



Bahria Town (Private) Limited, Rawalpindi

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## Initial Environmental Examination of Bahria Town Phase VII Ext. Project

Final Report

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## Executive Summary

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### Introduction

The Bahria Town (Pvt.) Limited has planned to develop a modern housing scheme named “Bahria Town Phase VII” during 2007.

Bahria Town Pvt. Ltd is the largest real-estate developers and Investors in Pakistan and the largest private housing society in Asia. Bahria Town offers amenities (24-hour armed security, schools, hospitals, a fire department, retail shopping, restaurants and entertainment centers).

The Bahria Town prepared an EIA of Bahria Town Project during August 2007 which was submitted to Pakistan Environmental Protection Agency as well as to Environmental Protection Agency, Punjab.

The EIA covered an area of 88,000 Kanals of land with 70,000 Kanals in Rawalpindi district and 18,000 Kanals in Islamabad Capital Territory. The area covered by Bahria Town Phase VII was falling within the jurisdiction of Islamabad Capital Territory therefore; Pakistan Environmental Protection Agency has issued Environmental approval.

The Bahria Town Pvt. Ltd has recently purchased an additional land adjacent to Bahria Town Phase VII which is known as Phase VII Extension.

The Capital Development Authority Islamabad has informed Bahria Town (Pvt.) to obtain an environmental approval of Bahria Phase VII Ext. which also falls within their jurisdiction of Islamabad Capital Territory. This Initial Environmental Examination of Bahria Town Phase VII Ext. is being submitted to comply with the requirement of Capital Development Authority.

In order to comply with the regulatory requirement of environmental laws of Pakistan, Bahria Town Pvt. Ltd has acquired the services of M/s Project Procurement International, an environmental engineering consultancy firm, to conduct an IEE of the Project.

### Policy, Legal and Administrative Framework

The Project has been reviewed against the environmental legislations applicable in Pakistan, however the laws and acts particular for the proposed project includes:

- Pakistan Environmental Protection (Review of IEE and EIA) Regulations, 2000
- National Environmental Quality Standards (NEQS), 2000
- Antiquities Act, 1975

Bahria Town Pvt. Ltd being the proponent of the project will ensure that the construction and operational phases of the Project are in accordance with the recommendations of the IEE report and the Environmental Management Plan will be implemented.

The Environmental Management Plan will be made a part of the construction agreement to be signed between the management of Bahria Town Pvt. Ltd and Project Manager, Bahria Town Phase VII Ext. Project.

### **Need for the Project**

The project will fulfill the extravagant standard of living of the high class as well as middle class society to be able to live where they are comfortable with most state of the art facilities. Bahria Town has made a very positive approach that has transformed the concept of Housing Societies in metro cities in to landmark complexes and towers matching the examples of world class cities.

The project will address the housing problems directly and its linkage with the construction industry will contribute to the economy of Pakistan. Additionally, the project will reduce the pressure on already overcrowded housing situation in Pakistan particularly in Islamabad and Rawalpindi.

### **Analysis of the Alternatives**

**No Project Option:** If we consider no project option then we will lose all positive impacts that will be caused due to the project; like providing residential area with basic living facilities at an affordable price to general public. The “No Project Option” does not appear reasonable given the above fact. However, the expected negative impacts can be minimized by adopting appropriate mitigation measures.

**Build-As-Proposed-Option:** Bahria Town Phase VII Ext. Project is in accordance with the Bahria Town Master Plan. The area where this Project would be constructed does have all basic utilities like electricity, water supply, wastewater treatment plant. However, the negative impacts caused during the construction and operational phases of the project can be minimized, controlled or eliminated if the proposed mitigation measures as suggested in the IEE report are affectively implemented.

### **Project Description**

Bahria Town Phase VII Ext covering an area of 711.3 Kanals is located in Mouza Kotha Kalan and Mouza Humak in Zone V, Islamabad.

The area of Bahria Town Phase VII is 761.20 Kanals and of Phase VII Ext. is 711.3 Kanals. Therefore, the total area of Bahria Town Phase VII Ext. is 1,472.50 Kanals which has been approved by Capital Development Authority.

Bahria Town Phase VII Ext. 1, 289 plots of different sizes; 339 plots of size 50'x90', 51 plots of size 65'x70', 266 plots of 32.5'x70', 484 plots of 30'x75', 107 plots of 35'x70' and 42 plots of 37.5x60'.

.The Bahria Town Phase VII Ext. will have commercial and parking areas, open space, public buildings, graveyard and roads. All basic facilities like roads, water supply, sanitary sewerage system, sewerage treatment plant, Sui gas and electricity will be provided in the Bahria Town Phase VII Ext. Project.

Presently, 93% of development works i.e., roads, culverts, water supply, drainage system, sanitary sewerage system, electrification, mosque, landscaping, sui gas, telecommunication, commercial area and parks/green areas have been completed.

The remaining construction works i.e., remaining 7% development works, Sewerage Treatment Plant, plantation of trees, primary and secondary schools and public building has to be completed in a period of two years at an estimated cost of Rs 391 million.

### **Environmental Baseline Conditions**

In order to work out the impacts and related mitigation measures, the base line environmental conditions of physical, ecological and the socio-economic environment of the project area were studied as follows:

#### **Physical Environment**

**Topography:** Islamabad, with a total area of 906 square kilometers lies between 33°-43' North latitudes and 73°-04' East longitudes. Islamabad is located on the Northern edge of the track known as Potohar Plateau. The Potohar Plateau has an uneven land and is gradually rising in elevation from 500 to 600 meters above the sea level and the highest point is 1,600 meters above mean sea level. The land gradually slopes towards the South. The land is composed either of alluvium (clay or silt) or of gravel caps. A large part of the area is undulating and at various places it is badly dissected by gullies and ravines. The Kurang River has been dammed at a place named Rawal to form the Rawal Lake. Another dam has been built on the Soan River to form the Simly Lake.

**Geology and Soil:** The Potohar region has a complex geological history of mountain formation, alluvial-loessic depositions, and erosion cycles. Limestone is the characteristic rock of Margalla range. In age, it ranges from the Jurassic to Triassic. It is usually reddish or bluish white in color mixed or alternating with it beds of red or bluish clay or shades or sandstones. The deposits contain small sized rounded pebbles of sandstone, quartzite or granite and sand mixed or alternating with clayey deposits. They have been described as alluvial deposits, but it is equally probable that they have a glacial origin.

The soil in Potohar region are shallow clayey of low productivity. Mostly, on the Southern and Western aspects of the Potohar plateau, the soil is thin and infertile. Streams and ravines cut the loose plain, affected by gully erosion and steep slopes. Such land is unsuitable for cultivation. However, large patches of deep fertile soil are found in the depressions and sheltered localities supporting quality small forests (Rakh) and rain fed agriculture. The soil formed by the disintegration of shells, clay and sandstone occurs in scattered places.

**Land use:** The project site is undulated non-agricultural land. The land is mostly covered by construction debris consisting of soil mixed with gravels, cobbles and boulders.

**Surface Water:** Soan River is passing through the project site which is the main source of surface water in the project area.

**Ground Water:** Ground Water quality of the project site is good and used for drinking and other domestic purposes. The residential areas have Municipal Water supply from Bahria Town Bore wells. The ground water level ranges from 450-500 ft. in the project area.

**Climate:** The temperature of capital territory Islamabad ranges between  $-1^{\circ}\text{C}$  to  $46^{\circ}\text{C}$ . The coldest month is January when the mean maximum temperature is  $18.3^{\circ}\text{C}$  and mean minimum is  $3.8^{\circ}\text{C}$ . From February to May the temperature rises at the rate of  $5.0^{\circ}\text{C}$  per month. The highest temperature reached in May when the mean maximum temperature remains  $39.1^{\circ}\text{C}$ .

The average daily wind speed is 3.78 Km/h while average relative humidity remains 60.5%. Islamabad receives 114.57 mm rain on average monthly basis.

**Air Quality:** There are no major anthropogenic sources of air pollution in the project area. Presently the Project Site is surrounded by residential area. Furthermore, there is no industry near the project area. Moreover, the project area is covered with shrubs, herbs and sparse trees along the road side of Bahria Town. Air quality can be considered good due to the absence of significant pollution sources. In view of this, the criteria of ambient air quality pollutants (NO<sub>x</sub>, SO<sub>x</sub>, PM, CO etc.), in the area are within the acceptable limits.

**Noise and Vibration:** There is low to moderate traffic in the project area. The noise levels at the project site appears to be within acceptable limits.

## Ecological Environment

**Flora:** The Project area, consists of uneven land composed of alluvium (clay/silt) formed of alluvial deposits laid by the past and present river system in varying thickness. The vegetation is a representative of Dry Subtropical Scrub Forest which is dominated by *Acacia modesta* (Phulai), *Ziziphus mauritiana* (Ber); etc. Other associates existing in varying proportions include *Melia azadirachta* (Dharek); *Morus alba* (Mulberry-Shahtoot); *Dalbergia sissoo* (Tahli-Shisham); *Acacia nilotica* (Kiker). In the undergrowth *Cannabis sativa* (Bhang), *Calotropis procera* (Desi Ak) and *Parthenium hysterophorous* (Gandi Booti) are predominant. There will be no tree cutting at project site.

**Fauna:** The project area in its original form constitutes the habitat of wild fauna consisting of a host of animals and birds. Species found in Rawalpindi include Jackal, Wild hare, Hedgehog, Rat, Wild boar, Porcupine, Shikra, Grey partridge, Black partridge, Quail, House Sparrow, House Crow, Koel, Common myna, Spintailed lizard, Krait etc.

## **Socio-Economic and Cultural Environment**

Bahria Town Phase VII Ext. Project is located in Bahria Town Zone V Islamabad, located near to this DHA Phase I and different Villages which may get direct positive or negative impacts from the Project.

Bahria Town is a residential sector in Rawalpindi/Islamabad and one of the completed projects of Bahria Town.

**Population:** Located within the Islamabad Capital Territory (ICT), the population of the city has grown from 100,000 in 1951 to 1.15 million as of 2011, making it the ninth largest city in the country. Together with its neighboring twin city of Rawalpindi, the greater Islamabad-Rawalpindi metropolitan area is the third largest conurbation in Pakistan with a population of over 4.5 million inhabitants.

**Education:** There are number of private schools both for boys and girls in Bahria Town Rawalpindi i.e. ACE International Academy, A.Q. Khan College of Science & Technology.

**Public Health:** Islamabad has both public and private medical Centers. The largest Public hospital in Islamabad is Pakistan Institute of Medical Sciences (PIMS) hospital. Other hospitals include SHIFA international and Saudi Pak Tower MEDICS. Moreover Bahria Town provides 24 hours medical facilitates to its residents.

**Drinking water Supply:** Bahria Town has constructed tube wells to meet the demand of water supply of Bahria Town Islamabad.

**Employment:** More than 80% of the population in project area is engaged with business and employments. Mostly people are either serving in Government departments/private sector or having their own businesses.

## **Public Consultation**

The community living within the project area was consulted during the IEE of the project. The project activities and their positive and negative impacts on the physical, biological, and socio-economic environment were highlighted to them.

Generally, the people of the project area are in favor of the project and stated that this project will provide affordable plots to general public of Rawalpindi and Islamabad. They stated that more than half of the earnings of employees/general public is utilized on rent. The project will create employment opportunities for the local people during its construction phase.

Main concerns of the community were regarding traffic congestion, pressure on water supply and sewerage system during construction phases of the project.

## Impacts and Mitigation Measures

### Physical Environment

**Impact:** Soil related issues include soil erosion, slope stability, and soil contamination. Land clearing, leveling and grading, excavation and filling, construction activities and maintenance of equipment/vehicles may cause these issues. Soil may be contaminated because of fuel/oils/chemical spillage and leakage, and inappropriate waste (solid as well as liquid) disposal.

Construction machinery and project vehicles will release exhaust emissions, containing Carbon Monoxide (CO), Oxides of Sulfur (SO<sub>x</sub>), Oxides of Nitrogen (NO<sub>x</sub>) and Particulate Matter (PM). Furthermore, the construction activities will cause air pollution. These emissions can deteriorate the ambient air quality in the immediate vicinity of the project site. Furthermore, construction activities such as excavation, land leveling, filling and vehicular movement on unpaved tracks may also cause fugitive dust emissions.

Noise and vibration will be generated by construction machinery and vehicles. The ground water resources of the project area can be contaminated by solid waste disposal, sewerage disposal, and equipment/vehicles maintenance, spillage/leakage of fuels, oils and chemicals, and campsite sanitation facilities.

**Mitigations:** Soil erosion can be minimized during land clearing, leveling and grading. Excavated slopes will not be left untreated/unattended for long durations. Appropriate slope stabilization measures will be taken per the design (i.e. stone pitching).

Temporary measures, such as construction of temporary walls reinforced with brick lining bordering the construction areas to contain debris and spoil, will also be undertaken to avoid soil erosion and water contamination. The stone and gravel will not be extracted from Soan Nullah.

For the domestic sewage from the construction camp, a septic tanks with soakage pit will be constructed having adequate capacity. Waste oils will be collected in drums and sold to the recycling Project Manager, Bahria Town Phase VII Ext. Project. The recyclable waste from the project site (such as cardboard, drums, broken/used parts, etc.) will be sold to recycling Project Manager, Bahria Town Phase VII Ext. Project, or where appropriate reuse/recycle it. The hazardous waste will be kept separate and handled according to the nature of the waste.

### Ecological Environment

**Impacts:** The site preparation and construction activities may necessitate removal of the natural vegetation from the areas where project activities will be carried out. Damage and/or loss of vegetation and clearing of other indigenous and introduced species, as well as undergrowth species, comprising bushes, grass, etc. Construction crew can also indulge in tree/shrub cutting to obtain fuel wood for the camp.

The loss of natural vegetation discussed above, and other project activities will potentially have adverse impacts on the faunal resources and habitats of the area. Smoke, chemicals, dust particles, and noise generated by heavy machinery are a scaring factor for wildlife. Rodents, hedgehogs, porcupines would lose their dwellings. In addition, the wildlife may be disturbed by illumination, and presence of the people.

**Mitigations:** A plantation plan has been proposed having both indigenous and exotics trees which will be implemented. A record will be maintained for any tree cutting.

The measures to restore natural vegetation loss in the area will benefit the area's fauna as well. The project staff will not be allowed to indulge in any hunting or trapping activities. Night time construction works will not be undertaken. Illumination levels at the site will be minimized, as far as possible.

Appropriate diffusers will be used to restrict the illumination within the project site. Blasting will not be undertaken at the site for excavation purposes. Porcupine population has increased, as it is not palatable because of its quills. Destruction of habitat and consequent check on the population of this pest may prove to be boon to maintain ecological balance.

Developmental activities and colonization of project site would be a positive step to keep down the number of this undesirable species at the desirable level from human point of view.

## **Socio-Economic Environment**

**Impacts:** The land for the Bahria Town Phase VII Ext. Project is owned by the Bahria Town Pvt. Ltd. The project being located close to the residential areas may pose some safety hazards to the local population.

Construction workers may be susceptible to eye and respiratory diseases due to their routine exposure to dust and exhaust emissions on the project site. Injuries could happen primarily by occupational-related accidents, animal bites, etc. Activities such as land clearing, tree cutting, earthworks, and construction of facilities pose various occupational hazards to the workers on site.

There is no reported site of archeological or historical significance at the land acquired for the project. However, in case any artifact of such significance is found during the construction activities, the Archeology Department, Government of Pakistan will be informed.

**Mitigations:** Eye and respiratory diseases will be mitigated through routine health screening and training of Bahria Town employees engaged with the construction of the Project. Physical injury will be mitigated through the provision of appropriate training and emergency response procedures. Protected fencing will be fixed around the construction site.

Unauthorized access within the construction area will not be allowed. Vehicle speeds of 20 Km/hr. at the project site will be implemented. Appropriate light diffusers and reflectors will be used, if required, to minimize the public nuisance caused by light pollution.

### **Environmental Management Plan**

The purpose of the Environmental Mitigation Plan (EMP) is to minimize the potential environmental impacts due to the project. The EMP reflects the commitment of Bahria Town Pvt. Ltd to safeguard the environment as well as the surrounding population. The EMP provides a delivery mechanism to address the adverse environmental impacts of the proposed project during its execution and operation, to enhance project benefits and to introduce standards of best practices to be adopted for all phases of the project.

The cost estimates for environmental monitoring during construction phase of the project is Rs. 0.56 million.

### **Conclusion and Recommendations**

On the basis of the overall impact assessment, more specifically, nature and magnitude of the residual environmental impacts identified during present IEE, it is concluded that Bahria Town Phase VII Ext. Project is likely to cause conventional environmental impacts mainly occur during its construction phase. However these impacts can be mitigated provided the proposed activities are carried out as mentioned in the report, and the mitigation measures included in this report are completely and effectively implemented.

There are no remaining issues that warrant further investigation. This IEE is considered as adequate for the environmental and social justification of the project.