Table 1: Project investment costs in financial terms

Item	US$
Genset ex works	1,980,000
Shipping and transport on site	500,000
Total Generator	**2,480,000**
11kV circuit breaker & protection, installed	49,275
Fuel & water treatment, installed	98,550
Civil works for genset installation	30,000
Genset pipework & mechanical installation	336,350
Genset cabling, electrical & controls installation	119,350
Commissioning & testing	65,000
Training	55,000
Total Balance of Plant	**753,525**
Roof replacement contract	354,000
Roof replacement contract	434,500
Design and Supervision Consultant	410,000
Design and Supervision Consultant 2	4,688
Government In-Kind Contribution	567,450
Total Others	**1,770,638**
Physical Contingencies	416,826
Price Contingencies	114,912
TOTAL	**5,535,901**

Source: Asian Development Bank

Table 2: Weighted average tariff for 2014

Customer Type	% of electricity sold	A$/kWh
Domestic Electricity Revenue <100kWh	8.0%	0.20
Domestic Electricity Revenue <300kWh	12.7%	0.20
Domestic Electricity Revenue >300kWh	33.5%	0.35
Commercial Electricity Revenue	11.5%	0.70
Industrial Electricity Revenue	32.4%	0.70
Government Electricity Revenue	1.9%	0.70
Weighted Average Tariff		0.46

Source: Nauru Utilities Corporation

Table 3: Generator characteristics and losses estimates.

Generator Capacity (MW)	**2.9**
Generator LF x Av %	80%
Generation (MWh)	20,323
Generator Own Use	2%
Electricity sent out (MWh)	19,917
Technical Losses	4.4%
Non-technical Losses	15.2%
Electricity available for sales (MWh)	**16,025**

LF = Load Factor, MW = Megawatt, MWh = Megawatt-hour
Source: KEMA International B.V.; Asian Development Bank Estimates

Table 4: Financial analysis results

	Test Case	Variation	FNPV ($'000) @ 7.32%	FNPV ($'000) @ 10%	FIRR	SI	Base Case (US$)	SV	SV (%)
	Base Case		3,690	1,002	11.5%				
	Increase in Costs		2,378	- 188	9.8%				
1	Capex & Opex	20%				5.00	5,267	13,131	149.3%
1	Opex	20%					8	19.94	
	Decrease in Benefits								
2	Fuel price	10%	- 4,011	- 4,868	2.4%	20.87	1.3	1.49	14.77%
2	Lube price						2.3	2.64	
3	Tariffs	-10%	- 5,145	- 5,573	0.74%	-23.94	0.39 AUD/kWh	0.34AUD/kWh	-11.59%
4	Energy output	-20%	1,878	- 215	9.65%	-2.46	20,323 MWh	8564 MWh	-57.86%
	Combination	1,2,3 & 4	- 12,683		n/a				

Source: Asian Development Bank

Table 5: Economic cost and shadow factors

Traded Goods and Services	77.8%
Non-traded Goods and Services	19.7%
Labour	2.5%
SWRF	0.85
SCF	0.92
SERF	1.09
Total Economic Costs (US$)	**5,489,623**

Source: Asian Development Bank
SCF = shadow conversion factor, SERF = shadow exchange rate factor, SWRF = shadow wage rate factor

Table 6: Generation savings between the old gensets and the new genset.

Auxiliary services	**Same**	Fuel Price (US$/L)	1.30
Heat rate new plant L/kWh	0.235	Lube Price (US$/L)	2.30
Average heat rate current fleet L/kWh	0.300	Fuel Saving (US$/MWh)	85.03
Fuel Savings (L/kWh)	**0.065**	Lube Savings (US$/MWh)	5.76
Lube New plant (L/kWh)	0.00069	O&M Savings (US$/MWh)	17.00
Average Lube current system (L/kWh)	0.00319	**Total Savings per MWh**	**107.79**
Lube Savings (L/kWh)	**0.00251**		
New plant (US$/MWh)	8.00		
Current System (US$/MWh)	25.00		
O&M Saving (US$/MWh)	**17.00**		

Source: Asian Development Bank

Table 7: Benefits Associated with Other Works

Workstream	Annual Benefits
Powerhouse roof rehabilitation	Reduced risk of powerhouse flooding and generation unit outages. Say 1 in 5 year risk of direct and indirect damage of $100,000. **Benefit $20,000 per year.** Reduced risk of water damage to switchgear or other electrical equipment, which may result in prolonged outages while spares are sourced, delivered and fitted. Say 1 in 5 year risk of direct and indirect damage of $100,000. **Benefit $20,000 per year.** Decreased risk of pollution, i.e. spread of oil-contaminated rainwater, even with separation equipment. Say 1 in 10 year risk of a claim for clean-up amounting to

	$200,000. **Benefit $20,000 per year.** Reduced/eliminated risk of asbestos-related health impacts. Say 1 in 50 risk of asbestos related claims of $1,000,000. **Benefit $20,000 per year.** **Total Benefit - $80,000 per year.**
Site preparation	These works are mostly essential for the new diesel generator under this project, and also the new diesel generator to be supplied under Australian government funding. **No additional benefit to the 'with project' scenario.**
Water tower demolition	Reduced risk of death or serious injury by the removal of this dangerously unstable structure. Say 1 in 50 risk of death or disabling injury claims of $1,000,000. **Benefit $20,000 per year.**
Oil-water separation facility	Reduced risk of pollution incidents for which clean-up may run to several hundred thousand dollars; and reduced fire hazard from accumulated sump oil under the powerhouse deck. In addition to the roof-related costs outlined above, assume 1 in 10 year risk of a claim for clean-up amounting to $500,000. **Benefit $50,000 per year.**
Total Benefits	**$150,000 per year**

Source: Asian Development Bank

Table 8: Tariffs, from 2014

Customer Type	AUD/kWh
Domestic Electricity Revenue <300kWh	0.2
Domestic Electricity Revenue >300kWh	0.35
Commercial Electricity Revenue	0.7
Industrial Electricity Revenue	0.7
Government Electricity Revenue	0.7

Source: Nauru Utilities Corporation

Table 9: Economic Costs and Benefits

Year	Capex	O&M Costs	Total Costs	Total Benefits	Total
2014					
2015	2,610,484	-	2,610,484		- 2,610,484
2016	2,764,001	3,195,683	5,959,684	4,579,725	- 1,379,959
2017	115,137	6,391,366	6,506,504	9,098,997	2,592,493
2018	-	6,391,366	6,391,366	9,037,440	2,646,074
2019	-	6,391,366	6,391,366	8,974,761	2,583,395
2020	-	6,391,366	6,391,366	8,910,940	2,519,574
2021	-	6,391,366	6,391,366	8,845,955	2,454,589
2022	-	6,391,366	6,391,366	8,779,786	2,388,420
2023	-	6,391,366	6,391,366	8,712,411	2,321,045
2024	-	6,391,366	6,391,366	8,643,808	2,252,442
2025	-	6,391,366	6,391,366	8,573,956	2,182,590
2026	-	6,391,366	6,391,366	8,502,830	2,111,464
2027	-	6,391,366	6,391,366	8,430,409	2,039,043
2028	-	6,391,366	6,391,366	8,356,669	1,965,303
2029	-	6,391,366	6,391,366	8,281,586	1,890,220
2030	-	6,391,366	6,391,366	8,205,135	1,813,769
2031	-	6,391,366	6,391,366	8,127,292	1,735,926
2032	-	6,391,366	6,391,366	8,048,032	1,656,666
2033	-	6,391,366	6,391,366	7,967,329	1,575,963
2034	-	6,391,366	6,391,366	7,885,156	1,493,790
2035	-	6,391,366	6,391,366	7,801,488	1,410,122
2036	-	6,391,366	6,391,366	7,716,297	1,324,931
2037	-	6,391,366	6,391,366	7,629,555	1,238,189
2038	-	6,391,366	6,391,366	7,541,235	1,149,868
2039	-	6,391,366	6,391,366	7,451,307	1,059,941
2040	-	6,391,366	6,391,366	7,359,743	968,377
2041	-	3,195,683	3,195,683	3,679,872	484,189
ENPV of Costs			$46,975,941		
ENPV of Benefits				$64,378,418	
Project ENPV					**$ 10,504,789**
EIRR					**48.3%**

Source: Asian Development Bank

Table 10: Economic sensitivity analysis

Test Case	Variation	ENPV ($'000)	EIRR	LCOE (US¢/kWh)	SI	Base Case (US$)	SV	SV (%)
Base Case		10,504	48.3%	35.00				
Increase in Costs		9,380	39.2%	36.00				
1 Capex & Opex	20%				5.00	5,267	22,069	319.00%
1 Opex	20%					7.40	31.01	
Decrease in Benefits								
2 Fuel price	10%	8,805	44.7%	38.00	-13.86	1.3	1.95	49.90%
2 Lube price						2.3	3.45	
3 Tariffs	-10%	7,446	40.0%	n/a	10.18	0.39 A$/kWh	0.27A$/kWh	-30.60%
4 Energy output	-20%	7,768	39.4%		5.53	20,323 MWh	5843 MWh	-71.25%
Combination	1,2,3 & 4	1,698	18.8%	36.00				

Source: Asian Development Bank