BEYOND VALUE

Techno-Economic Viability Report of a E-Waste & Battery Recycling Facility of

Attero Recycling Private Limited

State Bank of India

October 2023

Kakode Associates

Consulting Private Limited

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October 24, 2023

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K&A/AAK/LDA/BJD/23-24/MF2374

To,

Chief Manager (Credit Analyst),

State Bank of India, Industrial Finance Branch - CCG,

14th Floor, Jawahar Vyapar Bhawan 1,

Tolstoy Marg, Janpath, New Delhi – 110 001

Subject: Techno Economic Viability Report (TEV) of a E-waste and Lithium Ion battery recycling facility located at Roorkee, Uttarakhand by Attero Recycling Private Limited. (hereinafter referred to as ARPL or the company).

Kind Attention: Mr. Sandeep Sethi

Dear Sir,

We refer to our engagement in connection with the captioned subject for assessment of technical, commercial and financial viability of the E-waste and Lithium Ion Battery recycling facility at Roorkee, Uttarakhand through a detailed analysis and evaluation of the constraints and future potential.



We have prepared this Techno-Economic Viability (TEV) report as per the scope of work discussed with State Bank of India (Hereinafter referred to as SBI). SBI and other lenders of **ARPL** shall be the sole intended users of this report, and the use of the report is restricted for the purpose indicated herein.

Our scope of work is limited to the date of this report and the analysis of any change, event or circumstance that may have occurred in the business and its market after the date of this report is out of our scope. The information used by us in preparing this report has been obtained from a variety of sources like financial statements, market research and/or other relevant documents provided by the officials of ARPL.

We trust our **TEV** report meets your requirements. For any further clarification please feel free to contact us at +91 7742840000.

Yours Sincerely,

For Kakode Associates Consulting Private Limited

Bhupesh Duggar

Head – TEV

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Scope of Work

State Bank of India (SBI) appointed Kakode Associates Consulting Private Limited for undertaking the Techno-Economic Viability (TEV) study of the e-waste & lithium ion battery recycling facility located at Roorkee, Uttarakhand. The study would be to assess the technical, commercial and financial viability of the said unit considering an additional expansion of capacity in the lithium ion battery recycling facility through a detailed analysis of the project and evaluation of the constraints and future potential.

The scope of work was finalized as under:

- **K&A** will physically visit the project site.
- K&A will validate the cost of the proposed project, given the specifications on civil works, building, machinery and also the cost and revenue assumptions related to commercial aspect of the project.
- K&A will analyse the revenue and cost estimates for the project

Methodology



The Techno-Economic Viability (TEV) study assigned to **K&A** was carried out in the following sequence:

- Collection of the documents from **ARPL** necessary for the study, identification and follow up of missing information.
- Assessment of Technical aspects of the subject Project i.e. adequacy of land area available, building area constructed, machinery planned, etc.
- ✤ Assessment of Built up area of the project.
- Assessment of Market conditions for the Industry and impact of macro-economic trends.
- Secondary research to understand industry specific benchmarks for Prices / Costs / Profitability and comparing the same with our projected cost / price details.
- Assessment of construction cost submitted and comments on sourcing of these costs.
- Review of various cost components considered in business projection.
- Assessment of demand and supply scenario of the products in related markets and sub markets.
- Assessment of financial projection and to derive various financial ratios to assess viability of the project.
- Review agreement of engagement terms.
- To carry out sensitivity analysis, SWOT analysis and to identify risk & its mitigation pertaining to the project.

Executive Summary

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About the Project

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- Attero Recycling Private Limited (ARPL) was incorporated on February 27, 2008 and has an existing plant at Roorkee, Uttarakhand to recycle e-waste. The plant was later upgraded in 2017 to recycle lithium ion batteries apart from e-waste. The capacities of the existing e-waste recycling unit and the lithium ion battery recycling unit is 1,44,000 MTPA & 700 MTPA respectively.
- IT goods scrap, non-IT scrap, Telecom scrap, PCBs, Consumer durables scrap (i.e. Air conditioners, refrigerators, etc.), mobile phones and other –waste are some of the types of e-waste which is collected and recycled. The company also undertakes refurbishing of desktops, laptops, printers, mobile phones, reverse logistics and data sanitation.
- ARPL now intends to expand its lithium ion battery recycling facility by 1,300 MTPA resulting in a total lithium ion battery recycling capacity of 2,000 MTPA. The ewaste capacity shall remain unchanged at 1,44,000 MTPA.
- The total Project Cost for the proposed project works out to INR 39.41 Crore out of which INR 11.41 Crore will be funded by the Promoters through Quasi equity/Internal accruals and balance INR 28.00 Crore will be funded by Term Loan from SBI.
- The date of Commercial operations (COD) for the proposed expansion project is estimated as January 1, 2025.

Project Cost



The project cost of the proposed project as provided by **ARPL** is as tabulated below:

Project Cost	INR in Crore		
Particulars	Amount	%	
Land Cost	2.35	6%	
Project planning & Designing	2.00	5%	
Building & Civil Work	3.99	10%	
Plant & Machinery	31.07	79%	
Total	39.41	100%	

K&A Comments

The **Plant & Machinery** accounts to **79%** of the **total project cost** followed by the building and civil cost of **10%** of the **total project cost**. We feel the above project cost is in line with industry standards and the same is reasonable.

If there is any cost over run, the promoters have agreed to fund the same from their own sources.



Means of Finance



The Means of Finance proposed for the Project by **ARPL** is as follows:

Means of Finance	INR in Crore		
Particulars	Amount	%	
Promoter's Contribution	11.41	29%	
Term Loan	28.00	71%	
Total	39.41	100%	
K&A Comments The project is majorly funded by bank finance of I amount of INR 11.41 Crore funded by Promoters.	NR 28.00 Crore , and	d balance	
The moratorium period for the loan is 14 months	with the first disburs	ement in	

November 2023. The **total loan tenure** is **65 months** with repayments concluding by **March 2029**. The **interest rate** for the said term loan is **9.90%**.



Profitability Analysis



The profitability analysis of the Project by **ARPL** is as follows:

Profitability Ratio						
Particulars	FY24	FY25	FY26	FY27	FY28	FY29
EBITDA %	19%	18%	20%	20%	21%	21%
PBT %	17%	15%	17%	18%	19%	20%
PAT %	13%	11%	13%	13%	14%	15%



K&A Comments

The Project on an average has an **EBITDA** of approx. **20%**. with an **average net profit margin (PAT)** of approx. **13%**.

We feel the same is reasonable and justified.

Loan Drawdown and Repayment Schedule



As per the details provided by **ARPL**, the loan drawdown and repayment schedule is as tabulated below:



Debt Service Coverage ratio (DSCR)



The Debt Service Coverage Ratio for the proposed Project is shown in the exhibit below:-

INR in Crore

Debt Service Coverage Ratio						
Particulars	FY24	FY25	FY26	FY27	FY28	FY29
PAT	82.16	79.95	103.43	107.74	113.58	122.84
Depreciation	7.55	9.94	10.16	10.38	10.59	6.38
Interest	4.90	10.73	9.84	8.78	7.99	7.33
Interest on term Loan	1.94	3.69	2.82	1.77	0.99	0.33
Loan Repayment	3.51	5.10	9.85	9.32	6.69	6.69
Coverage	94.61	100.62	123.43	126.89	132.16	136.55
Debt Service	5.45	8.79	12.68	11.10	7.68	7.02
DSCR	17.38	11.45	9.74	11.44	17.20	19.45
Average DSCR			13.55			

K&A Comments

The **average DSCR** of the said project works out to **13.55**. The **DSCR** for all the years is in the acceptable range varying from a minimum of **9.74** to a maximum of **19.45**.



Interest Coverage Ratio (ICR)



The Interest Coverage Ratio (ICR) for the project is shown in the exhibit below

Interest Coverage Ratio						
Particular	FY24	FY25	FY26	FY27	FY28	FY29
EBITDA-tax	94.61	100.62	123.43	126.89	132.16	136.55
Interest Payment	4.90	10.73	9.84	8.78	7.99	7.33
Interest Coverage Ratio	19.30	9.38	12.54	14.46	16.53	18.63
Average Interest Coverage Ratio			14.4	1		



INR in Crore

K&A Comments

The **average ICR** of the said project works out to **14.41** which augers well with the project.

Breakeven Analysis



The Breakeven Analysis for the project is shown in the exhibit below:-

The Breakeven Analysis for the project is	s shown in the exhibit belo	DW:-				INR in Crore
Particular	FY24	FY25	FY26	FY27	FY28	FY29
Sales	652.85	714.73	797.33	807.47	818.10	829.27
Fixed Cost	145.00	167.37	179.68	180.14	180.42	176.46
Variable Cost	397.65	440.11	479.04	482.95	485.50	488.26
Contribution Margin	255.20	274.61	318.30	324.52	332.60	341.02
Break Even Point(%)	56.8%	60.9%	56.5%	55.5%	54.2%	51.7%
Depreciation	7.55	9.94	10.16	10.38	10.59	6.38
Cash Break Even Point	53.9%	57.3%	53.3%	52.3%	51.1%	49.9%
BEP in terms of Sales						
Profit Volume Ratio	39%	38%	40%	40%	41%	41%
Break Even Point	370.94	435.62	450.10	448.22	443.78	429.11
Break Even Point (%)	56.8%	60.9%	56.5%	55.5%	54.2%	51.7%

Dreak Even Point (%) 20.0% 00.9% 20.2% **JJ.J**% **54.**2% Margin of Safety 43.18% 39.05% 43.55% 44.49% 45.75% braft to Margin of Safety (INR Crore) 281.90 279.11 347.23 359.25 374.32

48.25%

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Sensitivity Analysis

The sensitivity analysis for the proposed project is as follows:-

Sensitivity Analysis				
			Brea	keven on
Particulars	DSCR	Min. DSCR	ICR	FY28
Base case	13.55	9.74	14.41	51%
Decrease in Selling Price by 5%	10.27	7.38	10.92	58%
Decrease in Selling Price by 10%	6.99	5.03	7.43	68%
Increase in RM Cost by 5%	11.26	8.10	11.97	57%
Increase in RM Cost by 10%	8.96	6.46	9.53	63%
Decrease in Capacity Utilization by 10%	11.74	8.46	12.48	52%
Decrease in Capacity Utilization by 20%	9.92	7.18	10.74	54%
Increase in Interest rate by 2%	13.13	9.40	13.93	51%
Draft for				



The Sensitivity analysis shows that the **average DSCR, Min DSCR and ICR** are **most sensitive** to **decrease in Sale Price by 10%.**

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K&A Observations from Sensitivity Analysis:-

- K&A feel that the sale prices should be carefully monitored and is one of the key factor influencing the success of the project.
- K&A feels that based on the sensitivity analysis worked out for different scenarios, the company should comfortably be able to repay the loans to the lenders as per the loan repayment schedule.
- Sensitivity Analysis of DSCR and ICR shows that success of proposed project lies with achieving the projected operational performance by company and managing the various elements of cost very efficiently.



SWOT Analysis



Strengths

- The Attero group is already into recycling of electronic waste and added the battery recycling to its portfolio a few years back. The 700 MT capacity Li-ion Battery recycling is already running in operation.
- The company has already identified the land in Khata No. 172, Village Raipur, Bhagwanpur Industrial Estate, Tehsil Roorkee.
- ARPL has no problem in sourcing of e-waste and Li-ion battery as RM for its processes.
 The ARPL team is entering into contracts for the same with Auto OEMS, Battery manufacturers and recyclers both within the country and outside.

Opportunities

- High Demand of Electric vehicle: With the Indian automobile industry heading towards stringent pollution norms, it is already providing good opportunity for the Electric vehicles. The demand for batteries and their environment friendly recycling is going to increase. This is directly creating business for ARPL.
- The recycling industry for the e-waste and Li-ion Battery is a nascent stage while the ARPL is already established. Currently no major peers are in India who is catering this industries. Hence, company has the first mover advantage.

Weaknesses

 The availability of minimum educated workmen and those accustomed to industrial culture may be a problem.

Mitigation: The Company may have to transfer some skilled manpower from other cities initially till the regional workforce is trained.

Threats

- China controls the Li-ion Battery production and also controls the Li and Cobalt mining industry. It is capable of generating substantial volumes of fresh metal and recycled metal to challenge any other industry
- A large number of start-ups and recyclers have come up seeing the huge opportunity in the Li-ion Battery and e-waste recycling. They may also be able to get fresh scientists and recycling experts to work out the required solutions.



Risk Analysis and Mitigation



Risk management strengthens the robustness of the business. Risk Analysis and management refers to the formal processes whereby risks associated with a project are managed. Risk analysis and mitigation encompasses the following sequence.

Identification of risk and risk carrier.

Assessment of options for mitigating the risks.

Evaluation of the risks as to the likelihood and consequences.

- Authorization for implementation of the risk management plans.
- Implementation and review of the risk management efforts.
- Some of the risks associated with the project and the related mitigation plans are discussed hereunder.

Key Risk	Risk Carrier	Proposed Mitigation of Risk
Experience & Capability	ARPL	The Attero Recycling (ARPL), Parent Company of ATPL, has been in the business of E-Waste recycling since Feb 2008 when the plant in Roorkee was set up. The company has the capacity of 1,44,000 MT for e-waste recycling and further, the battery recycling was added in 2017 with the capacity of 7000 MT Li-B recycling. Thus, the company has 15 years plus recycling experience while the battery recycling capability is also 6 years old. The skill set is available in the R&D for developing the processes on a pilot scale and then extending it to shop-floor production. The company holds a number of patents for its recycling processes .
Time Overrun	ARPL	Considering the current situation of the project, the timelines considered for the completion of the project are satisfactory subject to smooth allocation of adequate resources and funds.
	40	We recommend the lenders to appoint a lenders independent engineer to monitor the status of the project on a quarterly basis.
Cost Overrun	ARPL	We note that cost considered for the said project are much lesser than the other global peers and based on their past
610		experience promoters confident to construct the said plant in the mentioned cost. Based on our industry research with respect
		to machinery cost and civil construction, we feel the same is reasonable and If there is any cost overrun, the promoters shall
		service the deficit from their own sources.

Risk Analysis and Mitigation



Key Risk	Risk Carrier	Proposed Mitigation of Risk
Off-take/Demand Risk	ARPL	Considering the background and experience of the promoters & company along with the current market demand, we
		do not envisage off-take or demand risk for this project of ARPL .
Statutory Approvals	ARPL	We have not received some of the critical approvals like Approved layout & building plans for the proposed project.
		We recommend ARPL to obtain the necessary approvals at the earliest to initiate commercial production.
		Considering the background of the promoters, We do not anticipate any approval or Certification related risk for the project.
Pricing Level & Sustainability	ARPL	The selling price per product is based on the inputs provided by the officials of ARPL and based on their historical
		invoices. Based on the discussion with the management and our market research the considered selling price seems reasonable.
Operating Risk	ARPL	Considering the background and experience of key management professional and Robust R&D capabilities, we do
		not anticipate any operating risk for the project.
Force Majeure Risk	ARPL	The lender may insist the firm to take adequate insurance cover for insurable Force Majeure risks.
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Conclusion



K&A believes that the management of Attero Recycling Private Limited have the financial capability as well as industry knowledge to implement the expansion of the lithium ion battery recycling Facility and to market the same successfully. In view of adequate experience, fair market conditions, receipt of necessary approvals from statutory authorities, proper project planning and the ability of the project to service the debt within a reasonable time, the proposal for the lithium battery recycling facility located at Roorkee, Uttarakhand by Attero Recycling Private Limited is considered Technically Feasible and Economically Viable.

For KAKODE ASSOCIATES CONSULTING PRIVATE LIMITED					
ANIL PAI KAKODE	AMEET KAKODE	BHUPESH DUGGAR	LIONEL AZAVEDO		
Director	CEO	CFO	Senior Associate		
Date: October 21, 2023	' diz		Place: Mumbai		
Draft					

Company Overview

About Attero Recycling Private Limited



- Attero Recycling Private Limited (ARPL) was incorporated on February 27, 2008 and has an existing plant at Roorkee, Uttarakhand to recycle e-waste. The plant was later upgraded in 2017 to recycle lithium ion batteries apart from e-waste. The capacities of the existing e-waste recycling unit and the lithium ion battery recycling unit is 1,44,000 MTPA & 700 MTPA respectively.
- IT goods scrap, non-IT scrap, Telecom scrap, PCBs, Consumer durables scrap (i.e. Air conditioners, refrigerators, etc.), mobile phones and other –waste are some of the types of e-waste which is collected and recycled. The company also undertakes refurbishing of desktops, laptops, printers, mobile phones, reverse logistics and data sanitation.
- The details of the directors of ARPL is as follows:-

Sr. No.	Name of Directors	Designation	DIN / PAN
1	Mr. Rohan Gupta	Director	00152245
2	Mr. Nitin Gupta	Managing Director	01354513
3	Ms. Neha Sharma	Company Secretary	EJKPS4534Q
	()		
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CIN	U20024UD2000DTC022572		
	0209510K2008P1C032573		
Roc Code	RoC-Uttarakhand		
Company Name	Attero Recycling Private Limited		
Registration Number	032573		
Company Category	Company Limited by Shares		
Company Subcategory	Non-Govt. Company		
Class of Company	Private		
Authorised Capital (INR)	89,11,50,000		
Paid Up Capital(INR)	62,83,31,150		
Date Of Incorporation	February 27, 2008		
Email ID	saurabhgupta75@gmail.com		
Registered Address	2, Green Park Saharanpur Road, Dehradun, Dehradun, Uttarakhand, India, 248001		
Whether Listed Or Not	Unlisted		
Date Of Balance Sheet	March 31, 2023		
Company Status (For E-	Active		

Source – https://www.mca.gov.in/content/mca/global/en/mca/master-data/MDS/company-master-info.html

Key Personnel | Co-founders & Management Team



Mr. Nitin Gupta – Co-founder & CEO

Mr. Nitin Gupta is an Alumnus of IIT Delhi (B. Tech EE) and has completed his Master's in Business Administration from NYU Stern School of Business.

Mr. Rohan Gupta – Co-founder & COO



Mr. Rohan Gupta has completed his B. Tech from NIT Jaipur. He has working experience with companies like SAP, Infosys. He is also the founder of Cinesprite Entertainment Private Limited.

Dr. Smruti Prakash Barik – Management Committee Member & CTO

Dr. Smruti Prakash Barik has studied PhD in Resources Recycling, UST, South Korea, M.Sc. (Chemistry), NOU, Orissa. He has more than 10 years of experience and has worked with organizations like IMMT, CSIR, Bhubansewar, RubaMin, IGMR South Korea.

Mr. Abdul Khalid – Management Committee Member & AVP (Service)



Mr. Abdul Khalid has more than 16 years of experience & has worked with firms like Bright Point, Ingram Micro, Axiom Telecom, HCL, etc.



Key Personnel | Management Team



Dr. Saurabh – Management Committee Member & CFO

Dr. Saurabh is a Chartered Accountant and has completed his PhD in Finance. He has more than 15 years of work experience in the field of the Company's proposed venture.

Mr. Mandeep Gusain – Management Committee Member & VP (Operations)



Mr. Mandeep Gusain has more than 20 years of work experience & has worked with firms like Indo Lloyd Freight Systems, VLMS, etc.

Mr. Pawandeep Singh – Management Committee Member & Head (Business Development)

Mr. Pawandeep Singh has more than 16 years of experience & has worked with Corporates like Religare Securities.



Mr. Abdul Gaffar – Management Committee Member & Factory Head



Mr. Abdul Gaffar has more than 30 years of experience & has worked with MNC's like Hero Cycles, Safari Bikes, Jindal Industries.

Key Personnel | Advisors



Craig Cougut

Harvard Law School, Brown University

Founder Pegasus Capital, Founding Partner Apollo Advisors **Dr. Ashok Jhunjhunwala** IIT Kanpur, University of Maine, Professor-IIT Madras

Director-SBI, Member of Prime Minister's Scientific Advisory Committee, Recipient of Padma Shri award 2002 Chief Advisor, Government of India, Electric Vehicle Mission 2030 Samir Inamdar MBA (IIM Calcutta), B.Engg. (Bombay Univ) Co-Founder & CEO, Forum Synergies, GE India (Ex-CEO), Tyco India (Ex-CEO)

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Gurdeep Singh

IIT Delhi, Harvard Business School

Hindustan Unilever Ltd (Director), Blue Star (Director), Renuka Do Brasil

Dr. Abhinav Mathur

NSIT (BE CS), IIT Delhi(Ph D Communication Networks), IIM Lucknow

Million Sparks Foundation (Founder), Spice Global (CTO & CSO)

Shareholding Pattern

The shareholding pattern of **ARPL** is as follows:-

		No. of	
Category	Name of Shareholders	shares	% Holding
Equity Share Capital			
Equity Shares	Nitin Gupta	4,40,000	1.50%
	Rohan Gupta	2,40,000	0.82%
	Saurabh Gupta	1,20,000	0.41%
	International Finance Corp.	4	0.00%
			0.00%
Class 'B' Equity Shares	NEA - Indo US Venture Capital LLC	100	0.00%
	DFJ Mauritius INC	100	0.00%
			0.00%
Series 'D' Equity Shares	Forum Synergies India Trust	6	0.00%
	Chaya Deep Ventures LLP	6 🔹	0.00%
Sub Total (Equity Shares of INR 10			
each) - A		8,00,216	2.73%



Source: As per the details provided by the officials of ARPL.

		No. of	%
Category	Name of Shareholders	shares	Holding
Preference Shares			
8% cumulative Convertible Participative			
Preference Shares	International Finance Corporation	2,43,77,799	83.03%
Sub Total (8% Preference Shares of INR 1	0		
each) - B		2,43,77,799	83.03%
0.001% cumulative Convertible Participa	tive		
Series B Preference Shares			
	NEA- Indo US Ventre Capital LLP	165,289	0.56%
	DFJ Mauritius INC	116,401	0.40%
	GHI of INC	422,535	1.44%
0.001% cumulative Convertible Participa Series D	tive		
	DFJ Maurities FDI INC	2,28,203	0.78%
	Forum Synergies India Trust	1,64,570	0.56%

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	Forum Synergies India Trust	1,64,570	0.56%
	Chaya Deep Ventures LLP	1,64,570	0.56%
	NEA-INDOUS Ventures Capital LLC	65,828	0.22%
	Kalaari Capital Partners II LLC	1,97,484	0.67%
	GHI of INC	49,371	0.17%
0.001% Cumulative convertible Participative Series A			

NEA-INDOUS Ventures Capital LLC	15,00,299	5.11%
DFJ Mauritius INC	10,56,519	3.60%

0.001% Cumulative convertible Participative

Series A1

	Nitin Gupta	34,185	0.12%
	Rohan Gupta	18,646	0.06%
Sub Total (0.001% Preference Shares of INR			
90 each) - C		41,83,900	14.25%
Total Equity & Preference Shares $(A + B + C)$		2 93 61 915	100.00%



Company Clientele

K&A



Historical Financials of the Company – Attero Recycling Private Limited



The historical financials of the company (Profit and Loss Account) is as follows:-

			INR in	Crore
Particulars	FY 20	FY 21	FY 22	FY 23
Income				
Revenue from operations	33.82	114.05	213.82	288.73
Other income	0.15	0.13	0.0	0.13
Total income	33.96	114.18	213.84	288.86
Expenses				
Cost of material consumed	19.15	72.22	124.40	234.69
Purchase of stock in trade	0.00	0.00	0.18	0.00
Changes in inventories of finished goods and Work				
in Progress & Stock in Trade	0.60	-1.52	2.40	-12.27
Employee Benefits expense	2.88	3.74	9.74	12.22
other expenses	21.11	14.92	16.95	36.83
Total expenses	43.74	89.37	153.67	271.47
EBITDA	-9.78	24.81	60.17	17.39
Finance Cost	5.03	4.89	4.37	2.09
Depreciation and amortisation	6.79	6.81	7.93	7.56
Total	11.82	11.70	12.30	9.65
Profit/ (loss) before exceptional items and tax	-21.59	13.11	47.87	7.74
Exceptional items [expense/ (income)	0.00	0.00	0.00	13.87
Profit/ (loss) before tax	-21.59	13.11	47.87	21.61
Current tax	0.00	0.00	7.46	5.39
Deferred Tax	0	0	0	-4.79
Tax Adjustment for Earlier Years	0.00	0.17	0.45	0.00
Profit / (loss) after tax	-21.59	12.94	39.96	21.02
EBITDA (%)	0%	22%	28%	6%
PAT (%)	0%	11%	19%	7%



Source: As per the audited financials statements submitted by the officials of ARPL.

Historical Financials of the Company – Attero Recycling Private Limited



The historical financials of the company (Balance Sheet) is as follows:-

				NR in Crore
Particulars	FY 20	FY 21	FY 22	FY 23
Equity and Liabilities				
Equity				
Share Capital	38.46	38.46	38.46	62.83
Reserves & Surplus	-20.19	-9.11	30.85	51.87
Total equity	18.27	29.34	69.30	114.70
Liabilities				
Non-current liabilities				
Long term Borrowings	24.38	24.38	38.45	10.29
Other Long Term Liabilities	0.01	0.00	0.00	0.00
Long Term Provision	0.67	0.41	0.69	1.53
Total non-current liabilities	25.05	24.79	39.14	11.83
Current liabilities				
Short Term Borrowings	27.21	23.56	5.72	5.81
Trade payables	15.73	21.09	12.03	48.63
Other Current Liabilities	17.67	17.71	20.80	10.60
Short Term Provision	0.02	0.02	6.00	3.81
Total current liabilities	60.64	62.38	44.54	68.85
Total Equity and Liabilities	103.96	116.50	152.98	195.38

Source: As per the audited financials statements submitted by the officials of ARPL.

		1	IN	IR in Crore
Particulars	FY 20	FY 21	FY 22	FY 23
Assets				
Non-current assets				
Tangible Assets	31.27	31.79	30.51	32.36
Intangible Assets	31.77	27.44	23.89	23.52
Capital Work in Progress	0.00	0.33	0.00	0.25
Other Non- Current Investment	0.08	0.01	0.01	0.01
Deferred Tax Assets	0.00	0.00	0.00	4.79
Long Term Loans & Advances	9.98	1.31	2.89	2.62
Other Non - Current Assets	0.04	0.11	0.11	0.11
Total non-current assets	73.14	60.99	57.40	63.66
Current assets				
Inventories	11.65	11.31	11.77	26.72
Trade receivables	17.21	33.39	50.61	79.79
Cash & Cash Equivalents	0.78	6.54	5.55	0.59
Short Term Loans & Advances	1.17	4.27	23.34	24.52
Other Current Assets	0.00	0.00	4.31	0.10
Total current assets	30.82	55.51	95.58	131.72
Total Assets	103.96	116.50	152.98	195.38

About the Project

About the Project

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- Attero Recycling Private Limited (ARPL) was incorporated on February 27, 2008 and has an existing plant at Roorkee, Uttarakhand to recycle e-waste. The plant was later upgraded in 2017 to recycle lithium ion batteries apart from e-waste. The capacities of the existing e-waste recycling unit and the lithium ion battery recycling unit is 1,44,000 MTPA & 700 MTPA respectively.
- IT goods scrap, non-IT scrap, Telecom scrap, PCBs, Consumer durables scrap (i.e. Air conditioners, refrigerators, etc.), mobile phones and other –waste are some of the types of e-waste which is collected and recycled. The company also undertakes refurbishing of desktops, laptops, printers, mobile phones, reverse logistics and data sanitation.
- ARPL now intends to expand its lithium ion battery recycling facility by 1,300 MTPA resulting in a total lithium ion battery recycling capacity of 2,000 MTPA. The ewaste capacity shall remain unchanged at 1,44,000 MTPA.
- The total Project Cost for the proposed project works out to INR 39.41 Crore out of which INR 11.41 Crore will be funded by the Promoters through Quasi equity/Internal accruals and balance INR 28.00 Crore will be funded by Term Loan from SBI.
- The date of Commercial operations (COD) for the proposed expansion project is estimated as January 1, 2025.

Project Cost



The project cost of the proposed project as provided by **ARPL** is as tabulated below:

Project Cost	INR in Crore		
Particulars	Amount	%	
Land Cost	2.35	6%	
Project planning & Designing	2.00	5%	
Building & Civil Work	3.99	10%	
Plant & Machinery	31.07	79%	
Total	39.41	100%	

K&A Comments

The **Plant & Machinery** accounts to **79%** of the **total project cost** followed by the building and civil cost of **10%** of the **total project cost**. We feel the above project cost is in line with industry standards and the same is reasonable.

If there is any cost over run, the promoters have agreed to fund the same from their own sources.



Project Cost Analysis



and	l Cost:						
Land (Cost						INR in Crore
Sr. No.	Address of the Land Parcel	Area (Sq. mtr.)	Star Price	np Duty & Registration Charges (INR in Crore)Total	Cost (INR in Crore)		Remarks
1 K8	Khata No. 172, Village Raipur, Bhagwanpur Industrial Estate, Tehs Roorkee, District Haridwar, Uttarakhand - 247 661 &A Comment: The land is consid	il 2,541 dered as per the sales agr	2.24 reement and we fee	0.112 el the rate considered for	2.35 the said land pa	rcel is in l	ine with the
ma Civ	arket rate and the same is reaso vil Cost:	onable.	.,551	3			INR in Crore
S.	S. NO. DESCRITION			Qty	Unit	Rate	Amount
	A FABRICATION AND ERECTION C	F NEW PROJECT OF SHED		1	JOB	2.19	2.19
	TOTAL AREA OF SIZE 570x57FIT	r = (32490 sq.fit)					
	B CIVIL WORK A NEW PROJECT O	F SHED					
	TOTAL AREA OF SIZE 570x57FIT	= (32490 sq. ft)		1	JOB	1.19	1.19
	SUB TOTAL AMOUNT						3.39
	GST					18%	0.61
	TOTAL						3.998
	GRAND TOTAL AMOUNT						3.998

K&A Comment: The **INR 1042/Sq. ft** rate considered for the construction of the shed is considered reasonable.

Project Cost Analysis



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Plant	& Machinery	:										
Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost	Transportation	Installation	Total Cost	[%] Tentative Supplier if Quotation not available	Name of Supplier if Quotation available	
1	Discharging	Discharge unit (multi voltage for battery/Module)	SYSTEM-RBT3302- (18~400)V/200V- 250A/125A- 100KW2CH-200KW- 380V3P/220V1P	1	2,24,03,588	2,24,03,588	11,20,179	22,40,359	2,57,64,126 8.29	9%	Arbin Instruments Inc	
2	R&D	ICPMS	Perkin	1	1,47,20,000	1,47,20,000	7,36,000	14,72,000	1,69,28,000 5.45	5%		
3	Roasting	Roaster	500 kg per hr, with cooling chamber	1	1,15,00,000	1,15,00,000	5,75,000	11,50,000	1,32,25,000 4.26	5%	AlfaTherm Limited	
4	Discharging	Discharge unit (multi voltage for cell)	LBT21084HC-0~5V- 60/5/0.5/0.02A-32CH- 415V3P	1	1,01,06,300	1,01,06,300	5,05,315	10,10,630	1,16,22,245 3.74	1%	Arbin Instruments Inc	
5	R&D	Pilot set-up	Leaching-SX- crystalization complete set	1	1,00,00,000	1,00,00,000	5,00,000	10,00,000	1,15,00,000 3.7(Viva Technologies, Fibrels India, Vikas Scientific, Fatehchand Omprakash, Bajranj Metals etc		
6	Electrical	Wiring & cabelling	32500 sft	1	1,00,00,000	1,00,00,000	5,00,000	10,00,000	1,15,00,000 3.70	0% National Electricals, Balaji Electricals		
7	Flooring	Epoxy 6 MM concerete	32500 sft	32500	250	81,25,000			81,25,000 2.61	Adhunik Paints or pooja Trading + Tasawur Ahmed fabrication		
8	Electrical	DG set		1	60,00,000	60,00,000	3,00,000	6,00,000	69,00,000 2.22	2%		
9	Lithium Evaporation	Evaporator unit (Evaporator, crystallizer (ss304)with agitator gearbox motor and cooling jacket, centrifuge (48", 2micron PP bag))	Evaporator unit (Evaporator, crystallizer (ss304)with agitator gearbox motor and cooling jacket, centrifuge (48", 2micron PP bag))	1	59,56,000	59,56,000	2,97,800	5,95,600	68,49,400 2.20	0%	VG Engineers Pvt. Ltd.	
10	0 Mechanical Recycling Copper Furnace 500 kg capacity		500 kg capacity	1	55,00,000	55,00,000	2,75,000	5,50,000	63,25,000 2.04	1%		
11	Mechanical Recyclin	g Aluminium Furnace	500 kg capacity	1	55,00,000	55,00,000	2,75,000	5,50,000	63,25,000 2.04	1%		
12	Battery Refurbishing Cyclinderical cell Testing Machine		1	54,69,400	54,69,400	2,73,470	5,46,940	62,89,810 2.02	2%			
13	Flooring	Epoxy 6 MM concerete	25000 sft	25000	250	62,50,000			62,50,000 2.01	Adhunik Paints or pooja Trading + Tasawur Ahmed fabrication		
14	R&D	Mini rotary kiln	10 kg capacity	1	50,00,000	50,00,000	2,50,000	5,00,000	57,50,000 1.85	Kencor Systems or Alpha therm or KV consulting		
15	Repair & Renovation	1		1	40,00,000	40,00,000			40,00,000 1.29	7% Tasawur Ahmed Fabrication		

Project Cost Analysis



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The project cost of the proposed project as provided by **ARPL** is as tabulated below:

Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost	Transportation	Installation	Total Cost %Tentative Supplier if Quotation not available available available	uotation
16	Repair & Renovation First Floor			1	50,00,000	50,00,000			50,00,000 1.61%	
17	Battery Refurbishing	BMS Tester		2	17,60,000	35,20,000	1,76,000	3,52,000	40,48,000 1.30%	
18	Pipeline & Fittings	Pipe line & fittings (MS, CPVC & SS)		1	35,00,000	35,00,000	1,75,000	3,50,000	40,25,000 1.30% Bharat Rubbers, Pooja Trading,	
19	Quality Control	AAS 240 FS Agilent	fast sequential AAS	1	34,25,000	34,25,000	1,71,250	3,42,500	39,38,750 1.27% Agilent	
20	Punching	punching machine	500 kg per hour	2	15,00,000	30,00,000	1,50,000	3,00,000	34,50,000 1.11% Universal Engeneering, Silicron Systems	
21	Dismantling	Automated dismantling system,	1 ton/hr	1	25,00,000	25,00,000	1,25,000	2,50,000	28,75,000 0.93% KV Consulting	
22	R&D	Civil/plumbing/electrical	Miscellaneous	1	25,00,000	25,00,000	1,25,000	2,50,000	28,75,000 0.93% Tasawur Ahmed Fabrication	
23	Electrical	Transformers		1	25,00,000	25,00,000	1,25,000	2,50,000	28,75,000 0.93%	
24	Mechanical Equipment Shifting			1	25,00,000	25,00,000			25,00,000 0.80% Self + outsouced equipment and manpower	
25	Graphite Purification	Enclosed Space for Purification Section	2900 sft	2900	700	20,30,000	1,01,500	2,03,000	23,34,500 0.75% Tasawur Ahmed Fabrication	
26	Lithium PP 1	Centrifuge	500 kg, 48" SS304, PP 2 micron bag with MS structure	1	20,25,000	20,25,000	1,01,250	2,02,500	23,28,750 0.75% Apollo Machine	ery
27	R&D	Spectrum two	Perkin	1	20,24,000	20,24,000	1,01,200	2,02,400	23,27,600 0.75%	
28	R&D	Work bench and furnitures	GLP standard, fume hood bench top and walk in	1	20,00,000	20,00,000	1,00,000	2,00,000	Aslam Civil Contractor, Taswaur Ahmed, Royal 23,00,000 0.74% Furniture, Rana furniture, Agarwal Furniture	
29	R&D	Lab furnishing	wood work and on work bench	1	20,00,000	20,00,000	1,00,000	2,00,000	Aslam Civil Contractor, Taswaur Ahmed, Royal 23,00,000 0.74% Furniture, Rana furniture, Agarwal Furniture	
30	Electrical	Panel		1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.74% Balaji Electrical, National electricals, Self	
31	Graphite Purification	Nacuum Drum filter set up	1 ton/hr	1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.74% Universal Heavy Engineering	
32	LFP Purification	Vacuum Drum filter set up	1 ton/hr	1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.74% Universal Heavy Engineering	
33	Titanium Purification	n Vacuum Drum filter set up	1 ton/hr	1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.74% Universal Heavy Engineering	
34	Shredding	shredder	500 kg per hour	1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.74% AlfaTherm Limit	ed
35	Quality Control	sulphur carbon analyser	Carbon and sulphur analysis	1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.74%	


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Sr. No	. Process	Equipment	Specification	QTY	Price/ Unit	Cost	Transportation	nstallation	Total Cost	Tentative Supplier if Quotation not available	Name of Supplier if Quotation available
36	R&D	Electrostatic corona separator		1	20,00,000	20,00,000	1,00,000	2,00,000	23,00,000 0.7	74%	
37	Battery Refurbishing	Pouch Testing Machine		1	19,32,000	19,32,000	96,600	1,93,200	22,21,800 0.7	71%	
38	Battery Refurbishing	Prismatic Testing Machine		1	19,32,000	19,32,000	96,600	1,93,200	22,21,800 0.7	71%	
39	Warehouse	Racks & Mezanine	3500 sft	3500	500	17,50,000	87,500	1,75,000	20,12,500 0.6	65% Neelkamal, Supreme	
40	Battery Refurbishing	Screw Drivers withTorque		8	2,00,000	16,00,000	80,000	1,60,000	18,40,000 0.5	59%Cleco, Mountz	
41	Sealing & packging	Packaging machine		4	4,00,000	16,00,000	80,000	1,60,000	18,40,000 0.5	59% Hi Pack, Sampack etc	
42	Battery Refurbishing	Storage		10	1,60,000	16,00,000	80,000	1,60,000	18,40,000 0.5	59% Neelkamal, Supreme	
43	Graphite Purification	n Tray roster for graphite pugging	capacity- 200 kg/ batch	2	7,79,760	15,59,520	77,976	1,55,952	17,93,448 0.5	58%	
44	Graphite Purification	n Dryer	200 kg per hour,	2	7,79,760	15,59,520	77,976	1,55,952	17,93,448 0.5	58%	
45	Titanium Purification	n Tray roster for Titanium pugging	capacity- 200 kg/ batch	2	7,79,760	15,59,520	77,976	1,55,952	17,93,448 0.5	58%	
46	LFP Purification	Tray roster for Lithium pugging	capacity- 200 kg/ batch	2	7,79,760	15,59,520	77,976	1,55,952	17,93,448 0.5	58%	
47	Titanium Purification	n Dryer	200 kg per hour,	2	7,79,760	15,59,520	77,976	1,55,952	17,93,448 0.5	58%	
48	LFP Purification	Dryer	200 kg per hour,	2	7,79,760	15,59,520	77,976	1,55,952	17,93,448 0.5	58%	
49	R&D	mini crystalliser	SS vessel with cooling jacket	1	15,00,000	15,00,000	75,000	1,50,000	17,25,000 0.5	56% V G Engineers, Balaji Thin film Technology	
50	Lithium PP 1	SS 304 reactor flat bottom (one with steam jacket & another cooling jacket) with height difference	5 KL (dia-1.6 m, height 2.5 m, thickness 5mm	2	7,00,000	14,00,000	70,000	1,40,000	16,10,000 0.5	52% Fibrels, Tasawur Ahmed Fabrication	
51	Metal Separation	press filter	24 inch 25 plates	2	6,50,000	13,00,000	65,000	1,30,000	14,95,000 0.4	48%	Friends Engineers
52	Quality Control	XRF Gun	Instant metal analysis	1	12,00,000	12,00,000	60,000	1,20,000	13,80,000 0.4	14%Bruker, Hitachi	
53	Lithium Evaporation	Storage tank	10 KL (SS 304) rectangular (2mx2m)	1	12,00,000	12,00,000	60,000	1,20,000	13,80,000 0.4	14% Fibrels, Tasawur Ahmed Fabrication	
54	Lithium PP 1	Storage tank	5 KL (lbh:2.5x1x2)m, SS 304	2	6,00,000	12,00,000	60,000	1,20,000	13,80,000 0.4	44% Fibrels, Tasawur Ahmed Fabrication	
55	Mechanical Recyclin	Cooling tower Pipeline, Pump, ^g starter panel		2	6,00,000	12,00,000	60,000	1,20,000	13,80,000 0.4	44% Sunway industrial Solutions, Sapphire Cooling Towers	



The project cost of the proposed project as provided by **ARPL** is as tabulated below: Tentative Supplier if Ouotation not QTY Price/Unit Total Cost Name of Supplier if Quotation available available UV spectro photo meter Double For Higher concentration Quality Control 12.69.600 0.41% Laxco 56 1 55,200 1,10,400 solution analysis 11.04.000 11.04.000 Beam Centrifuge Centrifuge & Lifting device 36" 57 Lithium Washing 36". SS 304. 2 micron ppbag 1 53.250 1,06,500 12.24.750 0.39% 10.65.000 10.65.000 58 R&D OFS VAS Quanta Silver Plus 52,500 1.05.000 12.07.500 0.39% 1 10.50.000 10.50.000 59 Lithium Washing Trav drver 500 kg/dav 1 52.470 1.04.940 12.06.810 0.39% 10.49.400 10.49.400 Aslam Civil Contractor. Taswaur Ahmed. with conference table. 60 R&D 1 50.000 1.00.000 11.50.000 0.37% Royal Furniture, Rana furniture, Agarwal meeting room 10.00.000 10.00.000 board, furnitures Furniture Electrical Lighting AC Fans 50.000 1.00.000 11.50.000 0.37% Balaii Electrical. National electricals 61 1 10.00.000 10.00.000 11,50,000 0.37% Hannu & So. Traders Self Hamid & Sons. Chahat Traders. Aggarwal 3 MM 1,00,000 62 Ducting Ducting 1 50,000 10.00.000 10.00.000 Battery Refurbishing IR Matching Machine 50,000 1,00,000 11,50,000 0.37% HIOKI 63 1 10.00.000 10.00.000 Dismantling Automated dismantling syste. 50.000 1.00.000 64 Development cost 1 11,50,000 0.37% KV Consulting 10.00.000 10.00.000 65 LFP Leaching drum filter SS316. Mesh 3 MM 50,000 1,00,000 11,50,000 0.37% Pooja Trading, Bajrang Metals, Self 1 10.00.000 10.00.000 66 LTO Leaching drum filter SS316. Mesh 3 MM 1 50,000 1,00,000 11,50,000 0.37% Pooja Trading, Bajrang Metals, Self 10.00.000 10.00.000 porous rotary drum with motor SS316, Mesh 3 MM 11,50,000 0.37% Pooja Trading, Bajrang Metals, Self Shredding 67 1 50.000 1,00,000 10.00.000 10.00.000 set up Automated Cutting system 68 Cutting 500 kg per hour 50,000 1,00,000 11,50,000 0.37% Silicron Systems 1 10,00,000 10,00,000 Electrical panel with 125 KVA 69 4 50,000 1,00,000 11,50,000 0.37% Unicorn Automations 2,50,000 10,00,000 drive 70 R&D Filtration pump-set Drum filtration set 2 1,00,000 11,50,000 0.37% Vikas Scientific, Jagriti Enterprises 50,000 5.00.000 10.00.000 71 Security CCTV system 1 50.000 1.00.000 11.50.000 0.37% 10,00,000 10,00,000 Tarson/Remi, heating 400 °C 72 R&D 5 50,000 1,00,000 11,50,000 0.37% Magnetic stirrer of 5kg load 2,00,000 10,00,000 73 R&D Autoclave 1 L capacity, Parr autoclave 50,000 1,00,000 11,50,000 0.37% 1 10,00,000 10,00,000 50,000 1,00,000 74 R&D Pulverizer 1 11,50,000 0.37% 10,00,000 10,00,000 75 R&D Other consumables Miscellaneous 50,000 1,00,000 11,50,000 0.37% 1

10,00,000 10,00,000



1.1

Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost Tr	ansportation I	nstallation	Total Cost	Tentative Supplier if Quotation not available	Name of Supplier if Quotation available
76	R&D	Magnetic separator	Variable magnetic field strength and rpm	1	10,00,000	10,00,000	50,000	1,00,000	11,50,000 0.3	37%	
77	Renovation R&D			1	10,00,000	10,00,000			10,00,000 0.3	32% Tasawur Ahmed Fabrication	
78	Repair & renovation STP & ETP			1	8,31,000	8,31,000	41,550	83,100	9,55,650 0.3	31%	WATWA ENGINEERS PRIVATE LIMITED
79	Lithium PP 2	SS 304 reactor flat bottom (one with steam jacket & another cooling jacket) with height difference	3 KL (dia-1.5, height- 2m, thickness 12 mm with baffles)	2	4,00,000	8,00,000	40,000	80,000	9,20,000 0.3	30% Fibrels, Tasawur Ahmed Fabrication	
80	R&D	Rotary evaporator	capacity 5L, digital, with vacuum	1	8,00,000	8,00,000	40,000	80,000	9,20,000 0.3	30%	
81	R&D	PC/Laptops		10	75,000	7,50,000	37,500	75,000	8,62,500 0.2	28% Dell, Lenovo, HP	
82	Titanium Purificatio	Enclosed Space for Purification Section	1000	1000	700	7,00,000	35,000	70,000	8,05,000 0.2	26%	
83	LFP Purification	Enclosed Space for Purification Section	1000	1000	700	7,00,000	35,000	70,000	8,05,000 0.2	26%	
84	Lithium PP 2	Filter press	24 inch 25 plates	1	6,50,000	6,50,000	32,500	65,000	7,47,500 0.2	24%	Friends Engineers
85	Battery Refurbishing	g Fixture & Tables		20	31,500	6,30,000	31,500	63,000	7,24,500 0.2	23%	
86	Battery Refurbishing	Heat sinks & Thermal pads Station		5	1,25,000	6,25,000	31,250	62,500	7,18,750 0.2	23%	
87	Lithium PP 1	storage tank	SS 304, lbh=240 cmx 120 cmx 80 cm	2	3,00,000	6,00,000	30,000	60,000	6,90,000 0.2	22% Fibrels, Tasawur Ahmed Fabrication	
88	Battery Refurbishing	g Spot welding Machine		1	6,00,000	6,00,000	30,000	60,000	6,90,000 0.2	22% SEMCO	
89	Lithium Purification	Filter press	18 inch 12 plates	1	5,50,000	5,50,000	27,500	55,000	6,32,500 0.2	20%	Friends Engineers
90	Quality Control	particle size analyser	particle size analysis	1	5,26,332	5,26,332	26,317	52,633	6,05,282 0.3	19%	
91	Roasting	cyclone		1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.2	19% Chahat Traders, Hamid & Sons, 19% Akram Fabricators	
92	Roasting	Duct connection	3 mm	1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.2	19% Chahat Traders, Hamid & Sons, Akram Fabricators	
93	R&D	Hot oven air drier	Temp. 250 °C	1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.3	19% Kencor System	
94	R&D	Mini rotary kiln		1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.2	19% Kencor Systems or Alpha therm or KV consulting	
95	Cutting	Automated Cutting system	Development cost	1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.3	19% KV Consulting	



The project cost of the proposed project as provided by **ARPL** is as tabulated below:

he p	roject cost o	f the proposed proje	ect as provided b	y ARP	L is as tab	ulated b	elow:			1.1
Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost Tr	ansportation In	stallation	Total Cost [%] Tentative Supplier if Quotation not available	Name of Supplier if Quotation available
96	Warehouse	Bins		1000	500	5,00,000	25,000	50,000	5,75,000 0.19% Neelkamal, Supreme, Tirupati	011
97	Furniture	Furniture		1	5,00,000	5,00,000	25,000	50,000	Royal Furniture, Rana furniture, 5,75,000 Agarwal Furniture	
98	Roasting	high temperature bag house/dust collector		1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.19%	
99	R&D	magnetic separator	100 kg per hr, with variable RPM and field strength	1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.19% KV Consulting	
100	R&D	size siever	2 Micron	1	5,00,000	5,00,000	25,000	50,000	5,75,000 ^{0.19%}	
101	R&D	centrifuge	12" SS316 , cloth PP 2 micron	1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.19%	
102	R&D	Chemicals		1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.19%	
103	R&D	Office accessories		1	5,00,000	5,00,000	25,000	50,000	5,75,000 0.19%	
104	Battery Refurbishing	capacity Sorting Machine		1	4,50,000	4,50,000	22,500	45,000	5,17,500 ^{0.17%} SEMCO	
105	R&D	press filter	12"X12", PP plates with filter cloth of 2 micron PP, PP tray, slurry pump	1	4,50,000	4,50,000	22,500	45,000	5,17,500 ^{0.17%}	Friends Engineers
106	R&D	Filtration pump-set	Buckner funnel with suction pump	3	1,50,000	4,50,000	22,500	45,000	5,17,500 ^{0.17%}	
107	Graphite Purification	storage tank of wash liquor	4kL dia -1.6 m, height-2m, thickness - 10 mm, FRP with flat buttom, MS support	2	2,20,000	4,40,000	22,000	44,000	5,06,000 ^{0.16%}	Fibrels
108	Titanium Purification	storage tank of wash liquor	4kL dia -1.6 m, height-2m, thickness - 10 mm, FRP with flat buttom, MS support	2	2,20,000	4,40,000	22,000	44,000	5,06,000 ^{0.16%}	Fibrels
109	LFP Purification	storage tank of wash liquor	4kL dia -1.6 m, height-2m, thickness - 10 mm, FRP with flat buttom, MS support	2	2,20,000	4,40,000	22,000	44,000	5,06,000 ^{0.16%}	Fibrels
110	Battery Refurbishing	Shocking & Enviromental chamber		1	4.00.000	4.00.000	20,000	40,000	4.60.000 ^{0.15%} SEMCO	

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baffle MS support



The project cost of the proposed project as provided by ARPL is as tabulated below:											
Sr. No	Process	Equipment	Specification	QTY	Price/ Unit	CostTra	ansportation In	stallation	Total Cost	% Tentative Supplier if Quotation not available	Name of Supplier Quotation availab
111	Graphite Purification	Agitator with Motor & gearbox	5 hp, ss shaft with blades frp coated	2	2,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
112	Graphite Purification	Grinder (For input and FG)	500 kg per hour	2	2,00,000	4,00,000	20,000	40,000	4,60,000	%	
113	LFP Purification	Agitator with Motor & gearbox	5 hp, ss shaft with blades frp coated	2	2,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
114	LFP Purification	Grinder (For input and FG)	500 kg per hour	2	2,00,000	4,00,000	20,000	40,000	4,60,000	%	
115	Lithium Washing	SS 304 reactor flat bottom (one with steam jacket & another cooling jacket) with height difference	1.5 KL (dia-0.5, height-2m, thickness 12 mm)	2	2,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
116	Titanium Purification	Agitator with Motor & gearbox	5 hp, ss shaft with blades frp coated	2	2,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
117	Titanium Purification	Grinder (For input and FG)	500 kg per hour	2	2,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
118	R&D	Muffel Furnace	Temp. 1400 °C	2	2,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
119	R&D	Glasswares	complete set	1	4,00,000	4,00,000	20,000	40,000	4,60,000 ^{0.15}	%	
120	Shredding	storage tank	10 KI FRP PPGI	1	3,95,000	3,95,000	19,750	39,500	4,54,250 ^{0.15}	%	Fibrels
121	Graphite Purification	Reactors	2 KL, dia-1.2 m, height- 2 m, thickness - 15 mm, FRP+PPGL with spherical bottom, baffle MS support	2	1,77,500	3,55,000	17,750	35,500	4,08,250 ^{0.13}	%	Fibrels
122	Graphite Purification	water storage tank	2 kL (dia-1.2 m, height- 2 m, thickness - 15 mm) frp tank	2	1,77,500	3,55,000	17,750	35,500	4,08,250 ^{0.13}	%	Fibrels
123	Titanium Purification	Reactors	2 KL, dia-1.2 m, height- 2 m, thickness - 15 mm, FRP+PPGL with spherical bottom, baffle MS support	2	1,77,500	3,55,000	17,750	35,500	4,08,250 ^{0.13}	%	Fibrels
124	Titanium Purification	water storage tank	2 kL (dia-1.2 m, height- 2 m, thickness - 15 mm) frp tank	2	1,77,500	3,55,000	17,750	35,500	4,08,250	%	Fibrels
125	LFP Purification	water storage tank	2 kL (dia-1.2 m, height- 2 m, thickness - 15 mm) frp tank	2	1,77,500	3,55,000	17,750	35,500	4,08,250	%	Fibrels
126	Lithium Purificatio	Enclosed Space for Purificatio	on 500 SFT	500	700	3,50,000	17,500	35,000	4,02,500 ^{0.13}	%	
127	R&D	storage tanks	500 litre, Frp PPGL	4	80,000	3,20,000	16,000	32,000	3,68,000	%	Fibrels
128	LFP Purification	Reactors	2 KL, dia-1.2 m, height- 2 m, thickness - 12 mm, FRP+PPGL with spherical bottom,	2	1,52,000	3,04,000	15,200	30,400	3,49,600 ^{0.11}	%	Fibrels

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The p	roject cost of t	he proposed project	as provided by ARPL is as tabulate	ed belo)w:				21	
Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost Tra	ansportation I	nstallation	Total Cost % Tentative Supplier if Quotation not available	Name of Supplier if Quotation available
129	Punching	collection tray		2	1,50,000	3,00,000	15,000	30,000	3,45,000 0.11% Universal Engeneering, Silicron Systems	
130	Graphite Purification	filtrate collection tank	1 kL, (1x1x1)m , FRP 15 mm	2	1,47,500	2,95,000	14,750	29,500	3,39,250 0.11%	Fibrels
131	Titanium Purification	n filtrate collection tank	1 kL, (1x1x1)m , FRP 15 mm	2	1,47,500	2,95,000	14,750	29,500	3,39,250 0.11%	Fibrels
132	LFP Purification	filtrate collection tank	1 kL, (1x1x1)m , FRP 15 mm	2	1,47,500	2,95,000	14,750	29,500	3,39,250 0.11%	Fibrels
133	Roasting	conveyor and hopper	20 ft	1	2,76,600	2,76,600	13,830	27,660	3,18,090 0.10%	Perfection Engineering Corporation
134	Punching	conveyor and hopper	20 ft	1	2,76,600	2,76,600	13,830	27,660	3,18,090 0.10%	Perfection Engineering Corporation
135	Lithium Purification	Storage tank	5 KL (ppgl with frp)	1	2,75,000	2,75,000	13,750	27,500	3,16,250 0.10%	Fibrels
136	Metal Separation	storage tank	2 KL PPGI FRP	2	1,35,000	2,70,000	13,500	27,000	3,10,500 0.10%	Fibrels
137	Battery Refurbishing	Precise Volt & Amp Meter		3	90,000	2,70,000	13,500	27,000	3,10,500 0.10%	
138	Quality Control	COD Analyzer		1	2,70,000	2,70,000	13,500	27,000	3,10,500 0.10%	
139	LTO Leaching	storage tank	5 KL PPGL FRP	1	2,50,000	2,50,000	12,500	25,000	2,87,500 0.09%	Fibrels
140	LTO Leaching	storage tank	5 KI	1	2,50,000	2,50,000	12,500	25,000	2,87,500 0.09%	Fibrels
141	LFP Leaching	storage tank	5 KL PPGL FRP	1	2,50,000	2,50,000	12,500	25,000	2,87,500 0.09%	Fibrels
142	LFP Leaching	storage tank	5 KL PPGL FRP	1	2,50,000	2,50,000	12,500	25,000	2,87,500 0.09%	Fibrels
143	Battery Refurbishing	Suits & Matts		4	60,000	2,40,000	12,000	24,000	2,76,000 0.09%	
144	Battery Refurbishing	Dust Duckt Chamber		2	1,10,000	2,20,000	11,000	22,000	2,53,000 0.08%	
145	Lithium Purification	Reactor with conical bottom	3 KL (dia-1.5, height-2m thickness 12 mm with baffles), ppgl with frp	1	2,03,000	2,03,000	10,150	20,300	2,33,450 0.08%	Fibrels



Гhe p	roject cost of	the proposed proje	ct as provided by ARPL is as tal	bulate	d below:						1/1
Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost Tra	nsportation In	stallation	Total Cost %	, Tentative Supplier if ⁶ Quotation not available	Name of Supplier if Quotation available
146	LTO Leaching	Agitator with Motor & gearbox	5 hp, ss shaft with blades frp coated	1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	Premier Machinery Store, 6 Bajranj Metal, Bharat Rubbers, Self	
147	Lithium PP 1	Gear box with motor & VFD	3hp, 3phase	2	1,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6 Unicorn Auromation	
148	LFP Leaching	Agitator with Motor & gearbox	5 hp, ss shaft with blades frp coated	1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
149	Lithium PP 1	Agitator	SS 304, turbine blades	2	1,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
150	Roasting	collection tray		1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
151	Shredding	scraper		1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
152	R&D	Tray drier	100 kg per hr	1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6Kencor	
153	R&D	compressor		1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
154	R&D	AOD pump		4	50,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
155	Warehouse	Trolleys		20	10,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
156	Quality Control	Moisture analyser	moisture in FG / RM	1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
157	Quality Control	Walk-In fume hood	· · · · · · · · · · · · · · · · · · ·	1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
158	R&D	Distillation unit	min. 20 L/day complete set	1	2,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
159	R&D	Hot plate (large size)	Temp. 300 °C	2	1,00,000	2,00,000	10,000	20,000	2,30,000 0.07%	6	
160	Battery Refurbishing	Cutter	· · · · · · · · · · · · · · · · · · ·	2	80,000	1,60,000	8,000	16,000	1,84,000 0.06%	6	
161	LTO Leaching	reactor	2 KL, dia-1.2 m, height- 2 m, thickness - 12 mm, FRP+PPGL with spherical bottom, baffle MS support	1	1,52,000	1,52,000	7,600	15,200	1,74,800 0.06%	6	Fibrels
162	LFP Leaching	reactor	2 KL, dia-1.2 m, height- 2 m, thickness - 12 mm, FRP+PPGL with spherical bottom, baffle MS support	1	1,52,000	1,52,000	7,600	15,200	1,74,800 0.06%	6	Fibrels
163	Graphite Purification	Blender with Motor & Gearbox	500 kg	1	1,50,000	1,50,000	7,500	15,000	1,72,500 0.06%	6	
164	LFP Purification	Blender with Motor & Gearbox	500 kg	1	1,50,000	1,50,000	7,500	15,000	1,72,500 0.06%	6	
165	Roasting	wet scrubber		1	1,50,000	1,50,000	7,500	15,000	1,72,500 0.06%	6	
166	Titanium Purification	Blender with Motor & Gearbox	500 kg	1	1,50,000	1,50,000	7,500	15,000	1,72,500 0.06%	6	
167	Quality Control	Benchtop Fume hood		1	1,50,000	1,50,000	7,500	15,000	1,72,500 0.06%	6	
168	Lithium Washing	Storage tank	2 KL (FRP/ppgl) 10 mm	1	1,35,000	1,35,000	6,750	13,500	1,55,250 0.05%	6	Fibrels
169	LFP Leaching	vibrofeeder	MS 5 MM thicknes,	1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.05%	6	
170	LTO Leaching	vibrofeeder	MS 5 MM thicknes.	1	1.25.000	1.25.000	6.250	12.500	1.43.750 0.05%	6	
171	Metal Separation	shaking table		1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.05%	6	
172	Metal Separation	pulveriser		1	1.25.000	1.25.000	6.250	12.500	1.43.750 0.05%	6	
173	Graphite Purification	over head acid storage tank	0.5 kL (dia-0.8 m, height- 1m, thickness-15mm)	1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.05%	6	Fibrels
174	Lithium Purification	Storage tank(collection tank)	500 L (ppgl with frp) 15 mm	1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.05%	6	Fibrels
175	Lithium PP 2	storage tank (collection tank)	500 L (FRP/ppgl) 15 mm	1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.05%	6	Fibrels



The	project cost of	the proposed project	as provided by ARPL is as tabulat								
Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost	Transportation	Installation	Total Cost	% Tentative Supplier if Quotation not available	Name of Supplier if Quotation available
176	Titanium Purification	over head acid storage tank	0.5 kL (dia-0.8 m, height- 1m, thickness-15mm)	1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.	05%	Fibrels
177	LFP Purification	over head acid storage tank	0.5 kL (dia-0.8 m, height- 1m, thickness-15mm) MS tank	1	1,25,000	1,25,000	6,250	12,500	1,43,750 0.	05%	Fibrels
178	Shredding	amna		2	60.000	1.20.000	6.000	12.000	1.38.000 0.	04%	Airtech Pumps and Equipments
179	Metal Separation	pump	3hp, 3phase, inlet out let 2"	2	60,000	1,20,000	6,000	12,000	1,38,000 0.	04%	Airtech Pumps and Equipments
180	Metal Separation	slurry pump	3hp. 3phase, inlet out let 2"	2	60.000	1.20.000	6.000	12.000	1.38.000 0.	04%	Airtech Pumps and Equipments
181	LTO Leaching	oump	SS 316, 3hp, inlet-outlet 1 inch	2	60.000	1.20.000	6.000	12.000	1.38.000 0.	04%	Airtech Pumps and Equipments
182	I FP Leaching	pump	SS 316, 3hp, inlet-outlet 1 inch	2	60.000	1.20.000	6.000	12.000	1.38.000 0.	04%	Airtech Pumps and Equipments
183	Battery Refurbishing	Spray Gun		2	56,000	1,12,000	5,600	11,200	1,28,800 0.	04%	
184	Graphite Purification	Sump with a pump	capacity KL with vertical sealless pump PP, inlet 2" out let 1.5", 5 MM FRP	1	1,02,500	1,02,500	5,125	10,250	1,17,875 0.	04%	Airtech Pumps and Equipments
185	Titanium Purification	Sump with a pump	capacity KL with vertical sealless pump PP, inlet 2" out let 1.5", 5 MM FRP	1	1,02,500	1,02,500	5,125	10,250	1,17,875 0.	04%	Airtech Pumps and Equipments
186	LFP Purification	Sump with a pump	capacity KL with vertical sealless pump PP, inlet 2" out let 1.5", 5 MM FRP	1	1,02,500	1,02,500	5,125	10,250	1,17,875 0.	04%	Airtech Pumps and Equipments
187	Battery Refurbishing	Low to High Charge(R& D Machine)		1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04% Chroma	
188	LFP Leaching	dosing pump	Sealless	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
189	Lithium PP 2	Gear box with motor, vfd	3hp, 3phase, 60 RPM output	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
190	Lithium PP 2	Agitator	SS 304, turbine blades	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
191	Lithium Purification	Gear box with motor	5hp, 3phase	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
192	Lithium Purification	Agitator	SS 304, turbine blades	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
193	Lithium Washing	Gear box with motor	3hp, 3phase, 60 RPM output	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
194	Lithium Washing	Agitator	SS 304, turbine blades	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
195	LTO Leaching	dosing pump	Sealless	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
196	R&D	pulveriser	100 kg per hour	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
197	R&D	Autoclave	2 L (Parr)	1	1,00,000	1,00,000	5,000	10,000	1,15,000 0.	04%	
198	Quality Control	BOD meter		1	1.00.000	1.00.000	5.000	10.000	1.15.000 0.	04%	
199	R&D	Plastic wares	complete set	1	1.00.000	1.00.000	5.000	10.000	1.15.000 0.	04%	
200	Warehouse	Pallet Trcuks		5	18,500	92,500	4,625	9,250	1,06,375 0.	03%	Fakira Enterprises
201	R&D	Weighing balance	max 220 g of accuracy in 4 digit	1	80,000	80,000	4,000	8,000	92,000 0.	03%	
202	Lithium Washing	solution transfer pump	PP/teflon, 2hp, inlet out let 2"	1	75,000	75,000	3,750	7,500	86,250 0.	03%	Airtech Pumps and Equipments
203	Warehouse	Office	Fabrication work	200	365	73,000	3,650	, 7,300	83,950 0.	03% Tasawur Ahmed Fabrication	
204	Battery Refurbishing	Drill Machine		2	36,000	72,000	3,600	7,200	82,800 0.	03%	
205	Graphite Purification	Graphite collection BIN	500 kg capacity SS	2	35,000	70,000	3,500	7,000	80,500 0.	03% Akram Fabricator, Bajrag Metal	44



The p	roject cost of t	he proposed project a	as provided by ARPL is as tabulate	ed belo	w:					1/1	
Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost	Transportation I	nstallation	Total Cost	Tentative Supplier if [%] Quotation not available	Name of Supplier if Quotation available
206	LFP Purification	Ferric Phosphate collection BIN	500 kg capacity SS	2	35,000	70,000	3,500	7,000	80,500 0.0)3% Akram Fabricator, Bajrag Metal	
207	Titanium Purification	Titanium collection BIN	500 kg capacity SS	2	35,000	70,000	3,500	7,000	80,500 0.0)3% Akram Fabricator, Bajrag Metal	
208	Graphite Purification	Transfer pump	5hp	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
209	Lithium Purification	Slurry pump	SS 316, 3hp, inlet-outlet 1 inch	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
210	Lithium Purification	solution transfer pump	SS 304, 2 hp in out 1 inch	1	60,000	60,000	3,000	6,000	69,000 0.0	02%	Airtech Pumps and Equipments
211	Lithium PP 2	Slurry pump	SS 316, 3hp, inlet-outlet 1 inch	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
212	Lithium PP 2	solution transfer pump	3hp, 3phase, inlet out let 2"	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
213	Roasting	pump		1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
214	LTO Leaching	pump	SS 316, 3hp, inlet-outlet 1 inch	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
215	Titanium Purification	Transfer pump	5hp	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
216	LFP Leaching	pump	SS 316, 3hp, inlet-outlet 1 inch	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
217	LFP Purification	Transfer pump	5hp	1	60,000	60,000	3,000	6,000	69,000 0.0)2%	Airtech Pumps and Equipments
218	Battery Refurbishing	Buffing		2	30,000	60,000	3,000	6,000	69,000 0.0)2%	
219	Lithium PP 2	MS structure	For filter press	1	50,000	50,000	2,500	5,000	57,500 0.0	22% Chahat Traders, Hamid & Sons, Akram Fabricators	
220	Lithium Purification	MS structure	For filter press	1	50,000	50,000	2,500	5,000	57,500 0.0	Chahat Traders, Hamid & Sons, Akram Fabricators	
221	Lithium Washing	MS structure		1	50,000	50,000	2,500	5,000	57,500 0.0	Chahat Traders, Hamid & Sons, Akram Fabricators	
222	Quality Control	PC for Instrument		1	50,000	50,000	2,500	5,000	57,500 0.0	02% HP Lenovo Dell	
223	Lithium Washing	Grinder	50 kg/h	1	50,000	50,000	2,500	5,000	57,500 0.0	02% Ramson Industries	
224	Lithium PP 1	Tripp valve	SS 304, dia 1 inch	2	25,000	50,000	2,500	5,000	57,500 0.0)2%	
225	R&D	Reactor with agitator & heater	SS 316, capacity 20 L (1 no)	1	50,000	50,000	2,500	5,000	57,500 0.0)2%	
226	Quality Control	Vent & hood with blower	with motor 4" SS pipe Bends flanges & 15 ft SS pipe	1	50,000	50,000	2,500	5,000	57,500 0.0)2%	
227	Quality Control	Oil free Compressor	HS-WP-IT 20 lit capacity	1	50,000	50,000	2,500	5,000	57,500 0.0)2%	
228	Quality Control	47 lit Acetylene gas cylinder 2 No	o to be purchased from local	2	25,000	50,000	2,500	5,000	57,500 0.0)2%	
229	Quality Control	Micro pipettes		1	50,000	50,000	2,500	5,000	57,500 0.0)2%	
230	Quality Control	SS hot plate		2	25,000	50,000	2,500	5,000	57,500 0.0)2%	
231	Quality Control	Platinum Crucible	Ti fusion	1	50,000	50,000	2,500	5,000	57,500 0.0)2%	
232	Quality Control	Tapped density meter		1	50,000	50,000	2,500	5,000	57,500 0.0	02%	
233	R&D	Appron	as per site	1	50,000	50,000	2,500	5,000	57,500 0.0	02%	
234	Battery Refurbishing	Saw Tool		2	24,000	48,000	2,400	4,800	55,200 0.0)2%	
235	Quality Control	distilled water unit		1	40,000	40,000	2,000	4,000	46,000 0.0	01%	



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The project cost of the proposed project as provided by **ARPL** is as tabulated below:

Sr. No.	Process	Equipment	Specification	QTY	Price/ Unit	Cost	Transportation	Installation	Total Cost	[%] Tentative Supplier if Quotation not available	Name of Supplier if Quotation available
236	R&D	Weighing balance	max 1 kg of accuracy in 3 digit	1	40,000	40,000	2,000	4,000	46,000 0.0	1%	
237	Battery Refurbishing	High Pressure Jack		1	30,000	30,000	1,500	3,000	34,500 0.0	1%	
238	R&D	Eh-pH meter	Thermo-Scientific	2	15,000	30,000	1,500	3,000	34,500 0.0	1%	
239	Lithium PP 2	Tripp valve	SS 304, dia 1 inch	1	25,000	25,000	1,250	2,500	28,750 0.0	1%	
240	Quality Control	47 lit N2O gas cylinder 1 No	to be purchased from local	1	25,000	25,000	1,250	2,500	28,750 0.0	1%	
241	Quality Control	1/4" gas control box	With pressure guage , Regulator , On / Off Valve for Air , Acetylene & N2O	2	12,000	24,000	1,200	2,400	27,600 0.0	1%	
242	Lithium PP 1	Gate valve 4 inch with flange	SS 304	2	10,000	20,000	1,000	2,000	23,000 0.0)1%	
243	R&D	barrel pump	Electrical, SS316 made	4	5,000	20,000	1,000	2,000	23,000 0.0	1%	
244	Quality Control	hot air oven		1	20,000	20,000	1,000	2,000	23,000 0.0	1%	
245	Quality Control	Water Bath		1	20,000	20,000	1,000	2,000	23,000 0.0	01%	
246	R&D	Weighing balance	max 30 kg of acuracy in 3 digit	1	20,000	20,000	1,000	2,000	23,000 0.0	1%	
247	R&D	Magnetic stirrer with ceramic to	p capacity- 10 L & 5 L (2 & 2 nos)	6	2,000	12,000	600	1,200	13,800 0.0	0%	
248	Battery Refurbishing	Trolly		1	10,000	10,000	500	1,000	11,500 0.0	0% JBL State clean/ Tasvir Enterprise	
249	Battery Refurbishing	Compressor		1	10,000	10,000	500	1,000	11,500 0.0	Quadornix systech technologies	
250	Quality Control	1/4" SS Tube	100 Ft	1	10,000	10,000	500	1,000	11,500 0.0	0%	
251	Quality Control	Moisture drain filter		1	10,000	10,000	500	1,000	11,500 0.0	0%	
252	Quality Control	Automatic drain filter		1	10,000	10,000	500	1,000	11,500 0.0	0%	
253	Quality Control	Single cylinder Manifold	With Bracket for Acetylene & N2O	1	10,000	10,000	500	1,000	11,500 0.0	0%	
254	Quality Control	Two stage pressure cylinder Regulator for N2O	inlet pressure 0-220 kg/cm2 Outlet Pressure 0- 14 kg/cm2 for N2O	1	7,000	7,000	350	700	8,050 0.0	0%	
255	Quality Control	Preheater for N2O		1	7,000	7,000	350	700	8,050 0.0	0%	
256	Quality Control	Two stage pressure cylinder Regulator for acetylene	inlet pressure 0-40 kg/cm2 Outlet Pressure 0- 2.5 kg/cm2 for N2O	1	7,000	7,000	350	700	8,050 0.0	0%	
257	Lithium PP 2	ball valve with flange	SS 304	1	5,000	5,000	250	500	5,750 0.0	0%	
258	Quality Control	PVC Casing	50 Ft	1	5,000	5,000	250	500	5,750 0.0	0%	
259	Quality Control	SS Blended Pigtail		1	5,000	5,000	250	500	5,750 0.0	0%	
260	Quality Control	Fittings		1	5,000	5,000	250	500	5,750 0.0	0%	
	Total								31,07,66,690		

K&A Comments:

We have received some quotations for the plant & machinery cost and estimate for the balance Plant & Machinery. However, considering the current situation of the project and based on the discussion with the management, we understand the project cost is estimated based on their experience and said project cost is much lesser than the other global players. Further, we advise lenders to obtain the undertaking from promoters to fund the deficit (if any) arises due to increase in project

Means of Finance



The Means of Finance proposed for the Project by **ARPL** is as follows:

Means of Finance	INR	in Crore
Particulars	Amount	%
Promoter's Contribution	11.41	29%
Term Loan	28.00	71%
Total	39.41	100%
K&A Comments The project is majorly funded by bank finance of II amount of INR 11.41 Crore funded by Promoters.	NR 28.00 Crore, and	d balance
The moratorium period for the loan is 14 months v	vith the first disburs	sement in

November 2023. The total loan tenure is 65 months with repayments concluding by March 2029. The interest rate for the said term loan is 9.90%.



Technical Assessment



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Location of Site



The land for the proposed expansion of the lithium ion battery recycling facility by **ARPL** is located on land bearing **Khasra No. 172k**, **Khatoni 52**, **Raipur Industrial Area**, **Roorkee**, **Taluka Bhagwanpur**, **District Haridwar**, **Uttarakhand – 247 661** admeasuring total plot area of **approx. 2,541 Sq. Mtr.** The coordinates of the site are **29°57'11.2"N 77°47'53.3"E**.



Location of Site





Existing Building Layout



The layout of the existing facility is as follows:-



Proposed Building Layout



The layout of the proposed structure erected to house the lithium ion expansion facility is as follows:-



K&A Comments

We have received the tentative layout from the architect. We advise the lenders to obtain the requisite approvals (approved lavout and building plans from the Local Authority) prior to COD of respective unit.

Project Implementation Schedule



The tentative implementation schedule for the proposed project is as detailed below :-Feb-Nov-Dec-Start Oct-Apr-Aug-Sep-Oct-23 24 24 Jul-24 Activity Finish date 23 23 24 24 24 25 date н HH Land Acquisition Completed Plan Approval Dec-23 Dec-23 **Building Construction/Renovation** Jan-24 Jun-24 **Machinery Orders Placement** Jan-24 Dec-23 **Machinery Foundations** Jun-24 Apr-24 Arrival of Machinery at the site Aug-24 Jun-24 **Erection of Machinery** Sep-24 Jul-24 Installation and commissioning Oct-24 Oct-24 Trial run Nov-24 Nov-24 **Commercial Production** Dec-24

K&A Comments

The timeline allocated for each activity / task is found to be adequate. Considering proper resource allocation and smooth fund flow in the project, the project shall commissioned by **January 1, 2025**. We recommend the lenders to appoint a lenders independent engineer to monitor the fortnightly progress of the project to mitigate the risk.

Statutory Approvals



As per details provided by	ARPL, the status of sta	atutory approvals is	s as labulated below:				
Document	Authority	Reference No.	Dated	Remarks	Reference No.	Dated	Remarks
			Existing premises			Propos	ed expansion
PAN Details	Gujarat Goods and Service Tax Act, 2017	AAGCA8859A	-	GST Registration Active for Maharashtra, Uttarakhand, Haryana, Delhi, Tamil Nadu & Uttar Pradesh	58	-	-
Importer Exporter Code	Ministry of Commerce and Industry			Not received for our perusal	-	-	-
Factory License	Labour Department, Uttarakhand	HWR-767	Valid from 08-05-2009 until 31-12-2023	License for a total of 500 persons and using motive power not exceeding 2,000 HP.	-	-	Revised license to be obtained taking into account the increased workforce.
Environmental Clearance	Ministry of Environment and Forests (I.A. Division), Government of India		SIO	Not received for our perusal	-	-	To be obtained prior to commencement of construction activity
Consent to Establish	Uttarakhand Pollution Control Board	·ccu	2		-	-	To be obtained prior to commencement of construction activity
Consent to Operate	Uttarakhand Pollution Control Board	UKPCB/HO/Con/A- 124/2022/1190	Dated 10.10.2022 & valid until 31-03-2023	Application done to UPCB for including recycling/refurbishment of batteries in the consent to operate.	-	-	To be obtained prior to commencement of production/processing.
Registration for Recyclng and Processing of Plastic Waste	Uttarakhand Pollution Control Board	PR-19-UTT-10- AAGCA8859A-22	Dated 19-10-2022	_	-	-	-
Authorization for the Collection, transportation, reception, recycling and recovery of hazardous waste	Uttarakhand Pollution Control Board	UKPCB/HO/HAZ-Reg- 21/2021-22/124	Dated 07-06-2021 and valid until 31-03-2024	Approval for total quantity of 363 MT/Month of Hazardous Waste	-	-	-
Authorisation for generation or storage or treatment or refurbishing or disposal of e- waste by manufacturer or	Uttarakhand Pollution Control Board	UEPPCB/HO/E- Waste/A-1/2021/94	Dated 18-05-2021 and valid until 31.03.2024	Approval for 12,000 MT/Month of electric and electronic waste	-	-	-
refurbisher							

Statutory Approvals



As per details provided by **ARPL**, the status of statutory approvals is as tabulated below: **Reference No.** Reference No. Dated Remarks Existing premises Proposed expansion Membership Certificate for Membership Certificate from Bharat BOWML/R/1400/14 Valid until 01-03-**Oil & Waste Management Limited** 2023 disposing hazardous waste (BOWML) Department of Town and Country **Building Approved Plans** Not received for our perusal To be obtained prior to initiation Planning, Uttarakhand of construction activity NOC granted for the total building Fire NOC Chief Fire Officer. Haridwar 6/CFP-R/2022 Dated 08-08-2022 To be obtained for the proposed & valid until 07comprising of G+1 constructed on plot area structure after construction is admeasuring s 9,729,00 square meters and 08-2025 completed the covered area of the said building is 6,224.50 square meters NOC for Ground Water CGWA/NOC/IND/ORI Valid from 16-07-NOC to abstract 9.900 m3/year of fresh Department of Water Resources. Abstraction G/2022/16441 2022 until 15-07water from the borewell. River Development & Ganga 2025 Reiuvenation. Central Ground Water Authority Not received for our perusal NA Order Collector and District Magistrate To be obtained prior to initiation of construction activity **Electricity Load Approval** Assistant Director of Boiler. Dated 16-02-2022 Maximum working pressure for the boiler -**Boiler Certificate** UR-497 _ Uttarakhand & valid until 15to be 10.54 kg/cm2 02-2023 **BQC Assessment Private Limited** ISO 45001:2018 Certification I-OSC202204010 Dated 13-04-2022 Certification with regards to Occupational -_ Health & Safety Management System **BQC Assessment Private Limited** ISO 14001:2015 Certification I-ESC202204011 Dated 13-04-2022 Certification with regards to Environmental -Management System BQC Assessment Private Limited ISO 9001:2015 Certification Dated 13-04-2022 Certification with regards to Quality -I-QSC202204029 Management System

K&A Comments

Considering the current stage of the project, We recommend **ARPL** to obtain the requisite approvals like the Environmental Clearance, Consent to Establish & Approved building plans from the statutory authorities prior to commencement of construction activity. Considering the background of the promoters and the past experience of the company in the e-waste recycling business, we do not anticipate any approval risk for the said project.

Raw Material Procurement



As per details available for our perusal, the company has made the agreement with the vendors for supply of Raw Material. The details of agreement is tabulated below:

Sr.No.	Industry Type	Company Name	Location	Agreement Signed	Material Type	Current Volume MT/Yearly	Agreement Date
1	Electric Vehicles	ARAI	India	Y	Scrap all type of batteries	20	2020
2	Electric Vehicles	Tata Motors Ltd	India	In Process	LFP battery & Cells	50	
3	Electric Vehicles	Tata Auto Comp Ltd	India	In Process	LFP battery & Cells	50	
4	Battery Manufacture	Octillion Power Systems India Pvt. Ltd.	India	Y	Battery Pack Manufacturer	50	2020
5	Battery Manufacture	Exicom Power Solutions	India	Ν	Battery Pack Manufacturer	80	
6	Battery Manufacture	PuR Energy Pvt. Ltd	India	Ν	Battery Pack Manufacturer	20	
7	Telecom	Reliance Jio Infocomm Ltd	India	Y	Storage Batteries	800	2020
8	Aggregator	GRS Batteries Foundation	Germany	Y	All type of Batteries	1200	2017
9	Consumer Durable	Jabil Inc.	USA	Y	Appliances battery	20	2017
10	Aggregator	eCycling Tracing	USA	Y	Mobile Batteries	500	2016
11	Battery Manufacture	Evolute	India	Ν	BMS	20	
12	Aggregator	uRecycle Group OY	Finland	Y	All type of Batteries	500	2018
13	Consumer Durable	Bajaj Electricals Ltd	India	In Process	Appliances battery	10	
14	Electric Vehicles	Maruti Suzuki India Ltd	India	Ν	LFP battery & Cells	50	
15	Electric Vehicles	Mercedes-Benz Research & Development NA Inc	USA	Ν		70	
16	Aggregator	Saleular Inc	USA	Ν	Mobile Batteries	200	2017
17	Aggregator	P4C Global Inc.	USA	Ν	Mobile Batteries	200	2017
18	Battery Manufacture	American Lithium Energy Corp	USA	Ν	Battery Pack Manufacturer	300	2017
19	Battery Manufacture	Beckett Energy Systems	USA	Ν		300	2017
20	Battery Manufacture	Valence Technology	USA	Ν		150	2018

Source: ARPL

Raw Material Procurement



Sr.No.	Industry Type	Company Name	Location	Agreement Signed	Material Type	Current Volume MT/Yearly	Agreement Date
21	Aggregator	GlobalTech Environmental Corp	USA	Ν	All type of Batteries	350	2017
22	Aggregator	Belmont Trading Company	UK	Ν	All type of Batteries	400	2017
23	Aggregator	Sources & Solutions LLC	USA	Y	All type of Batteries	350	2017
24	Aggregator	Spiers New Technology	USA	Ν	All type of Batteries	1000	
25	Aggregator	Hyla	USA	N	All type of Batteries	400	
26	Electric Vehicles	Tesla	USA	Ν	EV	1000	
27	Battery Manufacture	Imperium3	USA	N		350	
28	Electric Vehicles	Honda	Japan	Ν	EV	200	
29	Aggregator	P.H.U.PROecco	Poland	N	All type of Batteries	300	2017
Sourc	e: Attero	1:50					

K&A Comments

ARPL has been tying up with established sources and Auto OEMs in India through contracts for the sourcing of E Waste and Li-ion Battery right from 2017 onwards. With the EV market picking up in India, the Auto OEMs are showing heightened activity towards Li-ion Battery recycling for environmental reasons. Considering the current market situation with respect to uses of the electronic appliances and awareness of recycling of e-waste and In-hand contract for supply of e-waste with **ARPL**, **K&A** feels that the RM sourcing would not be an issue for the **ARPL** for the said plant.

Selling and Marketing Arrangement

As per the details available for our perusal, the list of targeted customer are as tabulated below:

E-waste Recycling

Financial Year	FY24
Company Name	Quantity (MT)
Orient Electric	10,000
Bajaj Electrical	10,000
Halonix	5,000
Havells	10,000
Signify	5,000
Crompton	4,000
Haier	1,000
Vivo	1,000
Bluestar	1,000
V- Guard	4,000
Lenovo	1,000
Symphony	1,000
Livgurad	1,800
HMD	400
WRL	900
Microtek	500
Versuny (Philips Home Appliances)	3,000
Techno mobile India	1,000
Exide-UPS	1,000
Acer	900

Financial Year	FY24
Company Name	Quantity (MT)
Ajanta Electronics	200
Nikkon	100
Inalsa Home Appliance	559
Maharaja White Lines	100
Куосега	
Voltsman	100
Beetal	200
Whilpool	30,000
Dakin	8,000
TCL	850
Catvision	27
LG	15,000
Godrej	8,000
HP	1,500
AO Smith	100
Portronics	250
Cohesive Technologies	250
Kent RO	200
MIVI	200
ITW	800
Asus	1,000
Zebronics	1,200
Singer India	1,000
Flipkart	500
Servotec	500
Supermexx	250
C&S Electricals	500
Vega	100
Luminous Power	3,000
Total	1.36.986



Selling and Marketing Arrangement

As per the details available for our perusal, the list of targeted customer are as tabulated below:

Li-Ion Battery

LIB Recyc	ling Segment
Name of the Company	Name of the Company
BYD	Lime
Call2Recycle	Lucas TVS
Carborundum Universal LTD	Luminous Power Technologies
Cell Propoulsion Pvt Ltd	M&M
Chargexo	Manikaran Power Ltd
Cleanaway	Maruti Suzuki
Coslight	MG Motor
Current Aggregators	Micromax
Cygni Energy Pvt Ltd	Motorola
Dura Power Pte Ltd	NALCO
Ecobat	Navitasys India Pvt Ltd
EnerHuman	Neuron Energy Pvt Ltd.
ENSOL	Nippon
EON Electric-Haridwar	Nokia
Epsilon Advanced Materials Pvt	Octillion Power
Ericsson	Octillion Power Systems India Pvt Ltd
Erlos	Okaya Power
Evolute Solutions Pvt	Ola Electric



Xiaomi

Li Energy





Economic Assessment



As per the details provided by ARPL , the	assumptions for the captione	ons for the captioned project is as tabulated below:					1.1			
Particulars	Unit	FY24	FY25	FY26	FY27	FY28	FY29			
India E-Waste Business										
Service Business										
Installed Capacity										
Own Capacity	MT/Year	144000	144000	144000	144000	144000	144000			
Franchise Capacity	MT/Year	3000	3000	3000	3000	3000	3000			
Total Capacity	MT/Year	147000	147000	147000	147000	147000	147000			
Capacity Utilization	%	85%	85%	85%	85%	85%	85%			
Tonnage Processed	MT/Year	124950	124950	124950	124950	124950	124950			
Average Service Fees	INR/KG	14.70	15.44	16.21	17.02	17.87	18.76			
Service Revenue	INR in Crore	183.68	192.86	202.50	212.63	223.26	234.42			
Metals Revenue										
Material % of tonnage Processed	%	59%	59%	59%	59%	59%	59%			
Tin	% of Material	0%	0%	0%	0%	0%	0%			
Aluminium	% of Material	7%	7%	7%	7%	7%	7%			
Iron	% of Material	55%	55%	55%	55%	55%	55%			
Copper	% of Material	1%	1%	1%	1%	1%	1%			
Others	% of Material	37%	37%	37%	37%	37%	37%			
Material Extraction										
Tin	MT/Year	49.29	49.29	49.29	49.29	49.29	49.29			
Aluminium	MT/Year	5150.91	5150.91	5150.91	5150.91	5150.91	5150.91			
Iron	MT/Year	40624.02	40624.02	40624.02	40624.02	40624.02	40624.02			
Copper	MT/Year	994.04	994.04	994.04	994.04	994.04	994.04			
Others	MT/Year	27167.57	27167.57	27167.57	27167.57	27167.57	27167.57			
Average Selling Price										
Tin	INR/Kg	1696.44	1696.44	1696.44	1696.44	1696.44	1696.44			
Aluminium	INR/Kg	208.84	208.84	208.84	208.84	208.84	208.84			
Iron	INR/Kg	40.66	40.66	40.66	40.66	40.66	40.66			
Copper	INR/Kg	745.66	745.66	745.66	745.66	745.66	745.66			
Others	INR/Kg	16.01	16.01	16.01	16.01	16.01	16.01			
Revenue from Metal Business	INR in Crore	398.74	398.74	398.74	398.74	398.74	398.74			



Particulars	Unit	FY24	FY25	FY26	FY27	FY28	FY29
India E-Waste Business							
Refurbishment Revenue							
Refurbishment Revenue	INR/Ton	1095.79	1095.79	1095.79	1095.79	1095.79	1095.7
Total Reburshiment Revenue	INR in Crore	13.69	13.69	13.69	13.69	13.69	13.6
Total E-Waste Business Revenue	INR in Crore	596.10	605.29	614.93	625.06	635.69	646.8
Operating Expenses							
Cost of Sales	INR/Ton	37306	39171	40150	40150	40150	4015
Total Cost of Sales	INR in Crore	466.13	489.44	501.68	501.68	501.68	501.6
Other Operating Cost							
Power	INR/Ton	193.93	203.63	213.81	224.50	235.73	247.5
Rent and Rates	INR/Ton	97.11	101.97	107.07	112.42	118.04	123.9
Repair & Maintenance	INR/Ton	62.81	65.95	69.25	72.71	76.35	80.1
Logistics Cost	INR/Ton	156.86	164.70	172.93	181.58	190.66	200.1
Manpower Cost	INR/Ton	884.51	928.74	975.17	1023.93	1075.13	1128.8
Franchise Cost	INR/Ton	3060.00	3213.00	3373.65	3542.33	3719.45	3905.4
Power	INR in Crore	2.42	2.54	2.67	2.81	2.95	3.0
Rent and Rates	INR in Crore	1.21	1.27	1.34	1.40	1.47	1.5
Repair & Maintenance	INR in Crore	0.78	0.82	0.87	0.91	0.95	1.0
Logistics Cost	INR in Crore	1.96	2.06	2.16	2.27	2.38	2.5
Manpower Cost	INR in Crore	11.05	11.60	12.18	12.79	13.43	14.1
Franchise Cost	INR in Crore	0.78	0.82	0.86	0.90	0.95	1.0
Admin and Marketing Cost							
Marketing Cost	INR in Crore	0.27	0.28	0.29	0.31	0.32	0.3
Security Cost	INR in Crore	0.68	0.71	0.75	0.78	0.82	0.8
Legal Cost	INR in Crore	3.18	3.34	3.51	3.68	3.87	4.0
Other Cost	INR in Crore	2.78	2.92	3.07	3.22	3.38	3.5
DFC Channel Cost							
	% of tonnage						
Percentage of tonnage processed	Capacity	1%	3%	6%	10%	10%	10%
Cost per KG	INR/Kg	9	7	6	5	5	!
Total Channel Cost	INR in Crore	1.59	3.09	5.29	7.35	7.35	7.3



As per the details provided by ARPL , the assumption	ons for the captioned	project is as tabu	lated below:			1	1
Particulars	Unit	FY24	FY25	FY26	FY27	FY28	FY2
India Li-one Business							
Installed Capacity							
Installed Capacity*	MT	700	1200	2000	2000	2000	200
Refurbishing Mix	%	10%	10%	10%	10%	10%	10%
Battery	%	90%	90%	90%	90%	90%	90%
Refurbishing Mix	MT	70	120	200	200	200	200
Capacity Utilization							
Spoke Capacity	%	80%	90%	90%	90%	90%	90%
Hub Capacity	%	80%	90%	90%	90%	90%	90%
Battery	MT	622	1200	2000	2000	2000	2000
Black Mass	MT	249	480	800	800	800	800
Input Mix (Battery and Black Mass-Recycling)							
LCO	%	9%	9%	9%	9%	9%	9%
NMC111	%	20%	20%	20%	20%	20%	20%
NMC622	%	20%	20%	20%	20%	20%	20%
NMC811	%	20%	20%	20%	20%	20%	20%
LFP	%	30%	30%	30%	30%	30%	30%
LTO	%	1%	1%	1%	1%	1%	19
Metal Content in Battery Mix							
Lithium Carbonate (Li2CO3)	%	8.56%	8.56%	8.56%	8.56%	8.56%	8.56%
Aluminium (Al)	%	10.47%	10.47%	10.47%	10.47%	10.47%	10.47%
Copper (Cu)	%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Graphite	%	21.34%	21.34%	21.34%	21.34%	21.34%	21.34%
Iron (Fe)	%	15.40%	15.40%	15.40%	15.40%	15.40%	15.40%
Nickel (Ni)	%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Cobalt (CO)	%	3.65%	3.65%	3.65%	3.65%	3.65%	3.65%
Others	%	25.58%	25.58%	25.58%	25.58%	25.58%	25.58%

*The capacity for FY25 is calculated based on the prorate basis. (700 MT for 9 months and 2000 MT for 3 Months)

Others



Dorticulors	Linit	EV24	EVOE	EVOC	EV27	EV29	EV/2
Particulars	Unit	FYZ4	FY25	FY26	FYZ7	F¥28	FYZ
India Li-Ion Business							
Metal Content in Black Mass							
Lithium Carbonate (Li2CO3)	%	17.12%	17.12%	17.12%	17.12%	17.12%	17.12
Aluminium (Al)	%	3.54%	3.54%	3.54%	3.54%	3.54%	3.549
Copper (Cu)	%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99
Graphite	%	42.68%	42.68%	42.68%	42.68%	42.68%	42.689
Iron (Fe)	%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10
Nickel (Ni)	%	14.00%	14.00%	14.00%	14.00%	14.00%	14.009
Cobalt (CO)	%	7.32%	7.32%	7.32%	7.32%	7.32%	7.329
Others	%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25
Extraction Percentage - Battery							
Lithium Carbonate (Li2CO3)	%	97.90%	97.90%	97.90%	97.90%	97.90%	97.90
Aluminium (Al)	%	95.44%	95.44%	95.44%	95.44%	95.44%	95.449
Copper (Cu)	%	97.66%	97.66%	97.66%	97.66%	97.66%	97.669
Graphite	%	98.20%	98.20%	98.20%	98.20%	98.20%	98.209
Iron (Fe)	%	98.09%	98.09%	98.09%	98.09%	98.09%	98.099
Nickel (Ni)	%	98.54%	98.54%	98.54%	98.54%	98.54%	98.549
Cobalt (CO)	%	96.69%	96.69%	96.69%	96.69%	96.69%	96.69%
Others	%	94.80%	94.80%	94.80%	94.80%	94.80%	94.80%
Extraction Percentage - Black Mass							
Lithium Carbonate (Li2CO3)	%	97.90%	97.90%	97.90%	97.90%	97.90%	97.909
Aluminium (Al)	%	95.44%	95.44%	95.44%	95.44%	95.44%	95.449
Copper (Cu)	%	97.66%	97.66%	97.66%	97.66%	97.66%	97.669
Graphite	%	98.20%	98.20%	98.20%	98.20%	98.20%	98.209
Iron (Fe)	%	98.09%	98.09%	98.09%	98.09%	98.09%	98.09
Nickel (Ni)	%	98.54%	98.54%	98.54%	98.54%	98.54%	98.549
Cobalt (CO)	%	96.69%	96.69%	96.69%	96.69%	96.69%	96.69

94.80%

94.80%

94.80%

94.80%

94.80%

94.80%

%



As per the details provided by ARPL , the ass	umptions for the captioned project	ct is as tabulated	l below:			1.1	
Particulars	Unit	FY24	FY25	FY26	FY27	FY28	FY29
India Li-ion Business							
Production Output							
Lithium Carbonate (Li2CO3)	MT	88.63	170.94	284.89	284.89	284.89	284.89
Aluminium (Al)	MT	64.37	124.14	206.89	206.89	206.89	206.89
Copper (Cu)	MT	46.16	89.02	148.37	148.37	148.37	148.37
Graphite	MT	221.67	427.50	712.50	712.50	712.50	712.50
Iron (Fe)	MT	104.37	201.28	335.47	335.47	335.47	335.47
Nickel (Ni)	MT	72.96	140.72	234.53	234.53	234.53	234.53
Cobalt (CO)	MT	37.37	72.07	120.11	120.11	120.11	120.11
Others	MT	150.56	290.36	483.94	483.94	483.94	483.94
Refurbished Battery	MT	62.22	120.00	200.00	200.00	200.00	200.00
Average Selling Price							
Lithium Carbonate (Li2CO3)	INR Lakbs/MT	16.60	16.60	16.60	16.60	16.60	16.60
Aluminium (Al)	INR Lakhs/MT	2 31	2 31	2 31	2 31	2 31	2 31
Copper (Cu)	INR Lakhs/MT	8 25	8 25	8 25	8 25	8 25	8 25
Granhite	INR Lakhs/MT	0.25	0.25	0.25	0.25	0.25	0.25
Iron (Fe)	INR Lakhs/MT	0.30	0.48	0.48	0.48	0.48	0.30
Nickel (Ni)	INR Lakhs/MT	18 68	18 68	18 68	18 68	18 68	18 68
Cobalt (CO)	INR Lakhs/MT	53.95	53.95	53.95	53.95	53.95	53.95
Others	INR Lakhs/MT	0.34	0.34	0.34	0.34	0.34	0.34
Refurbished Battery (% over the cost)	%	10%	10%	11%	11%	11%	11%
Battery Cost	INR Lakhs/MT	1 66	1 66	1 66	1 66	1 66	1 66
Refurbished Battery Selling Price	INR Lakhs/MT	1.83	1.83	1.80	1.80	1.84	1.00
Total Revenue	INR in Crore	56.74	109.44	182.40	182.41	182.42	182.42
Dave Matazial Cast							
Raw Material Cost		1 66	1 66	1 66	1 66	1 66	1 66
Ballery Black Mass		1.00	1.00	1.00	1.00	1.00	1.00
BidLK Material Cost		0.04	0.04 F1 70	0.04	0.04	0.04	0.04
Total Raw Material Cost	INR In Crore	20.80	51.79	80.32	80.32	80.32	80.32
Manpower Cost	INR in Crore	2.14	4.28	4.71	5.18	5.70	6.27
Consumables Cost	INR in Crore	0.38	0.76	0.83	0.91	1.01	1.11
Maintenance/repair costs	INR in Crore	-	1.97	2.17	2.38	2.62	2.89
Power costs	INR in Crore	0.37	0.74	0.81	0.89	0.98	1.08
Other overheads	INR in Crore	7.61	8.37	9.21	10.13	11.15	12.26
Total Operating cost	INR in Crore	10.50	16.12	17.73	19.51	21.46	23.60

Depreciation Schedule



As per the details provide	d by ARPL , the depreciation schee	dule for the proje	ect is as tabulate	ed below:			INR in Crore
Particulars	Rate	FY24	FY25	FY26	FY27	FY28	FY29
Factory Land							
Opening		3.74	3.74	6.10	6.10	6.10	6.10
Addition			2.35				
Depreciation							
Closing		3.74	6.10	6.10	6.10	6.10	6.10
Leasehold Improvement	t						
Opening		2.16	2.16	2.16	2.16	2.16	2.16
Addition							
Depreciation	1.93%	0.04	0.04	0.04	0.04	0.04	
Closing		0.22	0.18	0.13	0.09	0.05	0.05
Building							
Opening		7.98	7.98	12.41	12.86	13.31	13.76
Addition			4.44	0.45	0.45	0.45	0.45
Depreciation	3.14%	0.25	0.39	0.40	0.42	0.43	0.45
Closing		4.66	8.71	8.76	8.79	8.81	8.81
Plant & Machinery							
Opening		44.82	44.82	80.58	83.28	85.97	88.66
Addition			35.76	2.69	2.69	2.69	2.69
Depreciation	6.19%	2.78	4.99	5.16	5.33	5.49	5.66
Closing	22.701	19.34	50.11	47.65	45.02	42.22	39.25

Depreciation Schedule



As per the details provided by A	RPL, the depreciation sched	PL, the depreciation schedule for the project is as tabulated below:						
Particulars	Rate	FY24	FY25	FY26	FY27	FY28	FY29	
Furniture								
Opening		0.84	0.84	1.51	2.18	2.86	3.53	
Addition			0.67	0.67	0.67	0.67	0.67	
Depreciation	2.84%	0.02	0.04	0.06	0.08	0.10	0.12	
Closing	0.72	0.10	0.73	1.34	1.93	2.50	3.06	
Office Equipment								
Opening		1.55	1.55	2.22	2.90	3.57	4.24	
Addition			0.67	0.67	0.67	0.67	0.67	
Depreciation	2.47%	0.04	0.05	0.07	0.09	0.10	0.12	
Closing	1.2617	0.25	0.87	1.47	2.06	2.62	3.18	
Computers								
Opening		0.33	0.33	0.33	0.33	0.33	0.33	
Addition								
Depreciation	1.72%							
Closing	0.30	0.03	0.03	0.03	0.03	0.03	0.03	
Vehicles								
Opening		1.04	1.04	1.04	1.04	1.04	1.04	
Addition								
Depreciation	3%	0.03	0.03	0.03	0.03	0.03	0.03	
Closing	0.15	0.86	0.83	0.80	0.77	0.74	0.71	
Intangible Assets								
Opening		47.83	47.83	47.83	47.83	47.83	47.83	
Addition								
Depreciation	9%	4.39	4.39	4.39	4.39	4.39		
Closing	24.31	19.13	14.74	10.35	5.96	1.56	1.56	
Depreciation		7.55	9.94	10.16	10.38	10.59	6.38	
Net Block		48.33	82.29	76.63	70.74	64.64	62.75	

Working Capital Requirement



The working capital requirement for the proposed project is as	tabulated below	-					INR in Crore
Particulars	Days	FY24	FY25	FY26	FY27	FY28	FY29
E-Waste Business							
Receivables	60	97.99	99.50	101.08	102.75	104.50	106.33
Inventory	30	38.31	40.23	41.23	41.23	41.23	41.23
Payables	30	38.31	40.23	41.23	41.23	41.23	41.23
Net Working Capital		97.99	99.50	101.08	102.75	104.50	106.33
Li-ion Business							
Receivables	45	7.00	13.49	22.49	22.49	22.49	22.49
Total Working Capital		104.99	112.99	123.57	125.24	126.99	128.82
Permissible Limit @ 75%		78.74	84.74	92.68	93.93	95.24	96.62
Working Capital Loan		70.00	70.00	70.00	70.00	70.00	70.00
Interest on Working Capital Loan	10%	2.92	7.00	7.00	7.00	7.00	7.00



Loan Drawdown and Repayment Schedule



As per the details provided by **ARPL**, the loan drawdown and repayment schedule is as tabulated below:



Profitability Statement



INR in Crore

As per the details provided by **ARPL**, the profitability statement for the proposed project is as tabulated below:

Particulars	FY24	FY25	FY26	FY27	FY28	FY29
Revenue From Operation						
Revenue from E-Waste Business	596.10	605.29	614.93	625.06	635.69	646.85
Revenue from Li-ion Business	56.74	109.44	182.40	182.41	182.42	182.42
Total Revenue	652.85	714.73	797.33	807.47	818.10	829.27
Operating Cost						
E-waste Business - Operating Cost	492.84	518.90	534.66	538.11	539.56	541.09
Li-ion Business - Operating Cost	37.36	67.91	104.05	105.83	107.78	109.92
Total Operating Cost	530.20	586.82	638.72	643.93	647.34	651.01
EBITDA	122.65	127.91	158.62	163.53	170.77	178.26
Depreciation	7.55	9.94	10.16	10.38	10.59	6.38
Other Financial Charges	0.40	0.40	0.40	0.40	0.40	0.40
Term Loan	1.94	3.69	2.82	1.77	0.99	0.33
Working Capital Loan	2.92	7.00	7.00	7.00	7.00	7.00
Interest on Car Loan	0.05	0.03	0.02	0.01	-	-
Profit Before Tax	109.80	106.84	138.22	143.98	151.78	164.16
Тах	27.64	26.89	34.79	36.24	38.20	41.32
Profit After Tax	82.16	79.95	103.43	107.74	113.58	122.84

Profitability Analysis



The profitability analysis of the Project by **ARPL** is as follows:

Profitability Ratio						
Particulars	FY24	FY25	FY26	FY27	FY28	FY29
EBITDA %	19%	18%	20%	20%	21%	21%
PBT %	17%	15%	17%	18%	19%	20%
PAT %	13%	11%	13%	13%	14%	15%



K&A Comments

The Project on an average has an **EBITDA** of approx. **20%**. with an **average net profit margin (PAT)** of approx. **13%**.

We feel the same is reasonable and justified.

Cash Flow Statement



INR in Crore

As per the details provided by **ARPL**, the Projected Cash Flow Statement of the project are as tabulated below:

Particulars	FY24	FY25	FY26	FY27	FY28	FY29
Sources of Funds						
EBITDA	122.65	127.91	158.62	163.53	170.77	178.26
Increase in Term Loan	28.00	-	-	-	-	-
Change in Working Capital Loan	70.00	-	-	-	-	-
Total Sources of Funds	220.65	127.91	158.62	163.53	170.77	178.26
Applications of Funds						
Project cost	19.58	19.58				
Normal Capex		4.49	4.49	4.49	4.49	4.49
Change in Working Capital	47.10	8.01	10.58	1.67	1.75	1.84
Loan Repayment	3.51	5.10	9.85	9.32	6.69	6.69
Investment in Subsidiary	0.01	45.68	32.62	-	-	-
Other Finance Charges	0.40	0.40	0.40	0.40	0.40	0.40
Interest Payment	4.85	10.69	9.82	8.77	7.99	7.33
Car Loan Payment	0.20	0.20	0.20	0.15	-	-
Interest on Car Loan	0.05	0.03	0.02	0.01	-	-
Tax payment	27.64	26.89	34.79	36.24	38.20	41.32
Total Applications of Funds	103.34	121.07	102.77	61.05	59.53	62.07
Opening Cash & Cash Equivalent	0.59	117.90	124.74	180.58	283.07	394.31
Surplus/(Deficit) of the year	117.31	6.84	55.84	102.48	111.24	116.20
Closing Cash & Cash Equivalent	117.90	124.74	180.58	283.07	394.31	510.51
Projected Balance Sheet - Liabilities

Total Liabilities



As per the details provided by **ARPL**, the Projected Balance Sheet of the project are as tabulated below: **INR in Crore** Particulars **FY23 FY24 FY25 FY26 FY27 FY28 FY29 Equity & Liabilities** Shareholder's Fund 62.83 62.83 62.83 62.83 62.83 62.83 62.83 Share Capital **Reserve & Surplus** 51.87 134.03 213.97 317.40 425.14 538.72 661.56 Total Shareholder's Fund 114.70 196.86 601.55 724.39 276.81 380.23 487.97 Non-Current Liabilities Term Loan 9.65 32.56 22.70 13.38 6.69 -0.00 -0.00 0.74 0.35 0.00 0.00 0.00 Car Loan 0.55 0.15 Provisions 1.53 1.53 1.53 1.53 1.53 1.53 1.53 **Total Non-Current Liabilities** 11.93 34.64 24.59 15.07 8.22 1.53 1.53 **Current Liabilities** Creditors 48.63 38.31 40.23 41.23 41.23 41.23 41.23 Loan from Directors or Body Corporate 2.20 2.20 2.20 2.20 2.20 2.20 2.20 70.00 70.00 Working Capital Loan 70.00 70.00 70.00 70.00 _ 5.10 6.69 Current Maturities of Term Loan 3.51 9.85 9.32 6.69 Other Current Liabilities 10.60 10.60 10.60 10.60 10.60 10.60 10.60 Short Term Provisions 3.81 3.81 3.81 3.81 3.81 3.81 3.81 **Total Current Liabilities** 134.53 134.53 127.84 68.75 130.02 136.69 137.16

361.51

438.08

532.47

630.73

737.62

853.77

195.38

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Projected Balance Sheet - Assets



s per the details provided by ARPL , the Proje	cted Balance Sheet of	the project ar	e as tabulated	l below:			INR in Cror
Particulars	FY23	FY24	FY25	FY26	FY27	FY28	FY29
II. Assets							
Non-Current Assets							
Fixed Assets	55.89	48.33	82.29	76.63	70.74	64.64	62.75
Capital WIP	0.25	19.83	-	-	-	-	_
Non-Current Investment	0.01	0.02	45.70	78.32	78.32	78.32	78.32
Deferred Tax Asset	4.79	4.79	4.79	4.79	4.79	4.79	4.79
Long Term Loans & Advances	2.62	2.62	2.62	2.62	2.62	2.62	2.62
Other non-Current Assets	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Total Non Current Assets	63.66	75.70	135.51	162.47	156.58	150.48	148.59
Current Assets							
Inventory	26.72	38.31	40.23	41.23	41.23	41.23	41.23
Debtors	79.79	104.99	112.99	123.57	125.24	126.99	128.82
Short Term Loans and Advances	24.52	24.52	24.52	24.52	24.52	24.52	24.52
Other Current Asset	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Cash & Cash Equivalent	0.59	117.90	124.74	180.58	283.07	394.31	510.51
Total Current Assets	131.72	285.81	302.57	370.00	474.15	587.14	705.17
Total Assets	195.38	361.52	438.09	532.47	630.73	737.62	853. <u>77</u>

Debt Service Coverage ratio (DSCR)



The Debt Service Coverage Ratio for the proposed Project is shown in the exhibit below:-

INR in Crore

Debt Service Coverage Ratio						
Particulars	FY24	FY25	FY26	FY27	FY28	FY29
PAT	82.16	79.95	103.43	107.74	113.58	122.84
Depreciation	7.55	9.94	10.16	10.38	10.59	6.38
Interest	4.90	10.73	9.84	8.78	7.99	7.33
Interest on term Loan	1.94	3.69	2.82	1.77	0.99	0.33
Loan Repayment	3.51	5.10	9.85	9.32	6.69	6.69
Coverage	94.61	100.62	123.43	126.89	132.16	136.55
Debt Service	5.45	8.79	12.68	11.10	7.68	7.02
DSCR	17.38	11.45	9.74	11.44	17.20	19.45
Average DSCR			13.55			

K&A Comments

The **average DSCR** of the said project works out to **13.55**. The **DSCR** for all the years is in the acceptable range varying from a minimum of **9.74** to a maximum of **19.45**.



Interest Coverage Ratio (ICR)



The Interest Coverage Ratio (ICR) for the project is shown in the exhibit below

Interest Coverage Ratio						
Particular	FY24	FY25	FY26	FY27	FY28	FY29
EBITDA-tax	94.61	100.62	123.43	126.89	132.16	136.55
Interest Payment	4.90	10.73	9.84	8.78	7.99	7.33
Interest Coverage Ratio	19.30	9.38	12.54	14.46	16.53	18.63
Average Interest Coverage Ratio			14.41			

Interest Coverage Ratio



K&A Comments

The **average ICR** of the said project works out to **14.41** which augers well with the project.

Breakeven Analysis



The Breakeven Analysis for the project is shown in the exhibit below:-

The Breakeven Analysis for the project i	s shown in the exhibit belo	W:-				INR in Crore
Particular	FY24	FY25	FY26	FY27	FY28	FY29
Sales	652.85	714.73	797.33	807.47	818.10	829.27
Fixed Cost	145.00	167.37	179.68	180.14	180.42	176.46
Variable Cost	397.65	440.11	479.04	482.95	485.50	488.26
Contribution Margin	255.20	274.61	318.30	324.52	332.60	341.02
Break Even Point(%)	56.8%	60.9%	56.5%	55.5%	54.2%	51.7%
Depreciation	7.55	9.94	10.16	10.38	10.59	6.38
Cash Break Even Point	53.9%	57.3%	53.3%	52.3%	51.1%	49.9%
BEP in terms of Sales						
Profit Volume Ratio	39%	38%	40%	40%	41%	41%
Break Even Point	370.94	435.62	450.10	448.22	443.78	429.11
Break Even Point (%)	56.8%	60.9%	56.5%	55.5%	54.2%	51.7%

Dreak Even Point (%) 20.0% 00.9% 20.2% **JJ.J**% **54.**2% Margin of Safety 43.18% 39.05% 43.55% 44.49% 45.75% braft to Margin of Safety (INR Crore) 281.90 279.11 347.23 359.25 374.32

48.25%

400.17

Sensitivity Analysis

The sensitivity analysis for the proposed project is as follows:-

Sensitivity Analysis				
			Brea	keven on
Particulars	DSCR	Min. DSCR	ICR	FY28
Base case	13.55	9.74	14.41	51%
Decrease in Selling Price by 5%	10.27	7.38	10.92	58%
Decrease in Selling Price by 10%	6.99	5.03	7.43	68%
Increase in RM Cost by 5%	11.26	8.10	11.97	57%
Increase in RM Cost by 10%	8.96	6.46	9.53	63%
Decrease in Capacity Utilization by 10%	11.74	8.46	12.48	52%
Decrease in Capacity Utilization by 20%	9.92	7.18	10.74	54%
Increase in Interest rate by 2%	13.13	9.40	13.93	51%
Draft for	Q.			



K&A Comments

The Sensitivity analysis shows that the **average DSCR, Min DSCR and ICR** are **most sensitive** to **decrease in Sale Price by 10%.**

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K&A Observations from Sensitivity Analysis:-

- K&A feel that the sale prices should be carefully monitored and is one of the key factor influencing the success of the project.
- K&A feels that based on the sensitivity analysis worked out for different scenarios, the company should comfortably be able to repay the loans to the lenders as per the loan repayment schedule.
- Sensitivity Analysis of DSCR and ICR shows that success of proposed project lies with achieving the projected operational performance by company and managing the various elements of cost very efficiently.

SWOT Analysis



Strengths

- The Attero group is already into recycling of electronic waste and added the battery recycling to its portfolio a few years back. The 700 MT capacity Li-ion Battery recycling is already running in operation.
- The company has already identified the land in Khata No. 172, Village Raipur, Bhagwanpur Industrial Estate, Tehsil Roorkee.
- ARPL has no problem in sourcing of e-waste and Li-ion battery as RM for its processes.
 The ARPL team is entering into contracts for the same with Auto OEMS, Battery manufacturers and recyclers both within the country and outside.

Opportunities

- High Demand of Electric vehicle: With the Indian automobile industry heading towards stringent pollution norms, it is already providing good opportunity for the Electric vehicles. The demand for batteries and their environment friendly recycling is going to increase. This is directly creating business for ARPL.
- The recycling industry for the e-waste and Li-ion Battery is a nascent stage while the ARPL is already established. Currently no major peers are in India who is catering this industries. Hence, company has the first mover advantage.

Weaknesses

 The availability of minimum educated workmen and those accustomed to industrial culture may be a problem.

Mitigation: The Company may have to transfer some skilled manpower from other cities initially till the regional workforce is trained.

Threats

- China controls the Li-ion Battery production and also controls the Li and Cobalt mining industry. It is capable of generating substantial volumes of fresh metal and recycled metal to challenge any other industry
- A large number of start-ups and recyclers have come up seeing the huge opportunity in the Li-ion Battery and e-waste recycling. They may also be able to get fresh scientists and recycling experts to work out the required solutions.



Risk Analysis and Mitigation



Risk management strengthens the robustness of the business. Risk Analysis and management refers to the formal processes whereby risks associated with a project are managed. Risk analysis and mitigation encompasses the following sequence.

- Identification of risk and risk carrier.
- Evaluation of the risks as to the likelihood and consequences.

- Authorization for implementation of the risk management plans.
- Implementation and review of the risk management efforts.

Assessment of options for mitigating the risks.

Some of the risks associated with the project and the related mitigation plans are discussed hereunder.

Key Risk	Risk Carrier	Proposed Mitigation of Risk
Europianos 8 Conchilitu		
Experience & Capability	ARPL	The Attero Recycling (ARPL), Parent Company of ATPL, has been in the business of E-Waste recycling since Feb 2008 when the
		plant in Roorkee was set up. The company has the capacity of 1,44,000 MT for e-waste recycling and further, the battery
		recycling was added in 2017 with the capacity of 7000 MT Li-B recycling. Thus, the company has 15 years plus recycling
		experience while the battery recycling capability is also 6 years old. The skill set is available in the R&D for developing the
		processes on a pilot scale and then extending it to shop-floor production. The company holds a number of patents for its
		recycling processes.
Time Overrun	ARPL	Considering the current situation of the project, the timelines considered for the completion of the project are satisfactory
	CO	subject to smooth allocation of adequate resources and funds.
		We recommend the lenders to appoint a lenders independent engineer to monitor the status of the project on a quarterly basis.
Cost Overrun	ARPL	We note that cost considered for the said project are much lesser than the other global peers and based on their past
ora.		experience promoters confident to construct the said plant in the mentioned cost. Based on our industry research with respect
		to machinery cost and civil construction, we feel the same is reasonable and If there is any cost overrun, the promoters shall
		service the deficit from their own sources.

Risk Analysis and Mitigation



Key Risk	Risk Carrier	Proposed Mitigation of Risk
Off-take/Demand Risk	ARPL	Considering the background and experience of the promoters & company along with the current market demand, we
		do not envisage off-take or demand risk for this project of ARPL .
Statutory Approvals	ARPL	We have not received some of the critical approvals like Approved layout & building plans for the proposed project.
		We recommend ARPL to obtain the necessary approvals at the earliest to initiate commercial production.
		Considering the background of the promoters, We do not anticipate any approval or Certification related risk for the project.
Pricing Level & Sustainability	ARPL	The selling price per product is based on the inputs provided by the officials of ARPL and based on their historical
		invoices. Based on the discussion with the management and our market research the considered selling price seems reasonable.
Operating Risk	ARPL	Considering the background and experience of key management professional and Robust R&D capabilities, we do
		not anticipate any operating risk for the project.
Force Majeure Risk	ARPL	The lender may insist the firm to take adequate insurance cover for insurable Force Majeure risks.
Draft		

Conclusion

Conclusion



K&A believes that the management of Attero Recycling Private Limited have the financial capability as well as industry knowledge to implement the expansion of the lithium ion battery recycling Facility and to market the same successfully. In view of adequate experience, fair market conditions, receipt of necessary approvals from statutory authorities, proper project planning and the ability of the project to service the debt within a reasonable time, the proposal for the lithium battery recycling facility located at Roorkee, Uttarakhand by Attero Recycling Private Limited is considered Technically Feasible and Economically Viable.

For KAKODE ASSOCIATES CON	ISULTING PRIVATE LIMITED	ionpur	
ANIL PAI KAKODE		BHUPESH DUGGAR	LIONEL AZAVEDO
Director	CEO	CFO	Senior Associate
Date: October 23, 2023	oror		Place: Mumbai
Drafr.			

Disclaimer

- This Techno Economic Viability (TEV) Report is submitted on the basis that this Report and its contents will be held in complete confidence. Accordingly, by accepting a copy of this report, the recipient agrees to keep its contents and any other information, which is disclosed to such recipient, confidential and shall not divulge, distribute or disseminate any information contained herein, in part or in full, without the prior written approval of Kakode Associates Consulting Private Limited (K&A).
- The Report has been prepared for private circulation as required by the State Bank of India (SBI) for evaluating the proposed expansion Project of Attero Recycling Private Limited. This report has been prepared on the basis of the site visit and discussions held with ARPL's officials. The industry norms, studies and other information obtained by K&A from various sources available publicly, which K&A believes to be reliable, were the basis of this report. K&A has not carried out any independent verification for the truthfulness of the same. We have tried our best to independently verify the same. We have not checked the title clearance or the legality of the documents of the said property submitted by ARPL to us. This report is purely an opinion and has no legal or contractual obligation on our part. We have no direct or indirect interest in the company, its directors, their suppliers / vendors and / or the said project.
- The installed capacity considered for the TEV study is based on the details provided by the company. Based on our discussion with the management, we understand that the said capacity has been worked out based on their historical performance and actual production in the past year. We feel the same is reasonable and justified.

About K&A



KAKODE ASSOCIATES CONSULTING PRIVATE LIMITED (K&A) is a professionally managed consultancy organization promoted by Mr. Anil B. Pai Kakode, who is the proprietor of KAKODE & ASSOCIATES, a firm established since **1982**, and providing Engineering and Project Consultancy Services, including valuation of land, building, plant & machinery for variety of projects. K&A was incorporated in November **2015**, to undertake all the activities of the firm and widen the scope of the field of operation. Over the years we have expanded our team as well as services offered. We now undertake Asset Valuations, Business Valuations, Techno-Economic Viability Studies, Detailed Project Reports, Cost Validation Reports, Lender's Independent Engineer Reports for a wide spectrum of clients across various sectors, namely, pharmaceuticals, textiles, banking, hospitality, chemical, healthcare, steel, real estate, auto, agro and food processing and many other sectors. We at K&A strive to enter into a longterm association with all our clients. K&A offers following services to its esteemed clients.

- Valuation of Land, Building, Plant, Machinery & Stock.
- Lenders Independent Engineer.
- Techno-Economic Viability Reports.
- Feasibility Reports.
- Detailed Project Reports.
- Chartered Engineer Certifications.



- Cost Validation Reports.
- ✤ Technical Due Diligence.
- Mergers and Acquisition Consulting.

oseol We have undertaken valuation of more than **10,000 valuations** since the past 2 decades and over **100 TEV assignments** across various sectors. We have also undertaken valuations, project monitoring, Techno-Economic Viability (TEV) studies and Lender's Engineering monitoring of infrastructure projects including Power Plants (over 45,000 MW), Metro Projects (Mumbai, Kolkata, Ahmedabad, Nagpur, Noida, Pune, etc), real est bridge in, Gissoria estate, roads, irrigation projects, bridges (3rd longest bridge in India), tunnels (India's longest tunnel) and flyovers, etc. with a cumulative value of over INR 10 lakh crore.



BEYOND VALUE