

Table LBW6.4(a): Proposed works, cost estimates & phasing - Future System

Item No. (Ref. Fig. LBW6.5a)	Description	Estimated cost * (R-yr 2011 value)	Time Related Phasing	Comments	Project no.
Ashton					
Distribution System Items					
LAW1.01	2 x 200 mm Ø Valve to insert and close	141 400	2015	To isolate network from existing rising main	PRJ-LAW-003
LAW1.02	1580 m x 200 mm Ø Pipe to install	1 062 600	2013	Replace existing 200 mm Ø pipe	PRJ-LAW-002
LAW1.03	410 m x 200 mm Ø Pipe to install	295 400	2013	Replace existing 200 mm Ø pipe	PRJ-LAW-002
LAW1.04	710 m x 250 mm Ø Pipe to install	649 600	2013	Parallel reinforcement of main pipe	PRJ-LAW-002
LAW1.05	40 m x 400 mm Ø Pipe to install	120 400	2014	Parallel reinforcement of 250 mm Ø main pipe	PRJ-LAW-002
LAW1.06	35 m x 200 mm Ø Pipe to install	50 400	2014	Parallel reinforcement of 250 mm Ø main pipe	PRJ-LAW-002
LAW1.07	95 m x 400 mm Ø Pipe to install	222 600	2014	Parallel reinforcement of 315 mm Ø main pipe	PRJ-LAW-002
LAW1.08	550 m x 355 mm Ø Pipe to install	875 000	2014	Parallel reinforcement of 250 mm Ø pipe	PRJ-LAW-002
LAW1.09	270 m x 355 mm Ø Pipe to install	450 800	2014	Parallel reinforcement of 200 mm Ø pipe	PRJ-LAW-002
LAW1.10	85 m x 160 mm Ø Pipe to install	65 800	2015	Parallel reinforcement to improve network conveyance	PRJ-LAW-003
LAW1.11	55 m x 160 mm Ø Pipe to install	47 600	2021	Supply pipe. When FDA A01 & A02 develops	PRJ-LAW-004
LAW1.12	105 m x 160 mm Ø Pipe to install	116 200	2016	Supply pipe (including major road crossing). When FDA A03 develops	PRJ-LAW-004
LAW1.13	25 m x 110 mm Ø Pipe to install	26 600	2014	Supply pipe. When FDA A04 develops	PRJ-LAW-004
LAW1.14	265 m x 160 mm Ø Pipe to install	144 200	2023	Supply pipe. When FDA A05 develops	PRJ-LAW-004
LAW1.15	1 x 150 mm Ø Valve to close	-	2023	Close existing valve. When FDA A05 develops. Rezone network to improve high static pressure.	PRJ-LAW-004
LAW1.16	1 x 150 mm Ø Valve to insert and close	67 200	2023	New zone valve. When FDA A05 develops. Rezone network to improve high static pressure.	PRJ-LAW-004
LAW2.01	251.2 m E6L 150 mm Ø Pressure Reducing Valve to abandon	-	2015	Relocate PRV. Required to rezone network	PRJ-LAW-006
LAW2.02	2 x 75 mm Ø Valve to open (Including Multiple Open/Closed Valves)	-	2015	Open existing valve. Required to rezone network.	PRJ-LAW-003
LAW2.03	1 x 150 mm Ø Valve to close	-	2015	Close existing valve. Only for emergency supply.	PRJ-LAW-003
LAW2.04	241.3 m E6L 150 mm Ø Pressure Reducing Valve to install	154 000	2015	Relocate PRV. Required to rezone network	PRJ-LAW-006
LAW3.01	3 x 100 mm Ø Valve to open (Including Multiple Open/Closed Valves)	-	2018	Open when PRV is relocated. Required to rezone network	PRJ-LAW-006
LAW3.02	230 m x 200 mm Ø Pipe to install	177 800	2018	Required to augment supply to Zolani reservoir. When FDA A06 - A08 develops	PRJ-LAW-006
LAW3.03	1100 m x 200 mm Ø Pipe to install	747 600	2019	Required to augment supply to Zolani reservoir. When FDA A06 - A08 develops	PRJ-LAW-007
LAW3.04	620 m x 150 mm Ø Pipe to install	338 800	2020	Required to augment supply to Zolani reservoir. When Zolani pump station is upgraded	PRJ-LAW-007
LAW3.05	285 m x 160 mm Ø Pipe to install	154 000	2020	Supply pipe. When FDA A06 & A08 develops.	PRJ-LAW-007
LAW3.06	130 m x 160 mm Ø Pipe to install	81 200	2020	Supply pipe. When FDA A06 & A08 develops.	PRJ-LAW-007
LAW4.01	515 m x 160 mm Ø Pipe to install	259 000	2022	Supply pipe. When FDA A07 develops.	PRJ-LAW-010
LAW4.02	325 m x 200 mm Ø Pipe to install	240 800	2017	Parallel reinforcement when existing pipe nears capacity.	PRJ-LAW-009
LAW4.03	55 m x 160 mm Ø Pipe to install	50 400	2017	Parallel reinforcement to improve network conveyance	PRJ-LAW-009
Sub-totals Distribution System Items		6 539 400			
Bulk Supply Items					
LAW.B1	135 l/s @ 72 m Pump Station to upgrade	889 000	2014	Upgrade WTP to Cogmanskloof pump station to 135 l/s @ 72 m	PRJ-LAW-001
LAW.B2	10500 m³ @ 242 m TWL Tank/Reservoir to install	15 288 000	2014	New 10.5 Ml reservoir at Cogmanskloof (TWL = 242 m)	PRJ-LAW-001
LAW.B3	58 l/s @ 78 m Pump Only to install	581 000	2013	Add 3rd pumpset for stand-by at Langeberg pumping station. Required as emergency supply to Langeberg & Ashton Foods.	PRJ-LAW-002
LAW.B4	80 l/s @ 25 m Pump Station to upgrade	- 630 000	2018	Downsize to 65 l/s @ 30 m to improve efficiency of pumping station.	PRJ-LAW-005
LAW.B5	2000 m³ @ 285 m TWL Tank/Reservoir to install	4 676 000	2016	New 2.0 Ml reservoir at Zolani (TWL = 285 m)	PRJ-LAW-008
LAW.B6	1000 m³ @ 262 m TWL Tank/Reservoir to install	2 954 000	2018	New 1.0 Ml reservoir at Conradiedorp (TWL = 262 m)	PRJ-LAW-005
LAW.B7	45 l/s @ 80 m Pump Station to upgrade	347 200	2021	Upgrade Zolani pump station to 45 l/s @ 80 m	PRJ-LAW-008
Sub-totals Bulk Supply Items		24 105 200			
Water Demand Management					
LAW.M1	Telemetry at reservoirs, pumping stations and bulk water meters	300 000			
Sub-totals Water Demand Management		300 000			
TOTALS		30 944 600			

Table LBW6.4(a): Proposed works, cost estimates & phasing - Future System

Item No. (Ref. Fig. LBW6.5b)	Description	Estimated cost * (R-yr 2011 value)	Time Related Phasing	Comments	Project no.
Bonnievale					
Distribution System Items					
LBW1.01	45 m x 110 mm Ø Pipe to install	35 000	2015	Inter-connection. Required soon to rezone network.	PRJ-LBW-004
LBW1.02	1 x 160 mm Ø Valve to insert and close	67 200	2015	Inter-connection. Required soon to rezone network.	PRJ-LBW-004
LBW1.03	70 m x 160 mm Ø Pipe to install	57 400	2015	Inter-connection. Required soon to rezone network.	PRJ-LBW-004
LBW1.04	25 m x 110 mm Ø Pipe to install	28 000	2015	Inter-connection. Required soon to rezone network.	PRJ-LBW-004
LBW1.05	1 x 110 mm Ø Valve to open	-	2015	Open existing zone valve. Required soon to rezone network.	PRJ-LBW-004
LBW1.06	10 m x 110 mm Ø Pipe to install	22 400	2015	Inter-connection. Required soon to rezone network.	PRJ-LBW-004
LBW1.07	115 m x 110 mm Ø Pipe to install	61 600	2015	Replace existing 50 mm Ø pipe	PRJ-LBW-004
LBW2.01	365 m x 250 mm Ø Pipe to install	316 400	2016	Supply pipe. When FDA B03, B06 - B09 develops	PRJ-LBW-006
LBW2.02	90 m x 160 mm Ø Pipe to install	63 000	2016	Supply pipe. When FDA B03 develops	PRJ-LBW-006
LBW2.03	510 m x 250 mm Ø Pipe to install	431 200	2016	Supply pipe. When FDA B06 - B09 develops	PRJ-LBW-006
LBW2.04	305 m x 200 mm Ø Pipe to install	215 600	2018	Supply pipe. When FDA B06 - B09 develops	PRJ-LBW-006
LBW2.05	755 m x 250 mm Ø Pipe to install	623 000	2018	Supply pipe. When FDA B06 - B08 develops	PRJ-LBW-006
LBW3.01	125 m x 110 mm Ø Pipe to install	65 800	2015	Inter-connection for pressure requirements	PRJ-LBW-003
LBW3.02	625 m x 110 mm Ø Pipe to install	250 600	2015	Parallel reinforcement for pressure requirements	PRJ-LBW-003
LBW3.03	415 m x 110 mm Ø Pipe to install	172 200	2015	Parallel reinforcement for pressure requirements	PRJ-LBW-003
LBW3.04	1710 m x 250 mm Ø Pipe to install	1 176 000	2016	Parallel reinforcement for pressure requirements	PRJ-LBW-003
LBW3.05	690 m x 200 mm Ø Pipe to install	478 800	2016	Parallel reinforcement for pressure requirements	PRJ-LBW-003
LBW4.01	1185 m x 110 mm Ø Pipe to install	456 400	2018	Parallel reinforcement for pressure requirements	PRJ-LBW-003
LBW5.01	205 m E&L 150 mm Ø Pressure Reducing Valve to install	154 000	2017	New 150 mm Ø pressure reducing valve	PRJ-LBW-005
LBW5.02	2 x 110 mm Ø Valve to close (Including Multiple Open/Closed Valves)	-	2017	Check that existing zone valves are closed	PRJ-LBW-005
Sub-totals Distribution System Items		4 674 600			
Bulk Supply Items					
LBW.B1	5500 m ³ @ 200 m TWL Tank/Reservoir to install	9 472 400	2013	New 5.5 Ml reservoir at Old Reservoirs	PRJ-LBW-001
LBW.B2	4000 m ³ @ 230 m TWL Tank/Reservoir to install	7 616 000	2014	New 4.0 Ml reservoir at New Reservoir	PRJ-LBW-002
LBW.B3	75 l/s @ 35 m Pump Station to construct	1 038 800	2014	New 75 l/s @ 35 m pump station	PRJ-LBW-002
LBW.B4	515 m x 315 mm Ø Pipe to install	684 600	2014	New dedicated rising main to New Reservoir	PRJ-LBW-002
LBW.B5a	34 l/s @ 100 m Pump to abandon	-	2013	Decommission pump 5	PRJ-LBW-001
LBW.B5b	34 l/s @ 100 m Pump to abandon	-	2013	Decommission pump 6	PRJ-LBW-001
LBW.B6a	75 m x 200 mm Ø Pipe to install	77 000	2013	New route for 200 mm Ø rising main. When pumps 5 & 6 are decommissioned	PRJ-LBW-001
LBW.B6b	5 m x 200 mm Ø Pipe to install	30 800	2013	Inter-connection for new supply route	PRJ-LBW-001
LBW.B6c	1 x 150 mm Ø Valve to insert and close	67 200	2013	Insert and close valves. When pumps 5 & 6 are decommissioned	PRJ-LBW-001
LBW.B6d	1 x 200 mm Ø Valve to insert and close	71 400	2013	Insert and close valves. When pumps 5 & 6 are decommissioned	PRJ-LBW-001
LBW.B6e	1 x 110 mm Ø Valve to insert and close	61 600	2013	Insert and close valves. When pumps 5 & 6 are decommissioned	PRJ-LBW-001
LBW.B6f	10 m x 200 mm Ø Pipe to install	33 600	2013	Inter-connection for new supply route	PRJ-LBW-001
Sub-totals Bulk Supply Items		19 153 400			
Water Demand Management					
LBW.M1	Telemetry at reservoirs, pumping stations and bulk water meters	200 000			
Sub-totals Water Demand Management		200 000			
TOTALS		24 028 000			

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Item No. (Ref. Fig. LBW6.5c)	Description	Estimated cost * (R-yr 2011 value)	Time Related Phasing	Comments	Project no.
McGregor					
Distribution System Items					
LMcW1.01	805 m x 250 mm Ø Pipe to install	732 200	2014	Parallel reinforcement of main pipe	PRJ-LMcW-002
LMcW1.02	1010 m x 160 mm Ø Pipe to install	537 600	2014	Parallel reinforcement of main pipe	PRJ-LMcW-002
LMcW1.03	330 m x 160 mm Ø Pipe to install	190 400	2015	New supply pipe after rezoning	PRJ-LMcW-002
LMcW1.04	500 m x 160 mm Ø Pipe to install	277 200	2014	Parallel reinforcement of main pipe	PRJ-LMcW-002
LMcW1.05	340 m x 160 mm Ø Pipe to install	196 000	2015	Parallel reinforcement. When FDA Mc02 develops	PRJ-LMcW-003
LMcW1.06	170 m x 110 mm Ø Pipe to install	81 200	2020	Parallel reinforcement and inter-connection. When FDA Mc01 develops	PRJ-LMcW-003
LMcW1.07	240 m x 110 mm Ø Pipe to install	99 400	2020	Supply pipe. When FDA Mc01 develops	PRJ-LMcW-003
LMcW2.01	230 m x 110 mm Ø Pipe to install	103 600	2012	Supply pipe and inter-connection	PRJ-LMcW-001
LMcW2.02a	4 x 110 mm Ø Valve to insert and close	246 400	2012	Install and close new zone valves	PRJ-LMcW-001
LMcW2.02b	1 x 75 mm Ø Valve to insert and close	58 800	2012	Install and close new zone valves	PRJ-LMcW-001
LMcW2.03	55 m x 110 mm Ø Pipe to install	39 200	2012	Inter-connection pipe	PRJ-LMcW-001
Sub-totals Distribution System Items		2 562 000			
Bulk Supply Items					
LMcW.B1	14 l/s @ 25 m Pump Station to construct	575 400	2012	New 14l/s @ 25 m booster pumping station	PRJ-LMcW-001
Sub-totals Bulk Supply Items		575 400			
Water Demand Management					
LMcW.M1	Telemetry at reservoirs, pumping stations and bulk water meters	100 000			
Sub-totals Water Demand Management		100 000			
TOTALS		3 237 400			

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Item No. (Ref. Fig. LBW6.5d)	Description	Estimated cost * (R-yr 2011 value)	Time Related Phasing	Comments	Project no.
Montagu					
Distribution System Items					
LMW1.01	75 m x 250 mm Ø Pipe to install	95 200	2012	Required to implement Ashbury Upper zone	PRJ-LMW-003
LMW1.02	1 x 200 mm Ø Valve to insert and close	71 400	2012	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.03	1 x 200 mm Ø Pipe to abandon	-	2012	Abandon existing 200 mm Ø pipe	PRJ-LMW-003
LMW1.04	860 m x 250 mm Ø Pipe to install	779 800	2012	Relocate 200 mm Ø and replace with 250 mm Ø	PRJ-LMW-003
LMW1.05a	2 x 75 mm Ø Valve to close (Including Multiple Open/Closed Valves)	-	2015	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.05b	1 x 160 mm Ø Valve to close	-	2015	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.05c	1 x 200 mm Ø Valve to close	-	2015	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.06a	1 x 200 mm Ø Valve to insert and close	71 400	2015	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.06b	1 x 160 mm Ø Valve to insert and close	67 200	2015	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.06c	1 x 110 mm Ø Valve to insert and close	61 600	2015	Required to isolate Ashbury Lower and Upper zones	PRJ-LMW-003
LMW1.07	145 m x 160 mm Ø Pipe to install	95 200	2024	Parallel reinforcement. When FDA M12 & M13 develops	PRJ-LMW-005
LMW1.08	60 m x 110 mm Ø Pipe to install	39 200	2024	Supply pipe. When FDA M12 & M13 develops	PRJ-LMW-005
LMW1.09	175 m x 250 mm Ø Pipe to install	183 400	2018	Required to improve conveyance	PRJ-LMW-003
LMW1.10	32 l/s 200 mm Ø Flow Control Valve to install	172 200	2018	New 32 l/s flow control valve between Ashbury Upper and Lower reservoirs	PRJ-LMW-003
LMW2.01	575 m x 250 mm Ø Pipe to install	407 400	2014	New supply required for rezoning	PRJ-LMW-004
LMW2.02	380 m x 200 mm Ø Pipe to install	275 800	2030	Parallel reinforcement. When FDA M11 & M17 develops	PRJ-LMW-004
LMW2.03	1 x 200 mm Ø Pipe to abandon	-	2012	Abandon existing 200 mm Ø pipe	PRJ-LMW-003
LMW2.04	810 m x 250 mm Ø Pipe to install	736 400	2012	Relocate 200 mm Ø and replace with 250 mm Ø	PRJ-LMW-003
LMW2.05	600 m x 200 mm Ø Pipe to install	420 000	2030	Parallel reinforcement. When FDA M11 & M17 develops	PRJ-LMW-004
LMW3.01	445 m x 110 mm Ø Pipe to install	183 400	2017	Parallel reinforcement for network conveyance	PRJ-LMW-006
LMW3.02	45 m x 160 mm Ø Pipe to install	44 800	2017	When new Badshoogte reservoir is constructed	PRJ-LMW-006
LMW3.03	1 x 160 mm Ø Check Valve to install	-	2017	Check that existing non-return valve is operational	PRJ-LMW-006
LMW4.01	105 m x 160 mm Ø Pipe to install	75 600	2014	Parallel reinforcement to improve network conveyance	PRJ-LMW-008
LMW4.02	145 m x 200 mm Ø Pipe to install	95 200	2014	Parallel reinforcement to improve network conveyance	PRJ-LMW-008
LMW4.03	290 m x 160 mm Ø Pipe to install	169 400	2014	Parallel reinforcement to improve network conveyance	PRJ-LMW-008
LMW5.01	10 l/s @ 30 m Pump Station to upgrade	7 000	2014	Upgrade to 10 l/s @ 30 m. When existing pump station reaches capacity.	PRJ-LMW-009
LMW5.02	285 m x 110 mm Ø Pipe to install	124 600	2014	Parallel reinforcement to improve network conveyance	PRJ-LMW-009
LMW6.01	465 m x 160 mm Ø Pipe to install	259 000	2028	Parallel reinforcement of main pipe	PRJ-LMW-011
LMW6.02	475 m x 110 mm Ø Pipe to install	194 600	2028	Parallel reinforcement of main pipe	PRJ-LMW-011
LMW7.01	265 m x 160 mm Ø Pipe to install	156 800	2023	Parallel reinforcement. When FDA M02 - M04 develops	PRJ-LMW-010
LMW7.02	375 m x 160 mm Ø Pipe to install	194 600	2023	Supply pipe. When FDA M02 - M04 develops	PRJ-LMW-010
LMW7.03	490 m x 160 mm Ø Pipe to install	271 600	2023	Parallel reinforcement. When FDA M02 - M04 develops	PRJ-LMW-010
LMW8.01	385 m x 200 mm Ø Pipe to install	280 000	2017	Parallel reinforcement of main pipe	PRJ-LMW-007
LMW8.02	400 m x 200 mm Ø Pipe to install	289 800	2017	Parallel reinforcement of main pipe	PRJ-LMW-007
LMW8.03	645 m x 200 mm Ø Pipe to install	449 400	2017	Supply pipe. When FDA M18 develops	PRJ-LMW-007
LMW8.04	725 m x 160 mm Ø Pipe to install	392 000	2020	Parallel reinforcement of main pipe	PRJ-LMW-007
LMW8.05	945 m x 110 mm Ø Pipe to install	368 200	2019	Parallel reinforcement of main pipe	PRJ-LMW-007
Sub-totals Distribution System Items		7 032 200			
Bulk Supply Items					
LMW.B01	19 l/s @ 81 m Pump Only to install	240 800	2014	Add 2nd pumpset for stand-by at WTP - South reservoir pumping station. To increase reliability of pumping station.	PRJ-LMW-002
LMW.B02	22 l/s @ 51 m Pump Only to install	190 400	2014	Add 3rd pumpset for stand-by at WTP - George Brink reservoir pumping station. To increase reliability of pumping station.	PRJ-LMW-002
LMW.B03	105 l/s @ 115 m Pump Station to upgrade	2 178 400	2018	Upgrade WTP - Ashbury Upper reservoir pump station to 107 l/s @ 103 m. Required when supply reaches capacity.	PRJ-LMW-001
LMW.B04a	2445 m x 315 mm Ø Pipe to install	3 109 400	2018	Parallel reinforcement of main pipe. When supply reaches capacity.	PRJ-LMW-001
LMW.B04b	2010 m x 315 mm Ø Pipe to install	2 562 000	2018	Parallel reinforcement of main pipe. When supply reaches capacity.	PRJ-LMW-001
LMW.B05	23 l/s @ 17 m Pump Station to construct	582 400	2015	New 23 l/s @ 17 m Ashbury pump station	PRJ-LMW-006
LMW.B06	545 m x 160 mm Ø Pipe to install	299 600	2015	Supply to new Badshoogte reservoir	PRJ-LMW-006
LMW.B07	2000 m³ @ 321 m TWL Tank/Reservoir to install	4 676 000	2015	New 2,0 Ml Badshoogte reservoir	PRJ-LMW-006
LMW.B08a	7 l/s @ 64 m Pump Station to abandon	-	2015	Decommission pump station	PRJ-LMW-006
LMW.B08b	200 m³ @ 314.1 m TWL Tank/Reservoir to abandon	-	2015	Decommission balancing tank	PRJ-LMW-006
LMW.B08c	1 x 110 mm Ø Valve to close	-	2015	Required to isolate decommissioned balancing tank	PRJ-LMW-006
LMW.B08d	1 x 75 mm Ø Valve to close	-	2015	Required to isolate decommissioned balancing tank	PRJ-LMW-006
LMW.B09	18 l/s @ 55 m Pump Station to upgrade	152 600	2028	Upgrade to 18 l/s @ 55 m. When existing pump station reaches capacity.	PRJ-LMW-011
LMW.B10	3500 m³ @ 312.47 m TWL Tank/Reservoir to install	6 910 400	2018	New 3,5 Ml reservoir for Montagu emergency storage (Emergency supply to George Brink reservoir zone)	PRJ-LMW-001
LMW.B11a	40 l/s 200 mm Ø Flow Control Valve to install	172 200	2019	New 40 l/s from WTP - Ashbury Upper pipeline to George Brink reservoir	PRJ-LMW-012
LMW.B11b	1 x 200 mm Ø Valve to open	-	2019	Augment supply to George Brink from Ashbury line	PRJ-LMW-012
Sub-totals Bulk Supply Items		21 074 200			
Water Demand Management					
LMW.M1	Telemetry at reservoirs, pumping stations and bulk water meters	500 000			
Sub-totals Water Demand Management		500 000			
TOTALS		28 606 400			

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Item No. (Ref. Fig. LBW6.5e)	Description	Estimated cost * (R-yr 2011 value)	Time Related Phasing	Comments	Project no.
Robertson					
Distribution System Items					
LRW1.01	835 m x 315 mm Ø Pipe to install	1 086 400	2012	Parallel reinforcement to improve network conveyance. When pump is upgraded	PRJ-LRW-001
LRW1.02	250 m x 315 mm Ø Pipe to install	352 800	2015	Parallel reinforcement to improve network conveyance. When pump is upgraded	PRJ-LRW-003
LRW1.03	280 m x 315 mm Ø Pipe to install	390 600	2015	Parallel reinforcement to improve network conveyance. When pump is upgraded	PRJ-LRW-003
LRW1.04	1260 m x 250 mm Ø Pipe to install	1 128 400	2015	Parallel reinforcement to improve network conveyance. When pump is upgraded	PRJ-LRW-003
LRW1.05	115 m x 160 mm Ø Pipe to install	79 800	2015	Parallel reinforcement to improve network conveyance. When pump is upgraded	PRJ-LRW-003
LRW1.06	730 m x 250 mm Ø Pipe to install	666 400	2023	Supply pipe to new reservoir	PRJ-LRW-002
LRW1.07	225 m x 160 mm Ø Pipe to install	137 200	2018	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.08	130 m x 200 mm Ø Pipe to install	112 000	2018	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.09	445 m x 160 mm Ø Pipe to install	249 200	2018	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.10	515 m x 160 mm Ø Pipe to install	284 200	2018	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.11	450 m x 160 mm Ø Pipe to install	252 000	2018	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.12	465 m x 200 mm Ø Pipe to install	331 800	2019	Parallel reinforcement to improve network conveyance	PRJ-LRW-003
LRW1.13	720 m x 200 mm Ø Pipe to install	498 400	2015	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.14	490 m x 200 mm Ø Pipe to install	819 000	2015	Parallel reinforcement of main pipe	PRJ-LRW-003
LRW1.15	36 l/s 150 mm Ø Flow Control Valve to install	154 000	2015	When FDAs develop. Required to sustain network pressure	PRJ-LRW-010
LRW1.16	200 m x 160 mm Ø Pipe to install	124 600	2015	Parallel reinforcement. When FDA R16 develops	PRJ-LRW-003
LRW1.17	785 m x 250 mm Ø Pipe to install	715 400	2012	Parallel reinforcement to improve network conveyance	PRJ-LRW-001
LRW1.18	45 m x 250 mm Ø Pipe to install	70 000	2012	Parallel reinforcement to improve network conveyance	PRJ-LRW-001
LRW1.19	1040 m x 250 mm Ø Pipe to install	936 600	2012	Parallel reinforcement to improve network conveyance	PRJ-LRW-001
LRW2.01	790 m x 200 mm Ø Pipe to install	544 600	2015	New supply pipe. When FDA R07 & R08 develops	PRJ-LRW-006
LRW2.02	210 m x 110 mm Ø Pipe to install	96 600	2015	New supply pipe. When FDA R07 & R08 develops	PRJ-LRW-006
LRW2.03a	15 m x 200 mm Ø Pipe to install	37 800	2017	New inter-connection for rezoning	PRJ-LRW-005
LRW2.03b	1 x 200 mm Ø Valve to insert and close	71 400	2017	Install & close zone valves	PRJ-LRW-005
LRW2.04a	1 x 160 mm Ø Valve to insert and close	67 200	2017	Install & close zone valves	PRJ-LRW-005
LRW2.04b	5 m x 200 mm Ø Pipe to install	30 800	2023	New inter-connection	PRJ-LRW-005
LRW2.05	475 m x 160 mm Ø Pipe to install	264 600	2015	New supply pipe. When FDA R07 & R08 develops	PRJ-LRW-006
LRW2.06	1 x 110 mm Ø Valve to open	-	2017	Open existing zone valve	PRJ-LRW-005
LRW2.07	5 x 110 mm Ø Valve to close (Including Multiple Open/Closed Valves)	-	2013	Close existing zone valve	PRJ-LRW-003
LRW2.08	2 x 75 mm Ø Valve to insert and close	117 600	2013	Install and close zone valves	PRJ-LRW-003
LRW2.09	90 m x 110 mm Ø Pipe to install	51 800	2015	New supply pipe. When FDA R20 develops	PRJ-LRW-006
LRW2.10	2 l/s @ 30 m Pump Station to construct	553 000	2019	Booster pump station (cost to developer)	
LRW2.11	140 m x 160 mm Ø Pipe to install	93 800	2023	Parallel reinforcement to improve network conveyance	PRJ-LRW-005
LRW2.12	85 m x 110 mm Ø Pipe to install	50 400	2017	Parallel reinforcement to improve network conveyance	PRJ-LRW-005
LRW3.01	2 x 160 mm Ø Valve to close (Including Multiple Open/Closed Valves)	-	2017	Close existing zone valve	PRJ-LRW-005
LRW3.02	1 x 200 mm Ø Valve to open	-	2017	Open existing zone valve	PRJ-LRW-008
LRW3.03	5 m x 160 mm Ø Pipe to install	23 800	2017	Inter-connection pipe for rezoning	PRJ-LRW-008
LRW3.04	5 m x 160 mm Ø Pipe to install	23 800	2017	Inter-connection pipe for rezoning	PRJ-LRW-008
LRW3.05	10 m x 75 mm Ø Pipe to install	19 600	2017	Inter-connection pipe for rezoning	PRJ-LRW-008
LRW3.06	5 m x 110 mm Ø Pipe to install	21 000	2017	Inter-connection pipe for rezoning	PRJ-LRW-008
LRW3.07a	1 x 160 mm Ø Valve to insert and close	67 200	2017	Install & close zone valves	PRJ-LRW-008
LRW3.07b	1 x 50 mm Ø Valve to insert and close	57 400	2017	Install & close zone valves	PRJ-LRW-008
LRW3.08	4 x 160 mm Ø Valve to open (Including Multiple Open/Closed Valves)	-	2017	Open existing zone valves	PRJ-LRW-008
LRW3.09	5 m x 200 mm Ø Pipe to install	30 800	2017	Inter-connection pipe for rezoning	PRJ-LRW-008
LRW3.10	1 x 110 mm Ø Valve to open	-	2017	Open existing zone valves	PRJ-LRW-008
LRW3.11	1 x 50 mm Ø Valve to open	-	2017	Open existing zone valves	PRJ-LRW-008
LRW3.12	110 m x 110 mm Ø Pipe to install	60 200	2025	Parallel reinforcement to improve network conveyance	PRJ-LRW-008
LRW3.13	5 m x 75 mm Ø Pipe to install	18 200	2017	Inter-connection pipe for rezoning	PRJ-LRW-008
LRW4.01	205 m x 110 mm Ø Pipe to install	95 200	2016	New Supply pipe for booster zone	PRJ-LRW-009
LRW4.02	1 x 125 mm Ø Valve to insert and close	64 400	2016	New zone valve	PRJ-LRW-009
LRW4.03	3 x 90 mm Ø Valve to close (Including Multiple Open/Closed Valves)	-	2016	Close existing zone valve	PRJ-LRW-009
LRW5.01	1055 m x 160 mm Ø Pipe to install	561 400	2018	New Supply pipe. When FDA R12 & R13 develops	PRJ-LRW-010
LRW5.02	10 m x 110 mm Ø Pipe to install	22 400	2018	Inter-connection when R12 & R13 develops	PRJ-LRW-010
LRW5.03	1 x 75 mm Ø Valve to close	-	2018	Close existing zone valve	PRJ-LRW-010
LRW5.04	195 m x 125 mm Ø Pipe to install	102 200	2018	New Supply pipe. When FDA R24 develops	PRJ-LRW-010
Sub-totals Distribution System Items		11 536 000			
Bulk Supply Items					
LRW.B1a	67 l/s @ 18 m Pump Station to construct	156 800	2012	Increase pump impeller to 310 mm	PRJ-LRW-001
LRW.B1b	67 l/s @ 18 m Pump Station to construct	156 800	2012	Increase pump impeller to 310 mm	PRJ-LRW-001
LRW.B1c	200 l/s @ 27 m Pump Station to upgrade	617 400	2012	Upgrade Reservoir 1 to town pump station to 200 l/s @ 27 m (Add 3rd pumpset)	PRJ-LRW-001
LRW.B2	5000 m ³ @ 225 m TWL Tank/Reservoir to install	8 820 000	2023	New balancing reservoir when AADD reaches 7000 kl/d	PRJ-LRW-002
LRW.B3	4 l/s @ 26 m Pump Station to construct	553 000	2016	New 4 l/s @ 26 m booster pump station	PRJ-LRW-009
LRW.B4	100 l/s @ 45 m Pump Station to upgrade	499 800	2016	Upgrade to 100 l/s @ 45 m. When supply problems occur	PRJ-LRW-004
LRW.B5	40 l/s @ 40 m Pump Station to upgrade	18 200	2014	Upgrade Res 2 to 3 pumps to 40 l/s @ 40 m. When supply problems occur	PRJ-LRW-007
LRW.B6	3000 m ³ @ 298.3 m TWL Tank/Reservoir to install	6 132 000	2014	When additional storage capacity is required in reservoir 2 & 3 zones	PRJ-LRW-007
LRW.B7	2000 m ³ @ 227 m TWL Tank/Reservoir to install	4 676 000	2019	New 2 Ml reservoir. When additional storage capacity is required in reservoir 4 zone	PRJ-LRW-009
LRW.B8	36 l/s @ 23 m Pump Station to upgrade	8 400	2011	Upgrade to 36 l/s @ 23 m. When supply problems occur	PRJ-LRW-009
Sub-totals Bulk Supply Items		21 638 400			
Water Demand Management					
LRW.M1	Telemetry at reservoirs, pumping stations and bulk water meters	500 000			
Sub-totals Water Demand Management		500 000			
TOTALS		33 674 400			

* Costs include P&G's, Contingencies & Fees, but exclude EIA studies, registration of servitudes and/or land acquisition, protection, monitoring and VAT.