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Dated: 22.02.2024

TECHNO-ECONOMIC VIABILITY STUDY REPORT OF

BIO DIESEL MANUFACTURING UNIT

(INSTALLED CAPACITY OF 20 TON PER DAY)

STUP BY

M/S ORENSE INDUSTRIES PRIVATE LIMITED

SITUATED AT

PLOT NO. 243 & 244, NANDARAJPUR, KHARIAGUDA, GANJAM,
ODISHA, 761209

- Corporate Valuers
- Business/ Enterprise/ Equity Valuations
- Lender's Independent Engineers (LIE)
- Techno Economic Viability Consultants (TEV)
- Agency for Specialized Account Monitoring (ASM)
- Project Techno-Financial Advisers

REPORT PREPARED FOR

M/S Orense Industries Private Limited

- Chartered Engineers
- Industry/ Trade Rehabilitation Consultants
- NPA Management
- Panel Valuer & Techno Economic Consultants for PSU Banks

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PART A

REPORT SUMMARY

S. No.	PARTICULAR	DESCRIPTION
1.	Name of the Company:	M/s Orense Industries Pvt Ltd
2.	Registered Address:	Andhapasra Road, Near Hanuman Temple, Berhampur, Ganjam, Orissa, India, 760002.
3.	Project Name	M/s Orense Industries Pvt Ltd
4.	Project Location:	Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209
5.	Project Type:	Vegetable Oil Refining Plant And Biodiesel Plant, (Capacity- 20TPD)
6.	Project Industry:	Bio Fuel Industry (Manufacturing)
7.	Product Type / Deliverables:	Bio Diesel and Glycerol
8.	Report Prepared for Organization:	M/s Orense Industries Pvt Ltd
9.	TEV Consultant Firm:	M/s. R.K Associates Valuers & Techno Engineering Consultants (P) Ltd.
10.	Report type:	Techno-Economic Viability Report
11.	Purpose of the Report:	To assess Project's Technical, Economical & Commercial Viability for the purpose of seeking external financial assistance to start a green field Project.
12.	Scope of the Report:	To assess, evaluate & comment on Technical, Economical & Commercial Viability of the Project as per data information provided by the client, independent Industry research and data.

information available on public domain.

13.	Date of Report:	22 th February, 2024												
14.	Documents referred for the Project:	<div><div>A. PROJECT INITIATION DOCUMENTS:</div><div><div>a. Project Report</div><div>b. Financial Projections of the Project</div><div>c. Project proposed Schedule</div><div>d. Statutory Approval Details</div><div>e. Layout and Master Plan</div></div><div>B. PROCUREMENT DOCUMENTS:</div><div><div>a. List of Plant & Machinery along with acquisition costs for the same</div><div>b. Major Existing Customer Line</div><div>c. List of Expected Raw material Supplier</div><div>d. Process Flow Chart</div><div>e. Sanction/proposed map of the sites</div><div>f. Lease/Sale deeds of the Land</div></div><div>C. STATUTORY APPROVALS, LICENCES & NOCs</div><div><div>a. MSME UDYAM Registration Certificate</div><div>b. Pollution Control Certificates</div><div>c. Factory Permission Certificate</div><div>d. PESO Preliminary Certificate</div></div></div>												
15.	Means of Finance:	Equity & Debt (D/E Ratio 3.00 TPC)												
16.	Key Financial Indicators:	<table><tr><th>Key Indicators</th><th>Value</th></tr><tr><td>Average DSCR</td><td>5.49</td></tr><tr><td>Maximum DSCR</td><td>8.06</td></tr><tr><td>Average EBITDA Margin</td><td>15.01%</td></tr><tr><td>Avg. PAT Margin</td><td>9.68%</td></tr><tr><td>NPV & IRR</td><td>24.90 Cr. & 119%</td></tr></table>	Key Indicators	Value	Average DSCR	5.49	Maximum DSCR	8.06	Average EBITDA Margin	15.01%	Avg. PAT Margin	9.68%	NPV & IRR	24.90 Cr. & 119%
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Avg. PAT Margin	9.68%													
NPV & IRR	24.90 Cr. & 119%													

Note: Above financial indicators are based on the financial projections provided by the firm and assessment and analysis of the same done by us.

PART B

INTRODUCTION

1. ABOUT THE REPORT:

This is a Techno Economic Viability Study Report of the proposed Bio Diesel manufacturing unit (Capacity: 20 TPD) at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209 setup by the company called M/s Orense Industries Private Limited.

2. EXECUTIVE SUMMARY:

As per MOA of company, the objects to be pursued by the M/S Orense Industries Private Limited on its incorporation are to carry on in India or elsewhere the business to manufacture, produce, refine, process, formulate, buy, sell, import, export or otherwise to deal in ethyl alcohol, ethanol, and biofuels.

Accordingly, Company has proposed to set up a Vegetable Oil Refining Plant And Biodiesel Plant as a greenfield project at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209, to manufacture Bio Diesel. The proposed manufacturing facility will be having a total capacity of 20 TPD & to be setup with total investment of INR 6, 62, 00,000.

As per the certificate of incorporation shared by the client/company, M/S Orense Industries Pvt. Ltd. was established on 27th October 2022 under the company's act, 2013 for manufacturing of Bio Diesel. The company was established as a private limited company, limited by shares and having a Corporate Identification Number (CIN) U23209OR2022PTC041057, PAN Number AADCO9227H and TAN Number BBNO02985D.

Moreover, the company is registered as Micro Enterprise vide registration number UDYAM-OD-11-0024284 dated 16th Jan 2023. As per UDYAM Registration Certificate, details of National Industry Classification Code(S) of the company has shown in the below table:

National Industry Classification Code(S)				
S. No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	19 -Manufacture of coke and refined petroleum products	1920 -Manufacture of refined petroleum products	19209 - Manufacture of other petroleum.	Manufacturing

MoP&NG announced a Biodiesel Purchase Policy which became effective 1st January 2006. On 10.08.2015, Government allowed direct sale of Biodiesel (B100) for blending with diesel to Bulk Consumers such as Railways, State Road Transport Corporations. On 29.06.2017 Government allowed sale of biodiesel to all consumers for blending with diesel.

The Policy on Biofuels 2018 aimed to achieve a 20% blending of biofuels with fossil fuels by 2030. This target was revised, and it will be completed by 2025. The National Policy on Biofuel is will help the nation meet the Panchamrita goals set by India during COP 26 to Achieve 50% of energy requirements from renewable energy by 2030.

According to the IEA, the total biofuel demand is set to rise by 23% to 200 billion litres by 2028, with renewable diesel and ethanol accounting for two-thirds of this growth. As per Government, the Oil Marketing Companies (OMCs) have procured **6 crore litres** of biodiesel till February 2023 as Oil Marketing Companies (OMCs) are periodically floating Expression of Interest (Eoi) for procurement of Biodiesel produced from UCO.

Government has notified Guidelines for sale of biodiesel for blending with High Speed Diesel for transportation purposes on 30.4.2019. Through this Notification Government has granted permission exclusively for sale of biodiesel (B-100) only and not for any mixture thereof of whatever percentage.

Presently, bio-diesel is being produced in the country primarily from imported palm stearin oil. In order to phase-out palm stearin, and as a measure towards import substitution, it has been decided to promote domestically available used cooking oil (UCO) as the feedstock. Used Cooking Oil has been identified as a potential raw material for biodiesel production in National Policy on Biofuels-2018. UCO can be collected from Bulk Consumers such as hotels, restaurants, canteens, etc. for conversion.

Further, the Government Initiatives such as Ethanol Blending Programme, Pradhan Mantri Ji-VAN Yojana, and GOBAR (Galvanizing Bio-Agro Resources) DHAN scheme, Repurpose Used Cooking Oil (RUCO) will boost the demand for Bio Fuels in near future. Few Bio Diesel Manufacturers along with capacities are shown in the below table:

Few Operational Plants In India	
Name of the plant	Capacity/ Commission Date
Southern Online Biotechnologies, Hyderabad	3 KLPD Commissioned March 2006
Universal Biofuels plant (Andhra Pradesh)	Annual Production Capacity to 60 Million Gallons

BR Bio Diesel Private Limited	Established in year 2019
Elite Natural Oils & Fuels Pvt. Ltd	production commenced in November 2018 200 Tons of Bio Diesel per day and 50 Tons of Refined Glycerine per day and 150 Tons of Refined Palm oil per day.
Muenzer Bharat Private Limited	2,00,000 metric tonnes
Rajputana Biodiesel	capacity of 30,000 litres of biodiesel per day

The consumption volume of biodiesel in India stood at 186 million litres in 2022. This was forecast to reach 190 million litres in 2023. To grab the opportunity of foreseen rising demand of Bio Diesel, Mr. Pritish Das Sharma and his brother in law Mr. Neeladri Nath Acharya comes up with the venture to set up a Bio Diesel manufacturing facility at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209.

As per sale deed, Company has purchased a land spanning 1.14 Acre (4613.415 Sq. Mtr.) to set up the proposed Vegetable Oil Refining Plant and Biodiesel Plant, (Capacity- 20TPD) for manufacturing Bio Diesel and it's by product Glycerol. Bio Diesel is in riding demand due to its use in Transportation, Fuel, Power Generation and Others.

The project is backed by experienced promoters, **Mr. Pritish Das Sharma** and **Mr. Neeladri Nath Acharya**, who are the longest serving director currently on board, who was appointed on 27th October, 2022. Mr. Pritish Das Sharma, is having a trade business in the name of Mahaveer Enterprises and having professional experience of Business & Marketing. Mr. Neeladri Nath Acharya on the other is hand having a rich Industrial and professional experience as worked with Hindalco Industries Limited, Sambalpur as Asst. Manager (Area-Head) in the Mechanical Department.

As per informed by the client, promoters have done a comprehensive market study before setting up the Bio Diesel manufacturing facility. Promoters have reached out to some operational plants such as Pyrelal green energy Pvt Ltd. at Varanasi commissioned as on Nov 2022 operational with the installed capacity of 20 KLPD and Mat fuzan beld Pvt Ltd at Lucknow commissioned as on Oct 2023 operational with the installed capacity of 20 KL/D 20 KLPD.

Also, attended meetings with various raw material supplier and OMC's for issuing the letter of intent (LoI) for ensuring the supply of their production. OMC like IOCL, BPCL will release tenders on an interval of 3 months every year. It is mandatory for suppliers to get the CTO (Consent to operate) from the concerned Central pollution control board for participating in the tenders. In case of issue advance LOI, Earlier OMC were released LOI to suppliers

before execution of the plant but they did not get the required quantity of bio diesel suppliers.

As per information provided by the client, the proposed project will be established with a capacity of 20 tons per Day by installing the Vegetable Oil Refining Plant and Biodiesel Plant at the manufacturing facility. Bio Diesel derived from vegetable oils like soybean oil or palm oil, vegetable waste oils, and animal fats by a biochemical process called "Transesterification." It produces very little or no amount of harmful gases as compared to diesel. It can be used as an alternative to conventional diesel fuel. Below table shows the Installed capacity of the proposed unit:

Installed Capacity of the Proposed Unit (20 TPD)	
Output	Out Put Per Day In Kg (or) Litre
Biodiesel (in litre)	20,607
Glycerol (in kg)	2,472

The unit will require a connected power load 60 kWh and approximately 9.50 M3/Day of water per day for various processes, sanitation, and drinking purposes. The necessary power supply will be obtained from the local power distribution department, while fresh ground water will be abstracted as per permitted by the respective authority.

Financially, the proposed project is estimated to cost INR 6.62 Crore, which will be financed through a debt-equity ratio of 3:1. The project cost will be financed through a bank term loan of INR 3.72 Crore for Building & Plant & Machinery and promoter contribution of INR 1.65 Crore. Working capital requirements will be met through a WC loan of INR 1.24 Crore to initiate the project.

Total Cost of The Project	
Particulars	Amount in Rupees
Land	0.00
Building	49,00,000
Bio Diesel manufacturing Plant	4,13,00,000
Miscellaneous Plant and Machinery	
100 KVA Transformer label 2 aluminium Wound	11,00,000
82.5 kva & 125 KVA (Three Phase) KOEL iGreen DG	11,00,000
Additional Container	12,00,000
Total Plant & Machinery	4,47,00,000
Working Capital Requirement	1,66,00,000

Total Cost Of The Project

INR 6,62,00,000

As per lease deed shared by the client/company and verified during Survey, Company has purchased a land spanning 1.14 Acre (4613.415 Sq. Mtr.) for the proposed manufacturing facility Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha. Land development work is in progress. As per data/information provided by the company, most of the required (Pre-operative) Statutory Approvals/NOC's such as PUC, Ground Water Abstraction, Factory & Boiler Permission, Fire Safety, PESO etc. etc. have been attained by the company from the respective authorities (*Refer the section Statutory Approval Section in the later part of the report*).

Currently, the manufacturing facility is under construction. Land Filling and Boundary wall work is in progress found at site (Completed by 60% Approx.), No building/Blocks found at site except a temporary Tin shed. Pre-Engineering Building (PEB)/MS structure's construction work is in the progress at the site as per the proposed map. (*Kindly refer the site pictures captured during the survey attached in the later section of the report*). The company has planned to achieve the C.O.D by 1st May 2024.

To procure the funding of INR 3.72 Crore for Building and Plant & Machinery through debt, the company approached the State Bank of India, for financial assistance. Further, the M/s Orense Industries Private Limited has appointed R.K. associates to assess the Techno-Economic Viability of the proposed Bio Diesel manufacturing facility at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha.

- 3. PURPOSE OF THE REPORT:** To assess Project's Technical and Financial Feasibility to help lender/s to take further course of action on loan account.
- 4. SCOPE OF THE REPORT:** To only assess, evaluate & comment on Technical & Financial Feasibility of the restructuring proposal of the company as per the information provided by the company.

NOTES:

- Project status is taken as per the information provided by the company. This has not been independently verified or inspected independently since this was out-of-scope of the work.
- Scrutiny about the company or its background is out-of-scope of this report.

- This report is only an opinion in respect to Technical and Financial Feasibility of the project as per the future Projections provided by the firm and independent analysis done by us and doesn't contains any recommendations including taking decision on the loan exposure.
- Product local and regional factors have not been assessed at our end.

5. METHODOLOGY/ MODEL ADOPTED:

- Data/ Information collection.
- Review of Data/ Information collected related to TEV study.
- Independent review & assessment of technology used and financial projections provided by the company.
- Projections are made extrapolating previous audited historical financials of the company in terms of income & expenditure since company is an ongoing concern.
- Assessment of Financial Statements.
- Projections of Revenue, P&L, Balance Sheet, Working Capital Schedule, Depreciation Schedule, Loan Schedule.
- Calculation of key financial indicators and ratio analysis including DSCR.
- Final conclusion.

6. DATA/ INFORMATION RECEIVED FROM: Data/ Information received from:

Person from Whom Data Obtained	
Particulars	Details
Name	Mr. Neeladri Nath Acharya (Director)
Company	M/s Orense Industries Pvt Ltd
Email Address/ Contact No.	orenseindustries@gmail.com / +91 8144023304

7. DOCUMENTS / DATA REFERRED:

- Detailed Project Report along with Financial Projections for next 7 Years.
- Production flow chart, Product profile, Pricing Strategy etc.
- List of Raw Material Suppliers.
- List of Top 10 customers of the company and Selling, Marketing & Distribution Plan of the Company.
- List of Plant and Machinery along with their acquisition cost.
- Layout Plan and Certificates of Statutory approvals/NOC.
- Survey Report conducted at the site.

PART C

COMPANY PROFILE

1. COMPANY OVERVIEW:

As per certificate of incorporation shared by the client/company, M/s. Orense Industries Pvt Ltd is an unlisted public company incorporated on 27th October, 2022. M/s Orense Industries Pvt Ltd is a New Fresh Project and civil construction works are in progress at the proposed site. As per MOA, the company will carry To carry on in India or elsewhere the business to manufacture, produce, refine, process, formulate, buy, sell, import, export or otherwise to deal in ethyl alcohol, ethanol, and biofuels.

The Corporate Identification Number (CIN) of the company is U23209OR2022PTC041057. The registered office is situated at C/o-Arun Kumar Padhy, Andhapasra Road, Near Hanuman Temple, Berhampur, Ganjam, Orissa, India, 760002. The company has Two directors names Mr. Pritish Das Sharma (DIN: 09775631) and Mr. Neeladri Nath Acharya (DIN: 09775632). The company is registered as MSME shown below:

भारत सरकार Government of India सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय Ministry of Micro, Small and Medium Enterprises		MSME सूक्ष्म, लघु एवं मध्यम उद्यम MICRO, SMALL & MEDIUM ENTERPRISES																					
UDYAM REGISTRATION CERTIFICATE																							
UDYAM REGISTRATION NUMBER		UDYAM-OD-11-0024284																					
NAME OF ENTERPRISE		ORENSE INDUSTRIES PRIVATE LIMITED																					
TYPE OF ENTERPRISE *		<table border="1"> <thead> <tr> <th>S.No.</th> <th>Classification Year</th> <th>Enterprise Type</th> <th>Classification Date</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2022-23</td> <td>Micro</td> <td>16/01/2023</td> </tr> </tbody> </table>		S.No.	Classification Year	Enterprise Type	Classification Date	1	2022-23	Micro	16/01/2023												
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1	2022-23	Micro	16/01/2023																				
MAJOR ACTIVITY		MANUFACTURING																					
SOCIAL CATEGORY OF ENTREPRENEUR		GENERAL																					
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1	ORENSE INDUSTRIES PRIVATE LIMITED																						
OFFICIAL ADDRESS OF ENTERPRISE		<table border="1"> <thead> <tr> <th>Flat/Door/Block No.</th> <th>1</th> <th>Name of Premises/ Building</th> <th>ARUN KUMAR PADHY</th> </tr> </thead> <tbody> <tr> <td>Village/Town</td> <td>ANDHAPASARA ROAD</td> <td>Block</td> <td>ANDHAPASARA ROAD</td> </tr> <tr> <td>Road/Street/Lane</td> <td>ANDHAPASARA ROAD</td> <td>City</td> <td>BERHAMPUR</td> </tr> <tr> <td>State</td> <td>ODISHA</td> <td>District</td> <td>GANJAM, Pin 760003</td> </tr> <tr> <td>Mobile</td> <td>8763940777</td> <td>Email:</td> <td>orensindustries@gmail.com</td> </tr> </tbody> </table>		Flat/Door/Block No.	1	Name of Premises/ Building	ARUN KUMAR PADHY	Village/Town	ANDHAPASARA ROAD	Block	ANDHAPASARA ROAD	Road/Street/Lane	ANDHAPASARA ROAD	City	BERHAMPUR	State	ODISHA	District	GANJAM, Pin 760003	Mobile	8763940777	Email:	orensindustries@gmail.com
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Road/Street/Lane	ANDHAPASARA ROAD	City	BERHAMPUR																				
State	ODISHA	District	GANJAM, Pin 760003																				
Mobile	8763940777	Email:	orensindustries@gmail.com																				
DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE		27/10/2022																					

Mr. Pritish Das Sharma and Mr. Neeladri Nath Acharya has come up with the venture to setting up the manufacturing facility of Bio Diesel at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209. They have purchased this land spanning 1.1400 Acre in the year 2022.

The company will be generating their revenue from selling of Bio Diesel and its by-product Glycerol to the OMC's as per the agreement/LOI. As per the latest bid released by OMC's for procurement of ~890747 kl Bio Diesel, only 5-6 % of total requirements are fulfilled from the market. Thus to meet the market demand generating from existing as well as new customer base of Bio Diesel in the country, promoters has decided to set up this proposed Bio Diesel Manufacturing facility with the installed capacity of 20 KLPD.

2. **PROPOSED SHAREHOLDING DETAILS:** As per Memorandum of Association shared by the client/company, Both the Promoters/Directors will be having 50-50% shareholding in the company as listed in the table below:

Shareholding Details		
Particular	Amount (INR)	
Authorized Share Capital	INR 15, 00,000 (1,50,000 Equity share 10 Rs. each)	
Paid Up Capital	INR 1,00,000	
Name of the Shareholder	No. of Equity Shares	% Holding
Mr. Pritish Das Sharma	5000	50%
Mr. Neeladri Nath Acharya	5000	50%
Total	10,000	100

Source: Data/Information provided by the Company

3. **KEY PROMOTERS/DIRECTORS PROFILE:**

The project is backed by experienced promoters, **Mr. Pritish Das Sharma** and **Mr. Neeladri Nath Acharya**, who are holding long professional and industrial experience. Below table shows the description about their professional & industrial expertise:

(A) Directors/Promoters Details					
Name	DIN	Age	Address	Designation	Contact Details
Mr. Pritish Das Sharma	09775631	35 Years	Annapurna Nagar 4th Lane, Near New Mango Market, Berhampur, Ganjam, Odisha, 760002.	Director	8763940777, prish.dassharma@gmail.com
Mr. Neeladri Nath Acharya	09775632	34 Years	Santoshi maa pada Sadaipali, Burla, Sambalpur, Odisha,	Director	9861667445, neeladri1988@gmail.com



		768017.	mail.com
(B) Education & Experience			
Mr. Pritish Das Sharma (Appointed as on 27 th Oct 2022)	<ul style="list-style-type: none"> Mr Sharma has completed Bachelor in Technology in Information Technology branch from National Institute of Science and Technology (NIST), Berhampur BPUT in 2008 and thereafter completed his Post Graduation Diploma in Management (PGDM) with specialization Human Resource and Marketing from Presidency Autonomous College, Berhampur (AICTE Approved) in 2012. After completing post-graduation he worked with Megrez Technologies Private Limited Delhi, Bhushan Steel Limited Dhenkanal, Odisha and Moonlight Enterprises, Berhampur, Odisha as HR Executive from 7th December 2012 to 31st Day of March 2019. After gaining lots of experience in the Job profile Mr Sharma Decided to do his own business and becomes a successful entrepreneur. Hence Mr Sharma started trading business of Construction Materials like cement, tmt bars & other raw materials, Existing Vendor of Tata Steel Ltd. in the name of Mahaveer Enterprises. He has expertise in the distribution and marketing. He has very good convincing power and good communication skills. He has very good skills which can help the company to make dealers and distributors. He is Young and very enthusiastic. He is passionate about what he does. 		
Mr. Neeladri Nath Acharya (Appointed as on 27 th Oct 2022)	<ul style="list-style-type: none"> Mr Acharya has completed B.Tech (Mech.) from Biju Patnaik University of Technology, Rourkela, Odisha in 2010. After completing B. Tech he has worked as Asst. Manager (Area-Head) Mechanical Hindalco Industries Limited, Sambalpur. After gaining lots of experience he has professionally managed family owned firms dealing with all type of Construction Materials like cement, tmt bars & other raw materials, Existing Vendor of Tata Steel Ltd. He has vast experience in this field. He has expertise in the procurement of raw materials and in manufacturing process. 		

Source: Data/ Information provided by the Company

PART D

PLANT INFRASTRUCTURE DETAILS

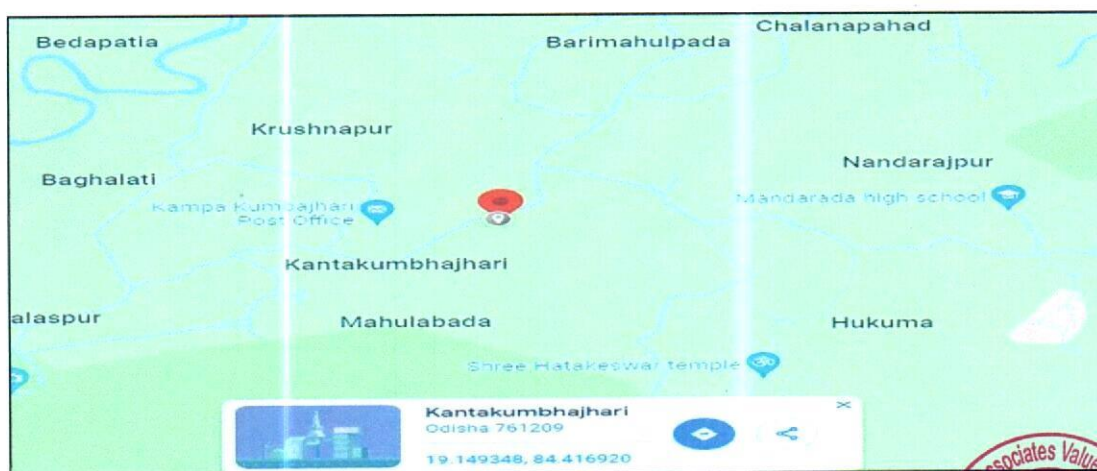
- 1. PLANT LOCATION:** The proposed manufacturing facility is located at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209, which is spread over an area of 1.1400 Acres (4613.415 Sq. Mt.) as per the sale deed provided to us by the company. It is a hilly area having better connectivity, which provided a suitable environment to setup the Bio Diesel manufacturing facility. Details of adjoining properties and Connectivity, found during the site visit described in the below tables:

Location	Adjoining Property
East	Agricultural Land
West	Agricultural Land
North	~ 20 Ft. wide PWD Road (Khariaguda to Bhagalati Dam)
South	Agricultural Land

Connectivity Details of the Proposed Location	
Connectivity	Details
Rail	Surla Road Railway Station - ~40 km away
Airport	Berhampur Airport, Helipad, - ~65 km away
Road	SH-22 ~7 km away

2. LOCATION MAP:

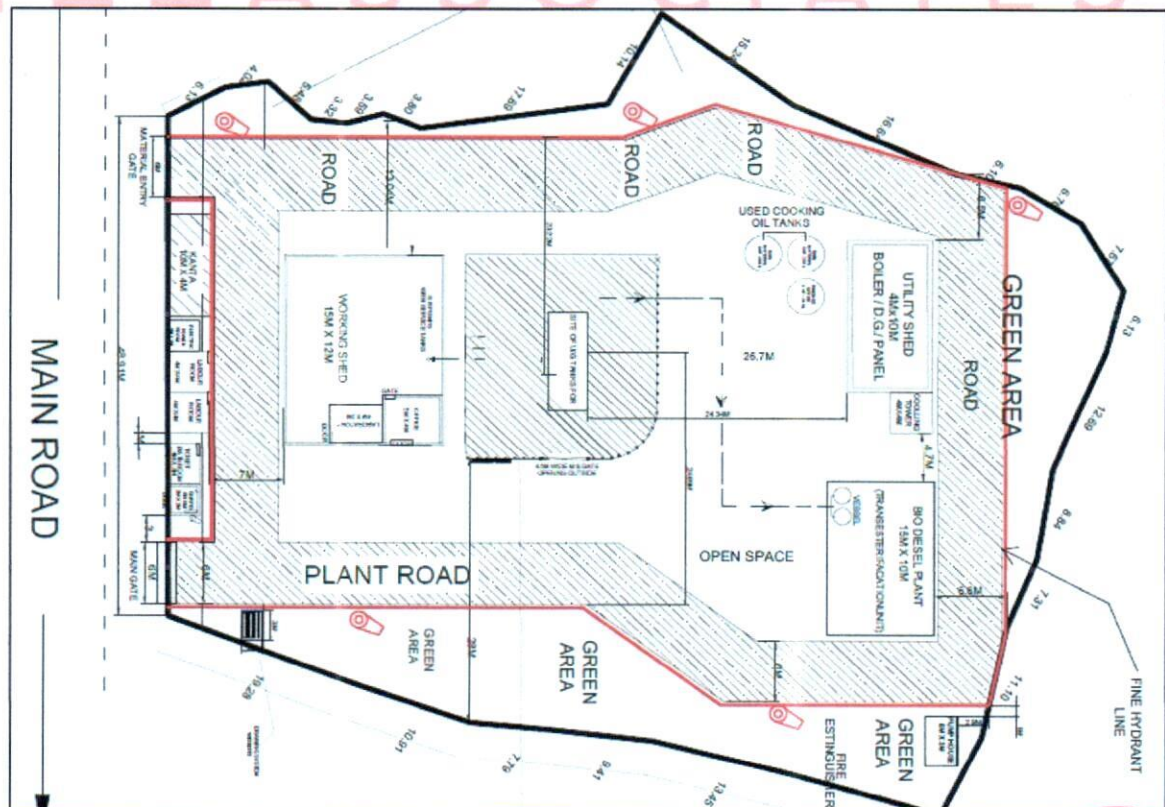
- a) Google Map Location:** Project location would be 19°08'57.4" North and 84°25'01.2" East Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209 and the location as per the Google map has been attached below:



- b) **Google Layout Plan:** Demarcation of the land with measurement on the Google map is as shown in the below picture:



3. **LAYOUT PLAN:** As per data/information shared by the client/Company, the proposed layout plan for the proposed site has been attached below:



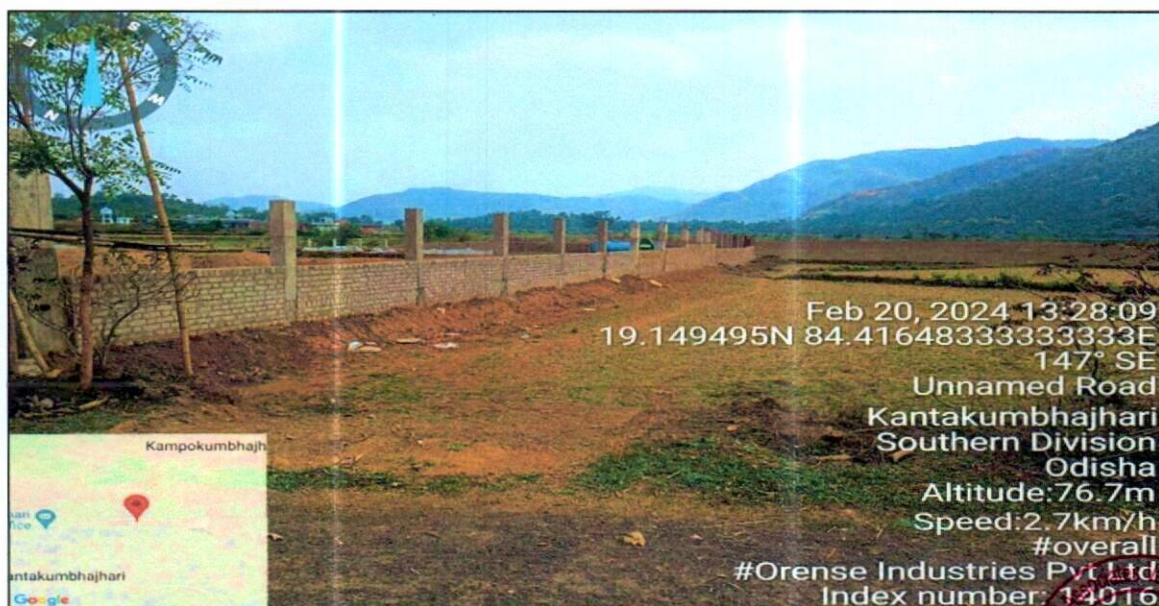
4. LAND DETAILS:

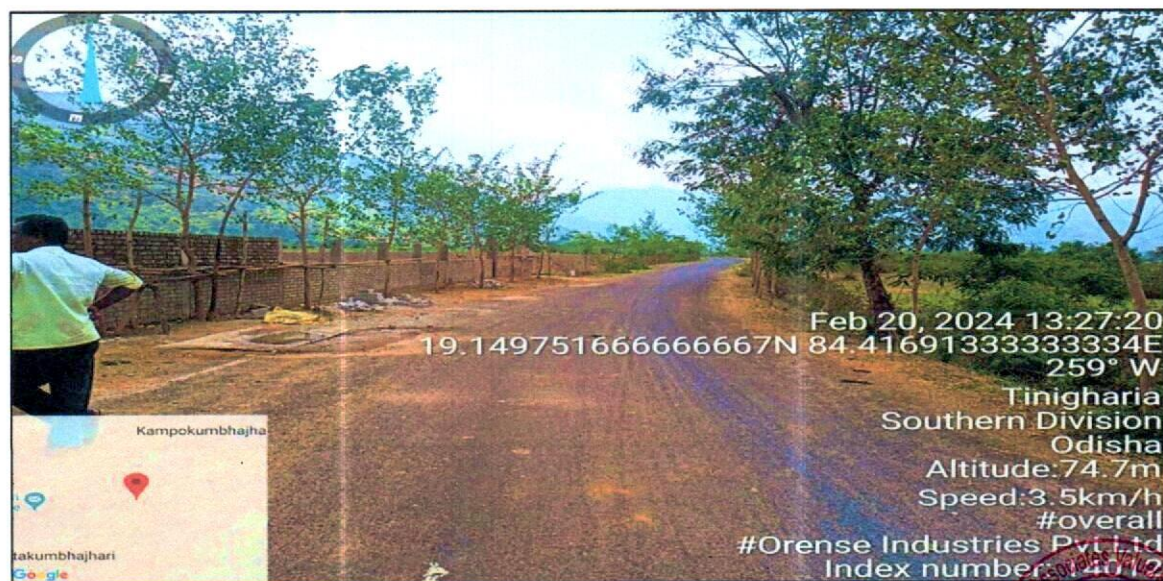
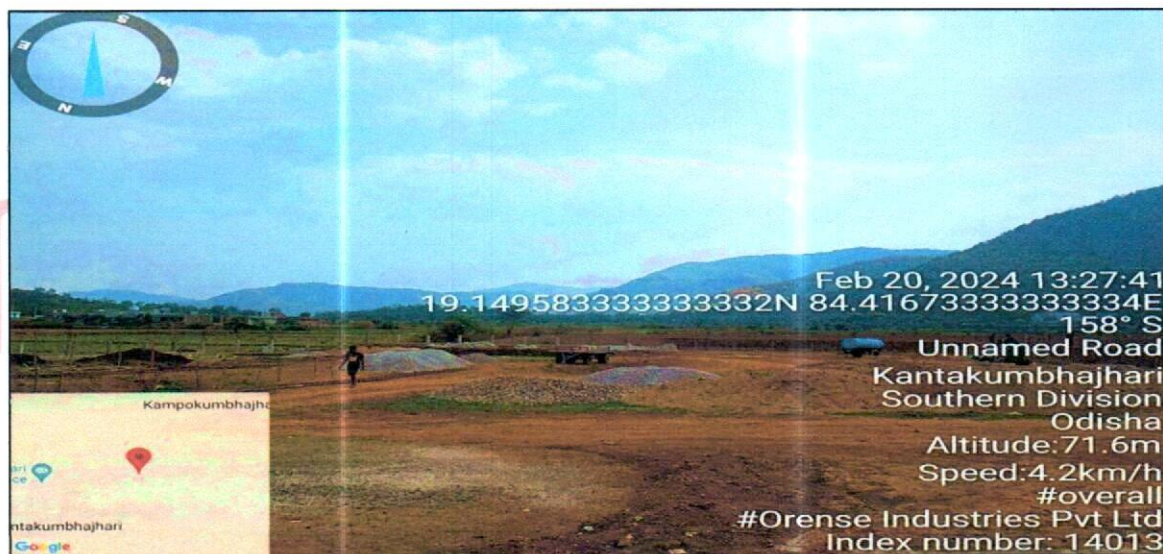
As per sale deed shared by the client/company and verified during Survey, Company has procured a land spanning 1.1400 Acre for the proposed manufacturing facility at Plot No. 243 & 244, Nandarajpur, Khariaguda, Ganjam, Odisha, 761209. The land is registered in the name of M/s. Orense Industries Private Limited. The total area of land admeasures about 4613.415 Sq. Mt. The Sale deed was executed as on 14th December 2022. The land comes under the jurisdiction of Mandrada Gram Panchayat.

The company has taken the NOC from Office of the Gram Panchayat Mandarada under Patrapur block, Dist. Ganjam (Odisha). According to which, Mr. Prithish Das Sharma S/o Sanjeev Kumar Das Sharma (Director of M/s Orense industry Pvt. Ltd.,) resident of village Arnapura Nagar, 4th Land, Berhampur, Ganjam, is permitted for construction of Building for production of Bio-Diesel at Mouza Nandarajpur bearing K.No. 88/223, Plot No.243 Extent of Ac. 0.560 and Plot No.244 Extent of Ac.0580 Total Extent of Ac.1.140 Dec.

During the site visit the land area has been checked and cross-verified through the Sale deed and we found that the land is not an industrial land. Currently, Land Filling and Boundary wall work is in progress found at site (Completed by 60% Approx.). As per informed by the client, promoters have purchased this land in ~INR 15.00 Lakhs. As per the Sale Deed, the land is a residential land and the company is in the process to take the Change of Land Use (CLU) from the District Industrial Centre (DIC) however,

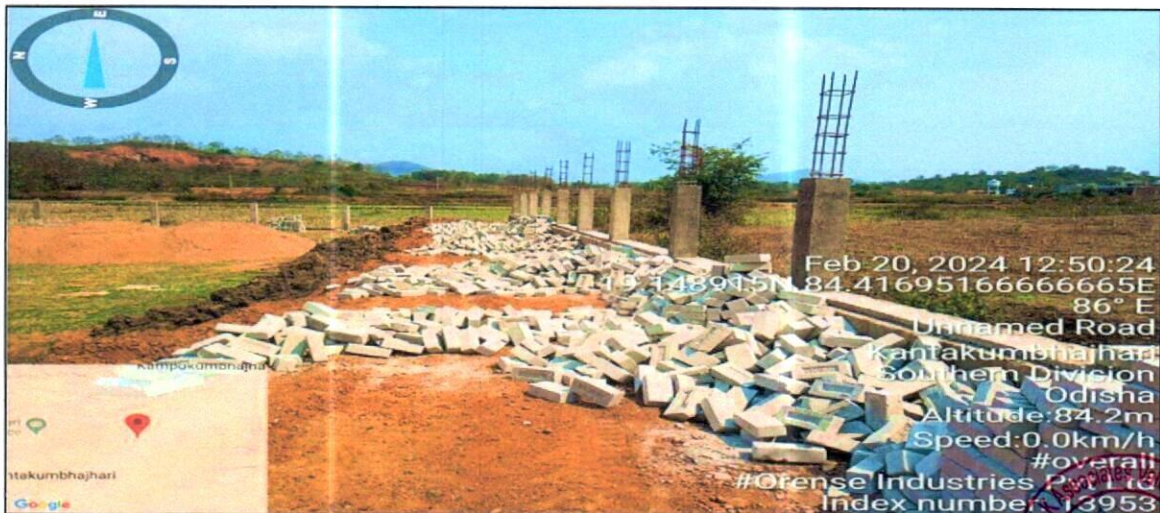
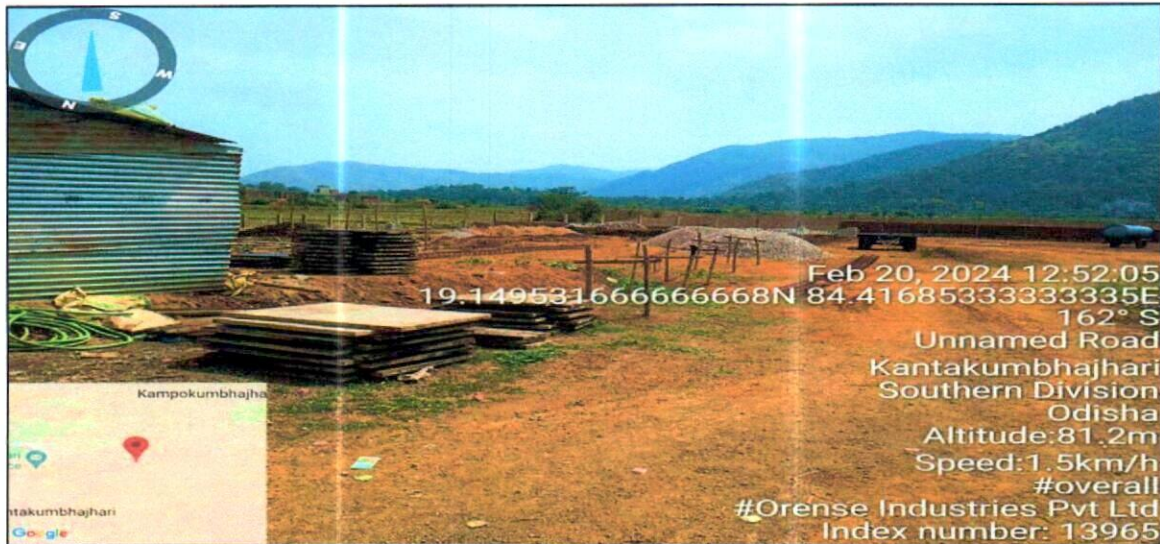
5. PHTOGRAPHS OF THE PROJECT:

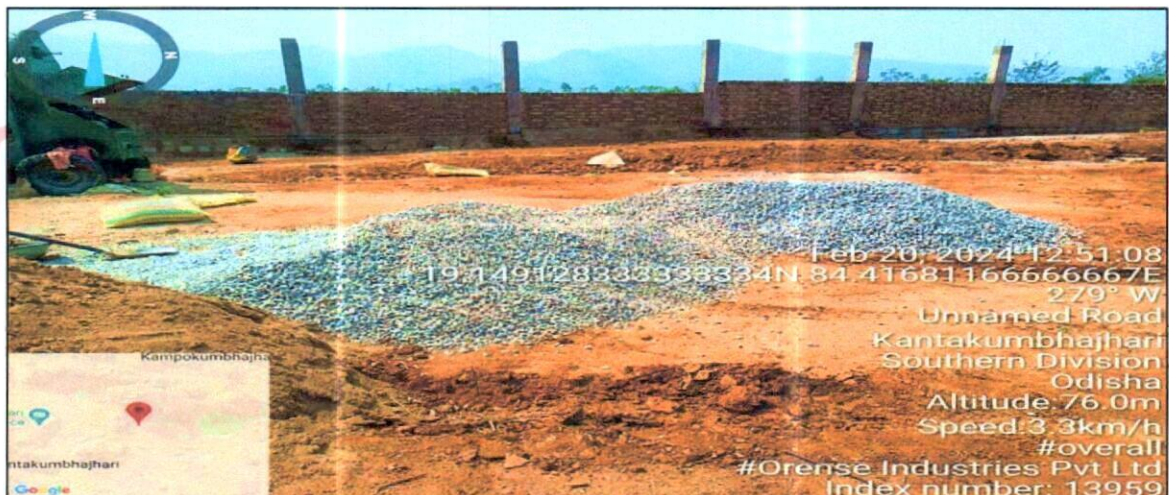
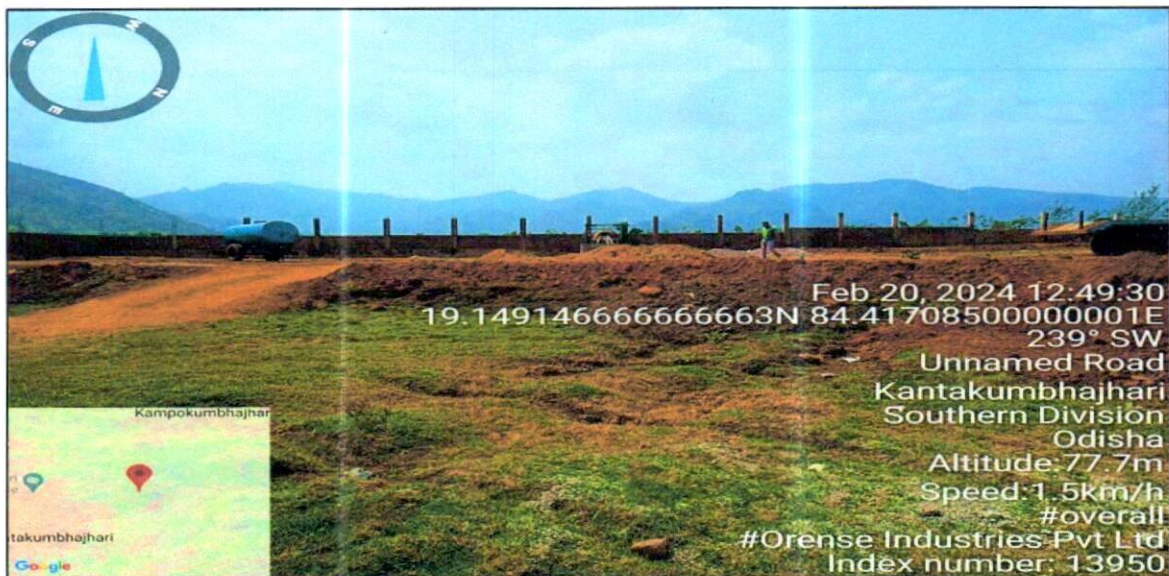












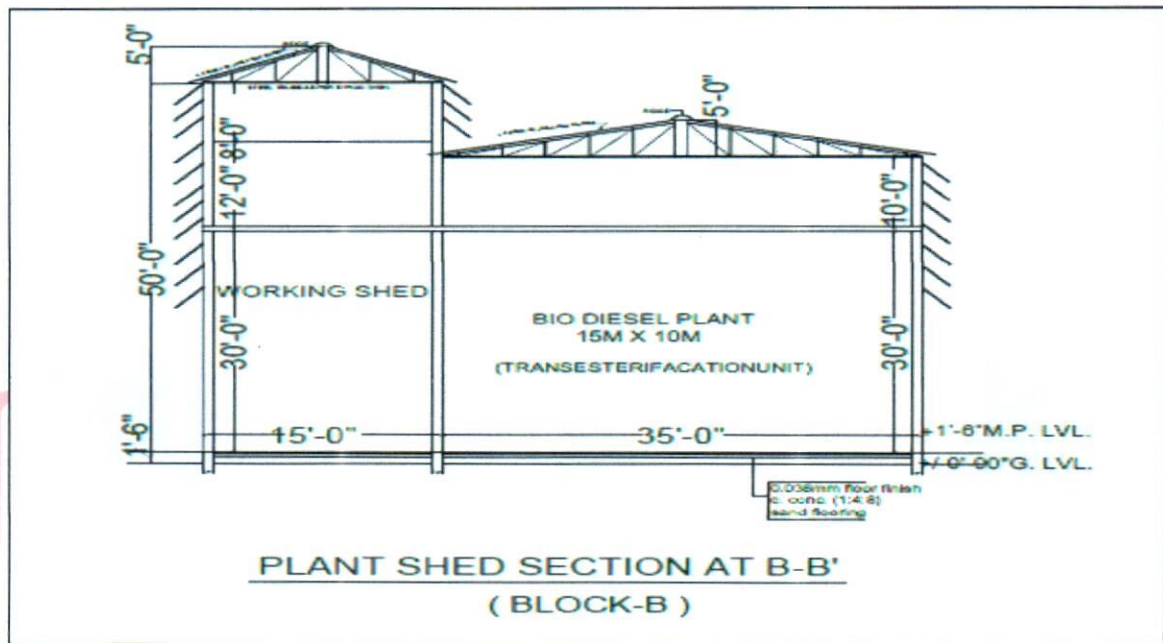
6. BUILDING & CIVIL WORKS:

The planning of the building structures and infrastructure facilities has been done keeping in view the major attributes like entrance to the plot, vehicular movement inside the plot and other functional requirements. As per informed by the client/company, the company will be required Architect approved map only since the property is in the jurisdiction of Gram Panchayat and the company has taken the NOC for Construction of Building & Civil work from Office of the Gram Panchayat Mandarada under Patrapur block, Dist. Ganjam (Odisha).

The proposed site map is prepared by C. Architect, Ar. DV Singh B.Sc. (ENGG.), LIC No. 93, and F 148 Annand Industrial Area Ghaziabad. As per Fire NOC shared by the client/Company, Bio Diesel Refinery Plant of Orense Industries Pvt. Ltd. is proposed for

production of bio-diesel using Vegetable oil, Sodium Hydroxide and Methanol etc. and it is coming under "Industrial Building" category as per Odisha Town Planning & Improvement Trust (Planning and Building Standards) Rules, 2021, Odisha Factory Rules, 1950 and Category "Industrial" Group-G, Moderate Hazard (Sub-Division- G-2) as per NBCI, 2016.

As per the Architect map & Fire NOC approved by Range Fire Officer, Southern Range, Berhampur, below table represents the Structural and construction site requirements:



Covered Area Of Plot No 243 , 244 Khata No 88/205 Nanderaj Pur , Khariaguda Patrapur		
S. No.	Structure	Area (Sq. Mt.)
1.	TOTAL AREA OF THE PLOT	4613.415
2.	Guard Room (3m X 3m)	9.00
3.	Office (5m X 4m)	20.00
4.	Labour Room X2 (4m X 4m)	32.00
5.	Toilet & Bathroom (4m X 3m)	12.00
6.	Boiler House (10m X 4m)	40.00
7.	Electricity (3m X 3m)	9.00
8.	Methanol Tank (6m X 3m)	18.00
9.	Cooling Tower (4m X 4m)	16.00
10.	Storage Tank (10m X 6m)	70.00
11.	Working Shed (15m X 12m)	180.00
12.	Site Of U/G Tanks(20m X 18m)	360.00
13.	Bio Diesel Plant (15m X 10m) (Transesterification unit)	150.00
	Total Covered. Area	916.00 Sq. Mt.

The total covered area of the plant with its civil structures admeasures to about ~916.00Sq. Mt. The master plan for the proposed use of site, has been prepared in accordance with the requirements of the project with due considerations of the requirements of machines and equipment's, the facilities and user amenities required.

As per data/information shared by the client, Company has given the contract to M/s Mahaveer Enterprises for Building & Civil construction works. Total estimated cost is INR 6100000/- (Sixty-One Lakh) inclusive of GST, including additional container setup cost of INR 12.00 lakhs which is taken as a part of cost of Plant & Machinery in TPC. The construction cost is estimated as ~INR 500 per Sq. Ft.

As per verified during the site visit as on 20th Feb 2024, currently, the manufacturing facility is under construction. Only Land Filling and Boundary wall work is in progress found at site (Demarcation is completed by 60% Approx.), No building/Blocks found at site except a temporary Tin shed. The construction work is expected to be completed by 31st March 2024 as per the contract with the constructor. 25% of the total Cost of Building & Civil Construction work will be funded by promoter and rest 75% will be funded through the proposed term loan.

7. PLANT AND MACHINERY DETAILS:

M/s Orense Industries Pvt. Ltd has signed a MOU with Ghaziabad based UCO & Non UCO technology supplier M/s C.C.P Consultant as on 14th August 2023 for procurement of Plant & Machinery for the proposed Bio Diesel Manufacturing facility. M/s C.C.P Consultant is also known for Retail Outlet of Bio-Diesel and Petrol (Energy Sector). As per the shared quotation of M/s CCP Consultant with us by the client, the details of Vegetable Oil Refining Plant and Biodiesel Plant, (Capacity- 20TPD) along with their costs etc. are given in below table:

Sections	Particular/Description	Quantity	Amount INR
Sec-1	WASHING AND DEGAMIN SECTION		
1	Conical Vassal- 13 KL-MS	2 Nos	4275000
2	Reactor Vassal-5KL, S/S-316	1 Nos	1200000
3	Tank-1250x1Mtrx1Mtr-MS(Glycerin)	1 Nos	150000
4	Hot Water Tank-(2Mtrx1250 x1250-MS)	1 Nos	535000
5	Bio Diesel Filter Tank- (850x850x1250-MS)	1 Nos	535000

6	Pump	11 Nos	430000
7	Motor-(3HP)	11 Nos	275000
Total			74,00000
Sec-2	BLEACHING SECTION		
1	Bleacher – 13kl-MS	1 Nos	3200000
2	Filter Press- C.I-30"	1 Nos	600000
3	Receiver -1500Ltr-MS	6 Nos	750000
	Receiver -1000Ltr-MS	1 Nos	
4	Vacuum Pump & Motor	1 Nos	150000
Total			47,00000
Sec-3	CONTINUOUS DEODORIZATION CUM DEACIDIFICATION SECTION-(Distillation)		
1	Distillation -13kl, S/S-316	1 Nos	2700000
2	Condenser – 500diax3mtr-SS TO MS	2 Nos	2600000
	Condenser – 300diax3mtr-SS TO MS	1 Nos	1000000
3	Booster	2 Nos	450000
4	Therma-Fluid Heater-(4 Lakh Calories)	1 Nos	850000
5	Mono Block Bump-7.5HP, 10HP	2 Nos	80000
6	Steam Boiler - Capacity-500kg	1 Nos	350000
7	Cooling Tower-(100TR)	1 Nos	250000
8	Physical Distillation-(15KL-SS-316)	1 Nos	(Complete DistillationSet) 6750000
9	Column-22 Feet, S/S-316	1 Nos	
10	High Vacuum System-Oil Ring	1 Nos	
11	Condenser -SS-316	2 Nos	
12	Electrical Panel	1 Nos	1200000
13	Flange & Valve		700000
14	Pipe Line-MS		750000
15	Consultancy		1500000
Total			1,91,80,000/-
Sec-4	Structure		
1	Steel Structure		
2	Wire Cable		
3	Electrical Light		

4	Tafan & Gauge Glass	
Total		37,20,000/-
Grand Total (Excluding GST)		INR 3,50,00000/-
@ 18% GST		6300000
Grand Total with GST		INR 4,13,00,000/-
1 DG SET:		
Kirloskar i-Green Brand Diesel Generating Set of Rated Capacity (125 KVA) panel with Kirloskar i- Green make Water Cooled Engine and Kirloskar i-Green make 3 Ph Phase Alternator with Acoustic Enclosure conforming to CPCB norms complete.		9,30,000/- (Model No. 4R1040TA G1 (WC))
@ 18% GST		1,67,400/-
Total (Excluding Transportation & Installation)		10,97,400/-
Installation of 160 KVA and 7 span 11 KV line Conductor and last span xlpe cable with 3 ph LT line 12 span for 3phase power supply 60 KW.		
100 KVA Transformer label 2 aluminum Wound along with other required equipment & Services		6,37,500/-
Security Deposit amount of TPSODL for 60kw (app)		1,80,000/-
Cost of metering unit meter ,communiting card, modem to be purchased		1,10,000/-
6% supervision charges of TPSODL (app)		25,000/-
Prosing Fees Deposit		1180/-
Trease Challan for inspection		25,000/-
Total		3,41,180/-
Grand Total		9,78,680/-
Grand Total		INR 4,33,76,080/-

Thus the total cost of installing the Biodiesel Plant (20 TPD) will be INR 4.13 Crore including GST, where the GST@18%, Transportation, Civil Work Extra and Electricity will be paid/provide by Client/Party as per the agreement with the said P&M supplier. One DG set of 125 kva will be costing ~INR 11.00 Lakhs including installation work, GST and transportation cost. One 100 KVA Transformer label 2 aluminium Wound will be costing ~INR 11.00 Lakhs including GST, required civil structure and sub-equipment. Thus Total Plant & Machinery will be costing ~INR 4.35 Crore (With GST) excluding additional container setting up cost of INR 12.00 Lakhs. 25% of the total Cost of Plant & Machinery will be funded by promoter and rest 75% will be funded through the proposed term loan.

However the cost of major machinery has been verified by us by doing the tertiary research and information given by various vendors, which we found in the range and in the line with the market trends. During site visit, we did not found any P&M at site. As per representative, P&M work is going on in Warehouse of contractor (CCP Consultants Engineering).

8. UTILITIES:

- a) **ELECTRICITY-** The electricity requirement for the plant will depends according to requirement. The electricity consumption mainly ranges between 60KVA. The Company will be installing the 160 KVA and 7 span 11 KV line Conductor and last span xlpe cable with 3 ph LT line 12 span for 3 phase power supply 60 KW by procuring the 100 KVA Transformer label 2 aluminium Wound. The Company has made an agreement with TPSODL as on 13th Dec 2023 to ensure the required power supply for the proposed unit, while the cost of construction of electrical infrastructure will be borne by company.
- b) **WATER-** Company has taken the NOC/Certificate of Exemption for Ground Water Withdrawal from the authority, by which Company is permitted for Abstraction of 9.50 metric cube per day water.
- c) **POLLUTION PREVENTION AND CONTROL:** Company has taken the consent from State Pollution Control Board, Odisha to establish under section 25 of Water (Prevention & Control of Pollution) Act 1974, and Section 21 of Air (Prevention & Control of Pollution) Act 1981 for the production Capacity of 2025 KL/Annum Bio Diesel & 675 KL/Annum Crude Glycerine.

PART E

PLANT TECHNICAL DETAILS

1. MANUFACTURING PROCESS:

Biodiesel production is the process of producing the biofuel, biodiesel, through the chemical reactions of transesterification and esterification. This involves vegetable or animal fats and oils being reacted with short-chain alcohols (typically methanol or ethanol). The alcohols used should be of low molecular weight.

Ethanol is the most used because of its low cost, however, greater conversions into biodiesel can be reached using methanol. Although the transesterification reaction can be catalysed by either acids or bases, the base-catalysed reaction is more common. This path has lower reaction times and catalyst cost than those acid catalysis. However, alkaline catalysis has the disadvantage of high sensitivity to both water and free fatty acids present in the oils.

Raw or refined plant oil, or recycled greases that have not been processed into biodiesel, are not biodiesel and should not be used as vehicle fuel. Fats and oils (triglycerides) are much more viscous than biodiesel, and low-level vegetable oil blends can cause long-term engine deposits, ring sticking, lube-oil gelling, and other maintenance problems that can reduce engine life.

Research is being conducted on developing algae as a potential biodiesel feedstock. It is expected to produce high yields from a smaller area of land than vegetable oils. Renewable diesel, also called "green diesel," is distinct from biodiesel and is produced through a very different process. The major steps required to synthesize biodiesel are as follows:

A. FEED STOCK PRETREATMENT:

Common feedstock used in biodiesel production include yellow grease (recycled vegetable oil), "virgin" vegetable oil, and tallow. Recycled oil is processed to remove impurities from cooking, storage, and handling, such as dirt, charred food, and water. Virgin oils are refined, but not to a food-grade level. Degumming to remove phospholipids and other plant matter is common, though refinement processes vary.

Water is removed because its presence during base-catalysed transesterification results in the saponification (hydrolysis) of the triglycerides, producing soap instead of biodiesel. A sample of the cleaned feedstock is then tested via titration against a



standardized base solution, to determine the concentration of free fatty acids present in the vegetable oil sample. The acids are then either removed (typically through neutralization), or are esterified to produce biodiesel.

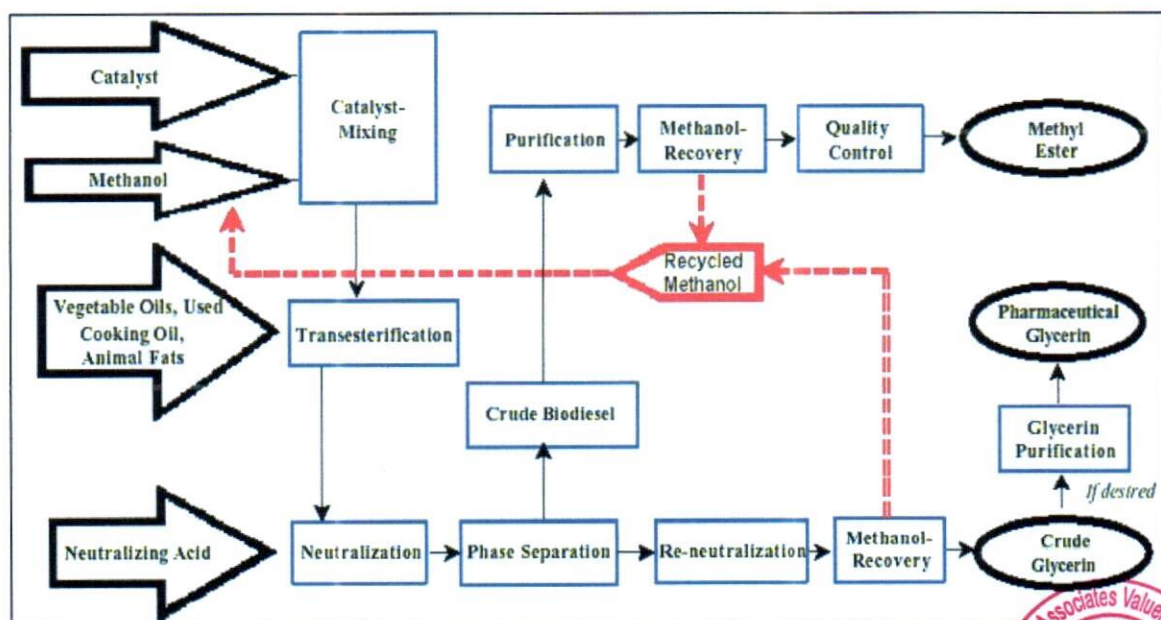
B. REACTIONS:

Base-catalysed transesterification reacts lipids (fats and oils) with alcohol (typically methanol or ethanol) to produce biodiesel and an impure coproduct, glycerol. If the feedstock oil is used or has a high acid content, acid-catalysed esterification can be used to react fatty acids with alcohol to produce biodiesel. Other methods, such as fixed-bed reactors, supercritical reactors, and ultrasonic reactors, forgo or decrease the use of chemical reaction that reduces the quality of substance in chemistry.

C. PRODUCT PURIFICATION:

Products of the reaction include not only biodiesel, but also the by-products soap, glycerol, excess alcohol, and trace amounts of water. All of these by-products must be removed to meet the standards, but the order of removal is process-dependent. The density of glycerol is greater than that of biodiesel, and this property difference is exploited to separate the bulk of the glycerol coproduct. Residual methanol is typically recovered by distillation and reused. Soaps can be removed or converted into acids. Residual water is also removed from the fuel.

2. PROCESS FLOW CHART:

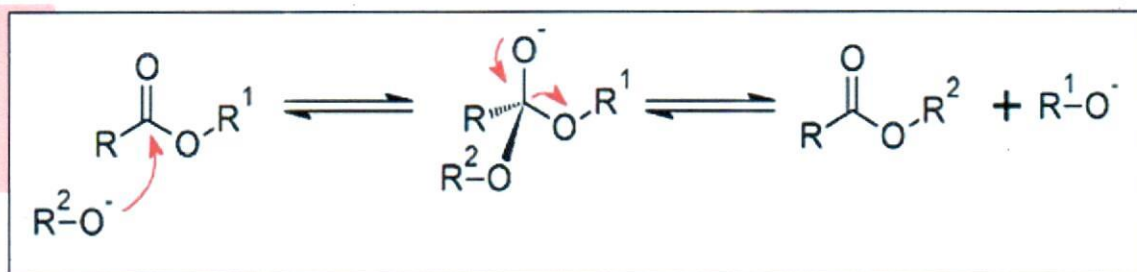


3. TECHNOLOGICAL ASSESSMENT:

a) PROPOSED TECHNOLOGY/METHOD:

The company will be using the "**Base-catalysed transesterification mechanism**". In this method the transesterification reaction is base catalyzed. Any strong base capable of deprotonating the alcohol will work (e.g. NaOH, KOH, sodium methoxide, etc.), but the sodium and potassium hydroxides are often chosen for their cost. The presence of water causes undesirable base hydrolysis, so the reaction must be kept dry.

In the transesterification mechanism, the carbonyl carbon of the starting ester (RCOOR¹) undergoes nucleophilic attack by the incoming alkoxide (R²O⁻) to give a tetrahedral intermediate, which either reverts to the starting material, or proceeds to the transesterified product (RCOOR²). The various species exist in equilibrium, and the product distribution depends on the relative energies of the reactant and product.



b) LATEST TECHNOLOGY:

For different type of feedstocks, different type of technologies are used in the market to optimise the production:

Common feedstock and technology used for biodiesel production	
Feedstock	Technology Used
Palm Stearin	Transesterification
Jatropha and other non-edible oils	Transesterification
Palm fatty acid distillate (PFAD)	Multistage acid esterification/enzymatic
Animal oil/waste oil and others (UCO)	Pre-treatment, multistage esterification-transesterification glycerolises
Animal fat/tallow	Pre-treatment, multistage esterification transesterification glycerolysis- finishing by sulphur removal

There are many methods processes for the production of Bio Diesel as described.

SUPERCRITICAL PROCESS: An alternative, catalyst-free method for transesterification uses supercritical methanol at high temperatures and pressures in a continuous process. In the supercritical state, the oil and methanol are in a single phase, and reaction occurs spontaneously and rapidly. The process can tolerate water in the feedstock, free fatty acids are converted to methyl esters instead of soap, so a wide variety of feedstocks can be used. Also the catalyst removal step is eliminated. High temperatures and pressures are required, but energy costs of production are similar or less than catalytic production routes.

ULTRA- AND HIGH-SHEAR IN-LINE AND BATCH REACTORS: Ultra- and High Shear in-line or batch reactors allow production of biodiesel continuously, semi- continuously, and in batch-mode. This drastically reduces production time and increases production volume. The reaction takes place in the high-energetic shear zone of the Ultra- and High Shear mixer by reducing the droplet size of the immiscible liquids such as oil or fats and methanol. Therefore, the smaller the droplet size the larger the surface area the faster the catalyst can react.

ULTRASONIC REACTOR METHOD: In the ultrasonic reactor method, the ultrasonic waves cause the reaction mixture to produce and collapse bubbles constantly; this cavitation simultaneously provides the mixing and heating required to carry out the transesterification process. Use of an ultrasonic reactor for biodiesel production can drastically reduce reaction time and temperatures, and energy input. Using such reactors, the process of transesterification can run inline rather than using the time-consuming batch processing. Industrial scale ultrasonic devices allow for processing of several thousand barrels per day.

a) TECHNOLOGICAL ASSESSMENT:

Transesterification is the process where free fatty acids/TAG reacts with alcohol in the presence of a catalyst for biodiesel production. Based on literature, many catalysts like acids (HCl, H₂SO₄, H₃PO₄, and sulfonic acid), alkalis (KOH, CH₃ONa, and NaOH), and enzymes (Lipase) are used for this process. Methanol is a cost-effective and efficient solvent so it is most commonly used for this process.

Taking into consideration of optimum yield and cost, alkali-catalyzed transesterification is commonly employed in industries. In this process, 60°C under atmospheric pressure, using methanol reaction was carried for about 1.5 h. High temperatures and pressures

and other solvents can be used to improvise the process but at a higher cost. The glycerol is obtained as a byproduct which in turn can be utilized for biogas production.

To avoid soap formation in the conventional transesterification process, catalyst-free supercritical methanol can be used to improvise the yield where two reactions simultaneously occur methyl esterification of free fatty acids and transesterification of triglycerides. The biodiesel produced is nontoxic, low power, and eco-friendly compared to conventionally produced biodiesel.

Thus as per the above technical analysis, M/s Orense Industries Pvt Ltd is using the appropriate "Transesterification", technology/methodology which is a going on, recognized and trending in the market at present. It can be commented positively that the plant will be running smoothly and technology & specification of the plant are matching with the need to run the plant smoothly and achieve the economies of scale.

4. RAW MATERIAL:

a) RAW MATERIAL USED:

Biodiesel is produced from vegetable oils, yellow grease, used cooking oils, or animal fats. The fuel is produced by transesterification—a process that converts fats and oils into biodiesel and glycerin (a by-product). Approximately 100 pounds of oil or fat are reacted with 10 pounds of a short chain alcohol (usually methanol) in the presence of a catalyst (usually sodium hydroxide [NaOH] or potassium hydroxide [KOH]) to form 100 pounds of biodiesel and 10 pounds of glycerin (or glycerol). Glycerin, a co-product, is a sugar commonly used in the manufacture of pharmaceuticals and cosmetics.

Palm stearin, Tallow oil, Used cooking oil, Jatropha seed oil, Karanja seed oil, Acid oil palm fatty acid, Rice bran fatty oil, Rape seed oil, CNS (Cashew nut shell) oil are few items which are available easily used as a raw material in the Bio Diesel production.

b) PRODUCTION ASSURANCE: Comparison between Weight balance from Palm Stearin Oil and Acid Oils are shown in the below table:

Weight Balance From Palm Stearin			
Raw Material	KG	Output	KG
Feed Stock	100	Bio Diesel	88
KOH/NAOH	1	Crude Glycerine	12

Methanol	12	Methanol	8
Activated Carbon	0.5		
Sulphuric acid	0.5	Spent Earth/ Carbon	2
Phosphoric Acid	0.5	Process Loss	5
Activated Earth/ Fullers Earth	0.5		
Total	115		115

Weight Balance From Acid Oils			
Raw Material	KG	Output	KG
Feed Stock	100	Bio Diesel	86
KOH/NAOH	1	Crude Glycerine	30
Methanol	20	Methanol	15
Glycerine	20	Bio Diesel pitch	2.5
Sulphuric acid	1	Spent Earth/ Carbon	3
Phosphoric Acid	1	Process Loss	8
Activated carbon	0.5		
Activated Earth/Fuller Earth	1		
Total	144.5		144.5

Palm stearin is the solid fraction of Crude Palm Oil (CPO) that is produced by partial crystallization at controlled temperature. It is more variable in composition than palm olein, the liquid fraction of palm oil, especially in terms of its solid fat content, and therefore has more variable physical characteristics. Palm stearin is characterized by a high proportion of palmitic acid (50-68%) and oleic acid (20-35%). Other fatty acids present in significant amounts are: linoleic acid (5-9%), stearic acid (4-6%) and myristic acid (1-2%). Its CAS number: 91079-14-0, EC number: 293-400-1. Palm stearin is the harder fraction of palm oil, containing a higher proportion of saturated fatty acids with a higher melting point of 48–50oC. A much harder stearin containing 79% palmitic acid and a tripalmitoylglycerol content of 60% is also available.

High-Melting Palm Oil Fractions: There are three types of palm stearins, (soft, hard, and very hard) available on the market. Soft palm stearins (melting point of 40–46oC) are obtained through single fractionation of crude palm oil or double fractionation of palm olein. Hard palm stearins (melting point of 52–56oC) are obtained through single fractionation of crude palm oil. The very hard palm stearins (melting point of 59–62oC) possess the unique solid fat content (above 80% between the temperature range of 25–40oC).

India imports around 400,000 tons of Crude Palm Oil (CPO) per month, from Malaysia and Indonesia. (It also imports 400,000 tons of palmolein per month from Malaysia and

Indonesia. CPO is also refined in Malaysia and Indonesia and Palm Stearin is separated from it). In India, Palm Stearin is separated from CPO, and it can be around 40,000 tons per month or 1,200 tons per day. Almost same quantity (1,200 tons per day) can be imported from Malaysia and Indonesia. About 40 BioDiesel plants of 30 tons per day, can be set up based on this locally available raw material and many more based on imported palm stearin.

The promoters have ensured the supply of required feed stock by meeting with various suppliers of Palm Stearin oil and Rice Bran oil, however, Company has proposed to use the Palm Stearin Oil for the production of Bio Diesel Due to its better availability and performance. Thus the Company will be producing 20,607.48 Letre (18,134 Kg, (1Kg = 1.1364 Litre)) per day.

- c) **RAW MATERIAL SUPPLY ANALYSIS:** As per data information provided by the client,, the promoters have contacted and established a network of promoting suppliers of raw material as shown in the below table:

S. No.	Firm Name	Type of Raw Material	Location
1	Chilika Casew Industries	Casew Nut Oil	HUMMA, ODISHA
2	Sri Jagannath Casew cluster pvt.Ltd.	Casew Nut Oil	RAMBHA, ODISHA
3	Senapati Industries	Casew Nut Oil	KESPUR, ODISHA
4	Aayush Casew Industries	Casew Nut Oil	PURI, ODISHA
5	Akriti Resources Pvt.ltd	Casew Nut Oil	KHURDHA, ODISHA
6	Sharanya Agro Industries	Casew Nut Oil	KUKUDAKHANDI, ODISHA
7	Sai Balaji Casew	Casew Nut Oil	PALASA, A.P.
8	Sri Yasaswi Cashew Processor	Casew Nut Oil	PALASA, A.P.
9	SIBA SAI CASEW	Casew Nut Oil,	PALASA, A.P.
10	White Gold Casew Industries	Casew Nut Oil,	PALASA, A.P.
11	SRI RAMA BY PRODUCTS	Casew Nut Oil	KAKINADA, A.P.
12	SRI SHAKTI TRADERS	Casew Nut Oil,	TUNI, A.P.
13	GANAPATI TRADERS	Casew Nut Oil,	SRIKAKULAM, A.P.
14	SOMNATH TRADERS	Casew Nut Oil	VISHAKHAPATNAM, A.P.
15	SRI LAXMI SRINIVAS TRADERS	Casew Nut Oil,	VISHAKHAPATNAM, A.P.
16	SRI DEVI LIQUIDS	Casew Nut Oil	RAJMUNDHRY, A.P.
17	DINESH SALES CORPORATION	Palm Fatty Acid, Distillate, Rice Bran Fatty Acid, Corn Fatty Acid, Soya & Sunflower Mix Fatty Acid Distillate	MUMBAI

18	SRI AMBA BHAVANI OIL PACKERS	Coconut Acid Oil	HYDERABAD
19	Shiva Shankar Edible Pvt.Ltd.	SOYA ACID OIL,PALM STERIN,	KOLKATA
20	AJAY CASHEW OIL AND ALLIED PRODUCTS	CASEW NUT OIL,	PANAJI
21	MRP AGRO PRV.LTD.	OIL Seed, Edible oil acid oils,	GWALIOR
22	GOLD MOHAR OILS	Sunflower and rice bran acid oils	HYDERABAD

As per data/information shared by the client, promoters have contacted to few Rice Bran oil suppliers such as Bal Gopal Food Product Pvt. Ltd., Growing Tree Oil And Refinery Pvt.Ltd , Priti Oil Refinery Pvt.Ltd, Jindal Rice Mill Pvt.Ltd., Sri Ram Oil Pvt.Ltd., Krupalu Refinery to ensure the supply of Raw material.

Apart from the above-mentioned vendors, the technology supplier of the company, M/s CCP consultant, Ghaziabad will give the assurance letter for ensuring availability of raw materials for the proposed plants after proper agreement. M/s C.C.P Consultant is known for Retail Outlet of Bio-Diesel and Petrol (Energy Sector)

- 5. MANPOWER:** As per the details provided by the company officials, in estimating the manpower requirement, a proper ratio between the administrative, managerial, supervisory and shop floor staff has been maintained with a view to affording proper industrial and professional management at various levels. The basic structure of the manpower will require the following kind of resources to operate the plant 24*7 for 300 days a year:

S. No.	Designation	No. Of Persons	Cost Per Day (INR)
1	Lab Chemist	1	1,000
2	Plant in charge	1	1,000
3	Supervisor	1	500
4	Electrician	1	500
5	Machine Operator	3	1,500
6	Helper	6	2,400
Total		13	~INR 7,000 per day

A 10 % escalation rate has been considered every year in the remuneration of the proposed manpower.

PART F

PRODUCT PROFILE

1. **PROPOSED/INSTALLED CAPACITY OF THE PLANT:** Below table shows the proposed capacity of the proposed Bio Diesel Manufacturing plant:

Installed Capacity of the Proposed Unit (20 TPD)	
Output	Out Put Per Day In Kg (or) Litre
Biodiesel (in litre)	20,607
Glycerol (in kg)	2,472

2. **PRODUCT DETAILS:** The company has proposed to manufacture the Bio Diesel and Glycerol (by-product). These products have significant applications in the Cleaning oil spills, Energy generation, Heating, Lubrication, Transportation. The installed capacity of the proposed Unit will be 20 TPD. Proposed product's profile along with Capacity and applicability are mentioned in the below table:

S. No.	Product's Name	Proposed Production	Product Profile
1.	Bio Diesel	20 KLPD	<ul style="list-style-type: none"> Bio Diesel is produced from Palm stearin, Tallow oil, Used cooking oil, Jatropha seed oil, Karanja seed oil, Acid oil palm fatty acid, Rice bran fatty oil, Rape seed oil, CNS (Cashew nut shell) oil by using Transesterification process. The resulting biodiesel contains no sulphur or fossil fuel aromatics. Biodiesel is almost 10% oxygen, making it an oxygenated fuel, which aids combustion in fuel-rich circumstances. Biodiesel can be used pure (B100 biodiesel = 100% biodiesel) or blended (for example, B20 biodiesel = 20% biodiesel and 80% petroleum diesel). It has the applicability in various industries such as Automobiles, Railways, Aircrafts – Aviation, Ships and Ocean Liners, Heating Oil, Power Generation, Agricultural Machinery, Oil Spills Cleaning.

21	Glycerol	2472 KGPD	<ul style="list-style-type: none"> It as a by-product of the manufacturing process of bio diesel. It is an odourless liquid that is used as a solvent, sweetening agent, and also as medicine. It is widely use in pharmaceutical industries. Glycerol is widely used in the film industry during the filming of scenes that involve water. In such situations, glycerol helps stop the areas from rapidly drying out. Also, widely used as a raw material in the production of nitro-glycerine.
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As the Company will be selling these products to the OMC's, The following 09 tests will be conducted as per IS 15607: 2022. A composite of up to 5 TTs received in a day from same Manufacturer and same batch shall be prepared by Lab for testing of the following parameters. The specification limits for these tests shall be as per IS 15607: 2022: (As revised from time to time): Appearance, Density @ 15°C, Kg/m³, Kinematic Viscosity at 40°C, cSt, Flash Point (PMCC), °C, Water Content, mg/kg, Coper strip corrosion ,3 hrs. at 50 °C, Acid value, mg KOH/g, CFPP, °C, Sulphur, mg/Kg.

3. PRODUCTS MANUFACTURED AT MANUFACTURING FACILITY:



Source - Pics obtained from the Public Domain

4. PRICING STRATEGY:

The selling price of the Bio Diesel are decided as per the latest tender released by the PSU OMCs including MRPL & NRL for Procurement of around ~89.0 crore litres of bio diesel (b-100). **EOI Ref No. OMC/EOI/NUCO/BD/DEC23 (CYCLE2) Tender ID 2023_MKTHO_173644_1**
Dated 8th Dec 2023 closing on 18th Dec 2023.

According to the tender, Base price of Biodiesel for the procurement period October 2023-September 2024 shall be Rs. 81.33 per Litre (KL), actual price on which the monthly PO shall be placed will be declared 3 days before the beginning of the procurement period and subsequently every month, which will be capped in the range of +/-10% of the base price published in the EOI. As per the Bid, Basic price of Biodiesel will be revised every Month as per changes in input/output costs which will be limited within range of +/- 10% of the published base price in the EOI i.e. between 73,197/- per KL and 89,463/- per KL.

Selling price of crude Glycerol (INR 35.00 per Litre) is decided based on the tertiary research, information available in public domain and rates informed by the various vendors/suppliers of the Glycerol. However these prices may vary according to price volatility with respect to Geo-political aspects, Demand & Supply and other factors. As per our tertiary research and data/information available in the public domain we found that the prices are in the ranges and trends of the market.

5. **SELLING, MARKETING & DISTRIBUTION PLAN:** OMC like IOCL, BPCL, HPCL and others are releasing tenders on an interval of 3 months every year. It is mandatory for suppliers to get the CTO (Consent to operate) from the concerned Central pollution control board for participating in the tenders. The quantity of bio diesel requirement will be around 890747 kl for Dec-23 to sep-24 as per tender documents.

As per OMC only 5-6 % of total requirements are fulfilled from the market. In case of issue advance LOI, Earlier OMC were released LOI to suppliers before execution of the plant but they did not get the required quantity of bio diesel suppliers. As per informed by the client, they will be taking the LOI's from these OMC's before starting the commercial production post successful trial run. Crude Glycerol will be selling out in the open market through the distributors/ dealers. Apart from the above, the technology supplier of the company, M/s CCP consultant, Ghaziabad will also purchasing the Bio Diesel and Glycerol from the company after proper agreement. M/s C.C.P Consultant is known for Retail Outlet of Bio-Diesel and Petrol (Energy Sector)

PART G

INDUSTRY OVERVIEW & ANALYSIS

1. INTRODUCTION:

India's domestic production of crude oil requirements covers 17.9% and the remaining 80% through imports. Increased import of crude oil causes an impact on foreign trade leading to challenges at both economic and political levels. However, India is also one of the largest consumer markets for vegetable oil (for cooking purposes), which means there is a vast untapped potential for producing biodiesel since there is abundant used cooking oil is available. With proper process management for collecting used cooking oil and making biodiesel, India can replace up to 40% of its energy requirements.

Biofuels, when burnt, produce lesser carbon emissions and fewer pollutants, making them a cleaner energy option. In addition, the flashpoint for biodiesel is more than 150°C. In comparison, petroleum products are combustible at 52°C, making it a safer alternative to use, store, and transport.

The rising demand for biodiesel in the transportation industry as a fuel that provides better efficiency as compared to gasoline and is environment-friendly represents one of the primary factors supporting the growth of the market in India. Besides this, the growing adoption of high-quality biodiesel in construction and mining equipment is offering a positive market outlook in the country.

Additionally, the Government of India is encouraging the adoption of cleaner fuels to reduce the harmful greenhouse gas (GHG) emissions in the environment. This, coupled with the rising demand for domestic fuel alternatives, such as biodiesel, due to the inflating crude oil prices, is propelling the growth of the market.

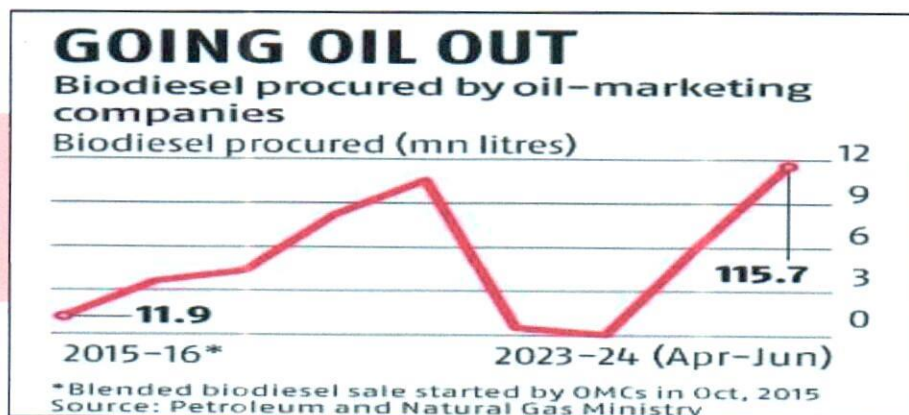
At present, Biodiesel is an excellent choice for aircraft fuel, lubrication, adhesive remover, degreaser, raw material for printing ink remover, and bioremediation agent to clean up oil spills. While it serves various purposes, it also offers tons of benefits to an economy.

2. MARKET SIZE:

India is now the world's third largest producer and consumer of ethanol thanks to nearly tripling production over the past five years. It has potential to expand further with the right policies, keeping costs in check and securing sustainable feedstocks. In 2018, India released its National Policy on Biofuels which set blending targets for ethanol (20%

blending by 2030) and biodiesel (5% by 2030), feedstock requirements for different fuels and laid out the responsibilities of 11 ministries to coordinate government actions. Beyond blending targets, India established guaranteed pricing, long-term ethanol contracts, and technical standards and codes. Financial support for building new facilities and upgrading existing ones was also provided. Buoyed by its success, the Government moved the 20% volume blending target for ethanol forward by 5 years to 2025-26, which was enshrined in an updated National Policy on Biofuels in 2022.

As per Government, the Oil Marketing Companies (OMCs) have procured 6 crore litres of biodiesel till February 2023 as Oil Marketing Companies (OMCs) are periodically floating Expression of Interest (EoI) for procurement of Biodiesel, which is expected to reach ~11-15 Crore litre till end of FY 2024.



3. RAW MATERIAL:

India imports around 400,000 tons of Crude Palm Oil (CPO) per month, from Malaysia and Indonesia. There are many large Palm Oil Refiners in India, who separate Palm Stearin from Crude Palm Oil. The remaining fraction, Palm Olein is then further refined to sell as Edible Palm Oil. Many of them are situated near ports which can handle bulk edible oil ships. Most of these are around Kandla / Mundra Ports in Gujrat, Kakinada Port in Andhra Pradesh and Haldia Port in West Bengal (near Kolkata).

Most of these refiners are large units and can set up large viable Biodiesel plants in their own premises. They can use existing utilities like steam, cooling water, storage tanks, material handling systems etc. This ensures a continuous supply of raw material in molten form. Since Palm Stearin has very low Free Fatty Acid content, it is the best raw material for manufacture of BioDiesel. Also these port can handle import of Methanol in Ship Loads.

UCO has been identified as a potential raw material for biodiesel production in National Policy on Biofuels-2018. UCO can be collected from Bulk Consumers such as hotels, restaurants, canteens, etc. for conversion. Presently, bio-diesel is being produced in the country primarily from imported palm stearin oil. In order to phase-out palm stearin, and as a measure towards import substitution, it has been decided to promote domestically available used cooking oil (UCO) as the feedstock.

4. CHALLENGES TO THE BIO DIESEL INDUSTRY:

High Production Costs: The production of algal biofuel remains costlier than conventional fossil fuels, giving rise to a lack of marketability with the general populace.

Water Demand: Algae require a significant amount of water, and their growth can be hampered by high temperatures and evaporation.

Quality and Species Issues: Much like with Biodiesel, different species of algae have varying oil content, posing a significant challenge in achieving consistent oil yields.

Competition from Other Biomasses: Algal biofuel faces competition from other forms of biomass for various applications, affecting its market acceptability. This competition, which includes sources like terrestrial crops and waste materials, influences the overall economic viability of algal biofuels. The challenge here lies in demonstrating the unique advantages and sustainability of algal biofuels in the face of these alternatives, as well as establishing a market presence that allows it to contribute significantly to the renewable energy portfolio.

Technical Hurdles: Algal biofuel production involves a complicated, multi-step process, and the technology needs further development. This challenge is part of the broader effort to develop sustainable and cost-competitive renewable energy sources to reduce our reliance on fossil fuels, where progress in electricity generation is more advanced than in liquid fuels.

Land Use: Scaling up algal biofuel production may require substantial land use, which needs to be balanced with other land-use priorities. Balancing the cultivation of algae for biofuels with other land uses, such as agriculture or preserving natural ecosystems, becomes a complex task. Striking the right balance is essential to ensure that algal biofuel production does not lead to environmental or social trade-offs.

5. GOVERNMENT INITIATIVES:

The National Policy on Biofuels was created by the Ministry of New and Renewable Energy in 2009. This was because India's domestic energy needs largely depended on imported crude oil. In 2018, the policy was revised by the Ministry of Petroleum and Natural Gas and was published as National Policy on Biofuels. The policy aims to reduce petroleum imports by promoting domestic fuel production. In June 2022, the Central Government revised its target of 20% ethanol blending in petrol by the year 2030 to the year 2025.

Government has notified Guidelines for sale of biodiesel for blending with High Speed Diesel for transportation purposes on 30.4.2019. Through this Notification Government has granted permission exclusively for sale of biodiesel (B-100) only and not for any mixture thereof of whatever percentage.

Further, the Government Initiatives such as Ethanol Blending Programme, Pradhan Mantri Ji-VAN Yojana, GOBAR (Galvanizing Bio-Agro Resources) DHAN scheme, Repurpose Used Cooking Oil (RUCO). The National Policy on Biofuel is essential for managing the environmental crises associated with fossil fuel production.

6. FUTURE OUTLOOK:

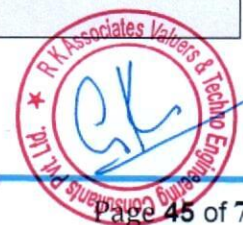
India has another opportunity to boost global biofuel deployment as well through the Global Biofuels Alliance, which it launched in 2023 with leaders from eight other countries. Last year the IEA released "Biofuel Policy in Brazil, India and the United States: Insights for the Global Biofuel Alliance" to support the GBA's development.

Further Indian Bio Diesel Market Demand is expected to grow at a healthy CAGR of 8.60% until 2030. Over the next five years biofuel demand is set to expand 38 billion litres, a near 30% increase from the last five-year period. In fact, total biofuel demand rises 23% to 200 billion litres by 2028, with renewable diesel and bio jet accounting for almost half of this growth with the remainder coming from ethanol and biodiesel.

To conclude, biodiesel production in India is about more than just alternative fuels, it is about transforming the future of energy in a rapidly evolving country. While challenges exist, India's commitment to sustainability and innovation is set to transform the country's energy landscape.



	<p>attacks. India is highly depend on the imported Crude Palm Stearin Oil.</p> <ul style="list-style-type: none"> • Low Temperature: Biodiesel gels in cold weather, but the temperature it will gel depends on the oil or fat used to make it. The best way to use biodiesel during the colder months is to blend it with winterized diesel fuel.
OPPORTUNITIES	<ul style="list-style-type: none"> • Thrust Sector: Bio Diesel have the opportunity to replace a large percentage of fossil fuels and reduce the dependency on crude oil. • Rising Demand: As per OMC's, currently market is able to supply only ~ 10% of total demand of Bio Diesel. It can be a big opportunity for the proposed manufacturing unit. • Alternate Fuel: India uses massive amounts of diesel every year – almost 80 million tons (about \$90 billion, or over Rs. 6 lac crores of annual business!) – for transport, back-up power generation and more. With its environmental effects as well as increasing price, diesel is becoming an increasingly unattractive product. Consequently, biodiesel is becoming increasingly attractive. • Stakeholder's Interest: With a large addressable market of almost \$100 billion, there's hence a significant interest among businesses, end users and government for the production and use of biodiesel. This hence constitutes an attractive business opportunity.
THREATS	<ul style="list-style-type: none"> • Food v/s Fuel: Feedstock production of biofuels is in competition with food production. Since biofuels are made from animal and vegetable fat, more demand for these products may raise prices for these products and create a food crisis in some countries. For instance, the production of biodiesel from corn may raise its demand, pushing the prices for the commodity up, and that could deprive poor people of having it. • LOI: Any breach of LOI with OMC's can negatively impact the futuristic cash flows of the company. • Regulatory Compliance: Adhering to various regulations and obtaining necessary permits, including those related to electricity, pollution, and water, can be time consuming and may pose challenges.



PART I

PROJECT COST AND MEANS OF FINANCE

As per data/information shared by the client, below are the details of Total project Cost (TPC) and means of finance of the proposed Bio Diesel Manufacturing Unit:

Total Project Cost	
Particulars	Amount in Rupees (INR)
Land	0.00
Building	49,00,000
Plant & Machinery	
Bio Diesel manufacturing Plant	4,13,00,000
100 KVA Transformer label 2 aluminium Wound	11,00,000
82.5 kva & 125 KVA (Three Phase) KOEL I Green DG	11,00,000
Additional Container	12,00,000
Total Plant & Machinery	4,47,00,000
WORKING CAPITAL REQUIREMENT	1,66,00,000
Total Cost Of The Project	6,62,00,000

Means of Finance	
Particulars	Amount in Rupees (INR)
Term Loan (75% of the Building and Plant & Machinery)	3,72,00,000
Working Capital loan (75% of the Working capital requirement)	1,24,50,000
Margin money for Term Loan (25% of the Building and Plant & Machinery) (refer- sch-1)	1,24,00,000
Margin money for Working Capital Loan (25% of the Working capital requirement)	41,50,000
Total	6,62,00,000

Notes:

1. As per sale deed executed as on 14th December 2022 shared by the client/company and verified during Survey, Company has purchased a land spanning 1.1400 Acre for the proposed manufacturing facility. Cost of Land is not considered as a part of Total Project Cost since it is owned by promoters of the company.
2. The total covered area of the plant with its civil structures admeasures to about ~916.00Sq. Mt. As per quotation shared by the client, Total estimated cost is INR 49.00 lakhs inclusive

of GST, excluding additional container setup cost of INR 12.00 lakhs which is taken as a part of cost of Plant & Machinery in TPC. The construction cost is estimated as ~INR 500 per Sq. Ft.

3. As per discussion with the consultant and quotations shared by the client, Thus the total cost of installing the Biodiesel Plant (20 TPD) will be INR 4.13 Crore including GST, where the GST@18%, Transportation, Civil Work Extra and Electricity will be paid/provide by Client/Party as per the agreement with the said P&M supplier.
4. One DG set of 125 kva will be costing ~INR 11.00 Lakhs including installation work, GST and transportation cost. One 100 KVA Transformer label 2 aluminium Wound will be costing ~INR 11.00 Lakhs including GST, required civil structure and sub-equipment.
5. Thus Total Plant & Machinery will be costing ~INR 4.47 Crore (With GST) including additional container setting up cost of INR 12.00 Lakhs.
6. 25% margin money of total Building and Plant & Machinery and Working Capital will be procured by the company.

PART J

PROJECT SCHEDULE

Below is the tabulated presentation of the status of the project showing expected duration shared by the project manager of the company. The project is expected to be complete soon.

S. No.	Particulars	Activity	Expected completion date	Status
1.	Land	Land Procurement	14 th Dec 2022	As per Sale deed Completed
		Land Development	Feb 2024	WIP
2.	Sanction of Rupee Term Loan	Sanction of Rupee Term Loan	10 th March 2024	Pending
3.	Building & Civil Works	Appointment of Architect	July 2023	Completed
		Building Plan Preparation	Sep. 2023	Completed
		Building Plan Sanction	-	Completed
		Appointment of Civil contractor/ developer	4 th Sep 2023	Completed
		Building & Civil Works completion	31 st March 2024	WIP
4.	Plant & Machinery	Finalization of P&M suppliers	14 th Aug 2023	Completed
		Orders to P&M suppliers	Nov 2023	Completed
		Arrival of P&M	31 st March 2024	Pending
		Installation of	1 st April 2024	Pending

		P&M		
		Utility Installation	15 th April 2024	Pending
5.	Statutory Approvals, registrations & NOCs	From the respective authorities	20 th April 2024	Most of the Pre- operational NOC's has been taken by the company.
6.	Finishing & Trail Run	Informed by client	30 th April 2024	Pending
7.	Commercial Operation Date	Informed by client	1 st May 2024	Pending

Notes:

1. Schedule has been made as per feasibility to achieve different milestones.
2. Achievement of Milestone will depend on sanction of term loan as per proposed timeline.
3. Company is looking for Sanction of term loan till 10th March 2024 to fund the 75% Cost of the building & civil works and Plant & Machinery.
4. As per this timeline, expected COD will be 1st May 2024

PART K

STATUTORY APPROVALS | LICENCES | NOC

Following major approvals are required. However the list are not exhaustive and State / district Authorities may be approached for further clearances required (if any):

S. No.	REQUIRED APPROVALS	REFERENCE NO./ DATE	STATUS (Approved/ Applied For/ Pending)
1.	Certificate of Incorporation	27th October 2022	Approved
2.	GST & PAN	21AADCO9227H1ZK, AADCO9227H,	Approved
3.	NOC from Gram Panchayat (Office Of The Gram Panchayat Mandarada Under Patrapur Block, Dist. Ganjam (Odisha))	March 2023	Approved
4.	PWD NOC (Office of the Superintending Engg. Ganjam R&B Division, Behrampur)	30th Sep 2023	Approved
5.	Land conversion to Industrial/Non agriculture	NA	Pending
6.	Factory Licence (Under The Factories Act, 1948)	28th Aug 2023	Pending
7.	Building and civil works Plan Sanction Approval Concerned local development authority	NA	NA
8.	Provisional Fire NOC (pre sanction) (ODISHA FIRE & EMERGENCY SERVICE)	8th Sep 2023	Approved

9.	Fire NOC (on completion) <i>Fire Services Department</i>	NA	Apply in due course
10.	PESO Preliminary <i>(Jt. Chief Controller of Explosives, Kolkata)</i>	22 nd May 2023	Approved
11.	Power Load Sanction <i>(Ganjam South Electrical Division Digapahandi)</i>	13th Dec 2023	Post electrical Infrastructure ready (TPSODL)
12.	Consent to establish (under Water Act & Air Act) <i>State Pollution Control Board, Odisha</i>	7 th Aug 2023	Approved
13.	Permission for extraction of ground water <i>(Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation Central Ground Water Authority)</i>	25 th Aug 2023	Approved
14.	Udyam Registration Certificate (MSME) <i>Ministry of MSME</i>	UDYAM-OD-11- 0024284	Approved

Observation Note:

1. Company is in the process of attaining the CLU on the land which is not industrial/Non-agricultural at present.
2. Rest approvals are pending and will be applied in due course as per above schedule.

PART L

COMPANY'S FINANCIAL FEASIBILITY

1. **PROJECTIONS OF THE FIRM:** The projections of the proposed manufacturing unit are done for next 8 years period from FY 2024-25 to 2031-32 based on the expected C.O.D and loan tenor are elaborated below:

A. PROJECTED PROFIT & LOSS ACCOUNT:

(INR LAKHS)

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Income:								
Total Sales	3745.37	5393.33	5501.20	5611.22	5723.44	5837.91	5954.67	6073.77
Closing Stock	119.92	122.32	124.76	127.26	129.81	132.40	135.05	137.75
Total (A)	3,865.29	5,515.65	5,625.96	5,738.48	5,853.25	5,970.32	6,089.72	6,211.52
Expenditure:								
Opening Stock	-	119.92	122.32	124.76	127.26	129.81	132.40	135.05
Raw Materials								
a) Palm stearin	3060.00	4406.40	4494.53	4584.42	4676.11	4769.63	4865.02	4962.32
b) Chemical KOH	29.75	42.84	43.70	44.57	45.46	46.37	47.30	48.24
c) Methanol	32.30	46.51	47.44	48.39	49.36	50.35	51.35	52.38
d) Phosphoric Acid	0.26	0.37	0.37	0.38	0.39	0.40	0.41	0.41
Electricity Charges	1.02	1.47	1.50	1.53	1.56	1.59	1.62	1.65
Lab Chemist Fees	3.30	3.96	4.36	4.79	5.27	5.80	6.38	7.02
Generator Expenses	7.65	11.88	13.07	14.37	15.81	17.39	19.13	21.05
Plant In charge Fee	3.30	3.96	4.36	4.79	5.27	5.80	6.38	7.02
Supervisor fee	1.65	1.98	2.18	2.40	2.64	2.90	3.19	3.51
Electrician Fee	1.65	1.98	2.18	2.40	2.64	2.90	3.19	3.51
Depreciation								
a) Plant and Machinery	33.53	62.02	52.72	44.81	38.09	32.38	27.52	23.39
b) Building	1.23	4.78	4.30	3.87	3.48	3.13	2.82	2.54
Machine Operator Charges	4.95	5.94	6.53	7.19	7.91	8.70	9.57	10.52
Helper	7.92	9.50	10.45	11.50	12.65	13.91	15.31	16.84
Thermo Flude Heater-	19.13	29.70	32.67	35.94	39.53	43.48	47.83	52.62
Interest On CC	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70

Loan								
Interest On Term Loan	50.22	47.61	41.41	34.31	26.20	16.92	6.30	0.00
Printing and Stationery	1.87	2.70	2.75	2.81	2.86	2.92	2.98	3.04
Postage and Telephone	1.87	2.70	2.75	2.81	2.86	2.92	2.98	3.04
Insurance Charges	1.87	2.70	2.75	2.81	2.86	2.92	2.98	3.04
Miscellaneous Expenses	3.75	5.39	5.50	5.61	5.72	5.84	5.95	6.07
Repair and Maintenance	7.49	10.79	11.00	11.22	11.45	11.68	11.91	12.15
Total (B)	3,288.39	4,838.79	4,922.53	5,009.37	5,099.07	5,191.42	5,286.21	5,389.09
Profit or Loss	576.90	676.86	703.43	729.11	754.18	778.90	803.51	822.43
Taxation @27.82%	160.49	188.30	195.69	202.84	209.81	216.69	223.54	228.80
Profit After Tax	416.41	488.56	507.74	526.27	544.37	562.21	579.98	593.63

B. PROJECTED BALANCE SHEET:

Equity & Liabilities	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
1) Shareholder's Funds								
a) Opening Share Capital	-	165.50	165.50	165.50	165.50	165.50	165.50	165.50
Additions to the Capital during the year	165.50	-	-	-	-	-	-	-
Closing Share Capital	165.50	165.50	165.50	165.50	165.50	165.50	165.50	165.50
b) Reserves and Surplus	-	216.41	244.96	352.70	478.97	623.34	785.55	965.53
Add: Net Profit after Tax	416.41	488.56	507.74	526.27	544.37	562.21	579.98	593.63
Less: Proposed Dividend	200.00	460.00	400.00	400.00	400.00	400.00	400.00	500.00
e) Closing Reserves and Surplus	216.41	244.96	352.70	478.97	623.34	785.55	965.53	1,059.15
2) Non- Current Liabilities								
a) Long Term Borrowing- Term Loan	372.00	328.82	279.44	222.96	158.36	84.49	-	-
3) Current Liabilities								
CC Loan	124.50	125	125	125	125	125	125	125

Sundry Creditors	30.60	44.06	44.95	45.84	46.76	47.70	48.65	49.62
Total	909.01	907.85	967.08	1,037.77	1,118.46	1,207.74	1,304.18	1,398.78
Assets								
1) Non-current assets								
Fixed assets								
a) Plant and Machinery	413.48	351.45	298.74	253.93	215.84	183.46	155.94	132.55
b) Building	47.78	43.00	38.70	34.83	31.35	28.21	25.39	22.85
2) Current Asset								
Inventories	119.92	122.32	124.76	127.26	129.81	132.40	135.05	137.75
Sundry Debtors	187.27	359.56	458.43	561.12	667.74	778.39	893.20	1,012.29
Advances To Supplier for machinery	123.00	-	-	-	-	-	-	0
Cash and Cash Equivalent	17.57	31.52	46.45	60.64	73.74	85.27	94.59	93.33
Total	909.01	907.85	967.08	1,037.77	1,118.46	1,207.74	1,304.18	1,398.78

C. PROJECTED CASH FLOW STATEMENT:

(INR LAKHS)

Particular	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Cash Flows From Operating Activities								
Profit before tax	576.90	676.86	703.43	729.11	754.18	778.90	803.51	822.43
Adjustments for:								
Depreciation and amortisation	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
Interest expenses								
Operating profit before working capital changes								
Increase / Decrease in inventories	-119.92	-2.40	-2.45	-2.50	-2.55	-2.60	-2.65	-2.70
Increase / Decrease in trade receivables	-187.27	-172.29	-98.88	-102.69	-106.61	-110.65	-114.81	-119.09
Trade payables, other liabilities and provisions	30.60	13.46	0.88	0.90	0.92	0.94	0.95	0.97
Taxes paid	-160.49	-188.30	-195.69	-202.84	-209.81	-216.69	-223.54	-228.80
CFO	174.57	394.13	464.31	470.67	477.70	485.41	493.81	498.74
Cash Flows From Investing Activities								
Purchase of fixed	-496.00	-						

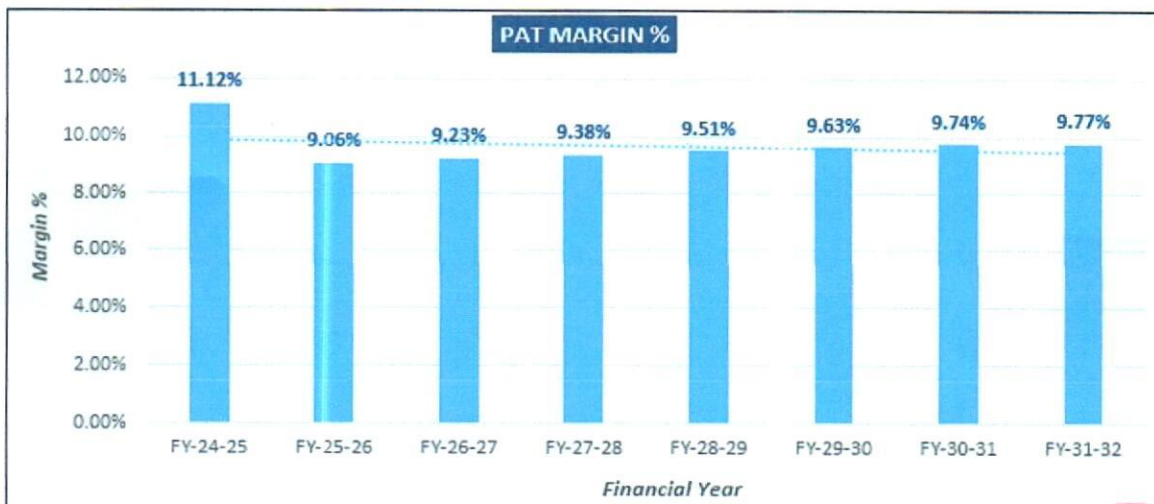
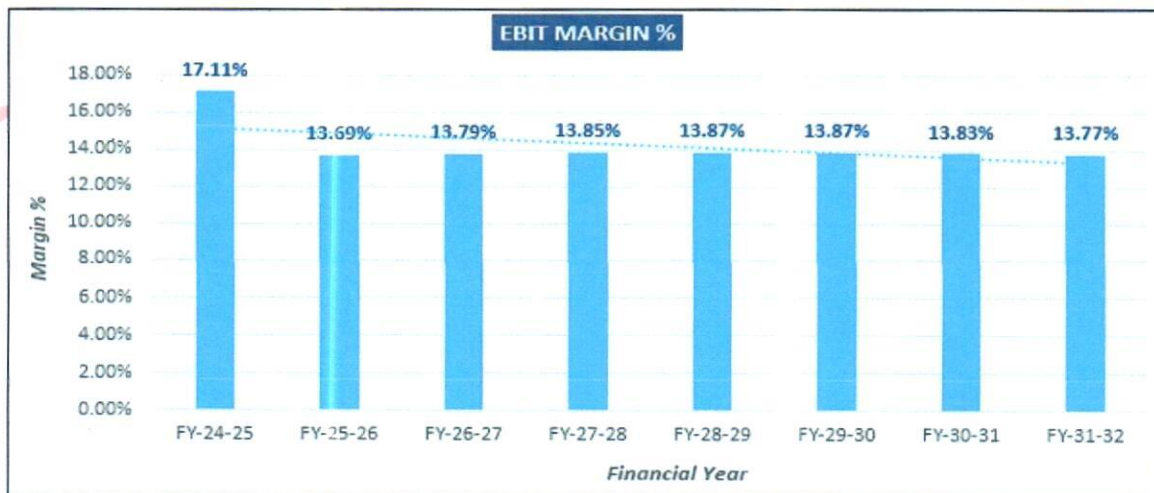
assets								
Advance to creditors for capital goods	-123.00	123.00						
CFI	-619	123.00	-	-	-	-	-	-
Cash Flows From Financing Activities								
Paid up Share Capital Amount received	165.50	-	-	-	-	-	-	-
Long term borrowings (net)	372.00	-43.18	-49.38	-56.48	-64.59	-73.87	-84.49	-
Short term borrowings (net)	124.50	-	-	-	-	-	-	-
Dividend Paid	-200.00	-460.00	-400.00	-400.00	-400.00	-400.00	-400.00	-500.00
CFF	462.00	-503.18	-449.38	-456.48	-464.59	-473.87	-484.49	-500.00
Net cash and cash equivalents	17.57	13.95	14.93	14.19	13.10	11.53	9.32	-1.26
Opening Cash and cash equivalents	-	17.57	31.52	46.45	60.64	73.74	85.27	94.59
Closing Cash and cash equivalents	17.57	31.52	46.45	60.64	73.74	85.27	94.59	93.33

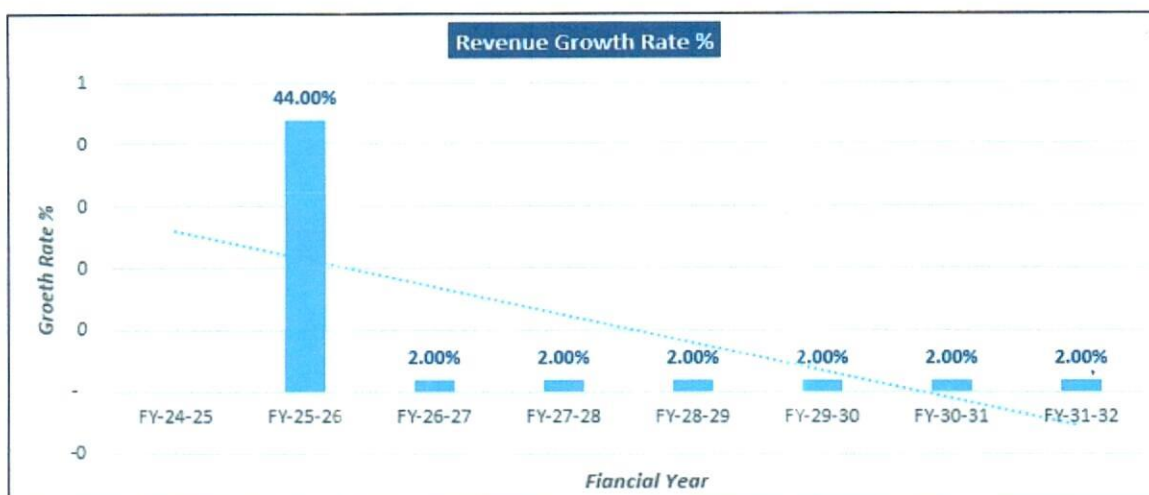
D. KEY FINANCIAL RATIO:

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Revenue	3,745.37	5,393.33	5,501.20	5,611.22	5,723.44	5,837.91	5,954.67	6,073.77
PBT	576.90	676.86	703.43	729.11	754.18	778.90	803.51	822.43
Interest Expense	63.92	61.31	55.10	48.01	39.89	30.61	20.00	13.70
EBIT	640.81	738.17	758.54	777.12	794.08	809.51	823.51	836.12
Dep	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
EBITDA	675.56	804.97	815.55	825.80	835.65	845.02	853.85	862.05
PAT	416.41	488.56	507.74	526.27	544.37	562.21	579.98	593.63
EBITDA MARGIN %	18.04%	14.93%	14.83%	14.72%	14.60%	14.47%	14.34%	14.19%
EBIT MARGIN %	17.11%	13.69%	13.79%	13.85%	13.87%	13.87%	13.83%	13.77%
PAT MARGIN %	11.12%	9.06%	9.23%	9.38%	9.51%	9.63%	9.74%	9.77%
Revenue Growth Rate %		44.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

Note: EBITDA Margins, EBIT Margins and Net profit margins are positive during the estimated period. Revenue growth rate is constant post FY 2026-27 due to 2% escalation rate in the selling price while the company will be operating @100% capacity.

E. GRAPHICAL REPRESENTATION OF KEY RATIOS:





F. OTHER RATIOS OF THE PROPOSED PROJECT:

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Current Ratio	2.89	3.05	3.72	4.40	5.09	5.78	6.48	7.14
Debt equity ratio	1.30	1.10	0.78	0.54	0.36	0.22	0.11	0.10

G. REVENUE BUILD-UP: Company will be generating its revenue from selling of Bio Diesel and its by product Crude Glycerol as shown in the below table:

Sales @ 100% Capacity i.e. 20KL Production for FY 2024-25			
Output	Out Put Per Day In Kg (Or) Litre	Sale Price Per Kg (Or) Litre	Total Sale Per Day
Biodiesel (in litre)	20,607	81.33	16,76,006
Glycerol (in kg)	2,472	35.00	86,520
Total			17,62,526

Diesel Prices has been taken as per the latest Bid released by IOCL as on Dec 2023 and Glycerol price has been taken as per the data/information available in the public domain and which is found to be reasonable and on conservative side as per our tertiary research. A 2% escalation rate in the selling price of both the products, has been considered in the later years during the forecasted period as per the market trends.

H. ESTIMATED KEY FINANCIAL METRICS:

DEBT SERVICE COVERAGE RATIO (DSCR)								
Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32

Funds Available For Servicing Debts:								
Net Profit After Tax	416.41	488.56	507.74	526.27	544.37	562.21	579.98	593.63
Depreciation	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
Interest on T/L	50.22	47.61	41.41	34.31	26.20	16.92	6.30	-
Interest on Working Capital	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70
TOTAL (A)	515.07	616.66	619.86	622.96	625.83	628.33	630.32	633.25
Debts To Be Serviced:								
Repayment Of Mach. T/L	-	43.18	49.38	56.48	64.59	73.87	84.49	-
Interest on new term loan	50.22	47.61	41.41	34.31	26.20	16.92	6.30	-
Interest on Working Capital	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70
TOTAL (B)	63.92	104.49	104.49	104.49	104.49	104.49	104.49	13.70
D.S.C.R. (A/B)	8.06	5.90	5.93	5.96	5.99	6.01	6.03	-
AVERAGE D.S.C.R	5.49							

I. SENSITIVITY ANALYSIS OF DSCR:

DSCR IF REVENUE DECREASED BY 10%

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Funds Available For Servicing Debts:								
Net Profit After Tax	147.28	101.02	112.45	123.08	133.11	142.73	152.10	157.20
Depreciation	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
Interest On T/L	50.22	47.61	41.41	34.31	26.20	16.92	6.30	-
Interest on Working Capital	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70
TOTAL (A)	245.95	229.13	224.57	219.77	214.57	208.85	202.44	196.82
Debts To Be Serviced:								
Repayment Of Mach. T/L	-	43.18	49.38	56.48	64.59	73.87	84.49	-
Repayment Of Other T/L	-	-	-	-	-	-	-	-
Interest on new term loan	50.22	47.61	41.41	34.31	26.20	16.92	6.30	-
Interest on Working Capital	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70
TOTAL (B)	63.92	104.49	104.49	104.49	104.49	104.49	104.49	13.70
D.S.C.R. (A/B)	3.85	2.19	2.15	2.10	2.05	2.00	1.94	-
AVERAGE D.S.C.R	2.04							

DSCR IF COST OF RAW MATERIAL INCREASED BY 10%

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Funds Available For Servicing Debts:								
Net Profit After Tax	191.04	164.03	176.72	188.63	199.97	210.93	221.67	228.15
Depreciation	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
Interest On T/L	50.22	47.61	41.41	34.31	26.20	16.92	6.30	-
Interest on Working Capital	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70
TOTAL (A)	289.70	292.13	288.84	285.32	281.44	277.05	272.01	267.78
Debts To Be Serviced:								
Repayment Of Mach. T/L	-	43.18	49.38	56.48	64.59	73.87	84.49	-
Interest on new term loan	-	-	-	-	-	-	-	-
Interest on Working Capital	50.22	47.61	41.41	34.31	26.20	16.92	6.30	-
TOTAL (B)	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70
D.S.C.R. (A/B)	63.92	104.49	104.49	104.49	104.49	104.49	104.49	13.70
AVERAGE D.S.C.R	2.60							

Thus as per the sensitivity analysis, the average DSCR of the project will be greater than 1, which means that if the sales goes down by 10% or Cost of raw materials goes up by 10% still then the project will be capable to services its debt.

J. NPV, IRR AND PAYBACK PERIOD OF THE PROJECT:

Calculation of NPV& IRR								
Particulars	Mar-25	Mar-26	Mar-27	Mar-28	Mar-29	Mar-30	Mar-31	Mar-32
EBIT	640.81	738.17	758.54	777.12	794.08	809.51	823.51	836.12
NOPAT	462.54	532.81	547.51	560.93	573.16	584.31	594.41	603.51
Depreciation	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
CAPEX	-496.00	-	-	-	-	-	-	-
WCC	-399.59	-38.22	-100.44	-104.29	-108.24	-112.31	-116.51	-120.82
FCFF	-398.30	561.39	504.09	505.32	506.49	507.50	508.25	508.62
Discount rate	14% (Nifty 50 Returns (CAGR) in the Last 10 Years + 2% Company Risk Premium)							
Period	0.92	1.89	1.78	1.79	1.79	1.79	1.79	1.79
Discount Factor	0.89	0.78	0.79	0.79	0.79	0.79	0.79	0.79
PV of FCF	-353.22	438.42	399.17	399.58	400.56	401.36	401.94	402.24
NPV	INR 2,490.06 Lakhs							
IRR	119%							

Payback Period of the Project								
Year	Mar-25	Mar-26	Mar-27	Mar-28	Mar-29	Mar-30	Mar-31	Mar-32
No. Of Years	1	2	3	4	5	6	7	8

Cash Accrual	451	555	565	575	586	598	610	620
Accumulated Cash Accrual	451.16	1,006.5	1,571.2	2,146.2	2,732.1	3,329.88	3,940.1	4,559.7
TPC	INR 662 Lakhs							
Payback Period	1.62 Years							

Thus, the project will be having a payback period of **1.62 years** and NPV & IRR of the project as on COD will **INR 2490.06 Lakhs & 119%**, which indicated the worthiness of the project.

K. BREAK-EVEN ANALYSIS:

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Sales value	3,745.3	5,393.3	5,501.2	5,611.2	5,723.4	5,837.9	5,954.6	6,073.7
Variable Overheads :								
Raw material	3,122.3	4,496.1	4,586.0	4,677.7	4,771.3	4,866.7	4,964.0	5,063.3
Power	1.02	1.47	1.50	1.53	1.56	1.59	1.62	1.65
Thermo-Flude Heater- running cost	19.13	29.70	32.67	35.94	39.53	43.48	47.83	52.62
Generator Expenses	7.65	11.88	13.07	14.37	15.81	17.39	19.13	21.05
Total	3,150	4,539	4,633	4,730	4,828	4,929	5,033	5,139
Contribution (A-B)	595.27	854.16	867.92	881.62	895.23	908.70	922.01	935.09
Fixed Overhead :								
Salary & Fees of All staff	22.77	27.32	30.06	33.06	36.37	40.01	44.01	48.41
Interest on TL and CC Loan	63.92	61.31	55.10	48.01	39.89	30.61	20.00	13.70
Other Cash Fixed Cost	16.85	24.27	24.76	25.25	25.76	26.27	26.80	27.33
Total cash fixed overhead	103.54	112.90	109.92	106.32	102.02	96.89	90.80	89.43
Non-cash fixed Overheads :								
Depreciation	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
Total Non-cash fixed Overheads :	34.75	66.80	57.02	48.68	41.57	35.51	30.34	25.93
Total fixed overheads (D+E)	138.29	179.70	166.93	155.00	143.59	132.40	121.14	115.36
Break Even Point % (F/C*100)	23.23%	21.04%	19.23%	17.58%	16.04%	14.57%	13.14%	12.34%
Cash Break Even Point % (D/C*100)	17.39%	13.22%	12.66%	12.06%	11.40%	10.66%	9.85%	9.56%

L. TERM LOAN INPUTS:

Term Loan Repayment Inputs	
Amount of Term Loan	INR 372.00 Lakhs
Rate of Interest	13.50%
SCOD (Scheduled Commercial Operation Date)	May 2024
Disbursal Start Date	Mar-24
Repayment Start Date	April 2025
Repayment Period (Years)	6
Total Monthly Instalments	78
Moratorium from first drawl (Months)	12
Door to Door Tenure (Months)	78
Number of Months a year	12

Loan Repayment Schedule			
Year	Principle served	Interest served	Total Served
FY-24-25	-	50,22,000.00	50,22,000.00
FY-25-26	43,18,015.00	47,61,293.00	90,79,308.00
FY-26-27	49,38,403.00	41,40,905.00	90,79,308.00
FY-27-28	56,47,926.00	34,31,382.00	90,79,308.00
FY-28-29	64,59,388.00	26,19,920.00	90,79,308.00
FY-29-30	73,87,439.00	16,91,869.00	90,79,308.00
FY-30-31	84,48,829.00	6,30,479.00	90,79,308.00
Total	3,72,00,000.00	2,22,97,848.00	5,94,97,848.00

M. WORKING CAPITAL REQUIREMENT:

Particulars	FY-24-25	FY-25-26	FY-26-27	FY-27-28	FY-28-29	FY-29-30	FY-30-31	FY-31-32
Total current Assets	447.76	513.40	629.65	749.02	871.28	996.06	1,122.8	1,243.3
Less: Current liabilities other than bank borrowing	30.60	44.06	44.95	45.84	46.76	47.70	48.65	49.62
Working capital	417.16	469.33	584.70	703.18	824.52	948.37	1,074.1	1,193.7
25% of working capital gap	104.29	117.33	146.18	175.79	206.13	237.09	268.55	298.44
MPBF(Maximum Permissible Bank Finance)	312.87	352.00	438.53	527.38	618.39	711.28	805.65	895.31
Projected CC loan	124.50	124.50	124.50	124.50	124.50	124.50	124.50	124.50
Loan Feasibility	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible

2. KEY ASSUMPTIONS & BASIS:

Sl. No.	Item	Assumptions and Basis																				
1.	General	<p>a. The projections of the firm are done for the period from FY 2024-25 to FY 2031-32, 8 years, to cover the term loan period as per the industry best practices.</p> <p>b. We have considered Revenue based model (top to bottom approach) while making the future financial projections.</p> <p>c. The expected COD of the project would be 1st May 2024, thus the project would be operational for 11 months in the initial year of the projected period.</p>																				
2.	Revenue Build up	<p>a. Total income for the financial years during the forecasted period will be generating from selling of Bio Diesel and its by-product Glycerol. The plant is assumed to be operational for 300 days for 24 hours annually i.e. 25 days a month.</p> <p>b. Below table shows the Revenue of the company @100% capacity utilization:</p> <table><tr><th colspan="4">Production @100% Capacity i.e. 20 KLPD</th></tr><tr><th>Products</th><th>Output/day</th><th>Sales Price/Unit</th><th>Amount (INR)</th></tr><tr><td>Biodiesel (in litre)</td><td>20,607</td><td>81.33</td><td>16,76,006</td></tr><tr><td>Glycerol (in kg)</td><td>2,472</td><td>35.00</td><td>86,520</td></tr><tr><td>Total</td><td>-</td><td>-</td><td>INR 17,62,526</td></tr></table> <p>c. Thus the company will be generating INR 3745.36 Lakhs in the initial year in the 11 months considering 25 working days a month, while operational @50% capacity i.e. 10KLPD in first 5 months.</p> <p>d. Therefore the company is achieving an average revenue growth rate of ~2% Y-o-Y basis which is also in the line with industrial & economic trends and on conservative side.</p>	Production @100% Capacity i.e. 20 KLPD				Products	Output/day	Sales Price/Unit	Amount (INR)	Biodiesel (in litre)	20,607	81.33	16,76,006	Glycerol (in kg)	2,472	35.00	86,520	Total	-	-	INR 17,62,526
Production @100% Capacity i.e. 20 KLPD																						
Products	Output/day	Sales Price/Unit	Amount (INR)																			
Biodiesel (in litre)	20,607	81.33	16,76,006																			
Glycerol (in kg)	2,472	35.00	86,520																			
Total	-	-	INR 17,62,526																			

3.	Pricing (Selling Price Per Unit)	<p>a. The selling price of the Bio Diesel are decided as per the latest tender released by the PSU OMCs including MRPL & NRL for Procurement of around ~89.0 crore litres of bio diesel (b-100). EOI Ref No. OMC/EOI/NUCO/BD/DEC23 (CYCLE2) Tender ID 2023_MKTHO_173644_1 Dated 8th Dec 2023 closing on 18th Dec 2023. However the prices are may higher or lower in open market.</p> <p>b. According to the tender, Base price of Biodiesel for the procurement period October 2023- September 2024 shall be Rs. 81.33 per Litre (KL), actual price on which the monthly PO shall be placed will be declared 3 days before the beginning of the procurement period and subsequently every month, which will be capped in the range of +/-10% of the base price published in the EOI.</p> <p>c. As per the Bid, Basic price of Biodiesel will be revised every Month as per changes in input/output costs which will be limited within range of +/- 10% of the published base price in the EOI i.e. between 73,197/- per KL and 89,463/- per KL.</p> <p>d. Selling price of crude Glycerol (INR 35.00 per Litre) is decided based on the tertiary research, information available in public domain and rates informed by the various vendors/suppliers of the Glycerol.</p> <p>e. An escalation of 2% Y-o-Y basis has been considered in selling price of Bio Diesel and Crude Glycerol during the projected period.</p> <p>f. Also as per our tertiary research, industry trend and pricing offered by other companies and vendors in this line and data/information available in public domain, we found that the Selling price per unit is in the ranges and trends of the market.</p> <p>g. However the price of the Ferro Alloys is volatile with respect to the various market factors such as Demand & Supply, Specification,</p>
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		<p>Raw Material Cost Variances and Other Production Costs.</p> <p>h. Thus, justifiably Selling price has been considered during the forecasted periods considering the micro and macro-economic factors, which is reasonable and on conservative side.</p>
4.	Capacity Utilization	<p>a. OMC's has assured to sign the LOI with the Company post achieving the COD, thus out of total installed capacity of 20klpd, the Company will be operating @ 50% Capacity in first 5 month of the initial projected year i.e. @10klpd.</p> <p>b. As per latest Bid released by OMC's as on 8th Dec 2023, OMC's are required to procure ~ Procurement of around 89.0 Crore Litres of Bio Diesel (B-100) from December 2023–September 2024. However, As per OMC only 5-6 % of total requirements are fulfilled from the market from past few years.</p> <p>c. Thus after sign the LOI with OMC' it is expected that the Company can operate @ 100% Capacity to supply its production to the OMC' i.e. 20KLPD.</p> <p>d. Thus it is assumed that the Company will be operating @100% Capacity utilization i.e. 20klpd from Oct 2024 till FY 2031-32.</p>
5.	Capital Expenditure	<p>a. As per sale deed executed as on 14th December 2022 shared by the client/company and verified during Survey, Company has purchased a land spanning 1.1400 Acre for the proposed manufacturing facility. Cost of Land is not considered as a part of Total Project Cost since it is owned by promoters of the company.</p> <p>b. The total covered area of the plant with its civil structures admeasures to about ~916.00Sq. Mt as per the proposed site map. As per work order issued to contractor M/s Mahaveer Enterprises shared by the client, Total estimated cost is INR 49.00 lakhs inclusive of GST, excluding additional container setup cost of INR 12.00 lakhs which is taken as a part of cost of Plant & Machinery in</p>

		<p>TPC. The construction cost is estimated as ~INR 500 per Sq. Ft.</p> <p>c. As per discussion with the consultant and work order issued to CCP Consultant shared by the client, the total cost of installing the Biodiesel Plant (20 TPD) will be INR 4.13 Crore including GST, where the GST@18%, Transportation, Civil Work Extra and Electricity will be paid/provide by Client/Party as per the agreement with the said P&M supplier.</p> <p>d. One DG set of 125 KVA will be costing ~INR 11.00 Lakhs including installation work, GST and transportation cost. One 100 KVA Transformer label 2 aluminium Wound will be costing ~INR 11.00 Lakhs including GST, required civil structure and sub-equipment.</p> <p>e. Thus Total Plant & Machinery will be costing ~INR 4.47 Crore (With GST) including additional container setting up cost of INR 12.00 Lakhs and 25% margin money of total Building and Plant & Machinery cost and Working Capital will be procured by the company.</p> <p>a. Thus INR 6.62 Crore will be the TPC for this proposed plant which is in the line with industrial and sectoral benchmarks as per our tertiary research and information available in the public domain and information provided by the third party consultants/vendors.</p>						
6.	Expenses	<p>a. Major expenses includes Raw materials (including stores and other items used in the process of manufacture), power and fuel, factory overhead, salaries and wages, transportation cost, SG&A etc.</p> <p>b. The present project will be using "Transesterification" process in which Palm Stearin Oil, KOH/NAOH, Methanol & Phosphoric Acid will be the major raw material as per shown in the below table along with their costs/unit @ 100% Capacity i.e. 20KLPD:</p> <table border="1"> <thead> <tr> <th>Raw Material</th><th>Consumption Kg/day</th><th>Cost Per Kg</th></tr> </thead> <tbody> <tr> <td>Palm stearin</td><td>20,000</td><td>INR 72</td></tr> </tbody> </table>	Raw Material	Consumption Kg/day	Cost Per Kg	Palm stearin	20,000	INR 72
Raw Material	Consumption Kg/day	Cost Per Kg						
Palm stearin	20,000	INR 72						

Chemical KOH	200	INR 70
Methanol	400	INR 38
Phosphoric Acid	6	INR 20

- c. An escalation of 2% in the costs of all raw material has been considered during the forecasted period. As per our tertiary research and data available in the public domain, we found the unit rate reasonable.
- d. As per the data information shared by the client, Electricity consumption will be 60kwh per day which will be costing @INR 8 per unit. Thus 480 /day will be electricity expense of the company.
- e. Company will initiate the project with ~13 employees as per the requirement.

Designation	No. Of Persons	Cost Per Day (INR)
Lab Chemist	1	1000
Plant in charge	1	1000
Supervisor	1	500
Electrician	1	500
Machine Operator	3	1500
Helper	6	2400
Total	13	~INR 7,000 per day

An escalation of 10% has been taken in the remunerations has been considered during the forecasted period.

- f. Thermo Fluidic heater will be operational 15 hr operation per day @8 litre /hr=120 litre/day*75 per litre i.e. INR 9000 per day will be the cost of it which has been escalated by 10% Y-o-Y basis during the forecasted period.
- g. DG usage will be 6 hr/day which consume 8 litre/hr=48 litre/day*75 per litre i.e. INR 3,600 per day will be the cost of it which has been escalated by 10% Y-o-Y basis during the forecasted period.
- h. Printing and Stationery, Postage and Telephone and Insurance

		<p>Charges has been considered as 0.05% of the Total Revenue during the forecasted period.</p> <p>i. Miscellaneous Expenses and Repair and Maintenance expenses has been considered as 0.10% and 0.20% of the total revenue during the forecasted period.</p>
7.	Term Loan	<p>a. As per the discussion with the client, company will apply for a term loan of INR 372.00 Lakhs from the total project cost of INR 662.00 Lakhs for the proposed Bio Diesel manufacturing unit.</p> <p>b. The tenure of the loan will be 7 years in which first 11 months will be considered as moratorium period from the date of COD. Interest rate has been considered as 13.5% as per discussion with the client.</p> <p>c. Also the loan repayment period will be from April 2025 till March 2032.</p> <p>d. As per working capital schedule, the company will be required a Cash Credit Limit of INR 124.50 Lakhs.</p>

Conclusion:

1. DSCR, has achieved more than 1 during the loan repayment period.
2. Average DSCR, EBITDA margin, EBIT margin is 5.49, 15.01%, and 14.22% respectively during the estimated period.
3. The company is having a positive NPV and IRR as on COD, of INR 2490.06 lakhs and 119% respectively at the base cases while it may vary with changes in the assumptions & micro and macro-economic trends considered as on date.
4. Based on the above key financial ratios of the proposed Project during the forecast period shows that the project looks financially viable if the Project Company & promoters are able to maintain assumed capacity utilization, revenue and can contain cost as assumed above.

PART M

CONCLUSION


Based on the technological, economical and market analysis done above, various assumptions of sectoral trends taken, product pricing to be adopted by the company, the Project appears to be Techno-commercially viable subject to the risks, threats, weaknesses, limitations of the product as detailed previously.

As per financial projections for the estimated period, **Average DSCR, EBITDA Margin and EBIT Margin** of the project are **5.49, 15.01% and 14.22%** respectively, where higher DSCR is the indicator of the project capability to pay out its outstanding debt and EBITDA margin shows the capability of the project to generate the operating profits over the forecasted period. Also the project is having the payback period of **~2 Years** in the line with sectoral trends.

The proposed Bio Diesel manufacturing facility is having a positive **NPV and IRR** as **INR 2490.06 Lakhs and 119%** respectively as the industry is expectedly growing at a CAGR of ~8% during the forecasted period. While it is not avoidable that the future projections may change in the upcoming years due to various factors impacting the operation, managerial, financial efficiency and economies of scale of the project.

While it would be depending on the management's capability in future that how efficiently company adopts marketing and advertisement strategy, supply chain and carry out inventory & resource management to achieve higher profitability. After considering the foreseen demand of the Bio Diesel and its by-products domestically and globally, various initiatives taken by government, financial analysis of the project based on the assumptions taken over the projected period, it appears reasonable to comment that the proposed project is "**Technically and Economically**" Viable subject to current assumptions considered and occurring the same in the upcoming years same as the forecasted period which is dependent on the sincerity and efforts of the management and various micro and macroeconomic & industry situation.

We have tried our level best to analyse the Project techno-economic feasibility of the Project based on the Industry research, Project information and various futuristic assumption taken. However achieving the financial milestones depends on the ability, sincerity and efforts of the company, promoters and its key managerial performance to maintain and complying with the norms, quality & standards of OMC's as per the released tender and LOI signed with them.

Declaration	i. The undersigned does not have any direct/indirect interest in the above property.	
	ii. The information furnished herein is true and correct to the best of our knowledge, logical and scientific assumptions.	
	iii. This TEV Report is carried out by our Financial Analyst team on the request from M/s Orense Industries Private Limited.	
	iv. Meeting of Financial projections will be subject to subject to the market & economy stability factors, judicious business operations and proper & timely implementation of its process & product re-engineering & improvements plans for achieving high productivity, efficiency and achieving cost saving benefits.	
	v. We have submitted TEV report to the Client.	
Name & Address of consultant company		Signature of the authorized person
M/s. R.K. Associates Valuer & Techno Engineering Consultants Pvt. Ltd. D-39, 2 nd Floor. Sector-2, Noida- 201301		
Enclosed Documents	Disclaimer & Remarks 70-73	
Number of Pages in the Report	73	
Financial Analyst Team worked on the report	PREPARED BY: Mr. Gaurav Kumar	
	REVIEWED BY: Mrs. Rachit Gupta	

For R.K Associates Valuer & Techno

Place: Noida

Engineering Consultants (P) Ltd.

Date: 15/02/2024


(Authorized Signatory)

PART N

DISCLAIMER | REMARKS

1. No employee or member of R.K Associates has any direct/ indirect interest in the Project.
2. This report is prepared based on the copies of the documents/ information which the Bank/ Company has provided to us out of the standard checklist of documents sought from them and further based on our assumptions and limiting conditions. The client/owner and its management/representatives warranted to us that the information they supplied was complete, accurate and true and correct to the best of their knowledge. All such information provided to us has been relied upon in good faith and we have assumed that it is true and correct in all respect. I/We shall not be liable for any loss, damages, cost or expenses arising from fraudulent acts, misrepresentations, or wilful default on part of the owner, company, its directors, employee, representative or agents. Verification or cross checking of the documents provided to us from the originals or from any Govt. departments/ Record of Registrar has not been done at our end since this is beyond the scope of our work. If at any time in future, it is found or came to our knowledge that misrepresentation of facts or incomplete or distorted information has been provided to us then this report shall automatically become null & void.
3. Legal aspects for e.g. investigation of title, ownership rights, lien, charge, mortgage, lease, sanctioned maps, verification of documents, etc. have not been done at our end and same has to be taken care by legal expert/ Advocate. It is assumed that the concerned Lender/ Financial Institution has satisfied them with the authenticity of the documents, information given to us and for which the legal verification has been already taken and cleared by the competent Advocate before requesting for this report. I/ We assume no responsibility for the legal matters including, but not limited to, legal or title concerns.
4. This report is a general analysis of the project based on the scope mentioned in the report. This is not an Audit report, Design document, DPR or Techno feasibility study. All the information gathered is based on the facts seen on the site during survey, verbal discussion & documentary evidence provided by the client and is believed that information given by the company is true best of their knowledge.
5. This Techno Economic-Viability study is prepared based on certain futuristic assumption which are intra dependent on economic, market and sectorial growth condition in future and socio-economic, socio-political condition at macro and micro level.

6. Meeting of assumption and financial ratio will entirely depend on the sincerity and efforts of the company, promoters and its key managerial performance.
7. All observations mentioned in the report is only based on the visual observation and the documents/ data/ information provided by the client. No mechanical/ technical tests, measurements or any design review have been performed or carried out from our side during Project assessment.
8. This report has been diligently prepared by our techno-financial team to the best of their ability. However, it's important to note that the recommendations provided in this Total Economic Viability (TEV) assessment do not imply an endorsement, validation, or certification of the accuracy or completeness of the disclosed information by the involved stakeholders. Furthermore, we do not claim or endorse that the opinions presented herein are the sole best course of action for decision-makers to follow. There may exist additional approaches and inputs that have not been covered within this report or fall outside the scope of this report.
9. Bank/FII should **ONLY** take this report as an Advisory document from the Financial/ Chartered Engineering firm and its specifically advised to the creditor to cross verifies the original documents for the facts mentioned in the report which can be availed from the borrowing company directly.
10. In case of any default in loans or the credit facility extended to the borrowing company, R.K Associates shall not be held responsible for whatsoever reason may be and any request for seeking any explanation from the employee/s of R.K Associates will not be entertained at any instance or situation.
11. The documents, information, data provided to us during the course of this assessment by the client are reviewed only up to the extent required in relation to the scope of the work. No document has been reviewed beyond the scope of the work.
12. This report only contains general assessment & opinion as per the scope of work evaluated as per the information given in the copy of documents, information, data provided to us and/ and confirmed by the owner/ owner representative to us at site which has been relied upon in good faith. It doesn't contain any other recommendations of any sort including but not limited to express of any opinion on the suitability or otherwise of entering into any transaction with the borrower.

13. We have relied on data from third party, external sources & information available on public domain also to conclude this report. These sources are believed to be reliable and therefore, we assume no liability for the truth or accuracy of any data, opinions or estimates furnished by others that have been used in this analysis. Where we have relied on data, opinions or estimates from external sources, reasonable care has been taken to ensure that such data has been correctly extracted from those sources and /or reproduced in its proper form and context, however still we can't vouch its authenticity, correctness or accuracy.
14. This Report is prepared by our competent technical team which includes Engineers and financial experts & analysts.
15. This is just an opinion report and doesn't hold any binding on anyone. It is requested from the concerned Financial Institution which is using this report for taking financial decision on the project that they should consider all the different associated relevant & related factors also before taking any business decision based on the content of this report.
16. All Pages of the report including annexure are signed and stamped from our office. In case any paper in the report is without stamp & signature then this should not be considered a valid paper issued from this office.
17. Though adequate care has been taken while preparing this report as per its scope, but still we can't rule out typing, human errors, over sightedness of any information or any other mistakes. Therefore, the concerned organization is advised to satisfy themselves that the report is complete & satisfactory in all respect. Intimation regarding any discrepancy shall be brought into our notice immediately. If no intimation is received within **15 (Fifteen) days** in writing from the date of issuance of the report, to rectify these timely, then it shall be considered that the report is complete in all respect and has been accepted by the client up to their satisfaction & use and further to which R.K Associates shall not be held responsible in any manner.
18. Defect Liability Period is **15 DAYS**. We request the concerned authorized reader of this report to check the contents, data and calculations in the report within this period and intimate us in writing if any corrections are required or in case of any other concern with the contents or opinion mentioned in the report. Corrections only related to typographical, calculation, spelling mistakes, incorrect data/ figures/ statement will be entertained within the defect liability period. Any new changes for any additional information in already approved report will be regarded as additional work for which additional fees may be

charged. No request for any illegitimate change in regard to any facts & figures will be entertained.

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