PETITION FOR DETERMINATION OF REFERENCE TARIFF FOR COAL EXTRACTED FROM BLOCK-I OF THAR COALFIELDS EPC STAGE

SUBMITTED TO
THE THAR COAL AND ENERGY BOARD

ON BEHALF OF

SINO-SINDH RESOURCES LIMITED

FOR DEVELOPMENT OF A COAL MINE WITH A CAPACITY OF 7.8 MTPA IN BLOCK-I OF THAR COALFIELDS, PROVINCE OF SINDH

02. 7 , 2019

Sino-Sindh Resources Limited

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1 INTRODUCTION

1.1 PARTICULARS OF PETITIONER

Name and Registered Office

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Representative(s) of SSRL
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1.2 ACRONYMS

CAPEX Capital Expenditure

CCTEG China Coal Technology & Engineering Group Corporation

COD Commercial Operations Date

CPI Consumer Price Index

CSA Coal Supply Agreement

EPC Engineering, Procurement, and Construction

GoP Government of Pakistan

GoS Government of Sindh

IDC Interest During Construction

IRR Internal Rate of Return

KIBOR Karachi Inter-Bank Offer Rate

LIBOR London Inter-Bank Offer Rate

NEPRA National Electric Power Regulatory Authority

O&M Operations & Maintenance

OPEX Operational Expenses

PKR Pakistani Rupee

PPA Power Purchase Agreement

RFO Residual Furnace Oil

ROE Return on Equity

ROEDC Return on Equity During Construction

RWE RWE AG (German Electric Utilities Company)

SBP State Bank of Pakistan

SSRL Sino-Sindh Resources Limited

TCEB Thar Coal & Energy Board

USD United States Dollar

RMB Chinese Renminbi

WPPF Workers' Profit Participation Fund

WWF Workers' Welfare Fund

1.3 EFFECTIVE LEGAL ACTS AND RULES

'Thar Coal and Energy Board (TCEB)' is deemed as the authority for final decision pertaining to price-making and tariff determination of Thar Coal, as per the proclamation of the Government of Sindh in compliance with **Section 5(m) of Thar Coal and Energy Act, 2011**. Through the authority vested to the TCEB, this particular petition seeks the determination of Contract Stage tariff for SSRL Thar Coal Block I, 7.8 mtpa Mine, in Tharparkar District, Sindh, Pakistan, dated June 10, 2019. The petition has been formed in accordance with the rules and instructions established under **Thar Coal Tariff Determination Rules, 2014**, issued on November 27, 2014 by Energy Department, Government of Sindh.

In accordance with the notification issued by the **Federal Board of Revenue, dated April 19, 2011, for the Fiscal Incentives for Development of Local Coal**, the following considerations have been implemented in financial evaluation of reference tariff: "With respect to a project situated in Special Economic Zone of Thar coalfield, the payments made on account of sale or supply of goods or providing or rendering of services during project construction and operations, shall be exempt from the provisions of Section 153". The salient features of the afore-mentioned notification are:

1. Zero percent customs duties on import of coal mining equipment and machinery including vehicles for site use
2. Exemption on withholding tax to shareholders on dividend for initial 30 years
3. Exemption for 30 years on other levies including special excise duty, federal excise duty, WPPF and WWF

Additionally, Coal based Power Projects and Coal Mining Projects in Sindh shall have the same incentives, concessions, Protections and security package as that available to IPPs developed pursuant to Power Generation Policy 2002 (as amended from time to time).

1.4 RATIONALE FOR UTILIZING INDIGENOUS COAL AND BASIS FOR TARIFF PETITION

In wake of the increasing demand for electricity and existing shortfall of supply of energy, the power projects under CPEC have been prioritized by Government of Pakistan and Government of Sindh on fast-track basis. Indigenous coal is one of the cheapest sources of energy to acquire the threshold required for attaining energy self-sufficiency. Inclusion of coal in the energy mix has therefore, become indispensable for the country. Exploration of indigenous coal as compared to usage of imported coal is one of the major steps to attain sustainability in power sector. Reducing reliance on imported coal is essential due to fluctuating increase in international fuel prices and currency rate depreciation, adversely affecting the balance of payment.

Thar Coal project is, therefore, expected to play a pivotal role in acquiring economic stability. According to a report published by NEPRA, Thar coal reserves amount to 175.5 billion tones and it is anticipated that, if properly exploited, Pakistan's coal resources may generate more than 100,000 MW of electricity for the next 30 years. Sindh coal is classified as 'Lignite' with calorific value ranging from 5,219 to 13,555 Btu/lb. Thar coal has low sulfur and low ash content but high moisture.

Rationalizing the environmental concerns, a detailed study on Thar coal, published in ResearchGate journal, has established that Thar coal has an advantage of low to moderate sulfur (less than 2%) compared to the world's average sulfur (2.42%) in lignite coal. Oxides of sulfur are the most concerned emission pollutants from the regulatory standpoint. Low sulfur content in Thar coal makes it acceptable for power generation without exceeding the emission standard for sulfur oxides (≤1%).

The Petitioner, henceforth, presents the comprehensive details of parameters encompassing the calculation for Contract stage tariff for 7.8 mtpa coal mining. It would be pertinent to mention that the Petitioner has proposed to carry out expansion plans in the future, with respect to which, a request has been submitted to the relevant authorities.

2 PROJECT DESCRIPTION

2.1 PROJECT DEVELOPMENT PLAN

2x660MW coal-based power plant and 7.8 million tons per annum Open-Pit coal mine are being allocated in Thar coal block-1 and both projects are developed under the CPEC prioritized listed projects.

The 2x660MW power project is developed by Thar Coal Block-1 Power Generation Company (Private) Limited (Power Company), which is the subsidiary company of Shanghai Electric Group. The power company obtained tariff determination from NEPRA through upfront tariff and received the Letter of Support (LOS) from PPIB to establish the 2x660MW coal-based power plant by using indigenous coal in Thar coal block-1. The COD timeline of the power project is expected to be 36month after Financial Close.

The 7.8 million tons per annum Open-Pit coal mine project is developed by Sino Sindh Resources (Private) Limited, which is 100% owned by Global Mining Company. The Mining lease deed was issued on 29th May 2012 between Governor of Sindh, through Director General, Mines and Mineral Development, Government of Sindh. The feasibility study was completed by China Coal Technology Engineering Group and feasibility stage tariff determination was issued by TCEB on 5th April 2017. Furthermore, SSRL has initialed Coal Supply Agreement with Power Company to continuously supply 7.8 million tons of coal on annual basis for 30 years after power complex COD, and simultaneous completion of Coal Mine construction.

2.2 FEASIBILITY OF TECHNOLOGY SELECTED

In accordance with Power Company's request for construction timeline (36months after FC) and Mining capacity (7.8 mtpa), SSRL has carried out a comparative analysis for determining the most economical and feasible mining technology to be applied for mine construction.

2.2.1 Construction Period and Technology

The construction scale of the open pit coal mine is 7.80 mtpa. The total construction period is 36 months out of which 12 months are allocated for preparation for construction and mine construction is allocated 24 months. All of the waste materials will be hauled to the external dump in mine construction period.

Considering period of manufacturing cycles, complicated process system layout as well as the equilibrium of the deployed equipment, the construction period is obviously unsuitable for the technologies of

(a) the semi-mobile and semi-continuous process,

(b) the self-propelled and semi-continuous process

(c) the bucket continuous mining process.

Therefore, only the single bucket-truck process can be used in the construction period. The best time for the above-mentioned technologies is when the open pit mine completely reaches the inner discharge in the end of the construction period.

2.2.2 Economic Analysis Based On Capacity of Mining, Hauling and Dumping

The basis of technology comparison is as follows:

(a) Each stripping process shall achieve inner discharge within 5 years after mining COD

(b) The economic rationality analysis of each technology shall be based on completion of the stripping amount of 60.06Mm^3.

The annual production capacity of each process system is shown in table as under:

Technology System		**Annual production capacity (Mm^3/a)**	**Remark**
T/S system	35m^3 Shovel	10.50	
	Dump Truck 220 t	1.421	Distance 2.60km
Semi-mobile IPCC system（6000m^3/h）		16.11	
Fully-mobile IPCC system（9000m^3/h）		14.92	
BWE system（6600m^3/h）		14.95	

Table 1. Annual Production Capacity of Each Process

Equipment expenses and operating costs of the waste removal technologies are presented in Table 2.

No.	Item	Schemes			
		Scheme 1: T/S system	Scheme 2: Semi-mobile IPCC system	Scheme 3: Fully-mobile IPCC system	Scheme 4: BWE system
1	Main mining equipment Investment (Million USD)	227.124	338.330	371.922	277.734
2	Annual Operating Cost covering loading, hauling and dumping (Million USD[4])	67.399	79.679	65.523	53.308

Table 2. Initial investment and annual operating cost of each stripping process plan

Considering about the input period of the above technology, and investment of main mining equipment and the operating costs, Technology 1 has the lowest initial investment, Technology 4 has the lowest operating cost. The two semi-continuous process technologies are not in dominant position, after comprehensively considered the investment and cost.

2.2.3 Comparisons of technology in the single bucket-truck mining process equipment

In order to further analyze and compare the single bucket-truck mining process and the wheel mining process, we optimize the design of the single bucket-truck mining process equipment and transportation equipment, and analyze the investment and cost of the five schemes as elaborated in Table 3.

No.	Item	Shovel /Truck Technology				
		Scheme 1	**Scheme 2**	**Scheme 3**	**Scheme 4**	**Scheme 5**
		7m³ Hydraulic Excavator+60t Dump Truck (wide body)	**7m³ Hydraulic Excavator +55t Dump Truck(class)**	**15m³ Hydraulic Excavator +108t Dump Truck(class)**	**20m³ Hydraulic Excavator +154t Dump Truck(class)**	**35m³ Hydraulic Excavator +220t Dump Truck(class)**
1	Investment (Million USD)	83.420	130.849	121.133	192.548	206.110
Difference of Initial Investment Compared with Option 1 (Million USD)		0.00	-47.43	-37.712	-109.128	-122.690
2	Annual Operating Costs (Million USD)	68.258	118.876	75.134	72.954	65.042
Difference of Operating Costs Compared with Option 1 (Million USD)		0.00	-50.620	-6.876	-4.696	3.216

Table 3 Capital Investment and Operating Costs Comparison

In light of the comparative analysis of technology, it is concluded that deployment of small equipment is more economical than large equipment for shovel/truck technology, which would further result in lower coal price and indirectly create a consumer-friendly electricity tariff.

2.3 PROJECT EXECUTION PLAN

The company intends to achieve Financial Close by October 2019. Subsequent to the commencement of construction works, a time period of 36 months is planned for achieving COD by Q4 of 2022. Correspondingly, the power plant is scheduled to achieve COD during the same frame of time. The project schedule is tabulated as follows:

PROJECT PLAN		
Works Initiated	Day/Month/Year	Oct 2019
Financial Close	Day/Month/Year	Oct 2019
Construction Period	Months	36
COD	Day/Month/Year	Q4 2022
Commissioning Period	Years	30

The project cost of 1.17755 billion USD has been financed through a mix of Equity and Debt in a 25:75 ratio respectively.

The Project would be supplying coal to mine mouth power plants, which are being developed by Shanghai Electric. The coal-fired power plant would source all of its fuel requirements from SSRL under a long-term Coal Supply Agreement of 30 years to provide 7.8 mtpa of coal.

2.4 EQUIPMENT SELECTION

Optimum suitability of technology is intricately considered during the selection of equipment for coal mining. Detailed calculations are carried out for the lead time of equipment, overall impact of tariff and combined synergies of all equipment.

Considering, characteristics of stripping materials, space constraints and initial investment, it is determined that coal mining and waste removal shall be carried out using hydraulic excavator with the bucket capacity of classic 7.0m³ and 60t dump truck for loading and transportation. The quantity of hydraulic excavator and truck in the full production year is 29 sets and 269 sets. Auxiliary equipment shall correspondingly be accessed according to the main mining equipment. The annual working days of the mine are determined to be 330 days, 3 shifts per day and 8h per shift, according to the natural production condition and the mining technology of the open-pit mine.

Average stripping ratio for the mine is 8.21 m^3/t, while average thickness of mine-able coal seam is 31.39 meters.

Comprehensive details of the selection criteria and procedure may be found in Annexure.

2.5 COAL CHARACTERSTICS

The coal quality data is based primarily on Thar Mining Project Site Assessment Report Vol.1 Geological and Hydrological Report of Thar coalfield block I compiled by Germany's RE on December 2004, Chemical and Environmental Laboratory (KHI.) Test Report by Pakistan's SGS on July 2015 and the Supplementary Bore Hole data by Survey and Design Institute of Northeast Coalfield Geological Bureau in November 2016.

According to the sample study carried out in the Feasibility study, the coal extracted from Thar coal mine Block I has the following specifications:

	Coal Parameters	Unit	Value
1	Heat Content Per Unit of Thar Coal	BTU/kg	6796.64 - 12477.71
2	BTU/kWh	BTU	3412
3	Conversion of kCal to BTU	kCal	3.97

The average total moisture is 45.51%, the average dry basis Ash is 18.28%, the average dry ash free basis Volatile Matter is 56.99%, the dry basis total Sulphur is 3.54%, the Gross Calorific Value on a dry basis is 23.05MJ/kg, and the Net Calorific Value on a received basis is 9.77～12.61MJ/kg. The coal of this coalfield is of low ash, very high total moisture content, very high volatile, low fixed carbon, middle high sulfur, middle calorific value, ultra-low chlorine and middle grind-ability, it is good to use for power plant.

The results of detailed analysis of coal seam are tabulated as follows:

Coal Seam	Moisture		Ash	Volatile Matter	Sulphur	Calorific Value	
	M_{ad}（%）	M_t（%）	A_d（%）	V_{daf}（%）	$S_{t,d}$（%）	$Q_{gr,d}$(MJ/kg)	$Q_{net,ar}$(MJ/kg)
A_1	6.94-11.40	12.60-50.00	14.99-35.18	49.26-62.23	0.68-6.49	14.48-24.86	9.62-18.13
	8.94(7)	41.77(12)	24.03(12)	57.28(12)	2.78(12)	20.51(12)	12.61(3)
A_2	5.64-11.89	33.20-57.55	12.03-33.79	53.20-63.42	0.75-16.23	17.83-24.67	9.23-12.33
	8.77(10)	44.79(21)	21.51(21)	58.46(21)	5.96(21)	21.74(19)	10.82(6)
A_3	7.27-12.58	9.7-50.70	11.11-37.43	54.89-67.34	1.58-14.91	16.06-25.68	8.89-18.20
	9.28（15）	42.77（34）	20.95（34）	58.50（34）	5.32(34)	22.05(34)	12.15(9)
B_1	5.54-13.90	35.40-52.80	13.00-35.52	54.04-71.19	0.41-10.59	17.63-27.06	9.75-12.92
	10.18(11)	44.77(24)	20.93(24)	59.71(24)	4.45(24)	22.46(24)	10.89(6)
B_2	4.73-12.94	29.80-50.00	10.05-34.56	54.22-73.99	0.78-14.02	16.06-27.88	9.94-13.85
	9.56(20)	44.33(41)	19.01(41)	60.92(41)	3.30(41)	23.48(41)	11.57(14)
C_1	6.55-12.37	42.47-54.48	7.16-20.68	54.85-63.42	0.76-3.71	23.25-27.09	10.44-13.35
	9.50(26)	47.23(50)	11.76(50)	58.84(50)	1.61(50)	25.66(50)	11.75(17)
C_2	6.88-12.76	42.85-54.40	7.94-23.40	51.79-62.67	0.68-4.36	21.01-27.01	8.68-12.53
	10.08(24)	48.58(47)	12.81(47)	56.41(47)	1.70(47)	24.85(47)	10.85(15)

2.6 OVERBURDEN QUANTITY

On the basis of mine geological model that has been prepared using GEOVIA Surpac™, calculates the quantity of overburden to be removed during the 24-months construction period to be 180.6 million BCM. This includes 20.6 million BCM of additional overburden to be removed for 2.45Mt of coal for commissioning and storage purposes. The mine's GEOVIA Surpac™ geological model is provided in soft form along with the petition before the Authority for reference.

2.7 DEWATERING PLAN

Dewatering of the mine is an essential round the clock activity to prevent the mine from flooding by the aquifers above and below the coal seam. Furthermore, delicate balance must be maintained between water influx and outflux to ensure sufficient pressures to prevent the mine floor from bursting or collapsing-in on itself. Based on the Hydro-Geological Study conducted in 2014, attached as Annexure with the petition for reference, the average dewatering rate is calculated to be 142520 m^3/day.

3 PROJECT INVESTMENT

3.1 ASSUMPTIONS

There are certain assumptions which form the basis of the total project cost and operational expenditures, and ultimately the resulting tariff structure. The assumptions are provided for ease of reference and may be subjected to True-up/Indexation as mentioned in the subsequent sections. The important assumptions are tabulated below:

1.	Price of Diesel	PKR 106.60/Litre
2.	Price of RFO	PKR 62,279/Ton
3.	USD-PKR Exchange Rate	PKR 139.00/USD
4.	USD-RMB Exchange Rate	RMB 6.71/USD
5.	Cost of Financing (100% Foreign)	6-month LIBOR + 3.00%
6.	6-month LIBOR Assumption	2.74%
7.	1-month KIBOR Assumption	10.68%
8.	Debt-Equity Ratio	75:25
9.	Equity IRR	20.00% Guaranteed
10.	Mining Technology	Trucks(60t) and Shovel(7m^3)
11.	Construction Period	36 Months
12.	Overburden Removal Volume	180.6 Million BCM
13.	Average Slope Angle of the Mine	24^o
14.	Average Rate of Dewatering	142520 m^3/d

3.2 ENGINEERING, PROCUREMENT AND CONSTRUCTION

The Construction Cost estimate of the Project is provided in US Dollars (“USD”) in the following table. The Engineering, Procurement and Construction (“EPC”) price is calculated to be USD 902.71 million.

Engineering, Procurement & Construction Cost cover all excavation equipment, civil works, in addition to necessary auxiliary machinery, installation, and systems including erection, commissioning of equipment, and construction of buildings. The stated EPC cost includes all works required for overburden removal, civil works, and implementation of the approved resettlement plan. The turnkey cost of the overburden removal, and civil works is based on a firm proposal, which has been negotiated with SHANGHAI ELECTRIC GROUP COMPANY LIMITED, SHANGHAI ELECTRIC HONGKONG INTERNATIONAL ENGINEERING COMPANY LIMITED, SHANGHAI ELECTRIC ENGINEERING CONSULTING CO., LTD which are the EPC contractors.

An item-wise cost estimation of the EPC works is tabulated as follows:

EPC COSTS		
Overburden Cost		
Overburden Removal	mUSD	304.18
Dewatering Operations Costs	mUSD	16.50
Total Over Burden Cost	**mUSD**	**320.69**
Civil Works		
Mobilization Advance	mUSD	20.57
Roads for Over-Burden and Dump Yard	mUSD	24.34
Conveyor Belt System	mUSD	2.79
Coal Handling System	mUSD	10.71
MSF Roads	mUSD	10.19
Dewatering and Drainage	mUSD	41.18
Power Supply System	mUSD	3.16
Water and Sewage System & Air-conditioning	mUSD	9.90
Workshop	mUSD	9.62
Warehouse	mUSD	2.43
Office and Accommodation	mUSD	23.21
Leveling, Pavement and Boundary of MSF	mUSD	19.35
Environmental Protection	mUSD	4.38
Total Civil Works	**mUSD**	**181.81**
Equipment & Installation		
Over Burden Removal	mUSD	101.78
Mining	mUSD	2.61
Auxiliary Equipment	mUSD	9.54
Dewatering & Water Prevention	mUSD	25.77
Coal Handling System	mUSD	15.95
Coal Transportation (Conveyor Belt)	mUSD	16.18
Communication & Control Systems	mUSD	9.77
Power Supply System	mUSD	35.24
Outdoor Water Supply & Drainage	mUSD	4.18
Workshop Facility and Warehouse	mUSD	8.73
Site Vehicles	mUSD	5.82
Office Equipment	mUSD	13.82
Total Equipment & Installation	**mUSD**	**249.39**
Civil Works	**mUSD**	**181.81**
OB Removal	**mUSD**	**320.69**
Other Project Costs	**mUSD**	**150.82**

3.3 NON-EPC COSTS

Non-EPC costs include Land Acquisition & Rehabilitation, SSRL OpEx, Security Cost, Transmission Line Reroute, Water Pipeline Reroute, Development Costs, Commitment and Arrangement Fee, Interest During Construction, Sinosure Fee, Income from Pre-COD sales, Royalty, which will be incurred by SSRL, following determination of tariff.

NON EPC COSTS		
SSRL Operating Expenses	mUSD	34.3653
Security Cost	mUSD	9.0000
Transmission Line Re-Route (HESCO)	mUSD	1.0000
Existing Pipeline Re-Route	mUSD	1.7700
Existing Roads Re-Route	mUSD	6.8500
Development Costs	mUSD	13.1000
Land Acquisition & Rehabilitation	mUSD	67.0008
Commitment Fee	mUSD	3.4216
Arrangement Fee	mUSD	4.4158
Interest During Construction	mUSD	94.4193
Sinosure Fee	mUSD	53.7670
Income from Pre-COD Sales	mUSD	-68.5646
Royalty to TCEB on Pre-COD Sales	mUSD	4.7836
Total Non EPC Costs	**mUSD**	**225.3288**

3.3.1 DEVELOPMENT COSTS

Development Costs are estimated to be USD 13.10 million in accordance with the calculations to-date. Since it is estimation, the actual value may slightly vary at later stages of tariff determination based on actual costs.

It comprises of the expenses of training, sponsors' development costs, all registration fees, any delay in start-up insurance, costs of feasibility studies, environmental studies, geological and hydrological studies, soil investigation, fees of engineering consultants, lawyers, technical consultants, and guarantees to be furnished to relevant authorities.

DEVELOPMENT COSTS		
Consultancies	mUSD	5.50
Lease & Guarantee	mUSD	1.00
Legal Fees	mUSD	3.00
Survey & Tests	mUSD	3.50
Environmental Costs	mUSD	0.10

3.3.2 LAND ACQUISITION AND REHABILITATION

The land acquisition cost covers: - the procurement of land, stamp duty and registration fees, fees of the broker and lawyers, the cost of fill required to level the site with the access road. Total land required is estimated to be 40.47 square kilometers, or approximately 10,000.34 acres, requiring relocation of roughly 1200 households, inhabiting the area selected for coal mining. It is estimated that the land will be acquired at a cost of USD 2,500 per acre, or at a price that is fixed by the Government of Sindh. Resettlement Cost per household is estimated to be USD 35,000. Total cost of land acquisition is estimated to be USD 25 million. Similarly, total cost of rehabilitation is estimated to be USD 42 million, resulting in total "Land Acquisition & Rehabilitation" Cost of USD 87.6 million.

LAND ACCESSION AND REHABILITATION COST		
Unit Cost of Land	USD/Acre	2500
Total Land Required	Acres	10,000.34
Number of Households to be Resettled	No.	1200
Estimated Cost of Resettlement Per Household	USD	35000
Total Cost of Land	**mUSD**	**25.00**
Total Cost of Rehabilitation	**mUSD**	**42.00**

3.3.3 ARRANGEMENT AND COMMITMENT FEE

Arrangement and Commitment Fee is evaluated to be USD 7.8374 million. Arrangement Fee is calculated to be USD 4.4158 million, assuming it to be 0.50 percent of Total Debt raised, to be paid on first drawdown. Commitment Fee is calculated to be USD 3.4216 million.

3.3.4 SINOSURE FEES

The Sinosure fee is calculated to be USD 53.7670 million. It is to be paid as upfront before start of Construction works. Calculation of Sinosure fees is based on 5.5% of Debt and Interest during Construction.

3.3.5 SECURITY

An amount USD 3 million per annum has been assigned on account of security expenditures for the mine facility. This amount is assumed constant throughout construction and operation period, for the purpose of tariff calculation.

3.3.6 SSRL OPERATING EXPENDITURE

SSRL Operating Expenses are evaluated to be USD 34.37 million. The calculation comprises of the following components: Salaries and Wages of foreign and local labor, Office Supplies, Travel Expenses, Food Allowance, Insurance Premium, Health and Safety of Staff, Office Rent in Beijing.

It covers the expenses of SSRL personnel, which include hiring of local and foreign personnel and their training.

3.3.7 RE-ROUTING EXPENSES

According the site investigation, the location of SSRL mine passes through three major infrastructure facilities. These facilities are engineered to be re-routed.

3.3.7.1 RE-ROUTING OF ROADS

Re-routing cost of USD 6.85 million for roads is currently an estimation and not actual cost. The actual cost shall be decided by the Government Authorities after bidding procedure.

3.3.7.2 RE-ROUTING OF WATER PIPELINES

Re-routing cost of USD 1.77 million for water pipelines is currently an estimation and not actual cost. The actual cost shall be decided by the Government Authorities after bidding procedure.

3.3.7.3 RE-ROUTING OF ELECTRIC CABLES/TRANSMISSION LINE

Re-routing cost of USD 1 million for electric cables is currently an estimation and not actual cost. The actual cost shall be decided by the Government Authorities after bidding procedure.

3.3.8 INTEREST DURING CONSTRUCTION - IDC

Total IDC for the project is estimated to be USD 94.4193 million. This is calculated on the basis of following assumptions:

- Debt:Equity Ratio is 75%:25%
- Construction Period is 36 months
- Interest Rate: 6-month LIBOR + 3%

IDC would be capitalized, and would be paid back on a pro-rata basis in-line with the debt repayment schedule of the Project.

3.4 OTHER PROJECT COSTS

Other Project Costs include the components as enlisted in table hereunder. Other Project Costs accumulates to USD 150.82 million.

The itemized costs are explained in the table as follows:

OTHER PROJECT COSTS		
Equipment Procurement for Replacement at COD	mUSD	34.31
Design, Consultancies and Studies	mUSD	33.91
Legal and Professional Services	mUSD	10.00
Mine Service Facilities OpEx	mUSD	23.86
EPC Contractor OpEx	mUSD	33.53
Lignite Production Cost	mUSD	9.00
Insurance Cost	mUSD	6.21
Total Other Project Costs	**mUSD**	**150.82**

3.4.1 INSURANCE COST

The Insurance cost is estimated to be USD 6.21 million.

3.4.2 DESIGN, CONSULTANCIES AND STUDY

The various Design, Consultancies and Study Works for Coal Mine are estimated to be USD 33.91 million.

3.5 WORKING CAPITAL

Working capital is completely financed by debt in local currency, that is, Pak Rupee. Therefore, the applied 1-month KIBOR rate of 10.68% is used for tariff calculations. The working capital spread is 2%; hence the total Effective Interest Rate is 12.68%.

3.5.1 COAL INVENTORY ASSUMPTION

The coal production is 7.8 million tons. It is assumed to have coal inventory of 30 days with the amount of coal to be stored in inventory to be 0.64 million tons.

3.5.2 FUEL, LUBRICANT, RFO AND SPARES INVENTORY ASSUMPTIONS

ASSUMPTIONS	
Fuel (Diesel) Inventory Days	21
RFO Inventory Days	21
Lubricant Inventory Days	10
Spares Inventory Days	180

3.5.3 ACCOUNTS RECEIVABLE AND ACCOUNTS PAYABLE ASSUMPTION

It is assumed to assign 30 days for recovering Accounts Receivable and 18 days for settlements of Accounts Payable.

3.6 TAXES AND DUTIES

In accordance with the Rules and Regulations issued by the Federal Board of Revenue for Thar Coal Mining Projects, customs duty on all imported supplies is assumed to be 0%. However, Sindh Excise Duty of 2.07% is applied on imported equipment. Sales Tax on supplies is assumed 0% and Sales Tax on Offshore Services is considered to be 13 %.

1 As per the new budget which is issued by the government on 2018 the offshore supplier contract is applying to 7% withhold income tax.

2、According to the Agreement between China and Pakistan for the Avoidance of Double Taxation and The Prevention of Fiscal Evasion with Respect to Taxes on Income we are applying to the Clause 13 "Technical Services" and the withhold tax is applying to 12.5%. Here we are sending you the soft copy for this agreement.

3、As per the Sindh Sales Tax on Services ACT,2011, Clause 3 the offshore service are applying to the Sindh Sale tax even we release the payment to non- resident. It means that we are applying to 13% SST

A withholding tax of 7% on supplies and 12.5% on services is applied as per the notifications appended in Annexure.

Because of the reasons explained above an additional USD 49.5150 million have been estimated to be the applicable Taxes and Duties. Final total project shall be adjusted based on actual taxations.

No taxes have been considered during the operations period of the mine and are considered to be a pass-through item.

3.7 PROJECT FINANCING AND ECONOMIC PARAMETERS

3.7.1 DEBT AND EQUITY

The Capital Structure is as follows:

CAPITAL STRUCTURE	%	USD
Equity	25	294.39
Debt	75	883.16
Capital Cost	100	1,177.55

3.7.2 FINANCIAL STRUCTURE

Financial structure is permitted under the Infrastructure Project Guidelines provided by State Bank of Pakistan, as well as The Thar Coal and Energy Board Act issued by the Government of Sindh in 2011. Cost of Debt is assumed to be at a spread of 300 basis points over 6-month LIBOR, which is the benchmark rate for debt denominated in USD. LIBOR is assumed to be 2.74 percent for reference tariff. As the debt would be fully covered by a Sinosure guarantee a coverage premium of 5.5 percent of the total debt is also being considered. Total cost of debt is assessed to be 5.74 percent for determination of reference tariff. At the time of financial close, the actual cost of debt may differ, depending on changes in LIBOR, and the final spread that has been negotiated with lenders.

DEBT FUNDING ASSUMPTIONS		
Sinosure Fees (% of Total Debt + IDC)	%	5.5
Principal Amount (incl. IDC)	USD	883.39
Currency of Debt	Ccy	USD
Total Debt Maturity	Years	13
Grace Period	Years	3

Debt Repayment Period	Years	10
6-month LIBOR	%	2.74
LT Debt Spread	%	3.00
Effective Interest Rate	%	5.74

3.8 DEBT DRAWDOWNS

Debt drawdown and Principal repayment has been scheduled according to the following table.

This is estimation and may vary depending on the COD.

DEBT DRAWDOWN						
Year	Nth Payment	Principal	Principal Repayment	Interest	Balance	Debt Servicing
1	1	883.16	33.30	25.35	849.86	58.65
	2	849.86	34.26	24.39	815.60	58.65
2	3	815.60	35.24	23.41	780.35	58.65
	4	780.35	36.26	22.40	744.10	58.65
3	5	744.10	37.30	21.36	706.80	58.65
	6	706.80	38.37	20.29	668.44	58.65
4	7	668.44	39.47	19.18	628.97	58.65
	8	628.97	40.60	18.05	588.37	58.65
5	9	588.37	41.76	16.89	546.61	58.65
	10	546.61	42.96	15.69	503.64	58.65
6	11	503.64	44.20	14.45	459.45	58.65
	12	459.45	45.47	13.19	413.98	58.65
7	13	413.98	46.77	11.88	367.21	58.65
	14	367.21	48.11	10.54	319.10	58.65
8	15	319.10	49.49	9.16	269.61	58.65
	16	269.61	50.91	7.74	218.69	58.65
9	17	218.69	52.37	6.28	166.32	58.65
	18	166.32	53.88	4.77	112.44	58.65
10	19	112.44	55.42	3.23	57.01	58.65
	20	57.01	57.01	1.64	(0.00)	58.65

3.9 EQUIPMENT REPLACEMENT

Equipment replacement cost is estimated to be USD 34.31 million. Equipment that have a life of 3 years, are replaced at COD.

4 TARIFF STRUCTURE

The project is designed to fulfil demand for coal power plant with gross installed capacity of 660*2 MW. Coal supply is determined to be 7.8 million tons per annum. Off-take requirement is 0.65 million tons per month.

The calculation of Coal Tariff is conducted on Cost-Plus regime. The guaranteed return on equity is 20% as decided by the Government of Pakistan. Components of tariff structure are tabulated in detail (next page):

TARIFF COMPONENTS			LEVELIZED COSTS USD/TON		
7.8 mtpa Coal Mine			1-10 Years	11-20 Years	21-30 Years
Production Payment	Variable OM - Foreign	Spares and Consumables	3.0636	2.8121	2.7567
		Tyres	1.0726	0.8984	0.8686
		Lubricants	0.9899	0.8739	0.7734
	Variable OM - Local	Fuel (Diesel)	6.2648	5.3941	4.6507
		Power (Belts, Crushers, Production Equip.)	0.4155	0.4155	0.4155
	Asset Replacement		3.2951	2.8722	1.3004
	Royalty		3.9827	2.6539	2.4638
Capacity Payments	Fixed OM - Foreign	Dewatering OpEx (Spares,Tyres,Lubricants)	0.1816	0.1876	0.2248
		MSF OpEx (Spares,Tyres,Lubricants)	0.3644	0.3644	0.3644
		Other OPEX	6.0550	5.7606	5.6585
	Fixed OM - Local	Fuel (Dewatering and MSF)	0.2120	0.2120	0.2120
		Power (Dewatering and MSF)	1.0558	1.0750	1.1923
		Other OPEX	2.6834	2.5170	2.4872
	Interest on Working Capital		1.3225	0.9151	0.8579
	Insurance		0.8020	0.8020	0.8020
	ROEdc		2.7056	2.7056	2.7056
	ROE		7.5803	7.5803	7.5803
	Principal Repayment		11.3226	-	-
	Interest Payments		3.7162	-	-

Levelized Tariff (1-30)	(USD/Ton)	50.6224
Average		
1 to 10	(USD/Ton)	57.0856
11 to 20	(USD/Ton)	38.0397
21 to 30	(USD/Ton)	35.3142

Total Levelized Production Payments are evaluated to be USD 18.0365/ton.

Total Levelized Capacity Payments are evaluated to be USD 32.5859 /ton.

4.1 VARIABLE O&M COSTS

The overall levelized Variable O&M cost is estimated to be USD 11.4884 per ton. Details of the components included in Variable O&M are discussed as follows:

4.1.1 SPARES AND CONSUMABLES COST

This component includes the annual maintenance cost for spare parts of all the equipment and machinery in use. Overall Levelized cost for Spares and Consumables is calculated to be USD 3.0108 per ton.

4.1.2 TYRES COST

This component includes the annual maintenance cost for Tyres for the vehicles used. Overall Levelized cost for Tyres is calculated to be USD 1.0403 per ton.

4.1.3 LUBRICANTS COST

This component includes the cost of lubricants for the equipment and vehicles used for Over-burden and mining operations. Overall Levelized cost for Lubricants is calculated to be USD 0.9628 per ton.

4.1.4 FUEL COST

This cost accounts for all the diesel used by the equipment and vehicles deployed for Over-Burden removal and Coal Extraction. The main equipment include Dump Trucks, Hydraulic Excavators, Rock Breaker, Wheel Dozer, Auxiliary Equipment and other equipment operated on diesel fuel for OB and Mining operations. Overall Levelized cost for Fuel is calculated to be USD 6.0589 per ton. The cost is based on diesel price of PKR 106.6/litre (as notified by OGRA for Islamkot City, Mithi District).

4.1.5 POWER COST

The power cost accounts for the generation of electricity for mine operations from RFO fuel. Overall Levelized cost for Power is calculated to be USD 0.4155 per ton.

4.2 ASSET REPLACEMENT

The equipment used has a specified life. Subsequently, at the end of its useful life the equipment is replaced. An Asset Replacement Reverse is established as part of the tariff to account for the Asset Replacement Cost. Equipment that have a life of 3 years, are replaced at COD. The overall levelized cost for Asset Replacement is USD 3.0164 per ton.

4.3 ROYALTY

As per the decision of the relevant authority, Royalty payments are assumed to be 7.5% of Coal price/ton or PKR 150/ton (whichever is higher). The Royalty may be adjusted from time to time. The levelized cost of Royalty is estimated to be USD 3.5318 per ton.

4.4 FIXED O&M (FOREIGN) COSTS

The overall levelized Fixed O&M (Foreign) cost is estimated to be USD 6.5574 per ton.

Details of the components included in Fixed O&M (Foreign) are discussed as follows:

4.4.1 DEWATERING OPEX COST

This component includes the annual cost of operational expenses comprising of Spares, Tyres and Lubricants for Dewatering of mine. According to the mine design, the dewatering work is constant and fixed. Overall Levelized cost for Dewatering operational expenses is calculated to be USD 0.1922 per ton.

4.4.2 MSF OPEX COST

The Mine Services Facility incurs operational costs of Spares, Tyres and Lubricant majorly for the on-site vehicles. The levelized cost for MSF operational expenses is USD 0.3644 per ton.

4.4.3 OTHER OPEX COST-FOREIGN

Levelized cost of Other Operational Expenditures is USD 6.0009 per ton. The Other OPEX costs include the following:

Labor and Personnel-Foreign

Logistics - Mine Office Supplies

SSRL Operating Expenses - Foreign

EPC/O&M Operating Expenses - Foreign

Health, Safety and Environment

Consultancies

Legal

Additional Works

4.5 FIXED O&M (LOCAL) COSTS

The levelized Fixed O&M (Local) cost is estimated to be USD 3.952 per ton. Details of the components included in Fixed O&M Costs (Local) are discussed as follows:

4.5.1 FUEL COSTS [DEWATERING AND MINE SERVICE FACILITIES]

The fixed component of fuel costs is on account of the diesel used for equipment and vehicles employed for Dewatering and MSF operations. Levelized cost of Fuel for Dewatering and MSF is USD 0.212 per ton. The cost is based on diesel price of PKR 106.6/litre (as notified by OGRA for Islamkot City, Mithi District).

4.5.2 POWER COST [DEWATERING AND MINE SERVICE FACILITIES]

The fixed component of power cost is on account of the generation of electricity through RFO fuel for Dewatering and MSF operations. Levelized cost of Power for Dewatering and MSF is USD 1.0893 per ton. The cost is based on RFO price of PKR 62.279/ton (Ex-Refinery price, Byco).

4.5.3 OTHER OPEX COSTS-LOCAL

Levelized cost of Other Operational Expenditures is USD 2.6508 per ton. The Other OPEX costs include the following:

Labor and Personnel-Local

Logistics - Travel and Training

SSRL Operating Expenses - Local

EPC/O&M Operating Expenses - Local

Land Lease Operating Expenditures

4.6 INTEREST ON WORKING CAPITAL COST

Levelized cost of Interest on Working Capital is calculated to be USD 1.1861 per ton.

Following are the assumed parameters for calculating the Interest on Working Capital:

Working Capital Financed by Debt	100%
Currency of Debt	PKR
1-mth KIBOR	10.68%
Working Capital Spread	2%
Effective Interest Rate	12.68%

4.7 INSURANCE

Levelized cost of Insurance is calculated to be USD 0.8020 per ton. The Pre-COD and post-COD Insurance is assumed to be 0.70 %.

4.8 RETURN ON EQUITY DURING CONSTRUCTION

Levelized cost of ROEDC is calculated to be USD 2.7056 per ton. ROEDC is being considered for 36 months, which is assumed to be the period in which mine will be developed. COD is assumed to be after 36 months.

4.9 RETURN ON EQUITY

Levelized cost of ROE is evaluated to be USD 7.5803 per ton.

4.10 PRINCIPAL REPAYMENT

Levelized cost of Principal Repayment is calculated to be USD 7.0612 per ton. The repayment shall be made on semi-annual basis. The assumptions for calculation of Principal Repayment are tabulated hereunder:

Principal Amount	mUSD	883.16
6M LIBOR + Premium	(%)	5.74%
Total Number of Payments	(No.)	20

4.11 INTEREST PAYMENT COST

Levelized cost of Interest Repayment is calculated to be USD 2.7413 per ton. The repayment shall be made on semi-annual basis.

5 ADJUSTMENTS AT FINANCIAL CLOSE

The Petitioner hereby requests adjustments in the project cost at Financial Close due to any changes in financial assumptions. On the date of financial closing, reference tariff table will be updated by the prevailing indices, exchange rates, and base numbers at that point in time.

The components that may require adjustments are as follows:

- EPC cost may be adjusted according to the agreed indexations in the contract. Further adjustments may be made at COD.
- Estimated Project Development cost may be adjusted dependent on the actual Project Development Cost.
- Spread on local and foreign financing may be adjusted.
- Financing cost may be adjusted in accordance with the lender's requirement.

6 TRUE-UP OF TARIFF AT COD

As per the indexations agreed upon during construction, fuel costs, dollar price and other adjustments, the tariff shall be re-evaluated at COD and trued-up.

7 ADJUSTMENTS AT COD

At COD, adjustments shall be applied to the tariff. The tariff shall be trued-up as per the following considerations:

- Adjustments in EPC Cost in case of any variations from estimated values of Over-Burden Volume and Dewatering Volume
- All payments involving USD/PKR conversions shall be adjusted as per the rate on the date of payment
- Indexations shall be applied according to the US Consumer Price Index (USCPI) for labor, spares and tyres
- The fuel price shall be adjusted as per the HSD price
- Power price shall be adjusted as per the RFO price
- At COD, the Petitioner shall submit proof of any withholding tax/sales tax included in payment to contractor; which may be added to project cost
- Costs for rehabilitation of villages may be actualized in accordance with the approval by the Government
- The applicable LIBOR and KIBOR rates at COD shall be used for the adjustment of IDC.
- Royalty payments, if adjusted by GoS, shall be actualized.

8 APPLICABLE INDEXATIONS

It is requested to allow for the indexation of following parameters, wherever applied in calculation of tariff:

- Fuel Price (HSD)
- RFO Price
- USCPI
- USD/PKR conversion rate
- Royalty as updated by GoS
- KIBOR/LIBOR
- Any applicable tax rate

9 PETITION

With reference to the preceding documents, a request is, hereby, put forth by the Petitioner before the Authority of TCEB for approval of Reference Coal Tariff of 7.8 mtpa coal mine at Thar, Sindh; along with the approval relevant requested adjustments and indexations sought in the Petition.

The Petitioner assures to readily and promptly provide any additional supporting documents that maybe required by TCEB.

10 ANNEXURES

Tariff Table (USD/Ton) - Sino Sindh Resources Limited (Thar Coal Block I) - 7.8MTPA

Year	Production Payments								Capacity Payments													Total
	Variable O&M					Asset Replacement	Royalty	Total Production Payments	Fixed OM - Foreign			Fixed OM - Local			Interest on Working Capital	Insurance	ROEdc	ROE	Principal Repayment	Interest Payments	Total Capacity Payment	
	Spares and Consumables	*Tyres*	*Lubricants*	*Fuel (Diesel)*	*Power (Belts, Crushers, Production Equip.)*				*Dewatering OpEx (Spares,Tyres,Lubricants)*	*MSF OpEx (Spares,Tyres,Lubricants)*	*Other OPEX*	*Fuel (Dewatering and MSF)*	*Power (Dewatering and MSF)*	*Other OPEX*								
1	3.3789	1.3476	1.1661	7.5531	0.4155	2.4248	4.1596	**20.4457**	0.2086	0.3644	6.8270	0.2120	1.1411	2.9082	1.3876	0.8020	2.7056	7.5803	8.6621	6.3766	**39.1757**	**59.6214**
2	3.3465	1.2898	1.1331	7.3054	0.4155	3.5484	4.1306	**21.1694**	0.2086	0.3644	5.7109	0.2120	1.1411	2.8884	1.3844	0.8020	2.7056	7.5803	9.1665	5.8723	**38.0365**	**59.2059**
3	3.3465	1.2898	1.1331	7.3054	0.4155	3.5247	4.2300	**21.2450**	0.2221	0.3644	6.9816	0.2120	1.1838	2.8871	1.4070	0.8020	2.7056	7.5803	9.7002	5.3386	**39.3847**	**60.6297**
4	3.3465	1.2898	1.1331	7.3054	0.4155	3.5247	4.1159	**21.1310**	0.2221	0.3644	5.4853	0.2120	1.1838	2.8871	1.3823	0.8020	2.7056	7.5803	10.2650	4.7738	**37.8637**	**58.9946**
5	2.8797	0.9182	0.8891	5.5469	0.4155	3.5247	3.9388	**18.1129**	0.2356	0.3644	6.3226	0.2120	1.2265	2.5532	1.3019	0.8020	2.7056	7.5803	10.8626	4.1761	**38.3429**	**56.4558**
6	2.8797	0.9182	0.8891	5.5469	0.4155	3.5247	3.8539	**18.0280**	0.2356	0.3644	5.2167	0.2120	1.2265	2.5454	1.2835	0.8020	2.7056	7.5803	11.4951	3.5437	**37.2107**	**55.2387**
7	2.8797	0.9182	0.8891	5.5469	0.4155	3.2907	3.8802	**17.8203**	0.1173	0.3644	6.2991	0.2120	0.8532	2.5454	1.2775	0.8020	2.7056	7.5803	12.1644	2.8744	**37.7956**	**55.6159**
8	2.8797	0.9182	0.8891	5.5469	0.4155	3.2827	3.8167	**17.7489**	0.1173	0.3644	5.4750	0.2120	0.8532	2.5454	1.2637	0.8020	2.7056	7.5803	12.8727	2.1661	**36.9578**	**54.7066**
9	2.8491	0.9182	0.8884	5.4956	0.4155	3.1551	3.9151	**17.6370**	0.1241	0.3644	6.9582	0.2120	0.8745	2.5369	1.2825	0.8020	2.7056	7.5803	13.6221	1.4166	**38.4793**	**56.1163**
10	2.8491	0.9182	0.8884	5.4956	0.4155	3.1509	3.7863	**17.5040**	0.1241	0.3644	5.2738	0.2120	0.8745	2.5367	1.2546	0.8020	2.7056	7.5803	14.4153	0.6235	**36.7668**	**54.2708**
11	2.8491	0.9182	0.8884	5.4956	0.4155	3.1487	2.7145	**16.4300**	0.1342	0.3644	6.3075	0.2120	0.9065	2.5367	0.9285	0.8020	2.7056	7.5803	-	-	**22.4777**	**38.9077**
12	2.8491	0.9182	0.8884	5.4956	0.4155	3.1487	2.7229	**16.4384**	0.1816	0.3644	6.2172	0.2120	1.0558	2.5367	0.9344	0.8020	2.7056	7.5803	-	-	**22.5899**	**39.0283**
13	2.8491	0.9182	0.8884	5.4956	0.4155	3.1487	2.6733	**16.3888**	0.1816	0.3644	5.5662	0.2120	1.0558	2.5367	0.9237	0.8020	2.7056	7.5803	-	-	**21.9282**	**38.3170**
14	2.8491	0.9182	0.8884	5.4956	0.4155	2.8550	2.6194	**16.0411**	0.1816	0.3644	5.1551	0.2120	1.0558	2.5367	0.9101	0.8020	2.7056	7.5803	-	-	**21.5035**	**37.5446**
15	2.8491	0.9182	0.8884	5.4956	0.4155	2.8352	2.6961	**16.0981**	0.1883	0.3644	6.1523	0.2120	1.0772	2.5367	0.9272	0.8020	2.7056	7.5803	-	-	**22.5459**	**38.6440**
16	2.8491	0.9182	0.8884	5.4956	0.4155	2.8352	2.6228	**16.0248**	0.1883	0.3644	5.1906	0.2120	1.0772	2.5367	0.9113	0.8020	2.7056	7.5803	-	-	**21.5683**	**37.5931**
17	2.7567	0.8686	0.8521	5.2418	0.4155	2.8352	2.6658	**15.6358**	0.2018	0.3644	6.1855	0.2120	1.1198	2.4883	0.9140	0.8020	2.7056	7.5803	-	-	**22.5737**	**38.2095**
18	2.7567	0.8686	0.8521	5.2418	0.4155	2.8352	2.6118	**15.5818**	0.2018	0.3644	5.4781	0.2120	1.1198	2.4872	0.9023	0.8020	2.7056	7.5803	-	-	**21.8536**	**37.4353**
19	2.7567	0.8686	0.8521	5.2418	0.4155	2.5445	2.6347	**15.3140**	0.2086	0.3644	6.0429	0.2120	1.1411	2.4872	0.9060	0.8020	2.7056	7.5803	-	-	**22.4502**	**37.7642**
20	2.7567	0.8686	0.8521	5.2418	0.4155	2.5351	2.5782	**15.2480**	0.2086	0.3644	5.3107	0.2120	1.1411	2.4872	0.8937	0.8020	2.7056	7.5803	-	-	**21.7056**	**36.9536**
21	2.7567	0.8686	0.8521	5.2418	0.4155	2.5208	2.7088	**15.3644**	0.2120	0.3644	7.0245	0.2120	1.1518	2.4872	0.9222	0.8020	2.7056	7.5803	-	-	**23.4620**	**38.8265**
22	2.7567	0.8686	0.8521	5.2418	0.4155	2.4990	2.5640	**15.1978**	0.2120	0.3644	5.1474	0.2120	1.1518	2.4872	0.8907	0.8020	2.7056	7.5803	-	-	**21.5534**	**36.7511**
23	2.7567	0.8686	0.8521	5.2418	0.4155	1.3433	2.5718	**14.0499**	0.2187	0.3644	6.3838	0.2120	1.1731	2.4872	0.8857	0.8020	2.7056	7.5803	-	-	**22.8128**	**36.8627**
24	2.7567	0.8686	0.8521	5.2418	0.4155	1.3433	2.4790	**13.9570**	0.2187	0.3644	5.1658	0.2120	1.1731	2.4872	0.8656	0.8020	2.7056	7.5803	-	-	**21.5747**	**35.5317**
25	2.7567	0.8686	0.8521	5.2418	0.4155	1.3433	2.5545	**14.0325**	0.2289	0.3644	6.1130	0.2120	1.2051	2.4872	0.8828	0.8020	2.7056	7.5803	-	-	**22.5814**	**36.6138**
26	2.7567	0.8686	0.8521	5.2418	0.4155	1.3433	2.4788	**13.9569**	0.2289	0.3644	5.1214	0.2120	1.2051	2.4872	0.8664	0.8020	2.7056	7.5803	-	-	**21.5733**	**35.5302**
27	2.7567	0.8686	0.8521	5.2418	0.4155	1.3196	2.5404	**13.9948**	0.2323	0.3644	5.9388	0.2120	1.2158	2.4872	0.8799	0.8020	2.7056	7.5803	-	-	**22.4183**	**36.4131**
28	2.7567	0.8686	0.8521	5.2418	0.4155	1.2917	2.4996	**13.9260**	0.2323	0.3644	5.4308	0.2120	1.2158	2.4872	0.8709	0.8020	2.7056	7.5803	-	-	**21.9013**	**35.8273**
29	2.7567	0.8686	0.4587	2.2863	0.4155	0.0000	2.1177	**8.9035**	0.2323	0.3644	5.0933	0.2120	1.2158	2.4872	0.7569	0.8020	2.7056	7.5803	-	-	**21.4498**	**30.3532**
30	2.7567	0.8686	0.4587	2.2863	0.4155	0.0000	2.1232	**8.9090**	0.2323	0.3644	5.1658	0.2120	1.2158	2.4872	0.7581	0.8020	2.7056	7.5803	-	-	**21.5235**	**30.4324**
Levelized																						
1 - 30 Year	3.0108	1.0403	0.9628	6.0589	0.4155	3.0164	3.5318	**18.0365**	0.1922	0.3644	6.0009	0.2120	1.0893	2.6508	1.1861	0.8020	2.7056	7.5803	7.0612	2.7413	**32.5859**	**50.6224**
Average																						
1 - 10 Year	3.0636	1.0726	0.9899	6.2648	0.4155	3.2951	3.9827	**19.0842**	0.1816	0.3644	6.0550	0.2120	1.0558	2.6834	1.3225	0.8020	2.7056	7.5803360	11.3226	3.7162	**38.0014**	**57.0856**
11 - 20 Year	2.8121	0.8984	0.8739	5.3941	0.4155	2.8722	2.6539	**15.9201**	0.1876	0.3644	5.7606	0.2120	1.0750	2.5170	0.9151	0.8020	2.7056	7.5803360	-	-	**22.1197**	**38.0397**
21 - 30 Year	2.7567	0.8686	0.7734	4.6507	0.4155	1.3004	2.4638	**13.2292**	0.2248	0.3644	5.6585	0.2120	1.1923	2.4872	0.8579	0.8020	2.7056	7.5803360	-	-	**22.0850**	**35.3142**

Debt Repayment Schedule

Principal Amount	mUSD	883.16
6M LIBOR + Premium	(%)	5.74%
Total Number of Payments	(No.s)	20

Semi-Annual Payments

Year	Nth Payment	Principal	Principal Repayment	Interest	Balance	Debt Servicing
1	1	883.16	33.30	25.35	849.86	58.651
	2	849.86	34.26	24.39	815.60	58.65
2	3	815.60	35.24	23.41	780.35	58.65
	4	780.35	36.26	22.40	744.10	58.65
3	5	744.10	37.30	21.36	706.80	58.65
	6	706.80	38.37	20.29	668.44	58.65
4	7	668.44	39.47	19.18	628.97	58.65
	8	628.97	40.60	18.05	588.37	58.65
5	9	588.37	41.76	16.89	546.61	58.65
	10	546.61	42.96	15.69	503.64	58.65
6	11	503.64	44.20	14.45	459.45	58.65
	12	459.45	45.47	13.19	413.98	58.65
7	13	413.98	46.77	11.88	367.21	58.65
	14	367.21	48.11	10.54	319.10	58.65
8	15	319.10	49.49	9.16	269.61	58.65
	16	269.61	50.91	7.74	218.69	58.65
9	17	218.69	52.37	6.28	166.32	58.65
	18	166.32	53.88	4.77	112.44	58.65
10	19	112.44	55.42	3.23	57.01	58.65
	20	57.01	57.01	1.64	(0.00)	58.65

Annual Payments

Year	Opening Principal	Principal Repayment	Interest	Balance	Debt Servicing
1	883.16	67.56	49.74	815.60	117.30
2	815.60	71.50	45.80	744.10	117.30
3	744.10	75.66	41.64	668.44	117.30
4	668.44	80.07	37.24	588.37	117.30
5	588.37	84.73	32.57	503.64	117.30
6	503.64	89.66	27.64	413.98	117.30
7	413.98	94.88	22.42	319.10	117.30
8	319.10	100.41	16.90	218.69	117.30
9	218.69	106.25	11.05	112.44	117.30
10	112.44	112.44	4.86	(0.00)	117.30