

CER Calculation

Year	Estimation of baseline emissions (tCO₂e)	Estimation of project emissions (tCO₂e)	Estimation of leakage (tCO₂e)	Estimation of overall emissions reductions (tCO₂e)
Year 1	17,380	0	0	17,380
Year 2	17,380	0	0	17,380
Year 3	17,380	0	0	17,380
Year 4	17,380	0	0	17,380
Year 5	17,380	0	0	17,380
Year 6	17,380	0	0	17,380
Year 7	17,380	0	0	17,380
Total (tonnes of CO₂e)	121,659	0	0	121,659

SG PERTING MINI-HYDRO (4 MW)

(Basecase no CDM)

CASHFLOW STATEMENT (in RM'000)

CASH FLOW STATEMENT (in RM '000)		Notes	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
INFLOW																											
				98,591	-	-	3,901	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681	5,745	
OUTFLOW																											
Total Expenditure				61,234	19,938	11,286	921	957	978	1,054	1,076	1,104	1,192	1,218	1,245	1,346	1,381	1,412	1,529	1,564	1,600	1,739	1,779	1,822	1,976	2,023	2,094
Cashflow Before Tax				37,357	(19,938)	(11,286)	2,980	3,724	3,703	3,627	3,605	3,577	3,490	3,463	3,436	3,335	3,301	3,269	3,153	3,118	3,081	2,943	2,902	2,860	2,705	2,658	3,650

Project IRR Pre Tax

8.30%

SG PERTING MINI-HYDRO (4MW)

(Basecase with CDM)

CASHFLOW STATEMENT (in RM'000)																									
	Notes		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
		TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
INFLOW																									
		111,579	-	-	4,718	5,498	5,498	5,498	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	5,253	6,316	
OUTFLOW																									
Total Expenditure		61,234	19,938	11,286	938	957	978	1,054	1,076	1,104	1,192	1,218	1,245	1,346	1,381	1,412	1,529	1,564	1,600	1,739	1,779	1,822	1,976	2,023	2,077
Cashflow Before Tax		50,345	(19,938)	(11,286)	3,780	4,541	4,520	4,444	4,177	4,149	4,061	4,035	4,008	3,907	3,872	3,841	3,724	3,690	3,653	3,514	3,474	3,431	3,277	3,230	4,240
Project IRR Pre Tax			10.68%																						

A: Electricity Tariff Increased by 10% to 18.37 cents / kwh

CASHFLOW STATEMENT (in RM'000)		Notes	TOTAL	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
INFLOW																										
			108,422	-	-	4,291	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	6,291	
OUTFLOW																										
Total Expenditure			61,234	19,938	11,286	938	957	978	1,054	1,076	1,104	1,192	1,218	1,245	1,346	1,381	1,412	1,529	1,564	1,600	1,739	1,779	1,822	1,976	2,023	2,077
Cashflow Before Tax			47,188	(19,938)	(11,286)	3,353	4,192	4,172	4,096	4,073	4,045	3,958	3,932	3,904	3,803	3,769	3,737	3,621	3,586	3,549	3,411	3,370	3,328	3,173	3,127	4,214
Project IRR Pre Tax			9.98%																							

B: Capital Expenditure reduced by 10%

CASHFLOW STATEMENT (in RM'000)				Notes	TOTAL	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
INFLOW																												
OUTFLOW																												
Total Expenditure																												
Cashflow Before Tax																												
Project IRR Pre Tax																												

C: Annual Operating and Maintenance Cost Reduced by 10%

CASHFLOW STATEMENT (in RM'000)				Notes	TOTAL	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
INFLOW																											
OUTFLOW																											
Total Expenditure																											
Cashflow Before Tax																											
Project IRR Pre Tax																											

D: Electricity Generation Increased by 10%

CASHFLOW STATEMENT (in RM'000)				Notes	TOTAL	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
INFLOW					108,422	-	-	4,291	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	5,149	6,291	
OUTFLOW																												
Total Expenditure					61,234	19,938	11,286	938	957	978	1,054	1,076	1,104	1,192	1,218	1,245	1,346	1,381	1,412	1,529	1,564	1,600	1,739	1,779	1,822	1,976	2,023	2,077
Cashflow Before Tax					47,188	(19,938)	(11,286)	3,353	4,192	4,172	4,096	4,073	4,045	3,958	3,932	3,904	3,803	3,769	3,737	3,621	3,586	3,549	3,411	3,370	3,328	3,173	3,127	4,214
Project IRR Pre Tax					9.98%																							

Sensitivity Analysis	
Electricity Tariff Increased by 10% to 18.37 cents / kwh	IRR 9.98%
Capital Expenditure reduced by 10%	9.67%
Annual Operating and Maintenance Cost Reduced by 10%	8.70%
Electricity Generation Increased by 10%	9.98%
Base Case	8.30%

Note 1 - Calculation of revenue

Item	Details	Units	
A	Capacity (kW)	4000	
B	Number of operation in a year (hrs) 24 hrs x 365 days	8760	
C	Load Factor	80%	
D	Annual Generation (kWh) (A x B x C)	28,032,000	
E	Grid Emission Factor ton CO2 e / MWh [1]	0.62	Malaysian Energy Centre, Study on Grid Connected Electricity Baselines in Malaysia, 2005
	Total CER's Generated	17,380 121,659	
F	Electricity Tariff (sen)	16.7	REPPA 868,992 130,348.80
G	CER's untill end 2012 (EURO) CER's after 2012 (EURO) Exchange Rate (Euro to MYR)	10 7 4.7	As per term sheet after deduction of commission World Bank Report Average
H	Total Electricity Sales (RM'000) (D x F)	4,681	
I	Net Carbon Revenue before 2012 Net Carbon Revenue after 2012	817 572	
J	Debtors collectio period (days)	60	
K	Therefore 1st yr revenue (RM'000)	3,901	
L	and 21st yr revenue (RM'000)	5,462	

[1] The Baseline Study mentions that the emission factor has been calculated as per ACM0002. It must be noted that the steps specified in ACM0002 to estimate the emission factor are same as in "Tool to calculate the emission factor for an electricity system – Version1.1. The Baseline study had adopted the latest IPCC 2006 Guidelines for National Greenhouse Gas Inventories to estimate the emission factor. Therefore, it may be considered that the emission factor has been calculated as per the tool.