATER AUGMENTATION PROJECT
HYDRAULIC ASSESSMENT - 1B (ks = 0.5mm)



MOKOLO AND CROCODILE (WEST) WATER AUGMENTATION PROJECT
HYDRAULIC ASSESSMENT - 2B (ks = 0.05mm)



MOKOLO AND CROCODILE (WEST) WATER AUGMENTATION PROJECT
HYDRAULIC ASSESSMENT - 2B (ks = 0.5mm)