

# 1 CONCEPTUAL PLAN

## 1.1 PROPOSAL:

Expansion of facility **“Divya Sree Point IT Park”** in Sholinganallur village in an area of 15060 m<sup>2</sup>. The built up area after expansion is 75282.21 m<sup>2</sup>

## 1.2 PROMOTERS:

The project is promoted by “Divyasree Infrastructure Developers Pvt Ltd ”. The registered address is - Door No 07, Rajiv Gandhi Salai, Old Mahabalipuram Road, Sholinganallur, Chennai -600119

## 1.3 PROJECT:

The proposed project is Expansion of Commercial building . The project details are given below:

Item	Details		
Project Name	<b>“Divya Sree Point IT Park”</b>		
Location	SNO 449/1A, 450/1,450/2A and 450/2B		
Type of project	Commercial development		
Total Plot Area	15060 sq.m		
Built up area (Existing)	53129 m <sup>2</sup>		
Built up area (After Expansion)	75282.21 m <sup>2</sup>		
Ground Coverage	5796.75 m <sup>2</sup>		
Surface Parking, Roads & pavements	4522.4 m <sup>2</sup>		
Green Belt	2148 m <sup>2</sup>		
Building Height	53 m		
Power requirement		<b>Power requirment</b>	
		<b>Existing</b>	<b>Proposed</b>
	Power	7114 kVA with 3×2500 kVA transformer	7114 kVA with 3×2500 kVA transformer
Source of power	TANGEDCO		
Power backup	DG sets of 6 x 1500 kVA		

Water requirement	Total water requirement = 355 KLD Fresh water = 237 KLD Recycled water: = 214 KLD
Water Source	SIPCOT
Estimated population to step-in	7890 Permanent Influx (Employees)
Project cost	4390 Lakhs
Connectivity	Old Mahabalipuram road.

#### **1.4 LAND & LOCATION:**

Proposed expansion will be located within an area of 15060 m<sup>2</sup>. The location map and the satellite image is enclosed as **Annexure-9**. The Approved layout plan is enclosed as **Annexure-10**.

#### **1.5 SERVICES & UTILITIES:**

Construction Materials: The major materials required in the construction are steel, cement, bricks, metal, flooring tiles/stones, wood, sanitary and hardware items, electrical fittings, water, etc. All the items to be used in the proposed project will be of good quality as much as procuring directly from the dealers or manufacturers will use possible ISI brand items. Local items sand, metal, bricks, etc will be procured through standard suppliers in the market. The required construction materials are given below

Steel	648263 kg
Cement	264167 50 kg bags
Sand	26846.7 cu.m
Stone aggregates (10mm)	4130 cum
Stone aggregates (20mm)	7572 cum

#### **1.6 Water Requirement:**

During Construction Phase: During construction phase, the work force involved will be 150 Nos. The water requirement during construction phase will be 25 KLD (including water for construction) and the sewage generated from domestic use will be 17 KLD which will be treated using septic tank and soak pits.

During Operation Phase: The daily requirement of water will be 355 KLD. Fresh water demand is 237 KLD & recycle water is 214 KLD. After treatment of wastewater, treated water will be reused for flushing and green belt. The source of water is met from SIPCOT. The water Balance is enclosed as Annexure -5.

#### Sewage Treatment Plant:

During operation, 292 KLD of wastewater will be generated which will be treated in the sewage treatment plant of 340 KLD and the treated sewage will be recycled for flushing, HVAC makeup and gardening. The design parameters, process description and schematic flow diagram of the STP is given in Annexure -14.

The sewage collection system, STP location, Schematic representation of Dual plumbing system is enclosed in Annexure -15.

#### Sewage Quantity, Treatment, Reuse & Disposal

Quantity of sewage	292KLD
STP Capacity	340 KLD
Collection of sewage & effluent	Waste water generated during the operation phase will be collected through sewerage system (pipe drain) for treatment in 340 KLD STP.
Treatment of sewage	Sewage will be treated up to the tertiary level in a Sewage Treatment Plant based on Activated sludge process. The secondary treated sewage will be treated in UF plant.
Reuse / recycle of treated sewage	Out of 292 KLD of treated water, 118 KLD will be recycled for toilet flushing 6 KLD for gardening, 88KLD for HVAC make up and excess 80 KLD will be disposed to CMWSSB sewer line

#### 1.7 Rain water Harvesting & Storm Water Management:

Rain water from roof tops will be drained through rain water vertical down take pipes. These vertical down take pipes shall be located at suitable locations inside the shafts or periphery of the building. The terrace will be sloped. The down take pipes will be connected to the rainwater storage tank & it will be used after suitable treatment. Rainwater harvesting calculation and the plan showing the location of RWH system, storm water drainage network and rainwater harvesting pits is given in **Annexure 13**.

**POWER:** The maximum demand has been estimated as 7114 kVA with 3×2500 kVA transformer for existing and proposed expansion facility. The local electricity board TANGEDCO will supply the required power. For back-up support, DG sets of 6 x 1500 kVA DG sets exist.

**Step in Population:** The total population 7890 (Employees) has been estimated as temporary influx.

## **1.8 Solid Waste Management**

*a. Construction phase:* Solid wastes of construction phase will constitute excess excavated earth and construction debris with bits and pieces of steel, air-conditioning insulation material, packaging material and wood used for shuttering purposes etc.

No construction material or wastes e.g. excavated soil, debris etc. will be dumped outside the project area.

- Construction waste and debris will in general be used for filling of land within the premises.
- Unusable steel bits and pieces, piping, concrete reinforcement will also be collected at site and sold to recyclers
- A significant portion of wood scrap can be reused on site.
- Recyclable wastes such as Cement bags, waste paper and cardboard packing material, glass fibre insulation etc shall be sold to recyclers.
- Construction sites are sources of many toxic substances such as paints, solvents, wood preservatives etc. Wastes generated from these sources during construction phase shall be stored in sealed containers, labelled and disposed of as required by the Hazardous Wastes Management and Handling act Amendment Rules (MoEF 2003).
- Excavated earth quantity will be around 96142 m<sup>3</sup> . Excess Excavated earth will be used for Backfilling, Soft landscaping, Road formation and filling low lying areas. Top soil will be stacked separately and used for green belt development.
- The construction debris will be segregated viz., steel, metal, plastics, papers etc. Maximum effort will be taken to recycle the wastes and other wastes will

be sold to scrap dealers. There will not be any health hazard due to this debris

**b. Operation Phase:**

About 5050 kg/ day of solid wastes are likely to be generated due to the proposed project.

Waste	Quantity (kg/day)	Treatment method
Organic	2236	Treated in Bio Gas plant and used for Electricity
STP Sludge	80	Composted and used as manure
Inorganic	2734	Sold to authorised recyclers

**Hazardous Wastes:**

Name of the waste	Quantity	Mode of disposal	Area of land earmarked for storage and disposal
Used Oil	5550 KL/A	Disposed to TNPCB Approved Vendor	Waste storage area - 75sqm
Waste / residue containing oil	1.0 T/A		
E-Waste	6.1 T/A		

The details of solid wastes collection recycle and disposals are given in the Table below.

**Solid Wastes Collection, Recycle & Disposal**

Construction debris	The approximate quantity will be 7665.58 cum. Maximum care will be taken to reuse the same. Scrapes will be sold to authorized vendors
Quantity of solid waste during operational Phase	5050 Kg / day (Organic waste – 2236 Kg/day, Inorganic Waste –2734 kg/day; Sludge – 80 Kg/day)
Nature of solid wastes	Organic waste: Waste vegetables, foods, leaves, STP Sludge etc. Inorganic waste: Plastics, polythene bags, glass etc.

Collection and disposal of solid wastes	The solid wastes generated will be segregated into organic and inorganic components and collected in separate bins. The organic biodegradable wastes (waste vegetables, foods etc.) will be treated in biogas plant and used to generate gas for DGs
Recycling of solid wastes	The inorganic wastes comprising recyclable materials, such as plastic, glass etc., will be sold by promoter to prospective buyers.

### **1.9 Green Belt Development:**

It is proposed to have tree plantation along the periphery of the site and also to develop lawn and greenery inside the project area. The landscape plan is shown in site plan and the vegetation for the greenbelt will be selected from the native species adapted to the local environment. About 2148 m<sup>2</sup> of green area will be provided. Landscaping has been taken care of in view of the environment and aesthetics of the surrounding areas. Stress has been laid on providing ample green areas in close conjugation to the hard areas in a manner, that the overall harmony and ambience is maintained. Landscaping takes into account the various aspects of the architectural design. Trees are proposed to be planted to form an integral part of the landscape plantation and their selection is based on their ability to provide shade, flowers and fragrance apart from their high-yielding growth pattern. The addition of shrubs, hedges and ground cover will add to the aesthetics and softness to the hard building surfaces.

### **1.10 ENERGY MANAGEMENT**

The building will use energy efficient and environmental friendly designs that will control formulation of heat island effect. There will be also green cover at the site to reduce formation of heat island. Passive design concepts have been used to minimize energy consumption and maximize the energy efficiency.

**a. Solar Architectural Features**

- The entire layout has been designed to take advantage of the local climatic conditions, the sun path and wind direction.
- Large windows have been proposed at regular intervals to invite daylight.

**i. Characteristics of Glass, Roof, Wall**

Sr. No.	Name of material	Thickness in mm	U value in w/m <sup>2</sup> °C
1	Glass	Double glazing with 6mm Clear glass	3.28
2	Opaque wall	200	1.71
3	Roof Assembly	100mm RCC slab with average 100mm brick bat coba underdeck/overdeck 75mm thick polystyrene	0.301

**b. Solar Powered street lights**

For the Solar Power is proposed to be utilized for street lighting in common area.

**c. Energy Efficient Systems**

- i. A water cooled air-conditioning system is used instead of air-cooled system.
- ii. Water cooled screw chillers are used with environmental friendly Refrigerant R – 34a.
- iii. Variable speed secondary pumping system is proposed for chilled water to derive energy savings during part loads.
- iv. Cooling towers will have variable speed drives to derive energy savings during part load and low wet bulb periods.
- v. All Public area air handling units will be provided with variable speed drives.
- vi. Entire HVAC system will be optimized for energy efficiency through a Building

- vii. Management System.
- viii. Electric motor drives for all fans, AHU's and pumps will be high efficiency motors to IS: 12615 – 2004 and also will comply with ECBC norms

**d. Energy conservation in plumbing System**

- a) Variable speed pumping system will be adopted for water distribution.
- b) All W.C's will have 3 – 6 litres dual- flush cistern.
- c) All public wash basins & urinals will have proximity sensors.
- d) Heat recovered from the de super heaters from the chillers will also be used to pre- heat the cold water.

**e. Conservation in electrical system**

- e) Energy efficient CFL/T5 lamps for common areas. Use of low loss electronic ballasts.
- f) Multiple circuits for lighting to switch off unwanted lights.
- g) Use of low loss capacitors, APFC relays.
- h) Group control for elevators
- i) Proper selection & sizing of cables considering de rating factors so as to minimize losses.
- j) High efficiency motors conforming to IS: 2615 – 2004.

**1.11 Parking And Traffic Management**

- a. Proposed Parking Facilities:** It is proposed to provide the following parking facilities

S. No	Type of vehicles	Surface parking	Stilt parking	Stilt first floor	1 <sup>st</sup> Basement parking	2 <sup>nd</sup> Basement parking	Area in Sq.m
1	Two wheelers	47	165	57	241	251	684.9
2	Cars	90	68	99	90	106	6795
	<b>Total</b>	<b>137</b>	<b>233</b>	<b>156</b>	<b>341</b>	<b>347</b>	<b>7479.9</b>



**b. Traffic Management Plan:** The project will have access to Old Mahabalipuram road. The internal roads of 6 m, pedestrian pathways, entry/exits and traffic circulation plan have been shown in the traffic circulation plan enclosed. In the circulation plan of the project, there will be proper entry and exit points for systematic control of the vehicular movement within the site. The parking and traffic circulation plan, Entry, Exit is enclosed in **Annexure-16**

### **1.12 FIRE FIGHTING SYSTEMS**

Adequate fire protection facilities will be installed including fire detectors, fire alarm and fire fighting system to guard the building against fires. All fire protection facilities are designed as per the latest National Building Code. NOC from fire department is enclosed in **Annexure -18**

### **1.13 MITIGATION MEASURES FOR AIR POLLUTION**

**a. Construction Stage:** During the construction stage there are chances of fugitive dust generation due to (i) excavation, (ii) movement heavy construction vehicles along the haul roads and (iii) storage and handling of construction materials. However, the generation of such dusts is most likely limited within the project boundary and negligible quantity is expected to the surrounding environment. To minimize such impact following measures shall be under taken:

#### ***i. Site clearance***

- The working area for the uprooting of shrubs or vegetation or for the removal of boulders or temporary or permanent structures shall be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.

#### ***ii. Haul Road:***

- Every main haul road (i.e. any course inside a construction site having a vehicle passing rate of higher than 4 in any 30 minutes) shall be paved with concrete, bituminous materials, metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.

- Regular water spraying on haulage roads during transportation of construction materials by water sprinklers
- Transfer points for transporting construction materials shall be provided with appropriate hoods/chutes to prevent dust emissions;
- Dumping of construction materials should be from an optimum height (preferably not too high) so as to reduce the dust blow

### ***iii. Use of vehicle***

- Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels.
- Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.

### ***iv. Stock Piles:***

- All loose material either stocked or transported shall be provided with suitable covering such as tarpaulin, etc.
- Water sprinkling shall be done at the location where dust generation is anticipated;
- Over Burden (OB) waste dumps shall be sprayed with water as they are major sources of air borne particulate matter/dust; and,
- OB waste dumps shall be reclaimed / afforested to bind the loose soil and to prevent soil erosion.

### ***v. Building construction***

- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting shall be provided to enclose the scaffolding from the ground floor level of the building
- Any skip hoist for material transport should be totally enclosed by impervious sheeting

## **b. Operation Stage :**

Table below gives the overview of the Air Pollution Control measures adopted during the project operation stage

### 1.1 Air Pollution Control Measures

S. N.	Air	Source	Control Measures
1	SO <sub>2</sub> , NO <sub>x</sub>	DG sets	Adequate stack height of 53 m for the 6 stacks as per CPCB norms.

Adequate stack is provided for the release of pollutants from DG and from process equipment. Both during construction & operation phase no significant impact on visibility and any other meteorological parameters were observed

S.No	Source of Emission	APC measures provided	Stack height (m)
1.	DG set -1500 KVA-6 Nos	Acoustic enclosure with stack	53 (6 Nos)
2.	Vehicular emissions Dust, SO <sub>2</sub> , NO <sub>x</sub> , CO, HC	Roads will be maintained properly to reduce dust. All vehicle owners will be informed to follow the emission standards fixed by the government authorities to keep the air pollutants under control. Pollution under Control checkup camps will be arranged for vehicles.	N.A

*i. Measures for Controlling Vehicular Emission:* To control the emissions from the movement of vehicular traffic in the proposed project, following measures shall be adopted:

- Proper maintenance of the internal paved areas inside the boundary.
- Adequate greenbelt will be developed and maintained as described in the subsequent portions.
- Informatory sign shall be provided to encourage vehicle owners to maintain their vehicle and follow the emission standards fixed by Government Authorities.

*ii. Control of Sulphur Dioxide Emission:* To minimize the effect of sulphur dioxide emissions on ambient air quality, a stack is installed for the exhaust of the flue gases at a safe height complying with the standards laid down by MoEF. The main source of SO<sub>2</sub> emissions

from the proposed project is the DG set operations. It would be ensured that all stacks of DG sets would be designed as per the stack height norms of MoEF. Diesel used for the DG sets will comply with the MOEF specifications.

- iii. Control of Particulate Emissions:** Particulate emissions are mainly from the movement of vehicles in the project site. Keeping this in mind the internal paved area of the complex will be well maintained. Green Belt has been proposed in the campus. The green belt development is designed basically to promote biodiversity enhancement, environmental management, land regeneration and water management, with technology transfer of the above activities for wider application.

#### **1.14 MITIGATION MEASURES FOR NOISE POLLUTION**

##### **a. Construction Stage**

- During the construction stage, expected noise levels shall be in the range of 80-85 dB (A) which will decrease with increase in distance as per the Inverse Square Law.
- Administrative as well as engineering control of noise will be implemented.
- Isolation of noise generation sources and temporal differentiation of noise generating activities will ensure minimum noise at receiver's end.
- To prevent any occupational hazard, earmuff / earplug shall be given to the workers working around or operating plant and machinery emitting high noise levels.
- Careful planning of machinery operation and scheduling of operations shall be done to minimize such impact.

##### **b. Operation Stage**

For the noise from DG Sets, there would be acoustic enclosure, which would lower the noise level. Therefore, adequate protective measures in the form of earmuffs / earplugs shall be given to workers working in these areas.

An adequate green belt cover shall be provided and the species will be selected based upon their Air-Pollution Tolerance Index (APTI), Noise abatement capacity and local availability and landscape requirements. Thus through the greenbelt there shall be significant attenuation of noise generation.

### **1.15 ENVIRONMENTAL MONITORING PLAN**

To check the effectiveness of mitigation measures as proposed, a detail environmental monitoring plan shall be implemented both during the construction and operation stage of the project. There shall be a project implementation unit (PIU) and it will be the responsibility of PIU to implement such monitoring programme. Such monitoring activities will help the PIU to maintain the quality of environment through adequate checking and control of mitigation measures and environmental infrastructures. There shall be monitoring programme both for the construction and operation stages of the project. Environmental Management plan is enclosed in **Annexure 19**.

### **1.16 CONCLUSION:**

- There is minimum negative impact on Air, Noise and Water Environment.
- Treated Waste Water will be reused for gardening and flushing.
- Rain Water harvesting system is proposed.
- Organic waste converter for solid waste management is proposed.
- There will be positive Impact on Social conditions in and around the site.
- The Project will not result in any adverse impact to the Environment.
- The marginal impact of setting up the Development in the proposed location will be fully mitigated by the Environment Management Plans. (EMP)