Table VI-7 (1/4) Unit Construction Cost of Detention Pond

Non-community/Dry Codition/Earth Pond/Refer to Fig. VI-4 (1/4)

CA:100,000m2 / Storage Capacity : 12,800m3 Unit : per pond

Description of Work	Unit	Quantity	Unit Price(RM)	Amount(RM)	Remarks
1. Direct Cost					
a. Earth Work					
Common excavation	m3	14,060	2.0	28,120	by mech.equip
Foundation excavation	m3	740	10.8	7,955	50%:hand,50%:mech.
Embankment	m3	252	12.0	3,024	
b. Surface Protection					
Turfing (slope)	m2	1,840	4.0	7,360	below HWL
Turfing (slope)	m2	380	4.0	1,520	above HWL
Turfing (bottom)	m2	3,200	4.0	12,800	bottom of pond
c. Concrete Work					
R.C. structures(inlet/outlet)	m3	20	250.0	5,000	
Concreetedrain (450mm)	m	60	24.0	1,440	
d. Metal Work					
Screen (d 25mm)	ton	0.40	2,400.0	960	
Sluice Gate (1m * 1m)	ton	0.05	7,000.0	350	
e. Road Work					
Asphalt pavement (t=180mm)	m2	870	6.0	5,220	
f. Chain Link Fencing (h=1.8m)	m	290	45.0	13,050	
g. Others (5% of the above)	L.S.			4,340	
2. Indirect Cost (20% of 1.)	L.S.			18,228	
3. Land Acquisition	m2	6,100	6.2	37,820	
4. Total (1.+2.+3.)				147,187	

Table VI-7 (2/4) Unit Construction Cost of Detention Pond

Non-community/Dry Codition/Slpe-Protection Pond/Refer to Fig. VI-4 (2/4)

CA:100,000m2 / Storage Capacity : 12,800m3 Unit : per pond

Description of Work	Unit	Quantity	Unit Price(RM)	Amount(RM)	Remarks
1. Direct Cost					
a. Earth Work					
Common excavation	m3	14,060	2.0	28,120	by mech.equip
Foundation excavation	m3	740	10.8	7,955	50%:hand,50%:mech.
Embankment	m3	252	12.0	3,024	
b. Surface Protection					
Slope protection (st. pitch, t=250mm)	m2	1,140	65.0	74,100	below HWL
Turfing (slope)	m2	230	4.0	920	above HWL
c. Concrete Work					
R.C. structures(inlet/outlet)	m3	20	250.0	5,000	
Cocrete pavement (t=120mm)	m2	3,600	30.0	108,000	bottom of pond
Concreetedrain (450mm)	m	60	24.0	1,440	
d. Metal Work					
Screen (d 25mm)	ton	0.40	2,400.0	960	
Sluice Gate (1m * 1m)	ton	0.05	7,000.0	350	
e. Road Work					
Asphalt pavement (t=180mm)	m2	810	6.0	4,860	
f. Chain Link Fencing (h=1.8m)	m	270	45.0	12,150	
g. Others (5% of the above)	L.S.			12,344	
2. Indirect Cost (20% of 1.)	L.S.			51,845	
3. Land Acquisition	m2	5,500	6.2	34,100	
4. Total (1.+2.+3.)				345,168	

Table VI-7 (3/4) Unit Construction Cost of Detention Pond

Community/Wet Codition/Slope-Protection Pond/Refer to Fig. VI-4 (3/4)

CA:100,000m2 / Storage Capacity : 12,800m3 Unit : per pond

Description of Work	Unit	Quantity	Unit Price(RM)	Amount(RM)	Remarks
1. Direct Cost					
a. Earth Work					
Common excavation	m3	15,580	2.0	31,160	by mech.equip
Foundation excavation	m3	820	10.8	8,815	50%:hand,50%:mech.
Embankment	m3	378	12.0	4,536	
b. Surface Protection					
Slope protection (st. pitch, t=250mm)	m2	1,330	65.0	86,450	below HWL
Turfing (slope)	m2	420	4.0	1,680	above HWL
Turfing (higer stage)	m2	4,240	4.0	16,960	higher stage
c. Concrete Work					
R.C. structures(inlet/outlet)	m3	30	250.0	7,500	
d. Metal Work					
Screen (d 25mm)	ton	0.40	2,400.0	960	
Sluice Gate (1m * 1m)	ton	0.05	7,000.0	350	
e. Road Work					
Asphalt pavement (t=180mm)	m2	1,386	6.0	8,316	
f. Chain Link Fencing (h=1.8m)	m	462	45.0	20,790	
g. Others (5% of the above)	L.S.			9,376	
2. Indirect Cost (20% of 1.)	L.S.			39,379	
3. Land Acquisition	m2	8,250	6.2	51,150	
4. Total (1.+2.+3.)				287,421	

Table VI-7 (4/4) Unit Construction Cost of Detention Pond

Community/Dry Codition/Slope-Protection Pond /Refer toFig. VI-4 (4/4)

CA:100,000m2 / Storage Capacity : 12,800m3 Unit : per pond

Description of Work	Unit	Quantity	Unit Price(RM)	Amount(RM)	Remarks
1. Direct Cost					
a. Earth Work					
Common excavation	m3	14,060	2.0	28,120	by mech.equip
Foundation excavation	m3	740	10.8	7,955	50%:hand,50%:mech.
Embankment	m3	378	12.0	4,536	
b. Surface Protection					
Slope protection (st. pitch, t=250mm)	m2	1,100	65.0	71,500	below HWL-bottom
Turfing (slope)	m2	420	4.0	1,680	above HWL
Turfing (higer stage+bottom)	m2	5,840	4.0	23,360	
c. Concrete Work					
R.C. structures(inlet/outlet)	m3	20	250.0	5,000	
Concrete drain (450mm)	m	80	24.0	1,920	
d. Metal Work					
Screen (d 25mm)	ton	0.40	2,400.0	960	
Sluice Gate (1m * 1m)	ton	0.05	7,000.0	350	
e. Road Work					
Asphalt pavement (t=180mm)	m2	1,386	6.0	8,316	
f. Chain Link Fencing (h=1.8m)	m	462	45.0	20,790	
g. Others (5% of the above)	L.S.			8,724	
2. Indirect Cost (20% of 1.)	L.S.			36,642	
3. Land Acquisition	m2	8,250	6.2	51,150	
4. Total (1.+2.+3.)				271,004	

Table VI-8 Unit Construction Cost of Storage Facility in Public Open Space

CA: 20,000 m2 — Unit : per place

Description of Work	Unit	Quantity	Unit Price(RM)	Amount(RM)	Remarks
1. Direct Cost					
a. Earth Work					
Common excavation	m3	1,080	2.0	2,160	by mech.equip
Foundation excavation	m3	120	10.8	1,290	50%:hand,50%:mech.
b. Concrete Work					
R.C. wall	m3	47	250.0	11,745	
R.C. outlet	m3	6	250.0	1,500	
Roadside Drain (300mm)	m	270	12.5	3,375	
c. Screen/Grating	ton	0.05	2,400.0	120	
d. Bottom Surface Protection					
Turfing	m2	4,000	4.0	16,000	bottom of storage place
e. Others (5% of the above)	L.S.			1,810	
2. Indirect Cost (20% of 1.)	L.S.			7,600	
3. Total (1.+2.)				45,599	

Table VI-9 Unit Construction Cost of Storage Tank in House Lot

CA: 100m2 — Unit : per house lot

Description of Work	Unit	Quantity	Unit Price(RM)	Amount(RM)	Remarks
1. Direct Cost					
a. Installation of FRP Storage Tank	no	1	800.0	800	
b. PVC Pipe Plumbing					
Half round rainwater gutter(150mm)	m	30	35.0	1,050	
Rainwater downpipe (100mm)	m	10	24.0	240	
c. Others (5% of the above)	L.S.			105	
2. Indirect Cost (20% of 1.)	L.S.			439	
3. Total (1.+2.)				2,633	

Table VI-10 (1/3) Rehabilitation Cost of Existing Detention Ponds

Sg.Petani Basin

Pond No.	Location	Area of Pond (m2)	Depth of Pond (m)	Storage Capacity (m3)	Type of Pond	Surface Protection	Drainage System [Sub-Basin Code]	Existing Outlet Structure	Work Quantities of Rehabilitation			Rehabilitation Cost (thousand RM)	Main Rehabilitation Points
3	Taman Ria Jaya (Makyong)	14,120	6.0	76,200	Excavation and partly embankment	Turfing	Line D [PE-14]	Box culvert with a 1.5m wide of sliding gate	Earth Work (m3)	:	0	0	In/Outlets structures and pond surface protection require to be rehabilitated.
									Slope Protection (m2)	:	32,300	129	
									Concrete Work (m3)	:	150	38	
									Metal Work (ton)	:	2.68	8	
									Road Work (m2)	:	3,070	18	
									Others	:		10	
									Indirect	:		41	
									Sub-Total			243	
4	Taman Ria Jaya (K.Industri R.)	45,790	9.0	384,640	Excavation and partly embankment	Turfing	Line C [PE-12]	Box culvert (1.2m wide of orifice) with intake tower	Earth Work (m3)	:	0	0	In/Outlets structures and pond surface protection require to be rehabilitated.
									Slope Protection (m2)	:	162,900	652	
									Concrete Work (m3)	:	780	195	
									Metal Work (ton)	:	13.52	39	
									Road Work (m2)	:	9,960	60	
									Others	:		47	
									Indirect	:		199	
									Sub-Total			1,192	
13	Taman Sri Wang (K/Api)	4,380	2.5	8,320	Excavation	Turfing	Sg.Gelugor [PE-28]	Box culvert (0.4m wide of orifice) with a sliding gate	Earth Work (m3)	:	6,400	17	Pond capacity should be increased by 6,400 m3. In/Outlets structures and pond surface protection require to be rehabilitated.
									Slope Protection (m2)	:	6,200	25	
									Concrete Work (m3)	:	440	110	
									Metal Work (ton)	:	0.52	2	
									Road Work (m2)	:	950	6	
									Others	:		8	
									Indirect	:		34	
									Sub-Total			202	
14	Taman Sri Wang (J/Raya)	6,190	1.5	5,570	Excavation and partly embankment	Turfing	Line G [PE-20]	Box culvert (0.5m wide of orifice) with a sliding gate	Earth Work (m3)	:	15,480	40	Pond capacity should be increased by 15,480 m3. In/Outlets structures and pond surface protection require to be rehabilitated.
									Slope Protection (m2)	:	8,900	36	
									Concrete Work (m3)	:	40	10	
									Metal Work (ton)	:	0.74	2	
									Road Work (m2)	:	1,350	8	
									Others	:		5	
									Indirect	:		20	
									Sub-Total			121	
15	Taman Keladi	17,900	6.0	96,660		Turfing	Line G [PE-19]	Concrete orifice with 0.3m wide without a sliding gate	Earth Work (m3)	:	0	0	In/Outlets structures and pond surface protection require to be rehabilitated.
									Slope Protection (m2)	:	40,900	164	
									Concrete Work (m3)	:	200	50	
									Metal Work (ton)	:	3.40	10	
									Road Work (m2)	:	3,890	23	
									Others	:		12	
									Indirect	:		52	
									Sub-Total			311	
	Total of Sg.Petani Basin								Total			2,069	

Table VI-10 (2/3) Rehabilitation Cost of Existing Detention Ponds

Sg.Pasir Basin

Pond No.	Location	Area of Pond (m2)	Depth of Pond (m)	Storage Capacity (m3)	Type of Pond	Surface Protection	Drainage System [Sub-Basin Code]	Existing Outlet Structure	Work Quantities of Rehabilitation		Rehabilitation Cost (thousand RM)	Main Rehabilitation Points
12	Taman Sejaati Indah	20,370	6.0	110,000	Excavation	Stone pitching of slope protection & concrete pavement at the bottom of pond	Sg.Pasir [PA-5]	Spillway type with three round orifices	Earth Work (m3) :	0	0	In/Outlets structures and pond surface protection require to be rehabilitated.
									Surface Protection (m2) :	11,800	646	
									Concrete Work (m3) :	3,940	985	
									Metal Work (ton) :	3.87	11	
									Road Work (m2) :	4,100	25	
									Others :		83	
									Indirect :		350	
									Sub-Total		2,100	
9	Taman Semarak(I)	13,280	3.6	39,840	Excavation and partly embankment	Turfing	Sg.Pasir [PA-8]	It is difficult to find out outlet structures due to being submerged.	Earth Work (m3) :	0	0	In/Outlets structures and pond surface protection require to be rehabilitated.
									Surface Protection (m2) :	16,900	68	
									Concrete Work (m3) :	80	20	
									Metal Work (ton) :	1.40	4	
									Road Work (m2) :	2,890	17	
									Others :		5	
									Indirect :		23	
									Sub-Total		137	
10	Taman Semarak(II)	2,560	2.7	5,380	Excavation and partly embankment	Turfing	Sg.Pasir [PA-8]	Concrete pipe with a 0.6m in diameter.	Earth Work (m3) :	3,260	8	Pond capacity should be increased by 3,260 m3. In/Outlets structures and pond surface protection require to be rehabilitated.
									Surface Protection (m2) :	3,700	15	
									Concrete Work (m3) :	20	5	
									Metal Work (ton) :	0.30	1	
									Road Work (m2) :	560	3	
									Others :		2	
									Indirect :		7	
									Sub-Total		40	
11	Taman Semarak(III)	4,770	4.8	20,030	Excavation and partly embankment	Turfing	Sg.Pasir [PA-8]	It is difficult to find out outlet structures due to being submerged.	Earth Work (m3) :	0	0	In/Outlets structures and pond surface protection require to be rehabilitated.
									Surface Protection (m2) :	8,500	34	
									Concrete Work (m3) :	40	10	
									Metal Work (ton) :	0.70	2	
									Road Work (m2) :	1,040	6	
									Others :		3	
									Indirect :		11	
									Sub-Total		66	
18	Taman Kempas (Atas)	4,540	2.5	8,630	Excavation and partly embankment	Stone pitching of slope protection & concrete pavement at the bottom of pond	Sg.Pasir [PA-6]	Outlet structure with an orifice of 0.45m in diameter.	Earth Work (m3) :	6,810	18	Pond capacity should be increased by 6,810 m3. Outlet structure require to be partly rehabilitated.
									Surface Protection (m2) :	1,700	93	
									Concrete Work (m3) :	550	138	
									Metal Work (ton) :	0.54	2	
									Road Work (m2) :	990	6	
									Others :		13	
									Indirect :		54	
									Sub-Total		324	
	Total of Sg.Pasir Basin								Total		2,667	

Table VI-10 (3/3) Rehabilitation Cost of Existing detention Ponds

Sg.Tukang Basin

Pond No.	Location	Area of Pond (m2)	Depth of Pond (m)	Storage Capacity (m3)	Type of Pond	Surface Protection	Drainage System [Sub-Basin Code]	Existing Outlet Structure	Work Quantities of Rehabilitation		Rehabilitation Cost (thousand RM)	Main Rehabilitation Points
2	Taman Ria	23,260	3.0	55,820	Excavation	Turfing	Sg.Tukang [TU-1]	Box culvert with a 1.5m wide of sliding gate	Earth Work (m3) :	23,260	60	Pond capacity should
									Surface Protection (m2) :	33,500	134	be increased by 23,260
									Concrete Work (m3) :	160	40	m3. In/Outlets
									Metal Work (ton) :	2.78	8	structures and pond
									Road Work (m2) :	5,060	30	surface protection
									Others :		14	require to be
									Indirect :		57	rehabilitated.
									Sub-Total		343	
Sg.Lalang Basin												
19	Kawasan Industi LPK	24,690	7.0	158,020	Excavation and partly embankment	Turfing	Sg.Lrang [LA-7]	Box culvert (1.5m wide of orifice) with intake tower.	Earth Work (m3) :	0	0	In/Outlets structures
									Surface Protection (m2) :	66,900	268	and pond surface
									Concrete Work (m3) :	320	80	protection require to be
									Metal Work (ton) :	5.56	16	rehabilitated.
									Road Work (m2) :	5,370	32	
									Others :		20	
									Indirect :		83	
									Sub-Total		499	
	Total of Sg.Tukang & Sg.Lalang Basins								Total		842	

Melaka : Sg.Malim Basin

Pond No.	Location	Area of Pond (m2)	Depth of Pond (m)	Storage Capacity (m3)	Type of Pond	Surface Protection	Drainage System [Sub-Basin Code]	Existing Outlet Structure	Work Quantities of Rehabilitation		Rehabilitation Cost (thousand RM)	Main Rehabilitation Points
1	Kawasan Industi Bukit Rambai	26,060	1.5	23,450	Excavation	Turfing	Sg.Ayer Salak [AS-2]	Wetmasonry Type Spillway with three orifices of 0.2m in dia.	Earth Work (m3) :	54,760	142	Pond capacity should
									Surface Protection (m2) :	33,100	132	be increased by 54,760
									Concrete Work (m3) :	160	40	m3. In/Outlets
									Metal Work (ton) :	2.75	8	structures and pond
									Road Work (m2) :	5,670	34	surface protection
									Others :		18	require to be
									Indirect :		75	rehabilitated.
									Total		449	

Table VI-11 (1/4) Construction Cost for Optimum Drainage Plan

Sungai Petani (1/2) Unit : thousand RM

Drainage Area	Sub-basin Code	Drainage Channel		Detention Pond		Storage in Public Open Space	Total
		Re-constructed	Newly Constructed	Rehabilitation of Existing Pond	Newly Constructed	Newly Constructed	
Sg.Lalang Basin							
Sg.Lalang	(LA-1)	1,544			3,200	9	4,753
	(LA-2)				4,136	288	4,424
	(LA-3)				6,374	409	6,783
Alur C	(LA-4)	1,466			3,881	255	5,602
Alur A	(LA-5)	330			2,179	0	2,508
	(LA-6)				5,127	90	5,217
Kawasan Industri LPK	(LA-7)			498	3,103	0	3,601
Sg.Bakap	(LA-8)	1,499			659	25	2,184
	(LA-9)				3,368	337	3,705
	(LA-10)				2,595	0	2,595
	(LA-11)				1,467	0	1,467
Sub-Total		4,838		498	36,089	1,413	42,838
Sg.Tukang Basin							
Taman Ria	(TU-1)			343	3,196	0	3,539
Sg.Tukang	(TU-2)	1,804			2,223	341	4,368
Cabang I-M	(TU-3)	74			911	93	1,078
Sg.Tukang	(TU-4)	1,129			275	18	1,422
Cabang H-L	(TU-5)	2,081			177	0	2,259
	(TU-6)				365	175	540
Internal Drain	(TU-7)				2,629	14	2,642
Sub-Total		5,089		343	9,776	640	15,847
Sg.Layar Besar Basin							
Sg.Layar Besar	(LB-1)	296			157	33	486
Sg.Layar Besar	(LB-2)	2,536			602	0	3,138
Cabang D-E	(LB-3)	598			411	53	1,062
Sg.Layar Besar	(LB-4)	3,324			1,731	0	5,055
Sub-Total		6,753		0	2,901	86	9,741
Sg.Che Bima Basin							
Sg.Che Bima	CB-1	928			2,096	0	3,024
Sg.Che Bima	CB-2	1,613			2,247	0	3,859
Sg.Che Bima	CB-3	1,903			1,143	0	3,046
Sub-Total		4,444		0	5,486	0	9,929

Table VI-11 (2/4) Construction Cost for Optimum Drainage

Sungai Petani (2/2) Unit : thousand RM

Drainage Area	Sub-basin Code	Drainage Channel		Detention Facilities			Total
				Detention Pond		Storage in Public Open Space	
		Re-constructed	Newly Constructed	Rehabilitation of Existing Pond	Newly Constructed	Newly Constructed	
Sg.Petani Basin							
Sg.Pasir Kechil	(PE-1)	968			2,454	0	3,421
Sg.Pasir Kechil	(PE-2)	1,161			581	0	1,742
Line A1	(PE-3)	972			706	0	1,677
Line A1	(PE-4)	1,663			501	0	2,164
	(PE-5)				871	0	871
Sg.Petani	(PE-6)	348			947	0	1,295
Line A	(PE-7)	575			1,793	147	2,515
Line A	(PE-8)	824			837	0	1,661
	(PE-9)				927	0	927
Line B	(PE-10)	396			977	18	1,390
	(PE-11)				244	90	334
Line C	(PE-12)	725		1,189	3,390	0	5,304
	(PE-13)				1,014	0	1,014
Line D	(PE-14)	612		242	2,235	78	3,167
	(PE-15)				0	33	33
Line E	(PE-16)	629			87	0	716
Line F	(PE-17)	164			452	108	724
	(PE-18)				273	0	273
Line G	(PE-19)	198		311	4,321	0	4,831
Line G	(PE-20)	1,419		121	2,063	0	3,603
	(PE-21)				19	0	19
Line H	(PE-22)	72			399	0	471
	(PE-23)				57	0	57
Line N	(PE-24)	670			153	69	892
Line N,P	(PE-25)	1,583			889	99	2,570
Sg.Air Medidih	(PE-26)	2,482			1,072	222	3,776
	(PE-27)				47	0	47
Sg.Gelugor	(PE-28)	832		200	661	0	1,694
Sg.Gelugor	(PE-29)	2,647			443	0	3,090
Line Q	(PE-30)	894			0	0	894
	(PE-31)				409	0	409
Sg.Bakar Arang	(PE-32)	3,382			1,322	41	4,745
Line R,S	(PE-33)	1,366			1,499	4	2,869
	(PE-34)				3,239	0	3,239
Sub-Total		24,581		2,063	34,883	908	62,435
Sg.Pasir Basin							
Sg.Pasir	(PA-1)	443			1,038	0	1,482
	(PA-2)				5,754	0	5,754
Internal Drain	(PA-3)				1,187	0	1,187
	(PA-4)				2,150	0	2,150
Drain I&II	(PA-5)			2,100	2,429	0	4,529
Taman Kempas	(PA-6)			324	1,324	0	1,648
	(PA-7)				5,282	0	5,282
T.Semarak(I)	(PA-8)			137	4,093	0	4,230
T.Semarak(II)	(PA-8)			40			40
T.Semarak(III)	(PA-8)			66			66
Drain III&IV	(PA-9)		450		792	0	1,241
	(PA-10)				7,733	0	7,733
Sub-Total		443	450	2,667	31,781	0	35,341
Total of Sungai Petani		46,148	450	5,571	120,917	3,046	176,132

Table VI-11 (3/4) Construction Cost for Optimum Drainage Plan

Melaka (1/2) Unit : thousand RM

Drainage Area	Sub-basin Code	Drainage Channel		Detention Facilities			Total
				Detention Pond		Storage in Public Open Space	
		Re-constructed	Newly Constructed	Rehabilitation of Existing Pond	Newly Constructed	Newly Constructed	
Sg.Leleh Basin							
	(UD-1)				0	7,911	7,911
Udang	(UD-2)				5,788	165	5,953
	(UD-3)				129	76	205
S.Gajah	(GA-1)				8,507	0	8,507
	(GA-2)				166	0	166
	(GA-3)				537	14	551
	(GA-4)				234	0	234
Leleh	(LE-1)				10,704	336	11,040
Sub-Total					26,065	8,501	34,565
Sg.Malim Basin							
	(AS-1)				11,494	0	11,494
K.I.Bukit Rambai	(AS-2)			449	7,101	32	7,582
Pt.ABI	(AS-3)	2,454			4,073	0	6,527
	(AS-4)				2,330	0	2,330
	(AH-1)				17,283	0	17,283
	(AH-2)				3,524	0	3,524
	(AH-3)				1,622	0	1,622
	(AH-4)				945	16	961
Pt.Cheng Besar	(AH-5)	4,385			3,250	147	7,782
Pt.Cheng Kecil	(AH-6)	2,262			237	0	2,499
	(MA-1)				5,198	714	5,911
	(MA-2)				2,615	0	2,615
Pt.Setulang Daing	(MA-3)	2,952			2,150	147	5,249
	(MA-4)				4,820	0	4,820
	(MA-5)				1,829	0	1,829
Sub-Total		12,054	0	449	68,469	1,056	82,027
Sg.Melaka Basin(1) - (Upstream of Merdeka Barrage)							
Internal Drain	(UM-1)				6,604	0	6,604
	(UM-2)				2,510	405	2,915
	(UM-3)				692	0	692
Sub-Total		0	0	0	9,806	405	10,211
Sg.Melaka Basin(2) - (Downstream of Merdeka Barrage)							
	(ME-1)				1,080	0	1,080
Drain I	(ME-2)	3,877			1,152	0	5,029
	(ME-3)				1,872	0	1,872
Drain II	(ME-4)	1,102			696	0	1,798
	(ME-5)				1,347	0	1,347
Drain III	(ME-6)	8,274			1,145	238	9,657
Drain IV	(ME-7)	2,803			56	77	2,936
	(ME-8)				1,407	39	1,446
Drain V	(ME-9)	1,242			2,728	45	4,015
Drain VI	(ME-10)	2,433			507	372	3,312
Drain VII	(ME-11)	408			402	73	883
Drain VIII	(ME-12)	526			94	117	737
	(ME-13)				380	0	380
Drain IX	(ME-14)	0			177	0	177
	(ME-15)				132	22	155
Drain X	(ME-16)	1,317			457	211	1,985
	(ME-17)				663	212	875
Sub-Total		21,983		0	14,295	1,404	37,682

Table VI-11 (4/4) Construction Cost for Optimum Drainage Plan

Melaka (2/2)

Unit : thousand RM

Drainage Area	Sub-basin Code	Drainage Channel		Detention Facilities			Total
				Detention Pond		Storage in Public Open Space	
		Re-constructed	Newly Constructed	Rehabilitation of Existing Pond	Newly Constructed	Newly Constructed	
Sg.Cheng Basin							
Sg.Soro Bangsal	(SB-1)	579			1,805	0	2,384
	(SB-2)	2,588			1,501	865	4,953
Sg.Paya Rumput	(AR-1)	1,472			962	0	2,434
	(AR-2)				4,049	57	4,107
	(AR-3)				2,063	111	2,174
Jenuang	(JN-1)				1,359	0	1,359
	(JN-2)				2,418	0	2,418
	(JN-3)				5,435	575	6,010
	(JN-4)				4,090	962	5,052
Cheng	(CH-1)				2,848	358	3,206
Sub-Total		4,639			26,531	2,927	34,096
Sg.Putat Basin							
	(PU-1)				230	100	329
	(PU-2)				146	292	438
	(PU-3)				1,323	0	1,323
Sg.Ayer Saga	(PU-4)	303			0	0	303
	(PU-5)				0	0	0
Sg.Bt. Bruang	(PU-6)	2,550			1,410	0	3,960
Sg.Ayer Manggis	(PU-7)				1,142	121	1,263
	(PU-8)				2,857	0	2,857
	(PU-9)				3,627	132	3,759
Sub-Total		2,853			10,735	645	14,233
Minor Basins - (Coastal Drainage System)							
Drain XI	(CD-1)				343	155	498
Drain XII	(CD-2)	342			0	271	613
Drain XIII	(CD-3)	3,123			1,677	445	5,245
Drain XIV	(CD-4)	8,639			4,856	91	13,585
Drain XV	(CD-5)	730			1,150	0	1,880
Drain XVI	(CD-6)	323			605	0	928
Drain XVII	(CD-7)	1,665			2,247	139	4,051
Drain XVIII	(CD-8)				271	0	271
	(CD-9)				64	0	64
Sub-Total		14,823	0	0	11,212	1,100	27,135
Total of Melaka		56,351	0	449	167,113	16,038	239,951

Table VI-12 Maintenance Cost for Drainage Channel

Unit : per 10,000m2

Description	Unit	Quantity	Unit Price(RM)	Amount(RM)	
1 Direct Cost					
a. Man Power					
Foreman	man.day	1.0	80.0	80.0	
Common Labour	man.day	6.0	33.0	198.0	
Operator	man.day	2.0	55.0	110.0	
b. Equipment					
Back hoe(0.09m3)	unit.day	1.0	850.0	850.0	
Dump Truck (4t)	unit.day	1.0	450.0	450.0	
Grass Cutter	unit.day	4.0	70.0	280.0	
c. Others (5% of the above)				98.4	
2 Indirect Cost (10% of the above)				206.6	
3 Total (1.+2.)				2,273.0	

Note : This maintenance cost is estimated on the quarterly basis.

Annual maintenance cost per 10,000m2 : 9,100.0

Table VI-13 Maintenance Cost for Detention Pond

Unit : per pond.time

Description	Unit	Quantity	Unit Price(RM)	Amount(RM)	
1 Direct Cost					
a. Man Power					
Foreman	man.day	0.5	80.0	40.0	
Common Labour	man.day	2.0	33.0	66.0	
Operator	man.day	1.0	55.0	55.0	
b. Equipment					
Back hoe(0.09m3)	unit.day	0.5	850.0	425.0	
Dump Truck (4t)	unit.day	0.5	450.0	225.0	
Grass Cutter	unit.day	1.5	70.0	105.0	
c. Others (5% of the above)				45.8	
2 Indirect Cost (10% of the above)				96.2	
3 Total (1.+2.)				1,058.0	

Note : This maintenance cost is estimated on the quarterly basis.

Annual maintenance cost per pond : 4,200.0

Table VI-14 Project Cost for Structure Plan

Unit : thousand RM

Drainage Basin	Construction Cost						Annual O&M Cost		
	Channel Impvt.	Detention Facilities				Total	Drainage Channels	Detention Facilities	Total
	Sub-Total	Existing Pond Rehabilitation	New Pond Construction	Storage Facility in Public Open Space	Sub-Total				
Sungai Petani									
Lalang	4,838	498	36,089	1,413	38,000	42,838	22	577	599
Tukang	5,089	343	9,776	640	10,759	15,848	21	156	178
Layer Besar	6,753	-	2,901	86	2,987	9,740	28	46	75
Che Bima	4,444	-	5,486	-	5,486	9,930	18	88	105
S.Petani	24,581	2,063	34,883	908	37,854	62,435	103	558	660
Pasir	893	2,667	31,781	-	34,448	35,341	4	508	512
Total	46,598	5,571	120,917	3,046	129,534	176,132	196	1,933	2,129
Melaka									
Leleh	-	-	26,065	8,501	34,565	34,565	-	417	417
Malim	12,054	449	68,469	1,056	69,974	82,028	52	1,095	1,147
Melaka(1)		-	9,806	405	10,211	10,211	23	581	604
Melaka(2)	21,983	-	14,295	1,404	15,699	37,682	80	229	308
Cheng	4,639		26,531	2,927	29,458	34,097			
Putat	2,853	-	10,735	645	11,380	14,233	13	172	185
Minor Basins	14,823	-	11,212	1,100	12,312	27,135	53	179	232
Total	56,352	449	167,113	16,038	183,600	239,952	221	2,672	2,893
G.Total	102,950	6,020	288,029	19,085	313,134	416,084	416	4,605	5,021

Note : Melaka(1) and Melaka(2) presents the basin in the upstream and the downstream of Merdeka Barrage, respectively.