



## **Executive Summary**

### **Environmental Impact Assessment and Environmental Management Plan**

**– Thimphu Tech Park, Bhutan**

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# Executive Summary

## 1.1. Background

The Royal Government of Bhutan (RGoB), with financial assistance from the World Bank, is implementing a project to promote IT in Bhutan. One component of the project includes the development of a 50,000 sft IT Park in a 5-acre parcel of land at Babesa, within Thimphu municipality. This will consist of facilities such as an incubation center, shared technology center, data center and office building. There will be no manufacturing facility in the IT Park. Thimphu Tech Park Pvt. Ltd., a joint venture company of Assetz Property Group Pte Ltd of Singapore and Druk Holding & Investments Ltd of Bhutan, has been selected through an international competitive bidding process to design, build, finance, own, operate, and transfer the IT Park facility.

## 1.2. Scope and Objectives of Environmental Assessment

The overall objective of this Environmental Assessment (EA) study was to identify the impacts on physical, biological, socio-economic and cultural environment of the project due to execution of project activities. The objective of the EA is also to influence the project as it evolves and takes shape: make it environmentally sound, tailor it and help fit it in the local environment including social and institutional context. The EA has been completed with an aim to prepare Environmental Management Plans (EMP) for all the identified adverse environmental impacts. These EMPs are intended to become part of contract document so that environmental mitigation costs are included in overall project cost and EMP is implemented.

## 1.3. Project description

The five acre project site lies about 10 kilometers south of Thimphu City centre, and falls under the Extended Municipal Boundary of the Thimphu City Corporation. The site is located in an area known as Babesa along the Thimphu-Phuentsholing Highway. The government owned vacant land allocated by the RGoB for the IT Park is part of an 18-acre parcel and has no structures on it. There is therefore no displacement of people with regard to the IT Park or ancillary facilities.

The proposed building will include IT/ITES space, Service and Administration Corridors in about 50,000 square feet of built-up area over G+2 levels. The design and construction of Thimphu TechPark has been oriented towards environmental sustainability and incorporates features that aim to minimize environmental impacts. The building has been designed so as to allow maximum day light while minimizing heat gain through an optimum window wall ratio. All lighting equipment, lamps and air conditioning equipment will be energy efficient and environment friendly. For winter heating, solar water heating panels are proposed for space heating. This system would have significant energy savings compared to a conventional system.

Water usage would be minimised by using low flow fixtures, dual flush fixtures for WC, and sensor fixtures for urinal flushing and wash basins. Rooftop rainwater would be stored in a separate tank and used to augment the domestic water requirements during the monsoon season. Sewage from the toilets is proposed to be conveyed to an on-site tertiary sewage treatment plant with a capacity of 27 cum per day. The treated effluent will be used for flushing in toilets. The remaining treated

water will be used for landscape & excess overflow will be diverted to the natural stream. The freshwater requirements for the facility would be supplied through piped water by Thimphu City Corporation.

The proposed IT Park's incoming raw power will be supplied through a 11KV system. The power supply will be backed up 100% by primed diesel generator sets. The facility will be provided with UPS units to back up critical loads as well as additional protective and safety features.

#### **1.4. Environmental Assessment Methodology**

The EA has been carried out in the following manner:

- Establishing baseline environmental scenario in the project area through data collection;
- Assessment of environmental impacts of project during construction and operation phases;
- Preparation of an EMP to mitigate all identified adverse impacts; and
- Estimation of EMP costs for inclusion in the overall project costs.

#### **1.5. Assessment of Environmental Impacts**

**Construction:** Construction activities such as site clearance and excavation are likely to result in adverse environmental impacts in terms of soil erosion. This impact could be highly significant and large in magnitude. Other moderately significant impacts include dust and noise pollution due to use of equipment and construction traffic; movement of construction related traffic around the project site; changes in site topography; impact on the natural stream flowing beside the project site; construction related waste disposal; drainage pattern; storm water flows and siltation; and impact on micro fauna and flora within the site. Occupational health and safety of workers on site could also be a potential adverse impact. However, construction activities are also likely to have beneficial impacts by providing employment opportunities to the local population as well as positively impact the local economy and land prices.

**Operation:** During operation of the TechPark, increase in traffic volumes, air quality and noise pollution from equipment and traffic as well as solid waste disposal are likely to result in moderately significant adverse impacts. Wastewater from the facility would be treated on site with a sewage treatment plant and disposal of this wastewater is not expected to pose an issue.

The impact on land prices, local economy and employment are expected to have significant and highly beneficial impacts. Other moderately beneficial impacts include positive impacts due to landscaping the site as well as impact on population and infrastructure in the area. These impacts would be of a permanent nature.

#### **1.6. Mitigation measures and EMP**

The EMP consists of a set of mitigation, monitoring and institutional measures to eliminate the adverse impacts, offset them, or reduce them to acceptable levels. The mitigation measures proposed broadly comprise:

**a. Erosion control**

Guidance on site clearance; providing silt traps and sedimentation basins; topsoil management; re-vegetation of cut and fill areas with appropriate species; providing vegetated swales and bio-retention basins for storm water management and reducing silt loads; and providing a green belt.

**b. Dust and noise suppression**

Spraying of water on compacted areas; covering waste disposal trucks with tarpaulins, employing equipment and vehicles that comply with noise and air emission standards; regular maintenance of machinery and vehicles; and providing an acoustic chamber, exhaust muffler and damping pads for the DG set.

**c. Safeguarding protected areas**

Erecting a low hard green hedge with railings around the project site before the major construction of the project commences. This hedge will act as a barrier that will prevent construction waste and other solid wastes from the site from being disposed in the Environmental Conservation Precinct (natural stream).

**d. Labor management**

Where offsite locations are unavailable and the labor camp is located onsite, housing for the laborers will be provided by the contractor selected for executing the work. Portable toilets / pit latrines will also be provided onsite with appropriate septic tank and soak pit. Drinking water and waste disposal facilities will also be provided. Other measures as required by national and local laws and rules will be implemented. These shall be included in the contract document.

**e. Occupational Health and Safety**

Compliance with General Rules and Regulations on Occupational Health and Safety 2006 by the contractor during construction. During operations, the facilities managers will be responsible for complying with these rules.

**f. Solid Waste and E-waste Management**

Construction waste will be managed as per TCC's norms. Construction waste shall be safely stored on site and carted away by the contractor to a location identified by TCC for filling purposes. Solid waste generated by the IT Park during operation will be managed as per the Rules and Regulations for Thimphu Municipal Solid Waste Management 2007. The facilities management will be responsible for segregating, inventory, tracking and documenting e-waste entering and leaving the facility.

**g. Traffic management**

During construction, ensure that no construction vehicle servicing the construction site will be parked on the access roads; provide dedicated parking spaces on site. During operation, employees of tenants shall be encouraged to use car pooling options. The tenants will be encouraged to establish a shuttle service between the IT Park and Thimphu City.

**h. On-site wastewater treatment**

Included in the project design.

**1.7. EMP budget**

A total of Nu. 53,00,000 (excluding the cost of the Sewage Treatment Plant) has been budgeted for implementing the EMP.