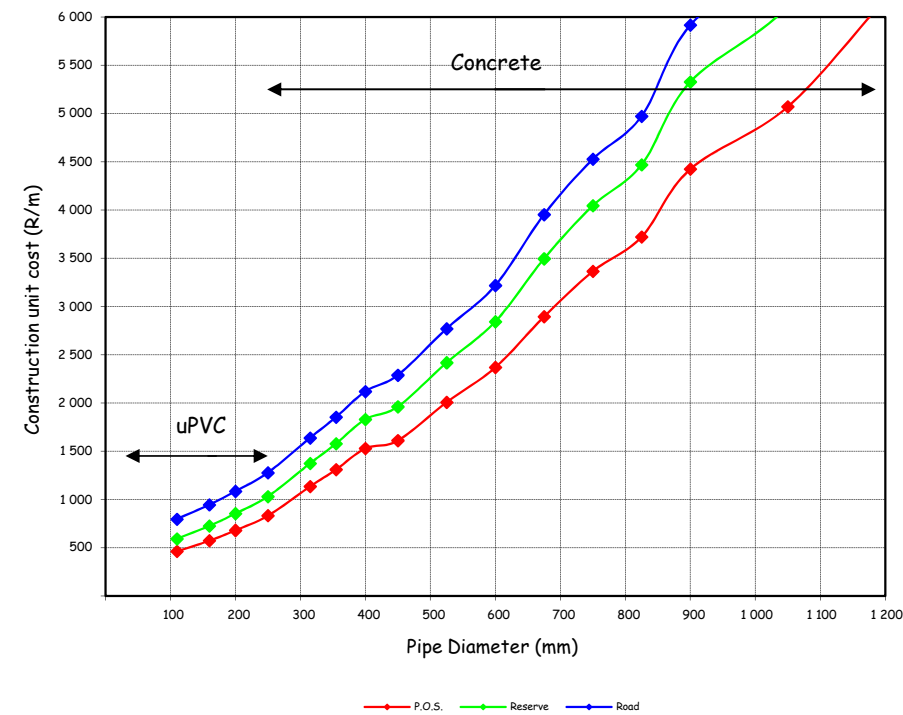
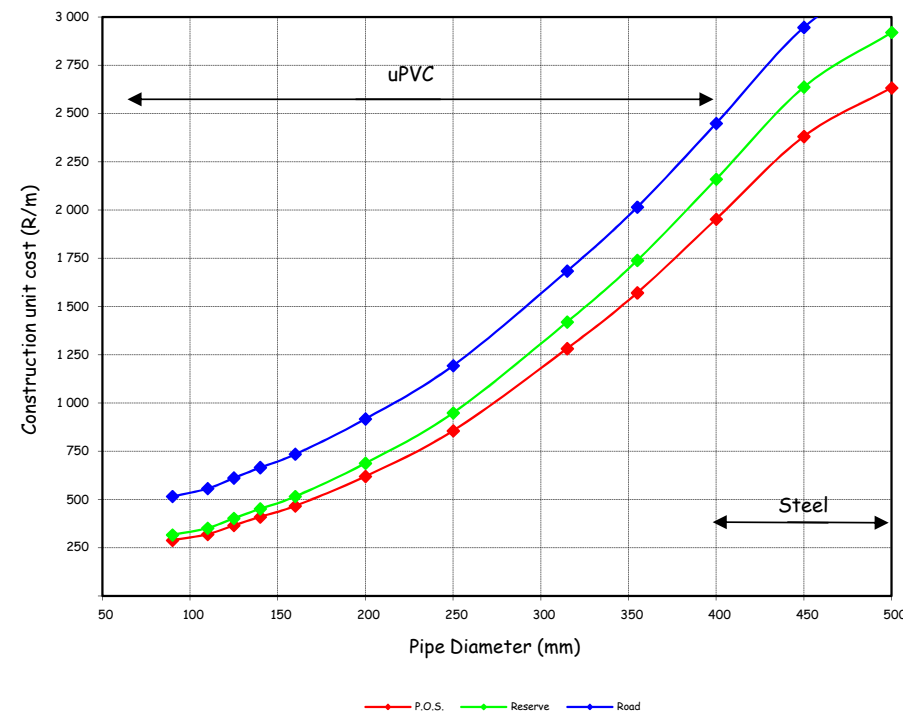


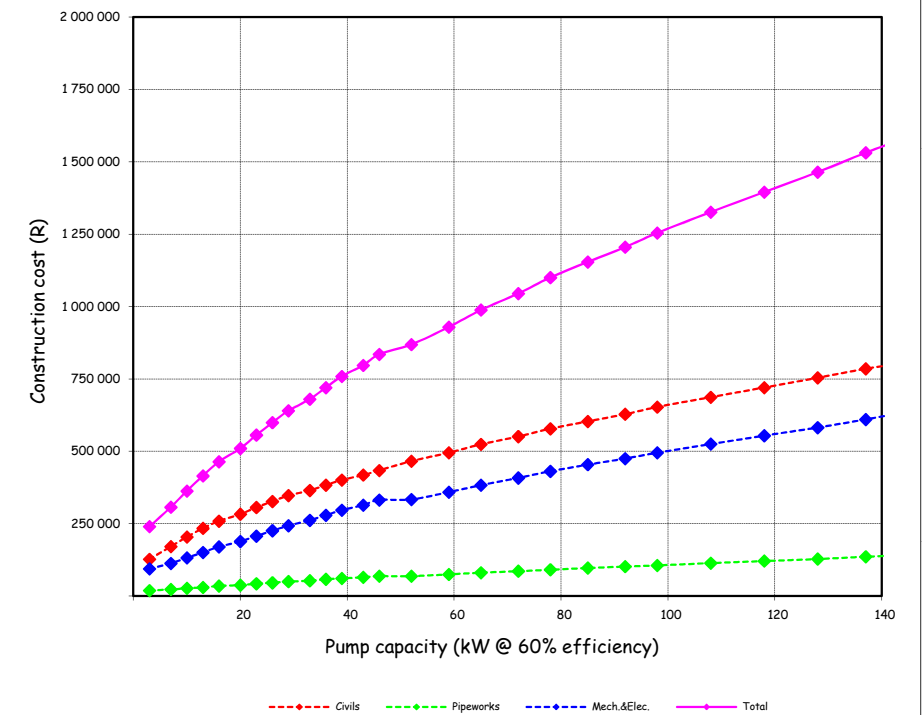
Gravity Pipeline Constr. Cost - 2011
(exc. P&G, Contg's, Fees and VAT)



Rising Main Constr. Cost - 2011
(exc. P&G, Contg's, Fees and VAT)



Pump station Constr. Cost - 2011
(exc. P&G, Contg's, Fees and VAT)



Gravity pipeline construction cost - 2010
(exc. P&G, Contg's, Fees and VAT)

Diam. (mm)	Class	Material	Open area (R)	Reserve (R)	Road (R)	Connection* (single)
110	34	uPVC	412	523	745	18 400
160	34	uPVC	482	609	846	19 400
200	34	uPVC	548	689	940	19 400
250	34	uPVC	642	802	1 069	20 500
315	34	uPVC	794	981	1 267	22 500
355	34	uPVC	907	1 114	1 412	24 500
400	34	uPVC	1 042	1 272	1 585	25 600
450	100D	Concrete	1 262	1 545	1 900	28 600
525	75D	Concrete	1 519	1 848	2 228	33 700
600	75D	Concrete	1 810	2 190	2 597	38 900
675	75D	Concrete	2 242	2 725	3 222	45 000
750	75D	Concrete	2 623	3 168	3 691	52 200
825	75D	Concrete	2 908	3 505	4 051	61 400
900	75D	Concrete	3 488	4 216	4 854	72 600
1 050	50D	Concrete	3 860	4 684	5 370	99 200
1 200	50D	Concrete	4 713	5 689	6 430	137 000
1 350	50D	Concrete	5 565	6 694	7 483	187 200
1 500	50D	Concrete	6 802	8 129	8 970	254 700
1 650	50D	Concrete	7 803	9 327	10 228	349 800

* Construction cost for connection to an existing pipeline (inc. Manhole)
House connect. = R 890

Pumpline (rising main) construction cost - 2010
(exc. P&G, Contg's, Fees and VAT)

Diam. (mm)	Class	Material	Open area (R)	Reserve (R)	Road (R)	Connection* (single)
90	12	uPVC	222	242	458	6 000
110	12	uPVC	240	264	486	6 000
125	12	uPVC	268	295	522	7 000
140	12	uPVC	296	325	557	7 000
160	12	uPVC	330	365	603	7 000
200	12	uPVC	423	468	719	9 000
250	12	uPVC	561	623	890	10 000
315	12	uPVC	809	897	1 183	13 000
355	12	uPVC	977	1 082	1 382	14 000
400	12	uPVC	1 196	1 324	1 637	16 000
450	6	Steel (X42)	2 196	2 406	2 737	21 000
500	6	Steel (X42)	2 444	2 683	3 029	25 000

* Construction cost for connection to an existing pipeline (inc. valve and chamber)

P&G / Contg's and Fees =	40%	of construction cost
Base year =	2008/09	
Diversion structure =	5	x connection cost
Investigate =	R 3 000	pipe slopes / diversions / siphons
	R 10 000	pump stations / WWTP's
Decommissioned =	R 3 000	pipes / diversions / siphons
	0.1	x total pump construction cost
Major crossing (< 250mmØ) =	2	x road pipe construction cost
Major crossing (≥ 250mmØ) =	4	x road pipe construction cost
Flow meter =	R 24 000	data logger & accessories
Waste Water Treatment Plant =	R 10 800 000 / MI/day	
WWTP formula: Cost = R 10800000 / 1 MI/d X Req. Capacity ^ 0.75		

Pump station construction cost - 2010

Capacity* (kW)	Flow* (l/s)	Civils (R)	Pipeworks (R)	Mech.&Elec. (R)	Total (R)
3	5	122700	20500	101200	244400
7	10	165700	24500	120700	310900
10	15	198400	28600	141100	368100
13	20	228100	32700	160600	421400
16	25	253600	36800	180000	470400
20	30	277200	39900	199400	516500
23	35	298600	44000	217800	560400
26	40	319100	48100	237300	604500
29	45	339500	52200	255700	647400
33	50	357900	56200	274100	688200
36	55	375300	60300	292500	728100
39	60	392700	64400	310900	768000
43	65	410100	67500	329300	806900
46	70	425400	71600	346700	843700
52	80	457200	72600	351800	881600
59	90	486800	78700	377400	942900
65	100	514400	83900	402900	1001200
72	110	542000	90000	427500	1059500
78	120	567600	95100	451000	1113700
85	130	593200	101200	474500	1168900
92	140	617700	106400	497000	1221100
98	150	641200	111500	519500	1272200
108	165	676000	118600	550200	1344800
118	180	708700	126800	580900	1416400
128	195	741500	134000	610600	1486100
137	210	773200	142200	639200	1554600
144	220	793600	147300	664800	1605700
157	240	833500	157500	700600	1691600
170	260	871400	167700	735300	1774400

Capacity* Pump capacity @ 60% efficiency
Flow* Pump capacity @ 20m head

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



March 2012

Sewer Master Plan Langeberg Municipality



Figure LBS 5.2
Cost Functions
(With Tables)