

**ENVIRONMENTAL IMPACT ASSESSMENT**  
**EXECUTIVE SUMMARY (*English*)**

**MULTI-PRODUCT SEZ**  
**PERAMBALUR DISTRICT, TAMILNADU**

**Prepared for:**

**GVK PERAMBALUR SEZ PRIVATE LIMITED**



Consultants:



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## **EXECUTIVE SUMMARY**

### **1.0 Introduction**

The project is to be developed in contiguous land with a total area of 2604.13 Acres in the Perambalur district in phases. GVK Perambalur SEZ Pvt. Limited in association with Tamil Nadu Industrial Development Corporation Limited (TIDCO) has identified and purchased the total land in the name of SEZ Company. The area for the multi-product SEZ falls under village boundaries of Pennakonam North, Pennakonam South, Eraiyur, Peraiyur and Thirumanduri.

The project will be developed as an Area Development Project spread over 2604.13 acres as envisaged by M/s GVK Perambalur SEZ Pvt. Limited. This will be a multi-product project with facilities like Engineering, Automobile and Auto-ancillaries, Drugs and Pharmaceuticals, Apparel and Readymade Garments, Agro and Food Processing, Gems and Jewellery, Plastics, IT/ITES, Chemical, Leather Products.

The multi-product SEZ (2604.13 acres) is a Designated Project under Category A of Schedule and falls under Item 7c (Industrial Estates/ Parks/ Complexes/ Areas, export processing zones (EPZs)/ Special Economic Zones (SEZs), Biotech parks, Leather complexes) of the Environmental Impact Assessment (EIA) Notification dated September 14, 2006 and requires Environmental Clearance from the Ministry of Environment and Forests (MoEF).

A Rapid Environmental Impact Assessment (REIA) study report has been prepared for this project based on winter season (December-February 2008-2009) baseline environmental quality data in the project area. Identification & prediction of significant environmental impacts due to proposed project along with Environmental Impact Statement followed by delineation of appropriate Environmental Management Plan are included in REIA Report. M/s GVK Perambalur SEZ Pvt. Limited has retained M/s SENES Consultants India Pvt. Ltd. to conduct Rapid Environmental Impact Assessment study for the proposed project.

For this study, the impact zone shall confine within a radius of 5 km from the center of the development site since the nature of the project is such that most of the potential impacts are likely to occur within this area. However, a buffer area extending to 10 km radius from the site has also been studied for any likely impacts. The methodology for EIA is to establish the baseline environmental setting in the 10 km radius area, assess the potential impacts of the proposed project components on different environmental components, develop adequate and feasible mitigation measures (via revising project design and layout, working practices, adopting cleaner development mechanism or to mitigate where appropriate) so as to keep residual impacts within acceptable limits and develop monitoring and other measures as necessary to ensure successful implementation.

The Executive Summary summarizes the findings of the EIA study undertaken in accordance with the EIA guidelines on similar developmental projects. The summary is intended to provide an overview of the prevailing baseline conditions, key environmental issues and their likely impacts and also list the major recommended mitigation measures to attenuate the impacts.

## **2.0 Salient Features of the Project**

The Salient features of the project are discussed below:

Total Project Cost:	Rs. 700 crores
Land Area	2604.13 acres
Period of construction	5 years
Rainwater harvesting	Provision made to charge groundwater aquifers
Energy consumption	200 MVA (Maximum peak demand)
Water Requirement	During Operation Phase– 40 MLD
Source of water supply	Water demand during the operation phase will be partly met from Palar river in association with TWAD Board.

## **3.0 Project Location & Setting**

The proposed project site is located near the Tiruchy city, in the Tamilnadu State. The site falls in Perambalur district of the state. The site is adjacent to the National Highway-45 (NH-45 connecting to Chennai to Trichy) near Perambalur town. The geographical coordinates of the project site are as follows:

Latitude:	11° 22" N
Longitude:	78° 58' E

The topography of the proposed site is a plain stretch of land without any undulating features. The contour map of the area shows most gentle relief. The site area has very scarce vegetation of few trees/ shrubs scattered randomly over the area.

### **3.1 Site Accessibility**

The site is well connected with the surrounding areas. The site is adjacent to the National Highway-45 (NH-45 connecting to Chennai to Trichy) near Perambalur town.

Trichy Airport is situated at a distance of 65 km from the site.

The project site is approximately 35 km from Ariyalur Railway Station on main line connecting Chennai to Trichy.

### 3.2 Project Components

This will be a multi-product project with facilities like Engineering, Automobile and Auto-ancillaries, Drugs and Pharmaceuticals, Apparel and Readymade Garments, Agro and Food Processing, Gems and Jewellery, Plastics, IT/ITES, Chemical, Leather Products, Educational facilities and Residential facilities for the people working in the area. The spread of the project will be 2604.13 acres.

#### 3.2.1 Landuse Distribution & Area Statement

The details of proposed land use in the multi-product SEZ given in **Table E.1**.

**Table E.1: Land Use Area Breakup**

Description	In Acre	In Hectare	%
<b>PROCESSING:</b>			
Red Category Industries	219	88	8
Engineering Apparel, Agro, Gems & Jewellery, IT/ITES, Bio tech	47	19	2
Green & Orange Category Industry - 1	243	98	9
Green & Orange Category Industry – 2	465	188	18
Social Infrastructure Area	37	15	1
Utility Area	38	15	1
Green Area including Channel Area	187	76	7
Road Area	209	84	8
<b>TOTAL:</b>	<b>1443</b>	<b>584</b>	<b>54</b>

Description	In Acre	In Hectare	%
<b>NON - PROCESSING:</b>			
Residential	461	186	18
Commercial	307	124	12
Social Infrastructure Area	46	19	2
Utility Area	31	13	1
Green Area including Pylon Buffer	128	52	5
Road Area	187	76	7
<b>TOTAL:</b>	<b>1161</b>	<b>470</b>	<b>46</b>
<b>GRAND TOTAL:</b>	<b>2604</b>	<b>1054</b>	<b>100</b>

The project will be developed on an area measuring 2604.13 acres. The project land distribution consists of 54 % Processing Area allocated for multi-product industries and 46 % Non- Processing Area.

The project will be implemented over a span of 5 years from the commencement of construction i.e. starting after EIA approval.

### **3.2.2 Workforce**

The total workforce for 1443 Acres of processing zone of Perambalur Multi-product SEZ is expected to be more than 53,000 persons (Direct Employment). The development of the Perambalur Multi-product SEZ and the setting up of various units in a plethora of industries would result in a large number of indirect employment opportunities being created in the zone. This is expected to surge further as the development of the zone and region progresses. The Non-processing area and adjoining region shall cater to the residential demand rising out of the zone.

### **3.2.3 Water Requirement & Supply**

As per the initial estimation, the average water requirement for the proposed project will be 3 MLD during the construction phase and 40 MLD during the operation phase. SEZ provides water to the units through the exclusive arrangement with TWAD Board from the Palar river.

Water conservation and rain water harvesting plan will be implemented to conserve the resources. 60% of water supply is considered as treated effluent flow from the industries. 80% of water supply is considered as sewage flow.

### **3.2.4 Power Requirement and Supply**

Uninterrupted power supply is assured by the State Government by means of a dedicated line.

### **3.2.5 Internal Road Network**

The layout plan of the proposed site will develop an internal network in such a manner that it will not only cater to various buildings but also integrate the whole complex in an interesting composition of built masses and open spaces with a pedestrian dominated movement pattern. The road width will vary from 24-90 m.

### **3.2.6 Fire Fighting**

The integrated project will be planned, designed and constructed with fixed fire fighting installations like wet risers, sprinklers, internal hydrants etc. The fire detection in the complex

will be through ionization based smoke detectors. Addressable analogue fire detection and alarm system will be installed on every floor of different blocks. In addition, manually operated 'break-glass' type electrical fire alarm system with talk back units will be provided.

#### **4.0 Environmental Setting of the Study Area**

The baseline environmental status was assessed based on primary and secondary data collected either through in-site field observation or obtained from agencies such as IMD, Geological Survey of India, State Ground Water Department, Central Ground Water Board, State Pollution Control Board, Census of India and Local Forest Department.

The boundary details of the site are as under -

**North:** Thirumandurai (2 km) & Pennakonam (1.5 km) villages and River Vellar (3 km).

**South:** River Chinnar

**East:** Open lands

**West:** National Highway NH-45 and open lands.

#### **5.0 Major Environmental Issues**

Before impact assessment of different environmental components is undertaken, it is pertinent to highlight the major issues of concern emerging from the analysis of the prevailing baseline environmental conditions and all project activities planned during construction and operational stage. The major project activities can broadly be categorized under construction and operational phase of the project implementation. The major issues related to this project are summarised below:

##### **5.1 Air Environment**

During construction phase, the major air pollutant of prime concern is SPM/ RSPM as impacts of other emissions such as SO<sub>2</sub>, NO<sub>x</sub>, and CO will not be significant because the nature of sources is such that the emissions are distributed spatially as well as temporal. Monitored average all parameters below NAAQS at all the eight locations.

The main source of air pollution would be vehicular traffic generated due to proposed project and traffic on NH-45. Adequately wide roads to cater to two-way traffic and to meet the fire regulations are planned in the SEZ area. Water sprinklers will be used to suppress dust during construction.

## **5.2 Noise environment**

Noise levels were observed at 8 locations within the impact zone. The results of the monitoring program indicated that both daytime and night time levels are within the prescribed standards in all locations.

The noise emitted from heavy-duty construction equipments during construction period being high shall require occupational preventive measures and temporary noise barriers for noise attenuation. The construction period being about 2-year duration, mitigation requirement becomes significant.

During operational period the major noise pollution source will be traffic activity inside as well as on the access roads and industrial operations. In order to prevent adverse noise exposure to the people of SEZ and also the sensitive receptors within the study area, optimal mix of mitigation measures such as low noise generation units, and noise barriers will be essential.

## **5.3 Water environment**

The ground water table varies from 65 m to 90 m. It is therefore a low to medium potential zone for ground water.

Water requirement during the construction phase will be met with through water pipe line from river Vellar provided by TWAD Board. SEZ provides water to the units through the exclusive arrangement with TWAD Board from the Palar river.

The average water requirement for the proposed project will be 3 MLD during the construction phase and 40 MLD during the operation phase. Water conservation and rain water harvesting plan will be implemented to conserve the resources.

The ground water samples were analyzed and compared with IS:10500: 1991 standards. Total Dissolved Solids (TDS) exceeds the desirable limit at all locations. Chloride (as Cl) exceed the desirable limits at three locations (Erayur, Arangur, Sirimathur). All other parameters are within desirable limits of drinking water standards. The high level of TDS is due to geology of the area.

It is proposed to have Sewage Treatment Plant (STP) of approximately 5 MLD capacity based on FAB Technology consisting of primary, secondary and tertiary treatment in order to treat waste water. Effluent Treatment Plant of approximately 10 MLD capacity is proposed to treat the industrial effluents. The treated water will used for green belt.

## 5.4 Waste Management

Solid waste composition in Multiproduct SEZ will comprise of waste of different characteristics.

**Municipal solid waste:** The solid waste generated during operation phase of the project has been estimated to be 20 TPD. The majority of waste shall be generated by industrial, residential, commercial and institutional sources and activities such as street sweepings and drain cleaning. The biodegradable and non-biodegradable waste shall be collected, segregated, transferred, and treated and disposed off as per the Solid Waste Management Rules 2000.

**E-Waste Management:** The e-waste is likely to be generated 2 years after the occupancy phase of the project. The e-waste generated will be recycled (exchanged with suppliers or refilled and reused) or stored on site in a designated room. A proper inventory will be maintained for all types of waste. Whenever an authorized contractor will be specified by SPCB, the e-waste will be handled according to the prescribed procedures and other applicable regulations.

**Sludge from sewage treatment plant:** To be used as manure for green belt development.

**Biomedical waste:** generated from the hospitals comprises of potentially hazardous ingredient including antibiotic, drugs, chemical, syringe etc. It shall also be treated as per Bio-Medical Waste (Management and Handling) Amendment Rules, 2000.

Comprehensive long term planning for integrated waste management shall be done.

## 5.5 Biological environment

The prevailing ecological environment in the study area (terrestrial/ aquatic) is not of significance as no forest of ecological value is located within the study area. However, the project will provide quality ambience with natural setting, well planned green belt and open spaces provide with landscapes so that it not only enhances the quality of life of the residents but also improve the micro-climatic conditions.

## 6.0 Environmental Assessment Management Plan

Adequate environmental management measures will be incorporated during the entire planning, construction and operating stages of the project to minimize any adverse environmental impact and assure sustainable development of the area. Summary of the EMP is presented in **Table E-2** along with the corresponding impacts. The EMP planned for the construction and operating stages of the project will include the following elements:

- Air Pollution Control and Management
- Noise Control and Management
- Storm Water Management
- Hazardous and Solid Waste Management
- Plantation and Landscaping
- Sewage Treatment and Management
- Energy Conservation
- Emergency Response Plans for emergency scenarios
- Environmental Management System
- Environmental Monitoring

For the effective and consistent functioning of the campus, an Environmental Management System (EMS) will be established at the site. The EMS will include the following:

1. An Environmental Management cell
2. Environmental Monitoring Program
3. Personnel Training
4. Regular Environmental Audits and Corrective Action
5. Documentation – Standard operating procedures Environmental Management Plans and other records.

**TABLE E-2: SUMMARY MATRIX OF PREDICTED IMPACTS AND MITIGATION MEASURES**

<b>SR. NO.</b>	<b>ENVIRONMENTAL COMPONENTS</b>	<b>POTENTIAL IMPACTS</b>	<b>POTENTIAL SOURCE OF IMPACT</b>	<b>CONTROLS THROUGH EMP &amp; DESIGN</b>	<b>IMPACT EVALUATION</b>	<b>REMEDIAL MEASURES</b>
1.	Groundwater Quality	Ground water contamination	<u>Construction Phase</u> Waste water generated from Labor tents Accumulation of water during excavations.	STP/ Septic Tank	Minor negative impact inside SEZ premises. No negative impact outside SEZ site. Short term.	Wherever possible care will be taken to prevent water from entering excavations
			<u>Operation Phase</u> Sewage treatment sludge disposal on land	Sewage sludge to be sent for suitable disposal or optionally passed through Filter Press/Centrifuge.	No negative impact on ground water quality envisaged. Not significant	In an unlikely event of soil and ground water contamination, remediation measures shall be implemented.
2.	Groundwater Quantity	Ground Water Depletion	<u>Construction Phase</u> Use of water from Kollidam river, supply is in association with TWAD Board.	Controlled drawing of Ground water during construction	No significant impact on ground water quantity envisaged.	

SR. NO.	ENVIRONMENTAL COMPONENTS	POTENTIAL IMPACTS	POTENTIAL SOURCE OF IMPACT	CONTROLS THROUGH EMP & DESIGN	IMPACT EVALUATION	REMEDIAL MEASURES
			<p><u>Operation Phase</u>                      Water during the operation phase will be met partly from Palar river in association with TWAD board. 40 MLD and remaining from treated waste water with dual pipeline system.                      Water conservation and rain water harvesting plan will be implemented to conserve the resources.                      Approximately total waste water generation will be 4 MLD. Hence it is proposed to set up a Sewage Treatment plant of capacity 5 MLD based on Fluidised Aerobic Bed (FAB) Technology. Industrial waste water will be treated in common effluent treatment plant.</p>	<p>Rain Water Harvesting Scheme                      Black and Grey water treatment and reuse.                      Storm water collection and holding for water harvesting                      Awareness Campaign for reduced water use by employees.</p>	<p>No significant impact on ground water quantity envisaged. Because entire water requirement for SEZ is met from River Palar,</p>	<p>In an unlikely event of depletion of ground water sources, water will be brought to the city using tankers and Ground water recharging scheme will be initiated in neighboring areas too.</p>
3.	Surface Water Quality	Surface water contamination	<p><u>Construction Phase</u>                      Surface runoff from site during construction activity.</p>	<p>Silt traps and other measures such as, additional on-site diversion ditches will be constructed to control surface run-off during site development.</p>	<p>No off site impact envisaged as no surface water receiving body in impact zone.</p>	

SR. NO.	ENVIRONMENTAL COMPONENTS	POTENTIAL IMPACTS	POTENTIAL SOURCE OF IMPACT	CONTROLS THROUGH EMP & DESIGN	IMPACT EVALUATION	REMEDIAL MEASURES
			<p><u>Operation Phase</u> Discharge of domestic wastewater to surface water body.</p>	Domestic water treatment scheme developed to treat the wastewater so that it can be reused for fushing, greenbelt development and airconditioning.	No off site impact envisaged	In case of any event of discharge of water from the site, the applicable water quality standards will be maintained as per Water Act based on discharge location on Land /surface water body / sewer
3.	Air Quality	Dust Emissions	<p><u>Construction Phase</u> Dust and air emission particularly due to the excavation activities, movement of vehicles resulting in air pollution.</p>	Suitable control measures will be adopted as per a dust control plan.	Minor negative impact inside SEZ premises. No negative impact outside SEZ site. Short term.	<p>Provision of spraying water to reduce dust emission on roads.</p> <p>Excavated topsoil to be preserved and reused for landscaping.</p> <p>The amount of exposed ground and stockpiles will be minimized so that re-suspension due to wind and subsequent dust fall is prevented.</p> <p>Ensuring all vehicles, generators and compressors are well maintained and regularly serviced.</p>

SR. NO.	ENVIRONMENTAL COMPONENTS	POTENTIAL IMPACTS	POTENTIAL SOURCE OF IMPACT	CONTROLS THROUGH EMP & DESIGN	IMPACT EVALUATION	REMEDIAL MEASURES
		Emissions of SPM, SO <sub>2</sub> , NOx and CO	<u>Construction Phase</u> Dust and other exhaust atmospheric emissions generated by vehicle movement, concrete mixing machinery, concrete conveyers, bucket conveyers, air blowers, pneumatic vibrators, mechanical vibrators and water tankers	Rapid on site construction and improved maintenance of equipment	Minor Negative impact inside the premises. No impact outside the premises. Short term	Regular Monitoring of emissions and control measures to reduce the emission levels.  The construction workers will be provided with appropriate protective equipments wherever high particulate emission is expected.  It is also recommended that the workers will not be allowed to work over a long exposure period.
			<u>Operation Phase</u> Vehicular movement within the SEZ	Fuel efficient vehicles will be used and proper record of vehicles will be maintained	No significant negative impact.	Maintain record of vehicles  Exhausts from vehicles will be minimized by use of fuel-efficient vehicles.  Vehicles will be well maintained and will have Pollution Under Check (PUC) certificate.

SR. NO.	ENVIRONMENTAL COMPONENTS	POTENTIAL IMPACTS	POTENTIAL SOURCE OF IMPACT	CONTROLS THROUGH EMP & DESIGN	IMPACT EVALUATION	REMEDIAL MEASURES
4.	Noise Environment	Noise emissions	<u>Construction Phase</u> Construction noise mainly due to excavation, plying of vehicles, operations of cranes etc	Use of well-maintained equipment fitted with silencers. Providing noise shields near the heavy construction operations Construction activity will be limited to daytime hours only.	Minor negative impact near noise generation sources inside premises.  Residential areas are located at least 1.0 km away from the site and hence no impact from increased noise levels is expected from the project activities. Also, there are no sensitive receptors located within or near the vicinity of site.	Use of Personal Protective Equipment (PPE) like ear muffs and ear plug during construction activities.  The vehicles used will be with the standard limiting noise output.  Wherever this cannot be achieved, the area will be earmarked as high noise level area requiring use of ear protection gadget.
			<u>Operation Phase</u> Noise from vehicles movement	Green Belt Development and development of silence zones for traffic movement.	Not significant as nearest receptor would be at a distance of 100 m from the highway.	
5.	Land Environment	Soil contamination	<u>Construction Phase</u> Disposal of construction Debris  Contamination of soil due to leakage of oil from vehicles	Construction debris will be collected and suitably used on site as per construction waste management plan.	Minor negative impact inside SEZ premises. No negative impact outside SEZ site. Short term.	The contamination of soil will be avoided by suitable management of oil and fuel.  Care will be taken to compact the soil after refilling so that, soil erosion and consequent soil import is avoided.

SR. NO.	ENVIRONMENTAL COMPONENTS	POTENTIAL IMPACTS	POTENTIAL SOURCE OF IMPACT	CONTROLS THROUGH EMP & DESIGN	IMPACT EVALUATION	REMEDIAL MEASURES
			<u>Operation Phase</u> Dumping of municipal solid waste on land.	Proposed solid waste management system for waste collection, segregation and disposal.	Since solid waste is handled on the site, waste dumping would not be allowed. Not Significant	About 170 tons per day of solid waste is estimated to be generated daily during the operation phase. The solid waste would be segregated into biodegradable waste and recyclable waste and handed over to NGOs for proper management.
6.	Ecological Environment (Flora and Fauna)	Displacement of Flora and Fauna on site	<u>Construction Phase</u> Site Development during construction.	Protected species of trees will be identified and marked	The proposed site is devoid of any vegetation. Surrounding areas have sparse vegetation.	
			<u>Operation Phase</u> Increase of Green Cover	A peripheral dense green belt of native species will be developed as per landscaping plan, besides parks, gardens and avenue plantation. It will enhance the ecology.	Beneficial impact	
7.	Socio-Economic Environment	No displacement	<u>Construction Phase</u> Construction Activities leading to relocation..	The land has been purchased directly from the landowners. There is no displacement of village/ area. The infrastructure of the surrounding villages, shall be upgraded. Many welfare schemes for the villagers have already been started	No negative Impact	

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			<u>Operation Phase</u> Site operation	Employees will be provided direct employment opportunities. In addition employment opportunities will be provided for persons engaged in operation and maintenance and allied activities.	Beneficial Impact	--
8.	Traffic Pattern	Increase of Vehicular traffic	<u>Construction Phase</u> Vehicular movement during construction	Vehicular movement will be restricted to day time only and adequate parking facility will be provided.	No significant negative impact.	Maintain record of vehicles Exhausts from vehicles will be minimized by use of fuel-efficient vehicles.  Vehicles will be well maintained and will have Pollution Under Check (PUC) certificate.
			<u>Operation Phase</u> Traffic due to people visiting the proposed project	Vehicular movement will be regulated inside the site with adequate roads and parking 3000 vehicles. Number of drop in and pick up points have been provided for free flow of traffic within the site. New roads are proposed in the master plan.	Moderate negative Impact	<ul style="list-style-type: none"> <li>• Shuttle service / carpooling for the residents to reduce the adverse impact on the national highway.</li> <li>• Pollution under Control checks may be carried out for vehicles.</li> <li>• Restricting of entry of polluting vehicles</li> </ul>

## **Conclusion**

Based on the environmental assessment, the associated potential adverse environmental impacts can be mitigated to an acceptable level by adequate implementation of the measures as stated in the EIA and the EMP.

It can be concluded from the impact matrix that the project will not have any significant negative environmental impacts but would help in improving the socio-economic conditions of the area surrounding the project site and the city as a whole.