



Sri Lanka Tsunami Reconstruction Program (SLTRP)
USAID Contract # 386-C-00-05-00166-00

Environmental Assessment

Vocational Education Reconstruction Component

December 2006

SLTRPR-0040



In association with EML Consultants, Chemonics International Inc, DEVTECH, FNI, Engineering Consultants Ltd., Lanka Hydraulic Institute, MICD, and Uni-Consultancy Service

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List of Abbreviations and Acronyms

DS	Divisional Secretary
ELT	English Language Training
EA	Environmental Assessment
EMAP	Environmental Management Action Plan
GN	Grama Niladhari
GoSL	Government of Sri Lanka
ICT	Information Communication Technology
ICTAD	Institute for Construction Training and Development
JAAF	Joint Apparel Association Forum
LEED	Leadership in Energy and Environmental Design
NA	Not Available
NGO	Non Governmental Organization
NWSDB	National Water Supply and Drainage Board
PAR	Preliminary Assessment Report
OTI	Office of Transitional Initiatives
PS	Pradeshiya Sabha
RFP	Request for Proposal
SDP	Skills Development Project
SLICTA	Sri Lanka ICT Association
SLTRP	Sri Lanka Tsunami Reconstruction Program
UDA	Urban Development Authority
USAID	United States Agency for International Development
VERC	Vocational Education Reconstruction Component
VTA	Vocational Training Authority
VTC	Vocational Training Center

Executive Summary

The Sri Lanka Tsunami Reconstruction Program is responsible for the reconstruction and construction of several vocational education centers throughout Southern and Eastern Sri Lanka, which it will carry out through its Vocational Education Reconstruction Component (VERC). Cognizant of the need to understand the potential environmental impacts of construction, and in order to ensure compliance with USAID 22 CFR 216, the project conducted environmental assessments in the nine sites selected for activities (five sites in the southern region and four sites in the eastern region).

The findings of the environmental assessments are contained in this document, including descriptions of the physical, biological and socio-economic environments of the selected sites, the impacts that will potentially result from construction of the centers and an environmental management plan to mitigate potential impacts. Potential longer-term impacts, which may occur as a result of the operation of the centers, are also included in this document, as are appropriate mitigation measures. Where possible, measures suggested in the Environmental Management Action Plan (EMAP) promote the adoption of safeguards to proactively avoid impacts, rather than mitigating impacts after they have already occurred.

As illustrated in the study, the major environmental concerns in the selected sites in the Southern region include the potential of flooding of the approach road and frontage of the vocational training center in Tangalla, the disposal of waste during construction at all sites, and the potential disruption to adjacent religious, educational and economic activities. Other concerns include the quantity and quality of potable water available for human use in all sites, although this concern should be addressed by the National Water Supply and Drainage Board (NWSDB) projects currently underway. There are no threatened species, habitats or ecosystems within any of the southern sites, and all environmental impacts stemming from the construction in the southern region will be adequately mitigated through the implementation of the EMAP.

Major environmental concerns in the sites located in the east include the potential for flooding in the Central Camp site, the disposal of waste during construction at all sites, and the availability of water for human consumption at all sites. Again, NWSDB projects are currently underway, and will likely address concerns related to access to safe water. There are no threatened species, habitats or ecosystems within the impact area of any of the eastern sites. There are no sites of archeological or cultural significance that warrant the introduction of special protection measures. All other environmental issues that arise from construction of VTCs can be adequately mitigated through the EMAP and its recommendations.

CHAPTER ONE: INTRODUCTION

1.1 Overview

The Indian Ocean tsunami, triggered by a massive earthquake off the coast of Sumatra in 2004, wreaked havoc in the region and claimed over 200,000 lives, displaced hundreds of thousands of people, and destroyed billions of dollars of property. The tsunami affected twelve coastal districts in Sri Lanka, representing one of the worst natural disasters in the country's history. The United States Agency for International Development (USAID) is supporting Sri Lanka in its endeavor to 'build back better' in the aftermath, and the Sri Lanka Tsunami Reconstruction Program (SLTRP) focuses specifically on this task.

The tsunami damaged and destroyed infrastructure throughout the coastal areas, including vocational education and training centers. SLTRP has several components focusing on rehabilitation of damaged coastal infrastructure, and is well positioned to effectively rehabilitate and construct vocational training centers along affected eastern and southern coastlines in the country.

Although rehabilitating damaged vocational training centers (VTCs) is the impetus for the Vocational Education Reconstruction Component (VERC) of SLTRP, it is notable that USAID had been fostering economic growth by generating employment opportunities through targeted skills development programs prior to the 2004 tsunami. The demand for vocational training opportunities has significantly increased following the tsunami, and the VERC was designed to not only address the country's immediate rehabilitation needs, but also to capitalize on the opportunity to uplift vocational education services and, in doing so, to increase the potential for employment.

The VERC program is guided by sets of principles that have a direct bearing upon the environmental assessment. In particular, such guidelines influenced the decision to locate the VTCs in certain sites and not others. As outlined in the 2006 Preliminary Assessment Report, "...two sets of guiding principles are relevant to the VERC: those related to best practices in vocational training for workforce development, and natural disaster recovery principles developed by the Government of Sri Lanka (GoSL), international donors and development agencies."

Workforce development principles related to VERC include:

- Creating demand-driven vocational education and training services and facilities (private sector demand should guide curriculum, pedagogy, and assessment of skills)
- Establishing public/private partnerships
- Ensuring community involvement, and the corresponding use of training centers
- Providing competency-based, learner-centered teaching
- Encouraging entrepreneurship in students and staff

- Providing robust career counseling and job placement
- Ensuring gender equity
- Creating an architectural design supportive of pedagogy
- Promoting environmentally-sound and architecturally-sustainable designs of centers

Guiding principles related to tsunami reconstruction that are relevant to VERC include:

- Conflict sensitivity
- Need-based decision-making concerning allocation of resources
- Design and implementation at the lowest appropriate tier of governance
- Community empowerment and consultation
- Communication and transparency in decision-making processes and implementation
- Avoiding rebuilding in a way that fails to reduce vulnerabilities to natural hazards
- Coordinating among donors, GoSL, civil society organizations, and international Non-Governmental Organizations (NGOs)

The geographical focus of the VERC is in the coastal areas of the Southern province, (comprising of the districts of Galle, Matara and Hambantota), and the coastal areas of the Eastern province (consisting of the districts of Trincomalee, Batticaloa and Ampara). After visiting a total of 41 sites, SLTRP in consultation with the VTA chose ten sites for rehabilitation, reconstruction and construction; subsequently, one site (Trincomalee) was eliminated due to issues related to land availability. The remaining nine sites are assessed in this report. The VTA recommended the relocation of certain existing VTA sites due to a previous GoSL mandate of a set back (no-build) zone for any reconstruction activities approximately 100 to 200 meters from the shore. This was reduced in October of 2005 by the GoSL to zones that vary by location, and was based on the set-back zones declared and gazetted under the Coast Conservation Act No. 57 of 1981.

Of the nine facilities to be constructed, two schools are to be built to Leadership in Energy and Environmental Design (LEED) green building standards: Ahangama and Sammanturai. The LEED green building system rates green buildings based on 69 points and seven pre-requisites that must be met to apply for the rating. The rating system comprises of six categories, namely: 1) sustainable site; 2) water efficiency; 3) energy and atmosphere; 4) materials and resources; 5) indoor environmental quality; and 6) innovation and design process. The LEED schools developed under this program are targeting a “silver” rating, which corresponds to achievement of 33 to 38 of the 69 possible points. Accordingly, construction contractors will be required to use utmost care should be taken while selecting materials to meet the LEED criteria for green buildings. Although only two centers will

strive for LEED certification, contractors will be encouraged to use energy efficient and eco-friendly materials with a maximum recycled content value in all construction sites.

Finally, it is worthy to note that, as the construction takes place under a tsunami reconstruction program, there is naturally a particular concern paid to issues of structural integrity, specifically with regard to resilience against natural hazards. SLTRP's VTC construction designs reflect this through three primary characteristics: 1) the use of reinforced concrete columns; 2) the anchoring of columns to foundation structures; and 3) the anchoring of roof structures to the concrete structure. These characteristics were, for the most part, absent from the developed sites that SLTRP is addressing. Furthermore, questions of water logging and flooding are addressed in the design of each school, for example by designing the floors levels at safe elevations, and selecting sites with relatively less risk than others; storm water disposal systems are also provided in every school.

1.2 Site Selection Process

The chosen sites for training facilities were selected based upon a process set out in the VERC Preliminary Assessment Report 2006 produced under SLTRP. Below are relevant excerpts from the report, which explain in further detail the process of selection:

“The primary driver for selecting center locations was labor demand within the tsunami-affected areas of the Southern and Eastern Provinces. Once the labor demand is identified, the next determinant is the appropriateness of the specific location to meet that demand. Determining appropriateness involves the interaction of multiple factors: accessibility to target population, suitability of the physical site for construction, proof of ownership by the VTA, potential for public-private partnerships, the cross-cutting themes of participation and communication, gender and conflict mitigation, and commitment of the VTA to staff and operate the center. The final determiner is the desire of USAID to have balance in the investment in the South and the East.”

Labor demand was determined through various methods, including examining reports produced by key government agencies involved in vocational education, reviewing data obtained through studies conducted by other agencies and conducting interviews with major stakeholders from construction, engine repair, electronics, electricity, apparel, bakery and hospitality industries. The project next conducted a skills analysis appropriate to the VTA (for which the VTA can offer training leading to certification), and matched skills to demand. The results of this exercise are explained below.

The largest labor demand is in the apparel industry, comprising nine separate skill areas: sewing machine operators, mechanics for factory floors, pattern makers, cutters, quality inspectors and quality controllers, fabric inspection, computer aided color matching, work study (work breakdown analysis), and supervisors.

The second greatest labor demand is in the construction industry. The Institute for Construction Training and Development (ICTAD) reports that the pre-tsunami annual

shortfall in construction trades was approximately 7,000 and the need for upgraded training by current workers is 10,000. No data exists on post-tsunami labor shortfalls in the construction industry. However, the Chamber of Construction Industry reports that member firms are unable to respond to the volume of available work because of the lack of skilled labor. The largest gap occurs in the area of masonry and related skills such as plumbers, plasterers, etc.

The final industry with identifiable labor demand is the hospitality industry, especially in the area of restaurant and bakeries, cooking and services. However, the data related to this demand is primarily anecdotal, as reported by industry representatives. This type of demand is also confined to the Southern Province.

The final area considered was self-employment, or work in micro-enterprises. It was found that there is a demand for small-scale enterprises focusing on gasoline, diesel engine mechanics (terrestrial, marine, and agricultural, varying by district), electrical/electronic appliance repair, and a host of other skills needed in construction industries.

In order to select the sites, the project also examined relevant physical characteristics and ownership rights into consideration. Specific criteria included:

- Ownership by VTA or ability to acquire ownership
- Population
- Available methods of transportation
- Size and configuration of the land
- Terrain

To finalize the selection process, the team analyzed the benefits that could be derived by the community by investing in particular sites. Calculating return involved a simple comparison of the cost of constructing and equipping a particular site with the number of graduates who would become certified and enter the workforce. For example, as noted in the PAR:

“This comparison eliminated the reconstruction of the Printing Center at Pettigallawata in Galle. The center would have produced a maximum of 15 graduates per year and would have cost an estimated \$1,200,000 to build and equip. The center would also have been in direct competition with the Galle center built and operated by the Institute of Printing (INGRIN)” (PAR 2006).

The VTA then reviewed the recommended sites and proposed activities, and as necessary, made a commitment to provide staff to operate the centers. An Advisory Council¹ then reviewed the site selections and proposed areas for skill development.

¹ Details of the composition of the Advisory Council are provided in PAR 2006

Table 1.1 provides a list of the ten selected sites, along with corresponding skill areas for development and an estimate of the annual output (certified graduates) in the skill areas. The graduate output estimates do not include short-courses or special programs, such as English language training (ELT) or micro-enterprise development (MED) where no certification is available. Each location will also provide career guidance, a community learning center, ELT instruction, and training in information and communications technology (ICT) and MED (PAR 2006).

Table 1.1: Vocational Training Centers to be Constructed/Rehabilitated
 (Adapted from VTRC, Preliminary Assessment, May 2006)

LOCATION	PROVINCE	CONSTRUCTION/SKILL AREAS	STUDENT OUTPUT
Ahangama	Southern	Construction of LEED™-certified model center with hospitality industry focus (one building)	80
Koggala	Southern	Construction of one building for industrial trades including A/C, electricity, automated system controls, and apparel	400
Hikkaduwa (Narigama)	Southern	Rehabilitation of two existing buildings and one new building focusing on construction trades, marine engine and refrigeration (one new building)	90
Talalle	Southern	Construction of two buildings to replace tsunami losses: one building for career guidance, community learning, and electronics, and one building for automotive mechanics	50
Tangalla (Henakaduwa)	Southern	Construction of one building for career guidance, community learning, and construction trades. Caveat: a new road to access the site must be built by GoSL prior to center construction	80
Central Camp	Eastern	Construction of one building for career guidance, community learning, small engine, construction trades, and electronics	80
Nintavur	Eastern	Rehabilitate existing structure and complete second floor. Include space for instructor training and certification.	80

LOCATION	PROVINCE	CONSTRUCTION/SKILL AREAS	STUDENT OUTPUT
Sammanturai	Eastern	Construction of LEED™-certified model center with hospitality industry focus (one building). Courses offered will have an industrial focus, mainly on floor-related activities of a garment factory.	80
Kaluwanchikudi	Eastern	Construction of one building for career guidance, community learning, small engine, construction trades, and electronics.	80

1.3 Purpose of the Environmental Assessment Report

Both the GoSL and USAID require the carrying out of environmental assessments prior to the commencement of certain types of development activities. This document has been prepared to fulfill USAID environmental regulations (22 CFR 216), as well as ensure compliance with relevant Sri Lankan environmental regulations.

In keeping with the USAID regulation on environmental safeguards, an initial environmental examination (IEE) was prepared for the entire SLTRP, which included the sub-project on vocational education facilities. The IEE was completed prior to the commencement of the project, and indicated a positive determination for all key sub-projects of SLTRP. The positive determination (or positive threshold decision) resulting from the IEE establishes that proposed actions are likely to cause significant impacts or create a reasonably foreseeable chance of significant harm to the environment, and that preparation of an EA or an environmental impact assessment (EIA) will be required. The potential environmental impacts related to the construction and operation of the centers, and the associated safeguards, are to be fully described in the EA to be completed upon a defined scope (PAR 2006).

In terms of GoSL regulation, Coast Conservation Act (CCA) provisions apply to those sites that fall within the purview of the coastal zone, as regulated by the Coast Conservation Department (CCD), and National Environmental Act provisions apply for those sites that fall outside the jurisdiction of the CCD administered by the Central Environmental Authority (CEA) of Sri Lanka. Although there are variations between the decision making procedures stipulated under the two acts, in practice the EA process followed is one and the same. However, the CCD will be consulted on a regular basis for their guidance and approval if any of the sites are within the CCD setback zones. SLTRP has obtained relevant approvals from the CCD where necessary, which are included in Appendix 6.

1.4 Scope and Objectives of the EA

This document fulfills the EA requirement by presenting potential environmental impacts from construction and operation of the nine VTCs (see Tables 1 and 2). All of the sites were assessed for potential environmental and socio-economic impacts, as will be discussed in further detail throughout the report. Finally, this study provides recommendations to avoid or mitigate potential negative environmental impacts, caused by the rehabilitation and construction of the VERC facilities.

1.4.1 Impact Assessment Methodology

Data was collected at all nine sites through the use of an environmental questionnaire (Appendix 1), which is based upon a process established by the former Sri Lanka Tsunami Reconstruction Organization. The process was originally established to respond to a need to conduct rapid environmental assessments in the aftermath of the tsunami. The environmental assessment team also collected qualitative information using this form, as there is a severe dearth of reliable, quantitative information on the main environmental variables at the sites.

Construction projects can cause direct, indirect, cumulative, short and longer-term adverse environmental impacts. This report deals largely with the direct, short-term impacts, but also addresses some major indirect impacts that could occur as a result of the project. Many of the longer-term impacts will arise during the operational phase of the centers, and will need to be addressed by the VTA as the responsible operating authority.

The environmental questionnaire form seeks to gather information in the following categories (for further details, see Appendix 1):

Physical – land forms/topography, soil types, water resources etc.

Ecological – types of ecosystems, habitats, species and their status

Sensitivity – identification of areas of environmental, archeological, and religious importance, as deemed by appropriate legislation.

Information was gathered using the following methods:

- Literature surveys to collect all available/relevant physical, biological and other environmental information. Consultations with experts were also conducted to supplement the literature review.
- Collection of socio-economic data through published statistics available from the Department of Census and Statistics Government of Sri Lanka and local community-based organizations (CBOs), and interviews with agency officers who support relevant livelihood programs.
- Conduct of line transects and faunal surveys to determine presence or absence of ecosystems and/or species of concern in project sites.

Potential environmental impacts and mitigation measures were identified based on a scoping session conducted by the EA team with contributions from the SLTRP staff managing the VERC. These potential impacts and proposed measures are based on past experience of team members in executing similar projects, expert opinion and field knowledge of the environmental setting of each proposed site. The impacts were then classified into 'low', 'moderate' and 'high' categories wherever possible, based in part upon the nature, magnitude and duration of impacts. Measures suggested in the Environmental Management Action Plan (EMAP) promote the adoption of necessary safeguards to proactively avoid impacts, rather than to mitigate impacts after they have occurred.

1.5 Definition of the Project Impact Area

The geographic area of the impact zone is defined as the physical footprint of the proposed activity and a 0.5 kilometer buffer zone around the site. It is anticipated that this radius not only covers the zone directly affected by the work, but also includes the area in which more geographically diffused impacts (such as air and water pollution) will occur.

1.6 Use of Construction Materials

1.6.1 Availability of Construction Materials in the Southern region

As all sites are located in urbanized areas and generally within less than five kilometers from towns, local suppliers will provide construction materials. There is no need to transport construction material unless there are extenuating circumstances such as a need for river sand or other materials that are not available locally. Consultation with residents of the area reveals that there are serious restrictions on river sand mining in the Tangalla area and most construction activities depend on river sand excavated and transported from the Embilipitiya area, which is more than 30 kilometers away. Even though there are several large rivers and tributaries in the proposed construction region, restrictions on sand mining are enforced by national and local authorities to mitigate its large scale, negative impacts. Therefore, river sand cannot be extracted from the nearest available locations without permits, which may or may not be attainable, depending upon the locality. It is predicted that local construction suppliers will be able to provide precise information on sources and quantities on available materials. Rubble can be reused from the sites such as Talalle, Ahangama and Koggala where there are existing buildings that will be demolished. Roofing tiles are mostly transported from centers of production such as Dankotuwa in the northwestern province. For further details regarding construction materials, please refer to Appendix 4.

1.6.2 Availability of Construction Materials in the Eastern region

Construction materials such as cement, sand, rubble, timber, bricks, and concrete stones are readily available in the Eastern Province. As demand for these materials is high due to on-going tsunami reconstruction efforts, it will be necessary to order materials well in advance in order to ensure work is completed on schedule.

1.6.3 Construction Workforce

The make-up of the construction workforce should be determined only after contract award and whenever possible, employment opportunities should be extended to the local community.

The construction schedule should take into account the monsoonal seasons and the weather factors that prevail in the specific sites in the Southern and Eastern regions of Sri Lanka

1.7 Alternatives

1.7.1 No Project Alternative

This option is not justifiable, as the project to reconstruct and construct vocational education centers is based on Sri Lankan national policies and programs that have been formulated to provide vocational education, as well as the need to reconstruct and rehabilitate after the impact of the most serious natural disaster ever recorded in Sri Lanka.

1.7.2 Alternative Sites for the Project

Alternative sites were already considered in the PAR 2006 which applied a set of criteria (see Section 1.2) to forty-one sites in order to select the final nine candidates for rehabilitation and construction of VTCs. As such, the type and location of sites has already been predetermined.

1.7.3 Alternative Types of Development at Selected Sites

This alternative explores the possibility of constructing other types of buildings on the same sites (i.e. alternative types of land use). Generally speaking, other potential land uses include hotels, restaurants, other educational facilities, commercial buildings, shops, telecommunication facilities, and homes. As these types of facilities already exist in adjacent lots, however, and there is a clear need for vocational training facilities to improve the skills of local communities, the socio-economic benefits of VTCs is greater than the aforementioned alternatives.

CHAPTER TWO: DESCRIPTION OF EXISTING ENVIRONMENTS

Chapter Two provides detailed information on various environmental and socio-economic factors at each site, thus laying the foundation to allow for accurate analysis of potential adverse impacts (discussed in Chapter Four). Environmental information was gathered through the use of the environmental assessment checklist (Appendix 1). Field visits were carried out during the day, and no night visits were undertaken.

2.1 Southern Region: The Natural Environment

2.1.1 Tangalla

Geographical setting

The proposed VTC is located about 198 kilometers from Colombo, just past the town of Tangalla. Administratively, it belongs to the Danketiya Grama Niladhari (GN) Division of the Tangalla Divisional Secretariat (DS) Division. Figure 2 provides the main types of land use within a 500 meter radius from the site and Figure 3 contains photographs of various views of the site taken during the field assessment.

Part of the proposed center will be constructed on land shared between the VTA and a Buddhist temple, known as the Tangalla Henakaduwa temple. The temple is adjacent to the main Tangalla-Tissamaharama road. Construction trades and domestic sewing training courses are currently operated by the VTA on the temple premises. On the eastern and northern ends, the site slopes towards a tract of paddy fields, known

Overview of Proposed Tangalla VTC Construction

- New permanent access road to be constructed (by GoSL)
- New two-story building to be constructed
- Will accommodate general vocational school programs
- Significant slopes on site

as the Tangalu Wel Yaya (translated as the ‘tract of paddy fields of Tangalla’. This tract is a well-known area but is fallow (see Figure 3). According to people consulted at the temple and local government officials, rice has not been cultivated in these fields for well over 25 years. The paddy fields are situated in the land use map (Figure 2) area identified as marsh and swamp, and the proposed VTC will face the fields.

The site is bordered on two sides by the temple premises and by houses and home gardens to the west. The main road from Tangalla to Tissamaharama continues past the temple across the paddy field tract. There are several waterways, both man-made and natural, which traverse the paddy fields. The chaitya (a sacred dome-shaped construction that is worshipped and has worshippers walking and meditating around it) is the closest part of the temple to the proposed construction site. The area set aside for the VTC will require some ground leveling prior to construction. There is a small irrigation canal which flows adjacent to the surrounding paddy fields and, at the nearest point to the proposed site, the canal is about ten meters away from the fence bordering the site. A new road will provide access to the VTC and will be built from the main road through the paddy fields (see Figure 1). This road will be built by the rural road development program now operating in Sri Lanka and popularly

2 - Land use map of Tangalla site

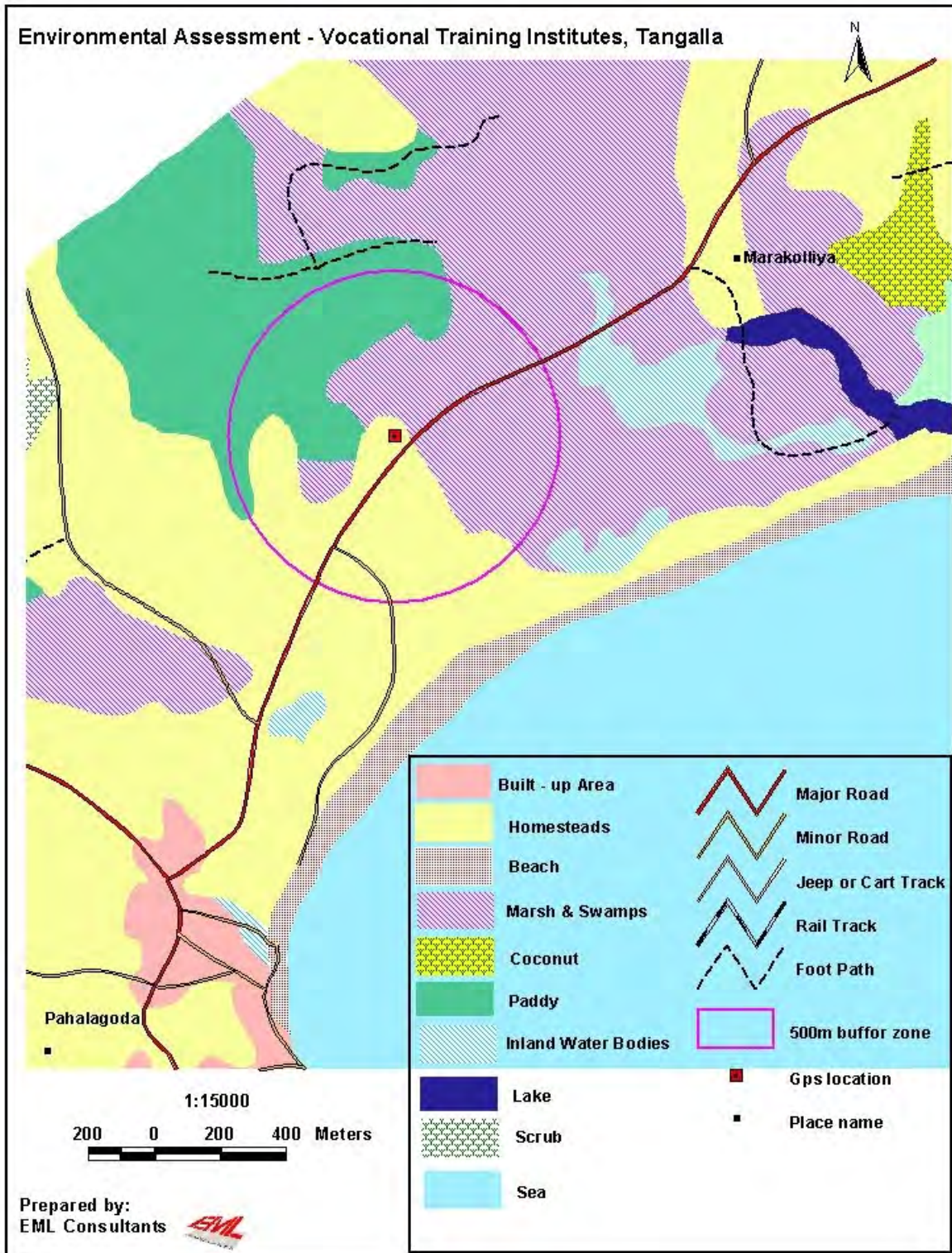


Figure 3 - Photographs of the Tangalla site



a) View of the chaitya from the site



b) Fallow paddy fields with irrigation channel



c) Trees on one part of the site



d) Open areas of the site with weeds



e) Existing toilets in the temple area



f) The existing well used for the toilets only



g) A view of the trees on the site

Physical setting

The difference in elevation from the highest point to the lowest point on this site is less than 20 meters. The paddy fields are situated below the temple. The view from the front of the proposed VTA center is scenic and allows for uninterrupted views of the paddy fields (see Figure 3). A strong breeze is usually present at all points of the site. Most of the construction will take place at the lower levels of the site. The soil is reddish and mixed with sand and mud particles. The temple has a well (Figure 3), which contains brackish water and is used only for toilets. Most surrounding homes have wells, but all contain brackish water. Water scarcity is a serious problem in the Tangalla area and has been an issue over a long period of time. Residents spend a considerable amount of time and effort transporting water from a fresh water source that is approximately one km inland. Toilets (mostly pit latrines) are found in every home and wells are situated more than 15 to 20 meters away from each other. The latrines are at a slightly higher ground elevation than the wells, which are nearer to the edge of the paddy fields. During the tsunami of 2004, seawater entered this area through the paddy fields, as they provide a natural depression that continues up to the coast. However, the temple site was for the most part unaffected by tsunami waters. The most significant drawbacks of this site includes the potential for flooding of the front area of the VTC and its access road; the potential disturbance to religious activities of the temple during to construction. There is also currently a severe scarcity of potable water in the area, but this problem should be addressed by the time construction begins as NWSDB is currently replacing the existing water system.

Biological setting

The main habitat type within the site can be classified as unmanaged home gardens. Within a 250 meter radius of the site, the main habitat comprises of fallow and cultivated paddy fields (45%), houses and home gardens (40%), and roads and waterways (15%). The vegetation cover consists mostly of short shrubs, weeds, and a few species of home garden trees including coconut trees. Appendix 5 contains a list of the species of flora and fauna found at this site. A portion of the fallow paddy fields between the main road and the coast are marshy. A few plant species that are usually seen in mangrove communities can be observed growing inland from the coast, indicating salinity intrusion into this area. About 20 coconut trees within the proposed site will need to be removed before construction. The most common species of animals observed were butterflies.

Description of the proposed layout of structures and activities of the VTC

Figure 1 presents the layout plan for the proposed Tangalla VTC. In brief, the project will include the construction of a new building, a community learning centre, and administration and other support areas covering a net square feet area of 6,490 (PAR 2006). Other site development activities will include courtyard commons, a well, a pump and water tower, sanitation and additional student wash rooms. SLTRP will not be involved in building the access road needed to the site; construction of this road by GoSL is a pre-condition for USAID's construction of the center. The center will cater to a student output of 80 per annum (see Table 1). The proposed operational activities at the centre will include: (a) small engine repair; (b) courses on electronics and electrical repair services; and (c) masonry and plumbing (PAR 2006).

2.1.2 Talalle

Geographical setting

The proposed VTA complex in Talalle is located near the 172nd kilometer post on the main southern highway, about five kilometers from the famous shrine at Dondra. Administratively, it belongs to the Talalle South GN Division in the Talalle DS Division. Figure 5 shows the main land use types within a radius of 500 meters from the proposed site, and Figure 6 provides photographs of various views of the site taken during the field assessment.

This is the existing regional VTC situated beside the main road leading to Matara (see Figure 4.). The entrance to the VTC is from the main road. It has several existing buildings and was in operation at the time of the site visit. Some of the buildings at the front of the site were partially damaged by the 2004 tsunami, while another in the middle area of the site was completely destroyed with only its foundations left in place. The sides and the back area of the property are devoid of any structures. New construction will take place on the footprint of the former buildings, as indicated in the drawings provided. A new set of toilets has been constructed on one side of the buildings and sand removed during the construction of the toilets has been placed in piles.

Overview of Proposed Talalle VTC Construction

- Existing vocational training program on site
- School functions will be relocated for duration of construction
- Multiple existing buildings will be removed
- One existing two-story building will be reused
- Will accommodate all typical vocational school functions
- Site already hosts a bakery and cafe

Physical setting

The difference in elevation from the highest point to the lowest point is less than 20 meters. There is a top layer of sand about four feet deep in most parts of the site. Removal of sand has been required for certain types of new construction that has occurred since the tsunami (i.e. the new set of toilets). Immediately behind the last building on the site is a fairly large pit containing garbage, consisting of paper, plastics, coconut husks and young coconuts. Although the pit emitted no odor during the time of visit, it will most likely collect water and serve as a breeding place for mosquitoes during rainy periods. A termite attack was evident in the walls of a portion of an existing building and was said to be a serious problem by the current manager of the VTC. Water is supplied by the NWSDB. There is currently a serious shortage of potable water in the area, as the water in both shallow and tube wells is brackish and unfit for human consumption. Again, this problem will likely be addressed in the near future, as the NWSDB is installing new pipes. Most residents transport drinking water from elsewhere. The VTC center officials were hoping for a better water supply from the proposed new projects of the NWSDB in the southern region. The area covering a radius of 250 meters from the site contains the coastal zone and beach on the front with the sides and back surrounded, by roads, houses, home gardens and a school among other types of buildings, such shops and restaurants. This VTC was significantly impacted by the tsunami due to its proximity to the sea.

Figure 4- Site layout map of Talalle site

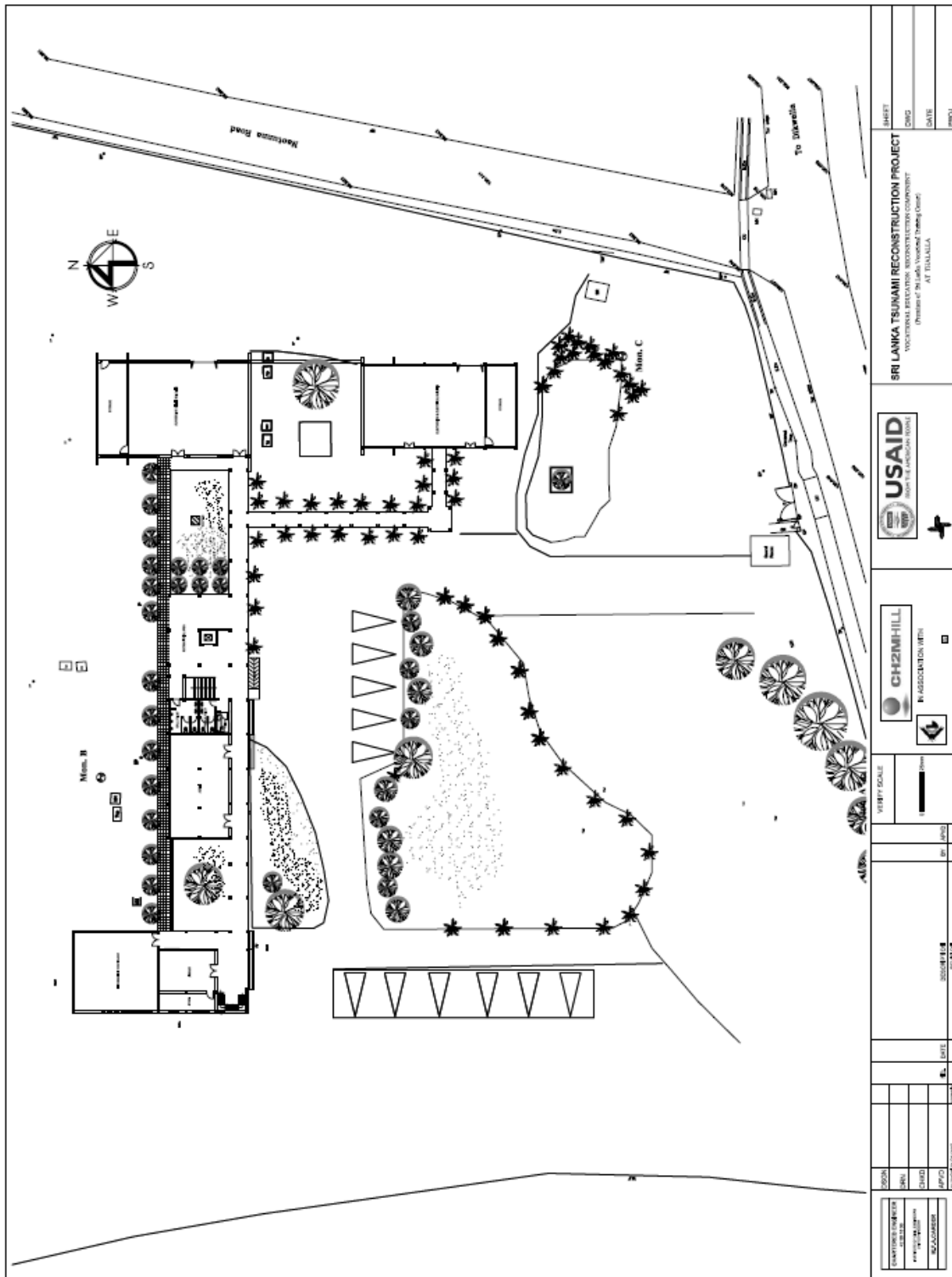


Figure 5- Land use map of Tallale site

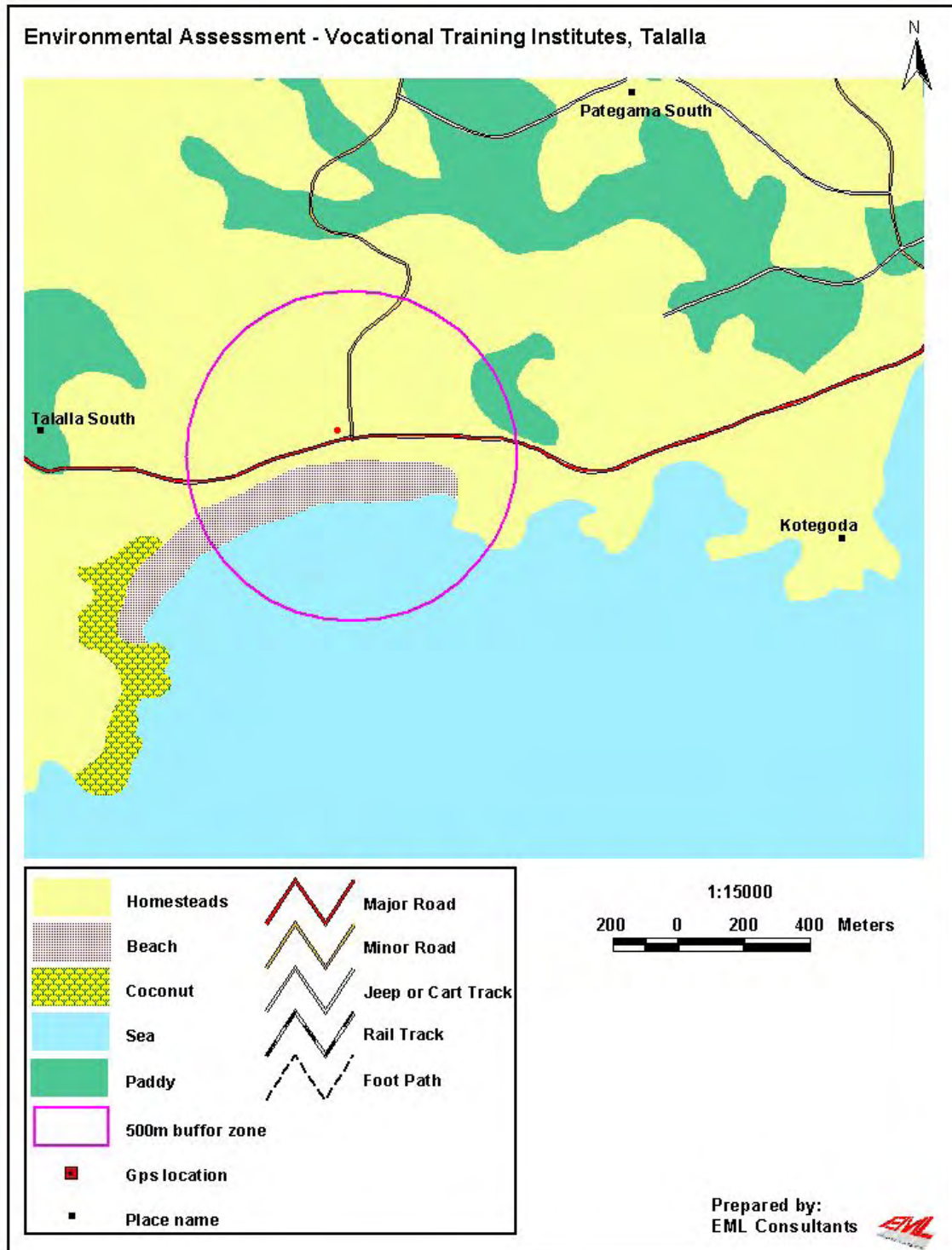


Figure 6- Photographs of the Talalle site



a) Sides of existing VTC
with bare patches of
sandy ground and grass



b) Sides of the existing VTC and the foundation of
a destroyed building



c) Sides of the existing VTC overgrown with
weeds

Biological setting

The site is largely devoid of trees at the front and sides, as buildings currently occupy those areas. There are patches of sandy soil interspersed with short grass. Thickets of heavily overgrown weeds occupying the sides and the back area of the site and support a reasonable diversity of butterflies as can be seen from Appendix 5. The VTC manager stated that considerable amounts of money and time are spent on controlling these weeds though mechanical means, but that these efforts have been largely unsuccessful. He felt that longer term measures should be undertaken to manage these invasive weeds, which are not only an eyesore, but also dominate parts of the premises that could otherwise be used by students and staff for recreational purposes. There is a termite threat at this site, as evidenced by signs of their current presence in the soil, as well as past attacks on the buildings.

Description of the proposed layout of structures and activities of the VTC

Please see Figure 4 for the proposed site layout plan for the Talalle VTC. The scope of activities of this center will include the construction of two new buildings to replace those lost due to the tsunami. One new building will house community learning, career guidance, administration and electronics, while the other will house automotive mechanic classes. Other site development activities will include landscaping, sanitation, and student wash rooms. Existing training programs include courses on motor engine maintenance and repair, boat engine maintenance and repair and bakery products. The new VTC will continue to promote the same skill development areas and, in addition, will introduce training programs on electricity, electronics, carpentry and plumbing. The center will be approximately 6,000 square feet, and will target an annual student output of fifty (PAR 2006).

2.1.3 Ahangama

Geographical setting

The proposed VTC in Ahangama is located near the 136th kilometer post on the main southern A2 highway, just past the Ahangama Township. Administratively, it belongs to the Ahangama Central GN Division in the Habaraduwa DS Division. Figure 8 provides the main types of land use within a 500 meter radius from the site and Figure 9 contains photographs of various views of the site taken during the field assessment.

The proposed site is adjacent to the main southern A2 highway and is accessible from the road. This is the site of a former school (Sri Dhammarama Kanishta

Vidyalaya) which has now been relocated inland due to serious structural damage caused by the tsunami. There is a two-story building still standing (constructed with external donor funds and opened for use a few months before the tsunami), which has some damage on the end closest to the ocean. Another, older building is partly standing, but has been severely damaged. The foundation of a completely demolished building and a play structure (slide) of the school can also be seen (see pictures in Figure 9). Part of this site falls within the set back

Overview of Proposed Ahangama VTC Construction

- LEED certified "silver" rating by USGBC
- Existing school buildings at site
- One undamaged building may be used by the Contractor during construction, but must be demolished due to location in CCD "no build" zone
- Materials from demolished buildings will be reused and recycled to greatest possible extent
- Shrine will be relocated
- Focus on hospitality industry

area of the coastal zone. As described previously, SLTRP has already obtained the necessary approvals from the CCD to implement the proposed construction within the set back zone.

The beach forms one side of the site with a drainage canal along one of boundaries (see Figure 7: Site Layout Map). The drainage canal was dry at the time of the site visit but according to local sources, carries rainwater run-off during the wet period. The canal originates from an adjacent village to the south, which is approximately four kilometers inland. There is the possibility that this drainage canal will overflow during periods of heavy rain or when water enters it from the sea during cyclonic storms or other extreme weather events that create large incoming waves. The site has very scenic views of the beach and the sea.

CCD plans to develop an access road to the beach along a narrow road opposite to the drainage canal. The new boundary demarcation of the school site has been drawn up and includes space for this road. Stilt fishing takes place in the sea adjacent to the coral reef in this area and about twenty families are said to depend upon income from this seasonal occupation. The stilts were unoccupied at the time of the visit. There is an elevated sand ridge abutting the site on the side of the beach, and a hillock in the land which juts out to sea. The beach along the site is used by fishermen, as well as many others.

Land-use in the surroundings is dominated by the main road, houses and home gardens. Tourism is an important economic activity in the area and many houses and buildings serve as mini hotels and restaurants. The property surrounding one side of the site was said to be earmarked for a future hotel. Figure 8 provides the main types of land use within a 500 meter radius from the site and Figure 9 contains photographs of various views of the site taken during the field assessment.

Physical setting

The site is nearly flat, with the exception of the area facing the beach where the ground rises by approximately one foot due to a sand bank (most probably formed by the impact of the tsunami). The base of the land is sand throughout, with intermittent patches of brownish soil. The area with a radius of 250 meter from the site is occupied by the beach and sea (40%), while home gardens, houses and roads occupy the rest. Residents stated that there was a serious problem with supplies of potable water. At present, most residents obtain their water from the mains of the NWSDB. However, supplies are intermittent at best, and at times too turbid for drinking. At the time of the field visit, supply to houses had not been operational for two days. Surface and tube well water is very brackish and some residents stated that after the tsunami, the quality of water in the coastal zone wells deteriorated significantly. As is the case in other sites, the NWSDB is currently making improvements to the pipe borne water supply, however, which should mitigate all concerns over the water supply. The Ahangama site is identified to be LEED certified (see Appendix 2), thus serving as a model vocational center in the south coast.

Figure 8- Land use of the Ahangama site

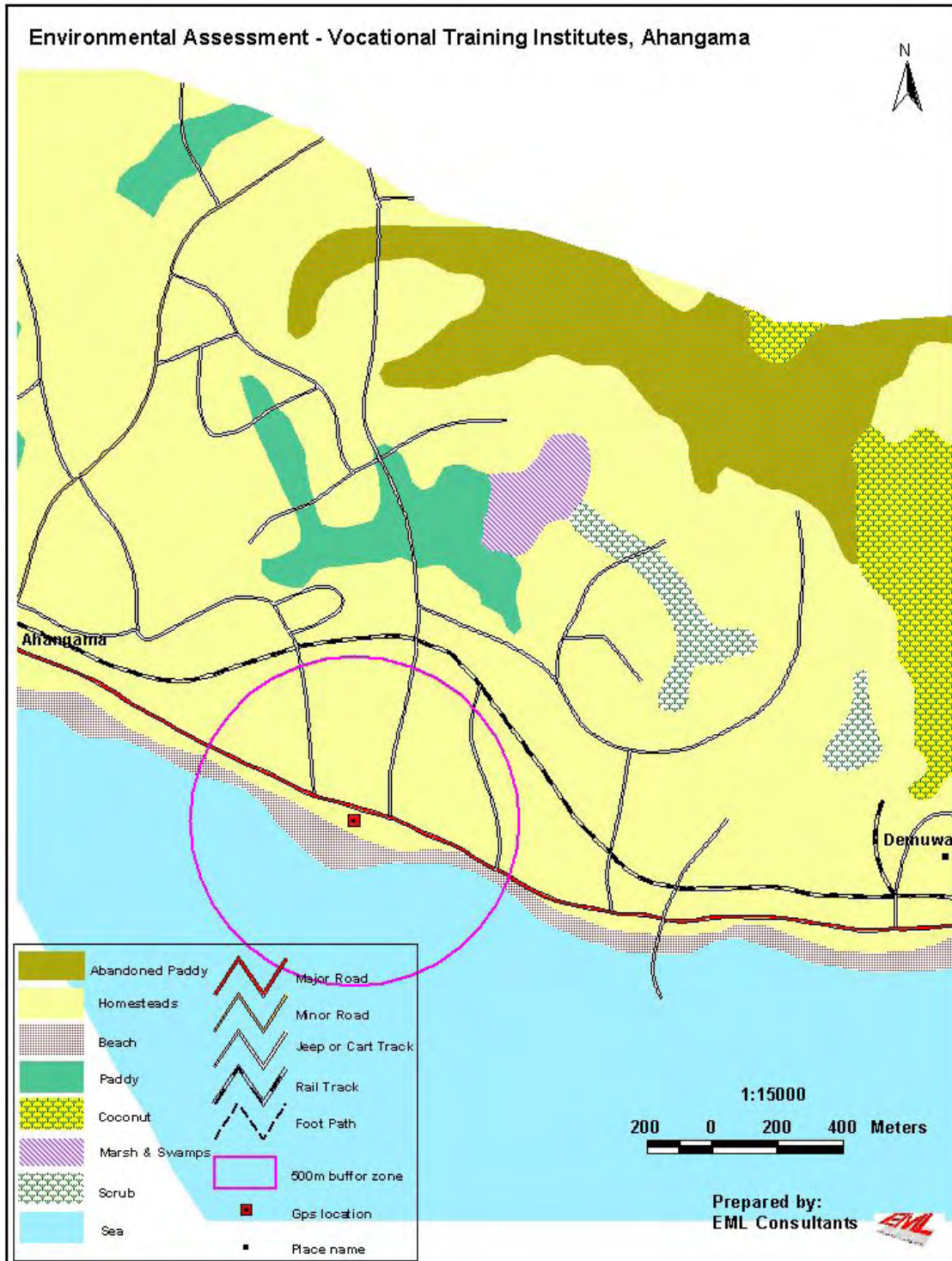


Figure 9- Photographs of the Ahangama site



a) The existing building on the site with the foundations of the tsunami destroyed building on the left hand side of the picture



b) A closer view of the foundations of the destroyed building



c) A play structure of the former school on the site



d) The area of the site with sea shore plants facing the sea



e) The drainage canal opening to the sea on one boundary of the site



f) A section of the coral reef



g) A view of the shore line from the site

The main environmental considerations at this site include: locating new construction within the set back area of the coastal zone (which the project has already addressed); vulnerability of the site to natural disasters that affect the coastal zone; potential overflowing of the bordering canal in periods of heavy rainfall; and a severe scarcity of potable water. With regard to the latter, water harvesting techniques will be used in this facility.

Biological setting

There is very little flora and fauna at the site, and it is entirely devoid of tall vegetation. Instead, the area is mostly made up of patches of grass, with a bed of Ipomea lining the side of the site closest to the beach. The beach slopes down (less than approximately three feet) to a small section of a coral reef that did not have any fish or large invertebrates visible to the naked eye at the time of the visit. According to the local people and the GN Chairman, heavy illegal coral mining took place prior to tsunami along this section of the coast.

During the site visit, it was observed that some coral heads had washed ashore. Although there was a significant reduction in coral mining after the tsunami, small amounts of coral continue to be removed from the coral reef next to this site. Appendix 5 provides details of species of flora and fauna recorded from this site.

Description of the proposed layout of structures and activities of the VTC

The damaged primary school building will be demolished to pave way for a new state-of-the-art-centre which will include a restaurant and community centre (including a bakery), a learning resource centre, an administration area and other support areas covering 10,330 square feet. The centre will focus on tourism/hospitality trade, aiming at specialization in culinary arts. Skill areas will cover food service, restaurant service, wedding/banquet service, laundering and other technical services needed in running a hotel/tourist establishment, such as maintenance electricians, plumbers, lift repairers, etc. The center will target an annual student output of 80 (PAR 2006). See Figure 7 for the proposed site layout plan for the Ahangama VTC.

2.1.4 Koggala

Geographical setting

The proposed VTC in Koggala is located near the 130th kilometer post on the main southern A2 highway. The entrance is near the Koggala Free Trade Zone, as indicated in the map below. Administratively, it belongs to the Koggala 144A GN division in the Koggala DS Division. Figure 11 shows the main types of land use within a radius of 500 m from the site and Figure 12 contains photographs of the site taken during the field assessment.

Overview of Proposed Koggala VTC Construction

- Burned-out police station located on site
- High visibility from main highway (Galle Road)
- Existing building to be demolished
- Training focus on apparel industry
- Limited inclusion of other educational themes

Figure 11- Land use of the Koggala site

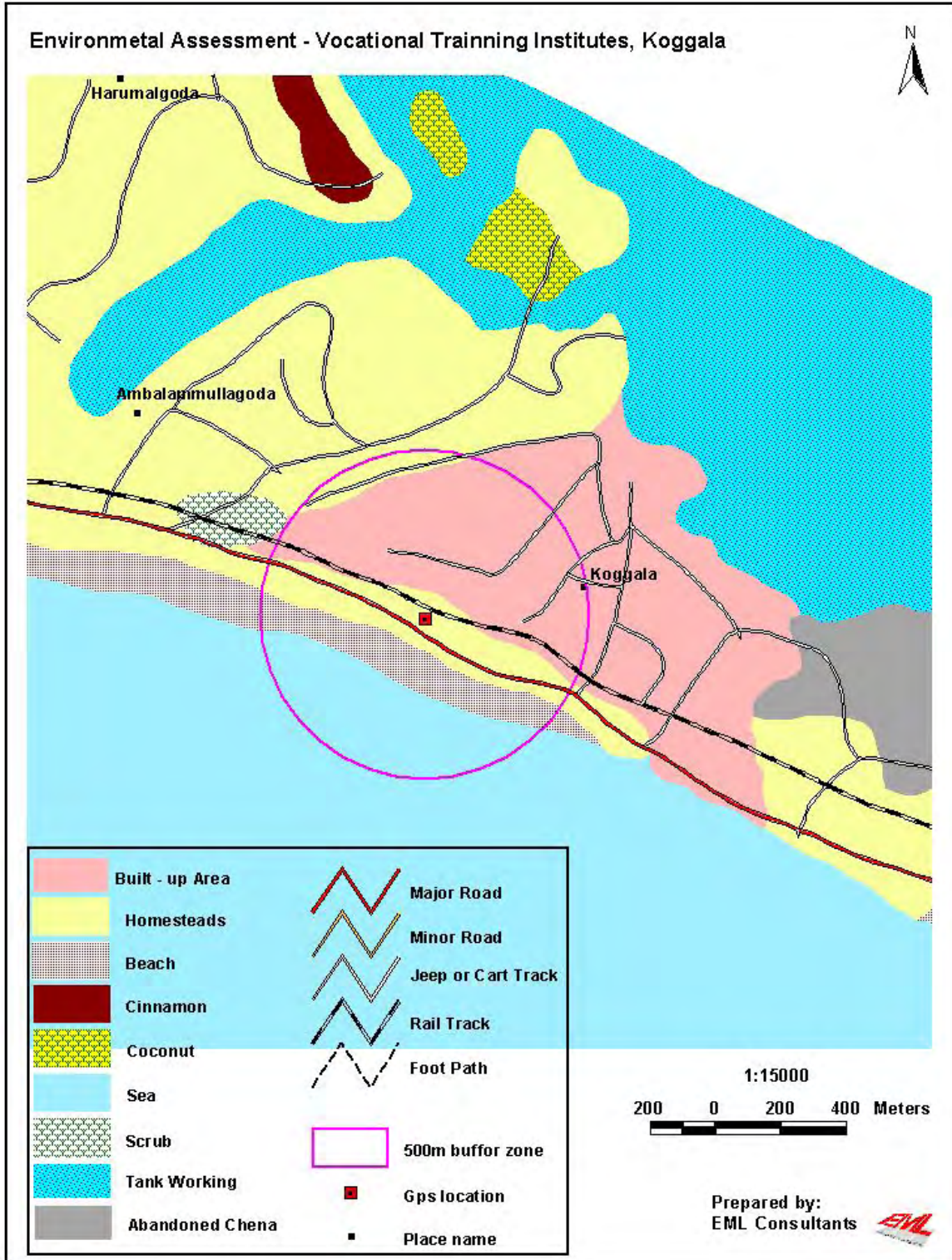


Figure 12- Photographs of the Koggala site



a) The existing partly destroyed building at the site



b) Sides of the site with part of an existing building where VTC activities are currently conducted



c) Sides of the existing building with parts of the site



The proposed site is a former Koggala police station, which has now been abandoned. The building occupies the center of the site, and is dilapidated with crumbling masonry, and missing doors and windows. The concrete on the front porch is seriously decayed, posing a potentially significant danger. Other parts of the building show signs of structural damage in the wall plaster and may not be safe. The vacant area around the building is used as a park by taxi drivers, as there is no fencing around the property. The site is bordered on two sides by commercial buildings. The one on its right hand side is the larger one and contains several shops (see Figure 11.). The site faces the main A2 road and hotels occupy the area between the road and the beach, some of which were partially flooded by tsunami waters. A vocational training program in information technology is currently operating in a small area adjoining commercial building.

Physical setting

The land is almost flat with its rear abutting the reservation of the railway line. There is some degree of noise due to the proximity of the train tracks, and there are buildings adjoining both boundaries of the site. Shop owners in the building to the right explained that machinery brought for the purpose of training free trade zone workers was to be housed in the building that they currently occupy. However, the training program was unsuccessful, due to rapid rusting of the machines. As a result, the building was converted to its present use. The soil consists mostly of sand with intermittent patches of reddish soil. Drinking water is transported from several kilometers inland, as the well water in the surface and tube wells is too brackish. The Free Trade Zone was said to use tube wells, even though at the time of writing this report it is not known if the water was potable. The owners of the adjacent shops expected a better water supply to be provided in the near future, through the new water supply projects of the NWSDB. The area within a 250 meter radius of the site consists of roads, railway lines, the Koggala Free Trade Zone complex, a pre-school, houses, home gardens, large and small hotels and the beach and sea.

The main environmental issue at this site is the current scarcity of potable water, and the potential for rusting of machinery. Again, current NWSDB projects should address concerns over water supply.

Biological setting

The site has mostly grass lands, but also is home to three trees. A few species of butterflies were observed at the time of visit. There is less diversity of flora and fauna in comparison to the sites at Tangalla, and Talalle (Appendix 5 has species recorded from this site). It is notable that the plans for the site include space for recreation (as is the case for other sites as well).

Description of the proposed layout of structures and activities of the centre

Figure 10 shows the proposed site layout plan for the Koggala VTC. The scope of the construction activities of this centre will include the construction of a new building with a net square feet area of 7,720, which will include training areas and support spaces. The centre will target a student output of 400 per annum. Courses will be focused on floor-related activities of a garment factory and will include training for sewing machine operators, mechanics for factory floor, pattern makers, cutters, quality inspectors, fabric inspectors, etc.

It will also include training in computer-aided color matching, work study and supervisor training (PAR 2006).

2.1.5 Hikkaduwa

Geographical setting

The proposed VTC in Hikkaduwa is located at approximately the 100th kilometer post on the main southern A2 highway, about 300 meters interior on the landside, as indicated in the map below. Administratively, it belongs to the 56A Wellaboda Narigama GN Division in the Hikkaduwa DS Division. The land use of the area within a 500 meter radius can be seen in Figure 14, and Figure 15 contains photographs of various views of the site taken during the field assessment.

The proposed site is a former primary school that was handed over to the VTA due to the closure of the school. There is therefore an existing training VTA centre on the premises, with on-going training programs. The site has open spaces between buildings, and is bounded intermittently by a fence and wall. The land slopes slightly (less than two feet) from the entrance side to the buildings. On the left is a narrow path which leads to a marshy area, and the land adjoining the narrow path is overgrown with weeds. It was believed to be full of pits caused by mining of land corals more than 30 to 50 years ago. The pits are now overgrown with weeds and shrubs, however. A private property (a house on the right of the entrance to the site) is marked off from the site. There is a narrow footpath and houses line the rear boundary of the site. The public road leading to the site may be due for widening in the future, and needs to be verified with the appropriate local authorities prior to construction of buildings. Water for human consumption is through pipe borne supply, as well as shallow and tube wells. The well water is brackish and turbid and used mostly for washing and cleaning. The VTC had water supply through mains of the NWSDB.

Overview of Proposed Hikkaduwa VTC Construction

- Existing school on site
- School functions will be relocated during construction
- Portions of existing buildings will be reused
- New construction will be two stories
- Curriculum will include all typical vocational school functions

Physical setting

As mentioned above, the land slopes from the entrance of the road towards the back of the site. The approach road is winding and its most notable feature is a railway crossing that is without a gate or an alarm bell. This crossing is known to have been the cause of many serious accidents, and the new VTA complex will attract even more people in the future who will need to use the railway crossing. The area within a 250 meter radius of the site consists of home gardens, houses and roads (more than 70% of the space), while the rest is occupied by unmanaged areas left to grow with weeds and shrubs.

Figure 13 - Site layout map of the Hikkaduwa site

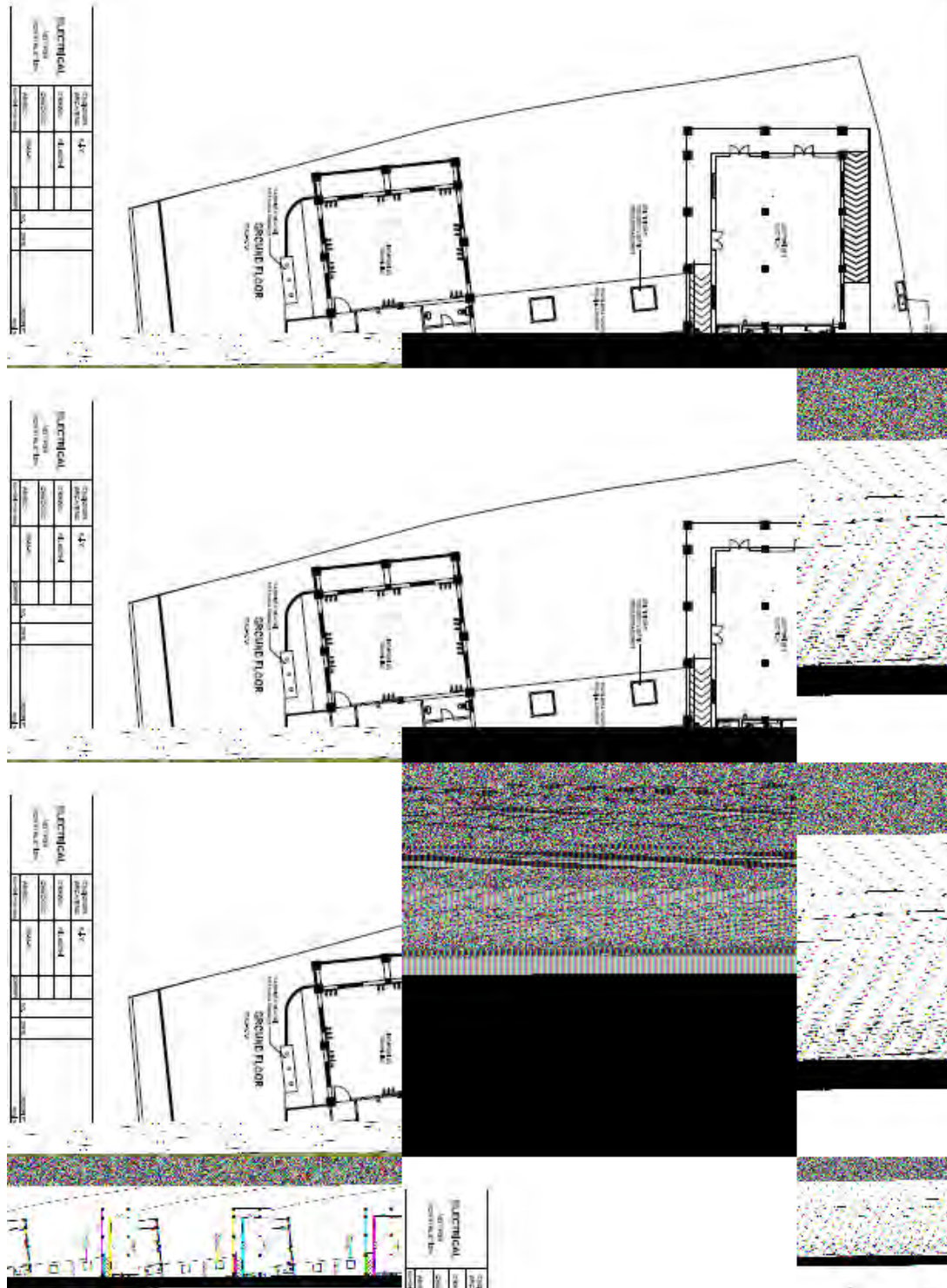


Figure 14 - Land use of the Hikkaduwa site

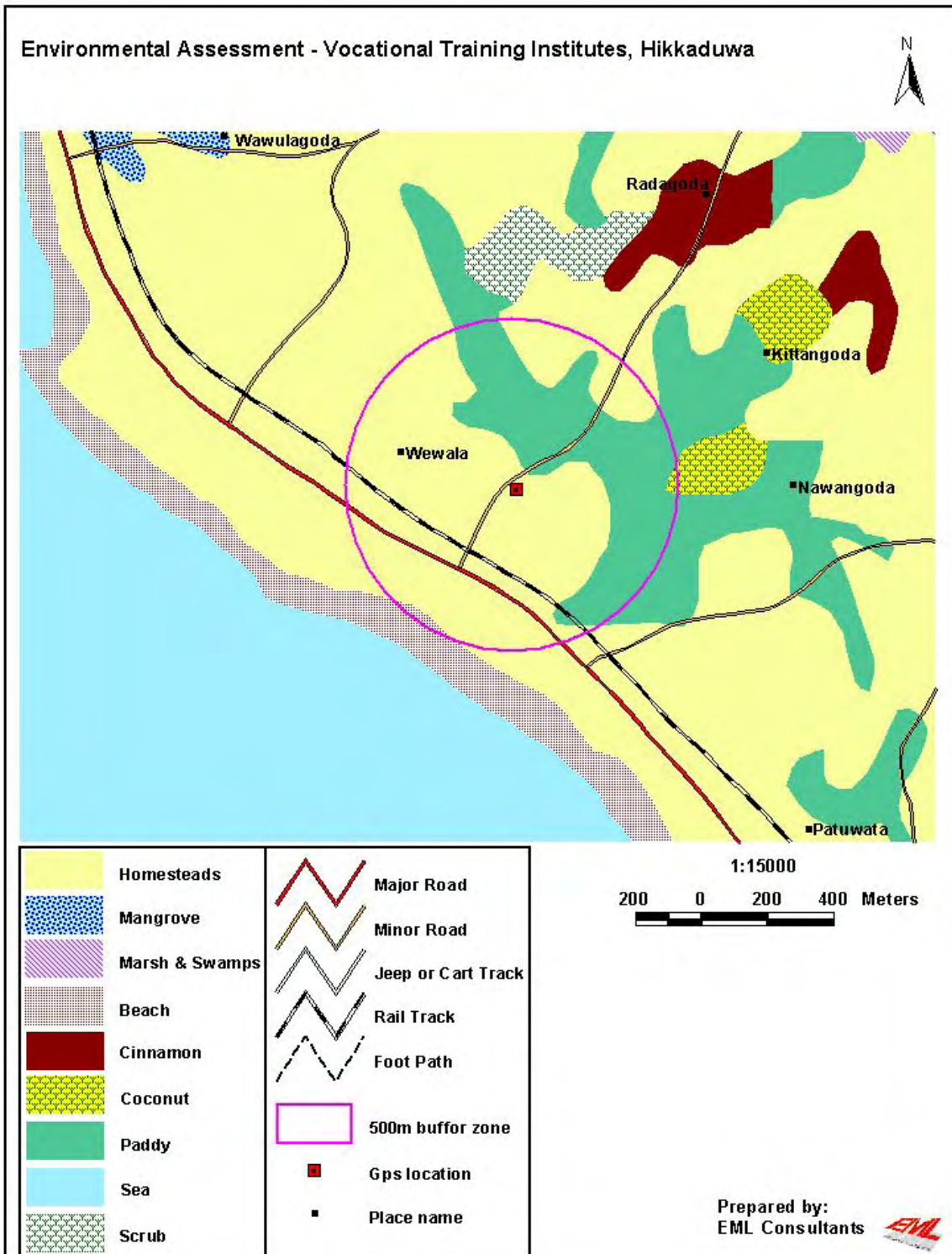


Figure 15- Photographs of the Hikkaduwa site



a) The entrance area of the site



b) View of the existing VTC buildings



c) An existing toilet of the VTC



d) View of the backyard of the existing VTC

Biological setting

The land mostly consists of grass in the middle and around the buildings with weeds and shrubs growing on the sides. The unoccupied land on the left of the site is a former coral mining area and has pits that are overgrown with weeds and shrubs. The surrounding houses of the site have many types of trees, as well as herbs and flowering plants growing close to the fence. The species of flora and fauna recorded from this site are given in Appendix 5.

Description of the proposed layout of structures and activities of the centre

Figure 13 shows the proposed site layout plan for the Hikkaduwa VTC. The scope of the construction activities of this centre will include the renovation of the two existing buildings and the construction of a new building for the community learning centre. The centre will be approximately 6,100 square feet, and will serve a student population of 90 per annum (PAR 2006). The program will offer marine-related training due to its proximity to the Hikkaduwa Fisheries Harbor and will focus on repair and maintenance of boats, ice systems, communications systems, electronic systems and small engine repair. Also, the existing welding program will be continued.

2.2 Eastern Region: The Natural Environment

Global Positioning System (GPS) reference points for the Eastern region are not available as they could not be obtained while in the field due to the prevailing security concerns. As a result, the site descriptions in the following sections cover the land use of a 250 and 500 meter radius areas.

2.2.1 Central Camp

Geographical setting

The proposed site is about 200 meters from the main road that connects Kalmunai and Sammanturai, in Chalambaikerny Central Camp, Ampara. Administratively, it belongs to Grama Sevaka No-3 of the Navithanveli DS Division. This site has been donated by A.L.A. Jabbar, Chief Trustee of the mosque of Central Camp. Figure 17 shows the photographs taken during the field assessment.

The land area within a 250 meter radius from the site includes houses and home gardens, a rice mill (whose sawdust is dumped in the nearby marshy land), a water canal from Iginiyagala which provides water for paddy cultivation, a school, a mosque, roads and a market.

Houses are without basic facilities such as toilets and dug wells and many people engage in animal husbandry and paddy cultivation for income generation. Land use within a 500 meter radius from the site includes a vehicle mechanic shop, a school, paddy land and roads. Solid waste dumped alongside the roads is a common sight. In general, during the dry season, the area faces serious water scarcity.

Overview of Proposed Central Camp VTC Construction

- New three-story construction
- Drainage work will be particularly important
- Will require compacted fill
- Curriculum will include all typical vocational school functions

Figure 16 -Site layout map of the Central Camp site



Figure 17- Photographs of the Central Camp site



a) A marshy area adjacent to site



b) A view of the section of the site which is at a lower level than the surroundings



c) A section of the site with human settlements



d) Water canal from Igniyagala reservoir



e) A common dug well and a bathroom for females



f) A view of the site indicating the height of the surrounding area

Physical setting

This proposed site at Chalambaikerny, Central Camp is in a resettlement village which was instituted after the inter-communal riots in the 1990s. The site has been donated by the Mosque authorities of Central Camp to VTA and is a vacant land bound by gravel and sandy access roads. The land itself is low-lying, and is about 1.5 meters below the raised roads and adjacent land. Adjacent to the site are a few village settlements, toilets, cattle sheds, a public dug well, women's toilets and a solid waste dump. The dug well appears to have no water during the dry season. However, discussions with local people revealed that the proposed land for the VTA complex has serious flooding problems during the rainy season and is even referred to as the village pond. It appears that the site has been used for soil extraction at some point and has a rocky area in the middle, suggesting that the substratum would have a rocky profile. No substantial vegetation was observed within the site, except for a few trees noted along the roads. The site has access to electricity and public transportation. However, present transportation access is not recommended for heavy vehicles. Telecommunication access could be obtained from the adjacent loops.

Differences in elevation are less than 20 meters and the land slope is of a medium grade, approximately 30 to 40%. Most of the activities take place at the bottom and the middle of the slope. The top soil depth is shallow, at around 20 centimeters. The soil is grey in color and mixed with sandy-regosols-mud and fine particles. The top layer of the soil surface contained some superficial cracks, as a result of drought. There was evidence of some soil erosion, which may have taken place during rainy seasons. It appears that the site has been used for soil extraction at some point, but it also contains a rocky area in the middle suggesting that the substratum would have a rocky profile.

An irrigation canal from Inginiyagala provides fresh surface water, and is situated at about 150 meter distance from the site. This surface water is used for irrigation and for animal consumption only, however. The site suffers from scarcity of potable water. Inspected dug wells showed little water or no water at all during the period of visit; the construction contractor will be responsible for digging functional wells to supply sanitary facilities. It was said that well water quality during monsoon is moderate and is used for drinking purposes. However it is anticipated that water for drinking will need to be brought in to the site during construction and operation of the facility. Villagers collect drinking water from the nearest mosque, particularly during the drought or some even traveled to several kilometers to collect water. Toilets are rare and common toilets are used. It is noteworthy that open defecation was not seen during the field visit.

Prolonged drought and floods are considered annual natural disasters in this area. The site has access to electricity and public transportation, but heavy vehicles are recommended against using the current roads. Telecommunication access could potentially be obtained from nearby. Flattening of hillocks in the site and refilling with soil may be required before construction.

The main environmental issues at this site are: high risk of flooding of the site during rainy periods, and scarcity of potable water sources on site.

Biological setting

Vegetation cover at the site is very little with the exception of a few trees standing along the three bordering roads. A small marshy land adjacent to the site contains aquatic fauna and flora, and the number of flora is greater than the fauna. Neem (*Azadirachta indica*) trees are the dominant tree forms. Paddy fields lie slightly further away from the site, which are extensively cultivated. Natural scrubland dominates the area (60%) within a 250 meter radius, and cultivated rice paddies occupy approximately 60% of the land use within the larger radius of 500 meters. The lists of flora and fauna of the site are given in Appendix 5.

Description of the proposed layout of structures and activities of the VTC

The centre will focus on electricity, electronics, career guidance, English language training, micro-enterprise development (mainly for the community to learn how to set up small businesses). The number of students is expected to be 80.

2.2.2 Kaluwanchikudi

Geographical setting

The proposed site in Kaluwanchikudi falls within the Batticaloa District approximately 27 kilometers from Batticaloa town, and about 200 meters from the seaside at the 400th kilometer post of the Batticaloa-Ratnapura-Colombo main road. Administratively, it belongs to GN division No 116C of the Munmunai South and Eruvilpattu DS Division.

The proposed site is demarcated by wooden/concrete poles on the rear and left sides while the front and the right side of the property are open. There are three temporary shelters in one corner of the site, along with a dug well and a toilet. The land appears to be used for the stockpiling a distribution of river sand. According to local sources, the land is vulnerable to water logging during the monsoon period as it is lower in

Overview of Proposed Kaluwanchikudi VTC Construction

- New one-story construction
- Undeveloped site, located just off main road
- Curriculum will include all typical vocational school functions
- Facility to include expanded engine repair program to support nearby bus depot

elevation than the road that surrounds it. Access to infrastructure facilities, such as electricity and telecommunication will be easy, as the site is just 100 meters away from the main supply lines. Within a 250 meter radius, the land use is dominated by buildings which belong mainly to government offices such as the Irrigation Department, Divisional Secretariat, Public Health Office (under construction), and a bus depot (also under construction). In addition, the land supports a road network, a few residences and vacant blocks of land cultivated with coconut palms.

Figure 18 – Site layout map of the Kaluwanchikudi site

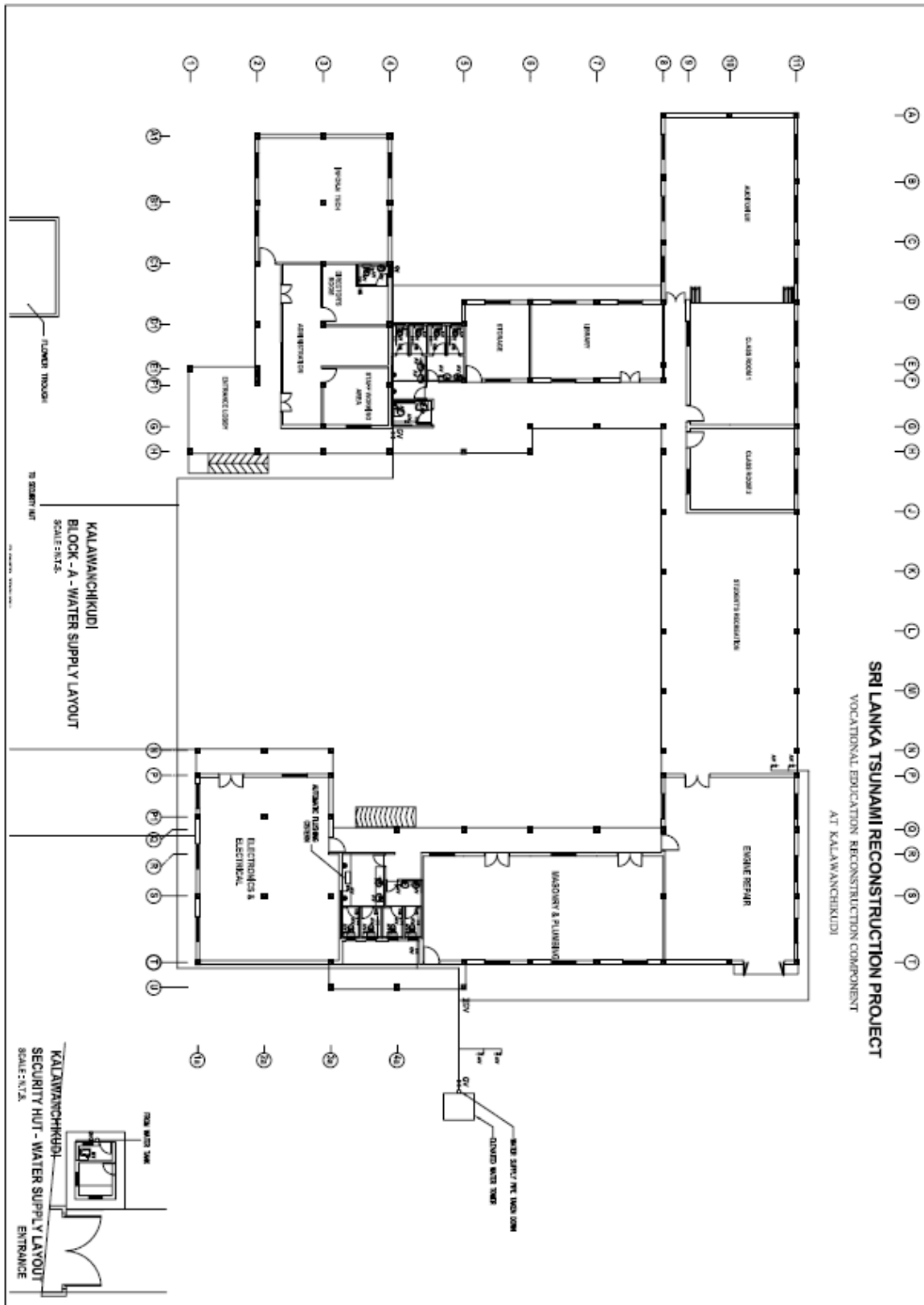


Figure 19- Photographs of the Kaluwanchikudi site



a) A front side view of site



b) A kiln within 500 meter radius area of the site



c) An area cleared of vegetation adjacent to the site

Physical setting

The difference in elevation is less than 20 meters and the land slope is less than 30%. The top soil depth is deep, at around 100 centimeters. There was no evidence of soil erosion, but water seepage and small scale floods occur during monsoon periods. Seasonal stream water is used by animals only. Dug wells are common, and the water is potable. Inspected dug wells contained water at 10 feet depth during the dry season. Pits created by soil extraction have also been noted in some places within this area. Within a 250 to 500 meter radius from the site, the land is primarily occupied by houses and home gardens. It was also noted that a brick-producing kiln operates in the area, whose emanating smoke has a significant effect on the immediate neighborhood. Individual toilets in houses are common and an adequate distance is maintained between dug wells and septic tanks. It is noteworthy that open defecation was not seen during the field visit.

The main environmental issue at this site is the potential for water logging of the site. The issue of adequate potable water may become a seasonal problem if there is a persistent drought.

Biological setting

Vegetation cover is minimal, with the exception of a few flat species found on the ground. There are no trees in and around the site, as most were removed during the Indian Peace Keeping Force (IPKF) regime in 1987. Some local cattle cross the site from nearby cattle sheds for browsing purposes. Neem (*Azadirachta indica*) and *Ficus religiosa* trees are most common in the area. Home gardens are extensively cultivated, and cover approximately 23% of the area within a 500 meter radius. Natural forest proportion is low (10%) and the grassland areas are common (40%) within the zone. Natural forest (70%) has it in the second circle of 250 to 500 meters. The list of species is given in Appendix 5.

Description of the proposed layout of structures and activities of the VTC

Figure 19 shows the proposed site layout plan for the Kaluwanchikudi VTC. The scope of the construction activities will include the construction of a new building to house the training areas, community learning centre, administration and other support areas covering a net square feet area of 6,490. The proposed program will focus on small engine repair, electricity, electronics, career guidance, English language training and micro-enterprise development. As the VTA site is located next to the new Kaluwanchikudi bus depot (currently under construction), courses will also focus on bus repair. The centre will target an annual student output of 80.

2.2.3 Sammanturai

Geographical setting

The proposed site in Sammanturai falls within the Ampara District along the Ampara – Kalmunai main road. Administratively, it belongs to GN division No-79E of the Sammanturai DS Division. Human activity in the surrounding area is minimal. The site is presently unoccupied and is mostly flat, open land with scattered shrubs and trees. There is a canal, named the Weragoda canal, which carries water from Malwatha Oya and is situated about 100 meters away from the site in the eastern direction. The canal had little water at the

time of the field visit as it is the dry season. Key existing infrastructure a 250 meter radius of the site includes a hotel, a damaged house, a YMCA building, two brick-making kilns, and a cattle shed. Within a radius of 500 meters, the key land use features include barren land, paddy land, part of the solid waste dump (where sorting was taking place for recycling purposes at the time of the visit) and the Sammanturai Technical College. There is a narrow trench about 10 meters long (currently in a state of disuse). An old structure made out of tin sheets stands on the west side of the land, which is currently unoccupied. The site is about 20 kilometers from the sea, and it was not affected during the tsunami. Infrastructure facilities such as electricity and telecommunication can be accessed easily from the main Ampara-Kalmunai road. This is to be a LEED certified model vocational center serving the eastern coast. As such, innovative approaches including water harvesting will be used in this facility.

Overview of Proposed Sammanturai VTC Construction

- LEED certified “silver” rating by USGBC
- New two-story building
- Undeveloped, high visibility site
- Curriculum will include all typical vocational school functions
- Additional focus on apparel industry
- Adjacent to existing technical college

Physical setting

Differences in elevation from highest point to lowest point are less than 20 meters and land slope is low at less than 30%. Soil is grey in color and mixed with sandy-regosols. The site was not subjected to soil erosion. There is a huge solid waste dump behind the proposed site for the VTC, accessed by a narrow road that borders the eastern side of the site. The dump is home to many scavenging animals, and emanates a foul smell which poses a serious nuisance to the neighborhood. A water canal originating from Weragoda provides fresh surface water, which is located at about 100 meters from the site. Surface water is used for irrigation and animal use only. Dug wells are common, but the water is rather hard. Inspected dug wells showed little water or no water at all during the middle of summer. It was said that water quality during monsoon is moderate in the dug wells and is used for drinking purposes. Toilets are common, as are adequate septic tanks. It is noteworthy that open defecation was not seen during the assessment. Prolonged drought is considered an annual natural disaster for the site, and it is periodic.

Biological setting

Major vegetation at the site includes shrubs and a few prostrate forms on the ground. There were few trees standing along the roads as well as within the premises. *Lantana camara* shrubs are dominant among the tree forms. Surrounding paddy fields are extensively cultivated. Natural scrubland proportion is high (60%) within the first 250 meter circle. Agricultural land of paddies (40%) has it in the second circle of 250 to 500 meter circle. The lists of flora and fauna recorded from this site are in Appendix 5.

Description of the proposed layout of structures and activities of the VTC

Figure 20 shows the proposed site layout plan for the Sammanturai VTC. It will be a new state-of-the-art centre, built using environmentally sustainable technology. Plans including constructing new buildings for career guidance, community learning, skill gaps and various

trainings. Courses offered will have an industrial focus, mainly on floor-related activities of a garment factory, such as machine operator training, pattern-making, fabric inspection, color matching, cutting, work study, quality inspection, line supervisor training and floor mechanics. There will be no handling of chemicals in the courses offered.

Figure 20 -Site layout map of the Sammanturai site

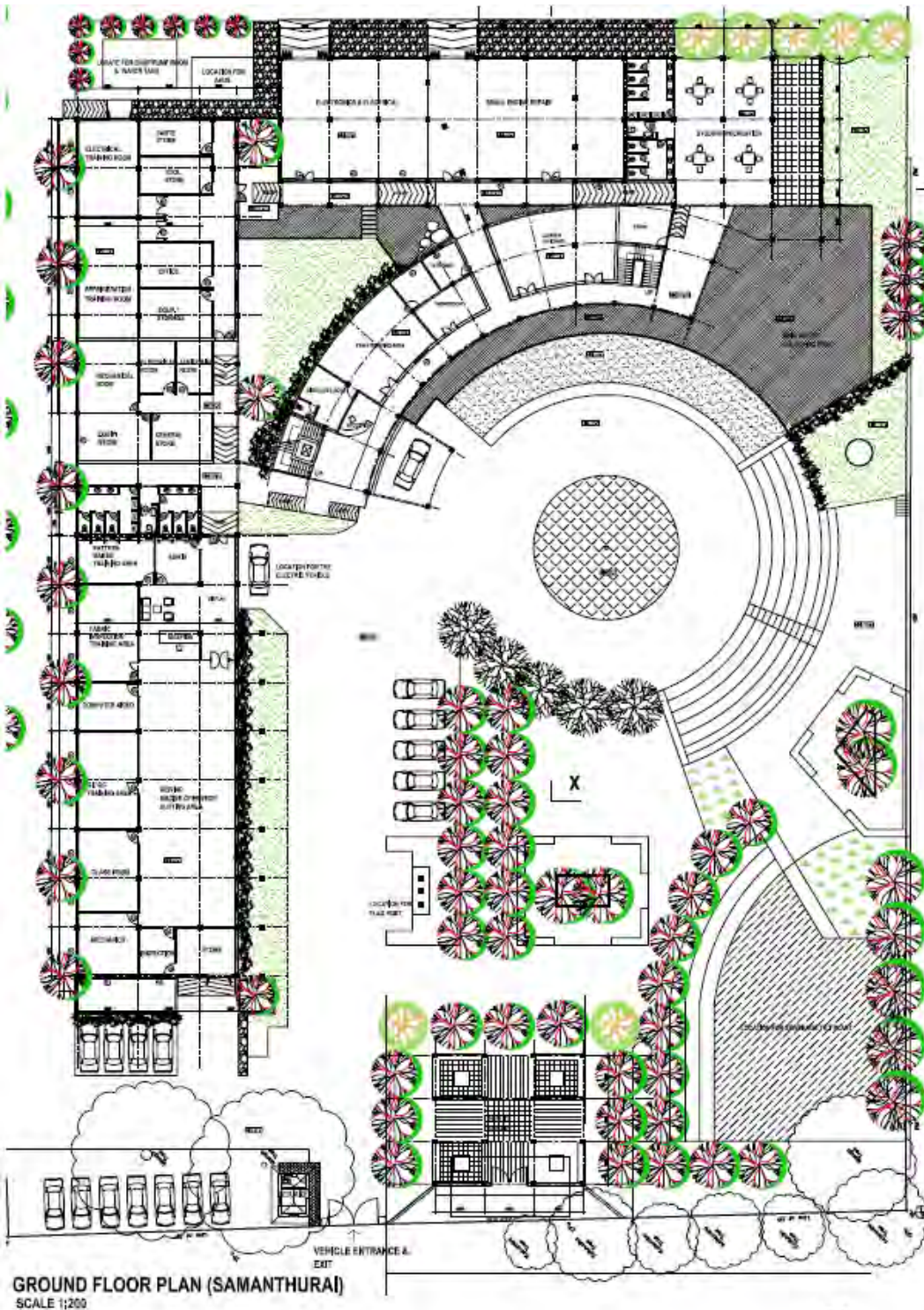


Figure 21- Photographs of the Sammanturai site



a) A kiln located opposite to the site, along the road



b) A front view of proposed site



c) A dump site of solid waste behind the site



d) The water supply from Weeragoda

2.2.4 Nintavur

Geographical setting

The proposed VTA complex is situated in the Ampara District, about 150 meters from the main Kalmunai – Akkaraipattu Road in Nellithivue -24, Nintavur. Administratively, it belongs to Grama Sevaka No-39c in the Nintavur DS Division.

Paddy fields dominate the landscape on the southern side of the VTC site. A marshy pond and a number of blocks of land identified for construction projects lie opposite the site. The main Kalmunai – Akkaraipattu road runs alongside the site, which is rather built up with shops and hotels. Other key land use features within the 250 meter land area from the site

include the post office and telecommunications center and tower bordering the site, a coconut farm, a cattle shed, a large playground, and a solid waste dump. Within an area with a radius of 500 meter from the

Overview of Proposed Nintavur VTC Construction

- Existing Regional VTC
- Existing programs will be relocated during construction
- Existing building will be upgraded
- Small new addition to be constructed
- Curriculum focus on instructor training

site, a mosque, school and a library are present. This is an existing VTC complex, which is set in a land area of approximately 1.5 acres. The site is approximately two kilometers from the sea, but was not damaged by the tsunami. Within the property, the main building is located about 75 to 100 meters from the main entrance and consists of two floors.

Construction work of the first floor is presently in progress. The dug well in the premises was noted as having polluted water and, as such, the VTC depends on potable water supplied from a privately owned source about 150 meters away.

Figure 22 -Site layout map of the Nintavur site

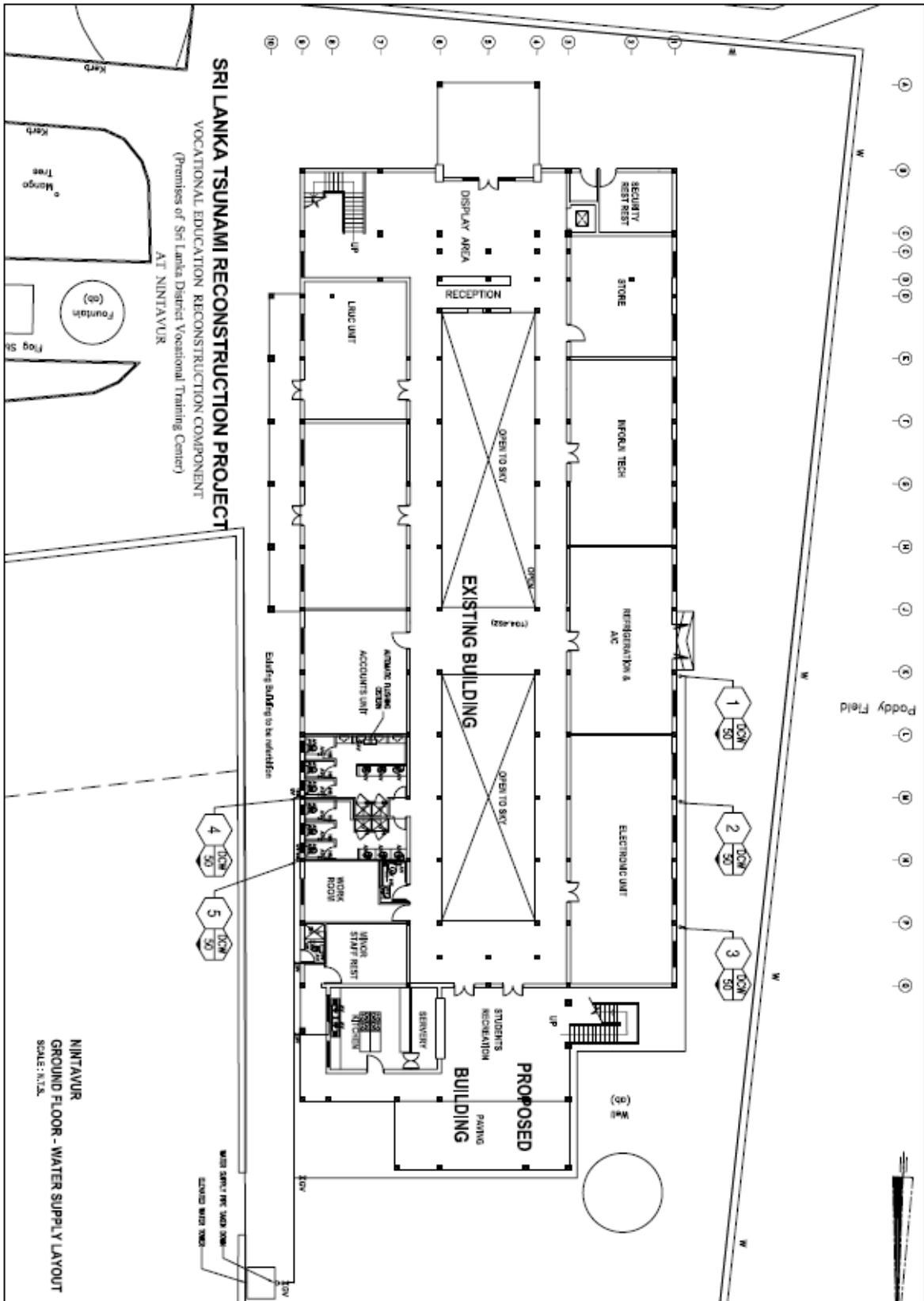


Figure 23- Photographs of the Nintavur site



a) Interior section of VTC showing the first floor stage



c) View from the back of the VTC centre showing the paddy fields



b) A dug well at VTC showing an algal bloom and amphibians



d) View of the front of the VTC

Physical setting

Differences in elevation from highest point to the lowest point are less than 20 meters and the land slope is low at less than 30%. The soil is reddish brown in color. The land area of the site is open, with buildings situated alongside. The majority of fresh surface water comes from a nearby reservoir, which is used for irrigation. Dug wells are common, except on the VTC premises, and the water is reportedly potable. The inspected dug wells were deep, and participants reported that water quality during monsoons is moderate. Toilets are common and wells are situated away from septic tanks. It is noteworthy that open defecation was not seen during the field visit. Floods are considered annual natural disasters for the site.

Biological setting

The major of vegetation cover at the site consists of shrubs and a few scattered trees. Cattle are commonly seen, and paddy fields occupy most of the land under cultivation. The proportion of natural scrubland was low within the first 250 meter circle. Coconut trees are the most dominant type of vegetation in the area with a 250 meter radius, and agricultural land, consisting of rice paddies makes up about 65% of the area with a radius of 500 meters.

Description of the proposed layout of structures and activities of the VTC

The scope of construction work at this centre will include the rehabilitation of the existing ground floor and completion of the first floor. New construction will cover a net area of 2500 square feet. This is an existing VTA center, and the programs currently offered include driver training, and television/radio repair. There is the possibility that the training program will be expanded to accommodate the full line of electric/electronic goods repair. The center will target an annual student output of 80.

2.3 Socioeconomic Environment

2.3.1 Introduction

The SLTRP proposes constructing ten vocational training centers in several tsunami affected areas in the south and east of Sri Lanka. The sites for the training centers have been selected primarily based upon their accessibility to surrounding populations, as well as local demand for trainings.

The socio-economic conditions of the DS Division have been analyzed for each site, as the DS serves as the basic administrative unit of the central government at the local level (and primary socioeconomic data is usually collected by the DS). Where such data was lacking at this level, however, a district or provincial level analysis was performed. The DS division is divided into sub units called GN divisions, which comprises a smaller area and usually covers about 250 to 300 families. Above the DS division level are the districts and provinces.

2.3.2 Project Area Demographics

The projects will be located in two provinces (Eastern and Southern). In the Southern province, there are five sites located in four DS divisions within the three districts of Galle, Matara, and Hambantota. In the Eastern province there are five sites located in five DS

divisions, within the three districts of Trincomalee, Batticaloa and Ampara. The population details are given in Table 2.1

Table 2.1: Demographic Characteristics of DS Divisions of VTI Sites

District	D.S. Division	Population of DS	Population of DS as % of District Population	Percentage of Rural Population in DS %	Population of DS by Sex (%)		Population of DS by Age (%)	
					M	F	>18 Yrs	<18 Yrs
East								
Batticaloa	Eravur Pattu	55,549	17.7	100	48.9	51.1	43.8	56.2
	Manmunai N	78,480	25.0	0	47.6	52.4	36.0	64.0
Trincomalee	Trinco Town	21,170	11.0	31	53.8	46.2	37.7	62.3
Ampara	Nintavur	24,673	4.2	100	48.5	51.5	35.5	64.5
	Sammanturai	51,142	8.7	100	49.4	50.6	43.9	56.1
	Navithanveli	17,330	2.9	100	50.7	49.3	43.5	56.5
Total		248,344	9.6	62.5	49.1	50.1	40.0	60.0
South								
Galle	Habaraduwa	58,996	6.0	100	46.9	53.1	31.8	68.2
	Hikkaduwa	98,012	9.9	100	48.6	51.4	34.5	65.5
Matara	Devinuwara	44,132	5.8	100	47.0	53.0	34.3	65.7
Hambantota	Tangalla	62,804	12.0	83	49.1	50.9	34.5	65.5
Total		263,944	8.1	96.0	48.2	51.8	33.8	66.2
Grand Total		512,288	8.7	73.0	48.6	51.4	36.8	63.2

Source: Department of Census & Statistics

The above table shows that the population of the DS divisions varies from about 17,000 to about 80,000 in the Eastern province, and from 44,000 to 100,000 in the Southern province. In general, there are more females than males in both the Eastern and Southern provinces, except in Trincomalee Town and Navithanveli DS divisions. In the Eastern province, the population is younger: about 40% are below 18 years of age, when compared to the Southern province, where about 38% of the population is under 18. The Eastern province is more urbanized than the Southern province, with the former having a rural population of 62% compared to 96% in the latter.

The ethnic composition of the population is shown in Table 2.2.

Table 2.2 Ethnic Composition of Populations

Division and Sector	Total No. of persons	Ethnicity								
		Sinhalese	Sri Lanka Tamil	Indian Tamil	Sri Lanka Moor	Burgher	Malay	Sri Lanka Chetty	Bharatha	Other
East										
Eravur Pattu	55,549	1,672	44,635	38	9,192	12	0	0	0	0
Manmunai North	78,480	289	72,374	243	3,248	2,300	2	0	0	24
Trincomalee Town	21,170	11,821	4,014	192	4,473	252	400	1	6	11
Nintavur	24,673	5	1,323	24	23,320	1	0	0	0	0
Sammanturai	51,142	281	6,822	240	43,700	79	12	0	0	8
Navithanveli	17,330	501	11,494	6	5,327	2	0	0	0	0
Total	248,344	14,569	140,662	743	89,260	2,646	414	1	6	43
South										
Habaraduwa	58,996	58,832	91	10	15	15	12	1	1	19
Hikkaduwa	98,012	97,529	330	55	48	11	4	5	2	28
Devinuwara	44,132	43,408	67	7	633	12	0	0	1	4
Tangalla	62,804	61,524	158	16	1,038	34	13	0	0	21
Total	263,944	261,293	646	88	1,734	72	29	6	4	72

Source: Department of Census & Statistics

The DS divisions in the Batticaloa district have a majority of Tamils, while the DS division in the Trincomalee district has about 50% Sinhalese and the balance equally divided between the Tamils and Moors. In the Ampara district, two DS divisions have a majority of the Moor community and the third one has a majority Tamil community. In the Southern province, all DS divisions have a majority Sinhalese community with a small community of Moors and Tamils in three DS divisions. In summary, there are a total of five DS divisions with a majority Sinhalese community, three DS divisions with a majority Tamil community, and two DS divisions with a majority Moor community. Thus in the Eastern province, there is mix of the three main communities residing adjacent to each other, whereas in the Southern province the residents are primarily from one ethnicity.

Table 2.3 provides details of the number of housing and non-housing units of the DS divisions. The non housing units comprise of buildings belonging to government or private

institutions or business premises. The number of housing units typically corresponds with the total number of households within each DS division. It can be observed that the number of housing/non housing units in the selected DS divisions comprises about 20% of the total number in the three districts in the Eastern Province and about 15% in the three districts of the Southern province.

Table 2.3: Housing/Non Housing Units by DS Divisions

District	D.S. Division	No of GN Divisions	Housing Units	Collective Living Quarters	Institutions	Non-housing Units	Total No of Units	Total as % of District
East								
Batticaloa	Eravur Pattu	39	15,197	123	126	1,238	16,684	13.2
	Manmunai N	48	18,176	55	124	2,419	20,774	16.4
Trincomalee	Trinco Town	42	21,643	207	186	2,814	24,850	26.8
Ampara	Nintavur	25	6,164	111	9	1,407	7,691	4.6
	Sammanturai	51	12,174	47	81	2,066	14,368	8.5
	Navithanveli	20	4,137	9	47	403	4,596	2.7
Total		225	77,491	552	573	10,347	88,963	22.9
South								
Galle	Habaraduwa	59	14,215	191	122	1,831	16,359	5.7
	Hikkaduwa	97	23,838	245	253	2,634	26,970	9.4
Matara	Devinuwara	41	10,822	13	61	1,162	12,058	5.3
Hambantota	Tangalla	72	17,607	103	89	1,999	19,798	11.8
Total		269	66,482	552	525	7,626	75,185	11.0
Grand Total		494	143,973	1,104	1,098	17,973	164,148	15.3

Source: Department of Census & Statistics

2.4 Socioeconomic Characteristics

Socioeconomic characteristics of the population, especially relating to educational facilities, income and poverty levels are discussed below.

2.4.1 Education

Relatively speaking, the Eastern Province has a larger number of schools (per thousand of population), a smaller number of pupils per school, and a higher pupil to teacher ratio when compared to the Southern Province (Table 2.4). Although these numbers suggest that there

are better educational facilities in the East, it is important to understand that the numbers may be misleading as they do not reflect the *quality* of the teachers and facilities. The educational facilities have also been affected by the destruction caused by the tsunami in these districts.

Table 2.4: Statistics of Schools, Teachers and Pupils by Districts

District	District Population	Total No. of schools	Teachers	Pupils	No of schools per 10,000 population	No of Pupils per School	Pupil to Teacher Ratio
East							
Ampara	589,344	393	7,280	155,834	6.67	397	21
Batticaloa	314,088	306	4,360	114,525	9.74	374	26
Trincomalee	192,902	253	4,239	94,030	13.12	372	22
Total	1,096,334	952	15,879	364,389	8.68	383	23
South							
Galle	990,539	512	11,153	230,445	5.17	450	21
Matara	761,236	442	10,202	186,490	5.81	422	18
Hambantota	525,370	341	6,995	142,623	6.49	418	20
Total	2,277,145	1,295	28,350	559,558	5.69	432	20
Grand Total	3,373,479	2,247	44,229	923,947	6.66	411	21

Source: Department of Census & Statistics

2.4.2 Household Income

Table 2.5 Household Income and Poverty Statistics

Province/ District	Average Household Income Rs/Month	Households Receiving Samurdhi (%) ^b	D.S. Division	Population Below Poverty Line (%)	Population Below Poverty Line (No.)
Eastern Province					
EP –Urban	10,292		Eravur Pattu	75 ^a	41,662
EP –Rural	6,992		Manmunai N	75 ^a	51,012
EP –Total	7,640		Trinco Town	65 ^a	15,878
Batticaloa	NA	27.1	Nintavur	60 ^a	14,804
Trincomalee	NA	25.5	Sammanturai	50 ^a	25,571
Ampara	NA	14.6	Navithanveli	60 ^a	10,398
Total		20.1		64	159,325
Southern Province			Habaraduwa		
	11,229			28.7	16,199
Galle	12,724	26.5	Hikkaduwa	24.9	23,487
Matara	10,529	36.3	Devinuwara	20.9	9,069
Hambantota	9,392	42.6	Tangalla	27.1	16,255
Total		33.4		25	65,010

a) Local Authority estimates, b) – Samurdhi Authority, NA – Not Available,

Source: Department of Census & Statistics, Household Income & Expenditure Survey 2002

Statistics on household income are not available in detail by DS division. The data presented in Table 2.5 provides a summary of income data collected through the Household Income and Expenditure Survey (HIES) conducted by the Department of Census and Statistics in 2002. The Poverty Line estimates are for incomes received in 2002 in the districts of the Southern province. The data on population below poverty line for DS divisions in the Eastern province are estimated by the Local Authorities, and is not based on valid official statistics. However, there appears to be considerable poverty in the Eastern province and is most likely higher than the levels prevailing in the Southern province due to the negative impacts of the war and tsunami on livelihoods and income.

If the households receiving Samurdhi benefits can be considered as poor, then the poverty level in the Southern districts is greater, standing at around 33% of households as compared to 20% of households in the Eastern districts. From evidence obtained during visits to the area, the most affected districts in terms of poverty appear to be Hambantota, Batticaloa and, to a lesser extent, Trincomalee, Ampara and Matara.

2.5 Other Socioeconomic Characteristics

Other socioeconomic data not available at DS level has been aggregated to the provincial level and presented in Table 2.6.

Table 2.6 Other Socio Economic Characteristics

Socio Economic Indicators	Eastern Province	Southern Province
Literacy Rate	86.6	92.7
No Schooling	13.8	7.7
Primary	37.9	31.6
Secondary	31.3	38.3
Post Secondary	17.0	22.4
Employment	37.2	46.7
Emp. In Agriculture	36.1	39.8
Emp. In Industry	16.6	24.1
Emp. In Services	47.3	36.1
Unemployment	8.4	11.7
Own House	91.5	94.9
Pipe Borne Water	17.4	34.1
Own Well	45.1	32.5
Water Sealed Latrine	42.6	86.4
No Toilet	29.2	3.4
Household Income	13,395	13,733
Gini Coefficient	0.51	0.39
Savings Rate	-0.9	6.4

Source: Central Bank of Sri Lanka: Socio economic Statistics 2004

Socioeconomic statistics available on a provincial basis demonstrates that the Eastern province lags behind in many indicators, particularly in the health and sanitation areas. The Eastern province has a lower literacy rate, a relatively high proportion of citizens without schooling, a lower proportion of the households with pipe borne water, a high percentage without toilets and a low savings rate, indicative of greater poverty within the province.

2.6 Socioeconomic Impacts of the Tsunami

The Department of Census and Statistics collected data to measure the degree of damage resulting from the tsunami in eight affected DS divisions. Types of damage analyzed included the level of damage to houses and other buildings. Divisions that have been selected as potential VTA sites are show in the table below.

Table 2.7 Tsunami Damage to Housing and Other Buildings

D.S. Division	Completely Damaged		Partly damaged		Partly damaged (usable)		Total	
	Housing	Other	Housing	Other	Housing	Other	Housing	Other
Eravur Pattu	99	53	11	0	271	21	381	74
Manmunai N.	958	112	487	29	1502	142	2947	283
Trinco Town	672	77	179	11	1116	115	1967	203
Nintavur	458	133	288	26	928	48	1674	207
Sammanturai	0	0	0	0	0	0	0	0
Navithanveli	0	0	0	0	0	0	0	0
Total	2187	375	965	66	3817	326	6969	767
Habaraduwa	547	350	162	88	959	437	1668	875
Hikkaduwa	2391	424	479	102	2826	663	5696	1189
Devinuwara	433	97	202	30	724	191	1359	318
Tangalla	91	58	55	4	226	33	412	95
Total	3462	929	898	224	4735	1324	9135	2477
Grand Total	5649	1304	1863	390	8552	1650	16104	3244

Source: Department of Census & Statistics

All the DS divisions except Sammanturai and Navithanveli suffered damage due to the tsunami. About 9% of the housing and 7% of other buildings were either completely or partly damaged by the tsunami in the DS divisions in the Eastern Districts. However, 14% of the housing and 32% of other buildings were either completely damaged by the tsunami in the DS divisions in the Southern districts.

The Census and Statistics Department also collected data on the number of deaths due to tsunami, as verified by official statistics and the number missing, but presumed dead. These statistics for the potential VTA sites are shown in Table 2.8 below.

Table 2.8 Number of Dead and Missing due to the Tsunami

D.S. Division	No of Dead	Number Missing	Total
Eravur Pattu	11	1	12
Manmunai N	912	78	990
Trinco Town	752	9	761
Nintavur	107	3	110
Sammanturai	0	0	0

Navithanveli	0	0	0
Total	1782	91	1873
Habaraduwa	188	14	202
Hikkaduwa	608	216	824
Devinuwara	740	115	855
Tangalla	21	0	21
Total	1557	345	1902
Grand Total	3339	436	3775

Source: Department of Census & Statistics

As shown in Table 2.8 above, the Eastern districts suffered more or less an equal amount of casualties as the DS divisions in the South in the project sites, with more persons missing in the South than the East.

Data on economic activities conducted in non-residential buildings was also collected for the survey, specific again to the project sites. The results are shown in Table 2.9 below.

Table 2.9 Economic Activities of Damaged (Non – Residential) Buildings

D.S. Division	Economic Activities of Non Residential Units Damaged (%)						
	Fisheries	Trade	Tourism	Hotels & Restaurants	Services	Other	NS
Eravur Pattu	65.6%	19.4%	0.0%	7.5%	6.0%	1.5%	0.0%
Manmunai N	6.4%	33.1%	3.6%	2.4%	41.8%	12.7%	0.0%
Trinco Town	51.2%	13.9%	1.8%	3.6%	13.9%	7.2%	8.4%
Nintavur	29.6%	40.8%	0.0%	1.8%	11.2%	16.6%	0.0%
Sammanturai	0	0	0	0	0	0	0
Navithanveli	0	0	0	0	0	0	0
Habaraduwa	NA	NA	NA	NA	NA	NA	NA
Hikkaduwa	8.4%	33.7%	8.4%	14.7%	22.0%	11.7%	1.1%
Devinuwara	NA	NA	NA	NA	NA	NA	NA
Tangalla	28.3%	32.4%	1.4%	9.5%	17.5%	9.5%	1.4%

Source: Department of Census & Statistics

The economic activities of damaged non-residential units varies from tourism to fisheries activities. According to the information in Table 2.9, the most damage was done to fisheries infrastructure buildings, followed by trade and services in the Eastern districts. In the case of the Southern province, most damage was done to trade, services and other sectors, except in Tangalla, where fisheries activities also suffered disproportionately.

It should be noted that the lack of damage to the DS divisions in which the Sammanthurai and Central Camp (Navithanveli) sites are situated resulted from the fact that they are located approximately 20 to 22 kilometers from the sea; thus both DS divisions escaped dramatic tsunami devastation. In the case of the Devinuwara and Habaraduwa DS divisions, while it is known that damage to non residential buildings occurred (see Table 2.7), the data relevant to economic activities taking place within these properties was not available for this EA.

2.7 Conclusions of Socioeconomic Survey

As a complete socio-economic survey has not been conducted in all project sites, the level of analysis is dependent on data availability. The analysis shows that the socio-economic conditions are similar in the two regions, with high levels of dependence on agriculture for employment, except in the DS divisions situated in urban areas such as Trincomalee or Hikkaduwa. The major ethnic group depends on the locality, with the Sinhalese being the major community in the south and either Tamils or Moors forming the major community in the east. The population is younger in the Eastern province, suggesting that demand for vocational training may be higher in this province.

The Eastern province has a larger number of schools per 10,000 of population, but the quality of the teaching and facilities may be lower. Educational attainment is higher in the Southern province, indicating again that vocational training may be in higher demand in the Eastern province. The household incomes are lower in the Eastern province and it appears that there is a higher population below the poverty line than in the Southern province. Employment levels are lower in the Eastern province, but there is a lower proportion of the population dependent upon the agricultural sector. There is a need to move out of the sector and find employment in other sectors, notably because of the lack of available opportunities within the agriculture sector. Vocational training programs, depending upon their scope and breadth, have the potential to meet this need.

All the DS divisions except Sammanturai and Navithanveli suffered damage due to tsunami. There was greater damage to housing and other buildings in the Southern province and rebuilding after the tsunami will require the joint efforts of many trained personnel. The fisheries and trade sectors suffered the greatest damages in the Eastern province, while the trade and services sectors suffered the most in the Southern region. There will be short-term employment opportunities for locals during the reconstruction phases, resulting in a short-term positive impact.

CHAPTER THREE: STAKEHOLDER CONSULTATIONS

3.1 Introduction

Stakeholder consultations are presently being carried out by the VERC team in the southern and eastern VERC project sites. The objectives of stake holder consultations at each construction site are to – (a) inform project recipients of this USAID supported program, (b) obtain feedback on the proposed design plans, and (c) provide clarification to stakeholders on a “partnership building approach”, which aims to support longer term institutional and capacity building goals to ensure the sustainability of the centers.

Discussions were originally held with the local VTA center staff, and then opened up to wider stakeholder audience, including local employers, students, parents, local officials, school principals, etc. This effort is to support the wider objectives of the SLTRP program of ownership building, improvement in Operations and Management (O&M), and the stimulation of effective private-public partnerships. The local VTA staff responded very positively to this approach and are working closely with the VERC team in arranging the follow-up meetings.

3.2 Southern Province Community Consultations

The outcomes of the meetings conducted thus far in the Southern province with the VTA local officials are summarized below.

Table 3.1 Southern Province Community Consultations

Site	Summary of Ideas
Tangalla	<p>The entrance gate to the Center had been placed in a location prone to flooding in the rainy season.</p> <p>Water availability at the site on a year round basis - The VTA officials are obtaining necessary clearance from the National Water Board Project. Team will follow up to ensure adequate water supply is available before the construction is completed.</p> <p>Electricity supply. 3-Phase electricity supply is available. The VTA officials are determining the necessary details and will obtain clearance from the NWSDB and the Electricity Board. Information on the location of the closest transformer will be provided to the project team.</p> <p>VTA officials inquired into the size of the training rooms. Team explained the rationale behind the chosen sizes of the rooms (400-600 square feet), and also explained their location.</p>
Talalle	<p>The imposition of a 300 meter reserve from the coast line by the CCD, and need for permits for construction within that zone will have a bearing on the current guard room that is to be converted into a bakery for training purposes. The VTA was requested by the Project team to obtain the necessary clearance for the construction, if</p>

	<p>possible.</p> <p>Water and electricity issue - At this centre, a water sump tank and pump, rather than an overhead tank is recommended. During periods of drought, this area experiences water shortages. Information on the exact locations of present septic tanks for the design drawings was requested by the project team.</p> <p>There was a request for bicycle park area and, if possible, a shaded area/shed for bikes and motor bikes</p> <p>A potential challenge will be ensuring the continued functioning of current training sessions during reconstruction. The VTA staff/teachers were requested to start thinking about this matter, and advise the construction team ahead of time, if possible, on necessary arrangements for this period. The possibility of relocating some of the training programs to Rural Centers on a rotational basis was suggested by the VTA staff.</p>
Koggala	<p>An abandoned building in the area has been approved for use as a model mini apparel factory/training centre. The centre will have collaboration from JAAF – Joint Apparel Association Fund.</p> <p>Training programs will also equip students with necessary skills to maintain the centre (e.g. if a generator is installed in this mini factory/training center; students will also be trained in the repair of such generators).</p> <p>Discussion drew queries regarding the – (a) second level in the building; (b) need for an office space, (c) toilets (d) management of noise in the “mini-factory” portion of the apparel training center.</p> <p>VERC team will verify if the proposed VTA site and construction activity encroaches onto the railway reservation, and take necessary steps if so.</p>
Ahangama	<p>Operational plans are yet to be formalized. There is another tourism training center being constructed, with Austrian assistance, in close proximity to the VTA.</p> <p>The team plans to obtain LEED certification for this site. It will thus be necessary to look into options for solar lighting, efficient use of water, electricity, etc. There will be costs involved for maintenance of this certification.</p> <p>The points to be covered in the next round of meetings include: is it permissible to build within the CCD set back zone? If not, how can the issue be resolved? Other points which still need to be further discussed include the relocation of the neighbor, the proposed road to the beach from the main road along one edge of the site, the development of the adjacent property as a hotel, the flooding of the drainage canal on one side of the site, and finally water and electricity supplies.</p>
Narigama (Hikkaduwa)	<p>Stakeholder discussions recommended not using tiles for roof repairs, as monkeys frequently drop mangos onto the roof which damage the</p>

	<p>tiles. Although asbestos was suggested, this is not advisable due to potential impacts on human and animal health.</p> <p>The Center will need water tanks to test motor engines.</p> <p>Need to identify locations of existing septic tanks to plan water supply and drainage system.</p> <p>Need to plan location for sump tank.</p> <p>The reconstruction program recommends that as the Narigama centre is located close to the Hikkaduwa harbor, a satellite training site attached to this centre is established at the Harbor. The programs would specifically address engine repair, refrigeration, ice-making, operation of fish coolers etc.</p>
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3.3 Eastern Province Community Consultations

The outcomes of the meetings conducted thus far in the Eastern province with the VTA local officials are summarized below.

Site	Summary of Ideas
Sammanthurai	<p>Several requests were made during the stakeholder consultations, including the following:</p> <ul style="list-style-type: none"> - Request for a recycling center for waste within the training complex - Request for a prayer room for all religious groups - Request for training in aluminum fabrication <p>Other issues raised included the fact that there is an acute labor shortage of mechanics. This shortage is especially felt during harvest times.</p> <p>Finally, stakeholders asked if any action can be taken to prevent water collection in the paddy.</p>
Kaluwanchikudi	<p>Stakeholders requested that the training programs include courses in “beauty culture”.</p> <p>Several individuals expressed a desire that the building be two stories rather than one, sparking a rather lengthy discussion. By the end of the discussion, the group seemed to understand that the financial allocation only allowed for a one storey building (as explained by Ron Saunders). The team plans to continue to engage the group on this issue (via Mr. Vinodarajah), thus assuaging any future concerns about this issue.</p>
Central Camp	<p>Stakeholders requested training programs in dress making</p> <p>Stakeholders wanted an assurance that computer training will not only be offered to the site representatives, but also the girls attending the training programs.</p>
Nintavur	<p>Stakeholders raised the following issues and concerns during consultations:</p>

	<ul style="list-style-type: none">- Possibly extending the concrete slab- The need for a storage room.- Possibly rearranging the location of the training programs in the building, especially examining the use of the 2nd floor. The stakeholders plan to hold further discussions on the matter, and will provide summary requests to the VERC team as soon as possible.- A student inquired if they could be linked to a livelihood program, which would consider providing graduates with tool kits.
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CHAPTER FOUR: IMPACT ANALYSIS AND MITIGATION PLAN

4.1 Project Impact Analysis

This section presents potential site-specific and general impacts that may result from the construction, as identified as part of the impact analysis. Impacts have been categorized on the basis of the main types of impact that are likely to be encountered during construction. The range of impact types includes direct and indirect, as well as short and long-term impacts. Direct and short-term impacts have been given greater emphasis in this report as the scope of this analysis primarily focuses on the construction phase of the project. The long-term impacts are nevertheless included, with the goal of providing information to the VTCs ultimately in charge of operations. In addition, several long-term environmental issues are likely to arise due to the location of the sites (as opposed to stemming from construction or operational activities). Examples of these include: the risk of being affected by natural hazards such as extreme weather events that affect the coastal zone, as well as the potential for flooding as some of the sites are located in or in close proximity to natural depressions or water retention areas. It should be noted that one of the guidelines of the tsunami reconstruction program of VERC is avoidance of rebuilding vulnerability to natural hazards, a philosophy which is evident in the facility designs. Rehabilitation and reconstruction under the VERC should continue to give careful consideration to this guideline.

Tables 4.1 and 4.2 below summarize the potential construction-related impacts in all of the project sites, in the Southern and the Eastern Provinces respectively. The analysis examined potential impacts on a variety of systems and elements, including:

- Soil Erosion
- Water Logging/Flooding
- Siltation of Natural Waterways
- Degradation of Air Quality
- Degradation of Water Quality
- Depletion of Water Resources
- Alteration of Natural Drainage Paths
- Destruction to Natural Vegetation
- Disturbance to Natural Habitats and Migratory Pathways
- Disturbance to existing activities in the neighborhood
- Long-term impacts from Extreme Weather Events
- Health Impacts
- Aesthetic Impacts

Table 4.1 Potential Construction and Location-Related Impacts, Southern Region

Description	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
Soil erosion	Soil erosion could be a potential problem during earth excavation activities at the site due to the sloping nature of the land.	Not significant	Not significant	Not significant	Not significant
Water logging/ flooding	The fallow paddy field and swampy area surrounding a section of the site is a natural depression and becomes flooded during heavy rains. The VTC has its entrance and frontage to this area and could face a problem of inundation.	Not significant	The buildings are in the coastal zone and can be impacted by extreme weather events such as storm surges and cyclones. Further, some of the buildings are to be constructed within the set back zone of the coastal zone. The drainage canal on one border of the site may overflow during periods of heavy rainfall.	Not significant	Not significant
Siltation of natural waterways	The new access road is to be cut through the paddy fields and could lead to the blocking and/or siltation of the irrigation channel that flows through the	Not significant	The drainage canal situated adjacent to the may become blocked due to demolition and construction debris.	Not significant	Not significant

Description	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
	paddy fields and flows near the site.				
Degradation of air quality	Solid waste is dumped illegally at a point in the fallow paddy fields near the VTC site. Also, open burning of waste has been noted at this site. This is already a hazard to the neighborhood and could be problematic to the operation of the VTC.	Demolition of damaged buildings and construction of new buildings will generate significant amounts of dust which will affect the people within the site as well as the immediate neighborhood that contains a school.	Small amounts of dust and particulate debris will be generated through the demolition of the partially destroyed school building	Demolition of damaged buildings and construction of new buildings will generate significant amounts of dust which can affect the people in the immediate neighborhood.	During the construction period there can be some dust generation which can adversely affect the neighborhood houses that are situated immediately behind and on one side of the center.
Degradation of water quality	Dumping of construction wastes into the fallow paddy field and swampy area adjacent to the site would cause water pollution in the irrigation and other small waterways. It will be necessary to conduct further consultations, and obtain information from the Irrigation Engineer about the flooding cycles and the water flows of the	Not significant	Not significant	Not significant	Not significant

Description	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
	channels through the fallow paddy field and swampy area.				
Depletion of water resources	The extraction of surface/ground water is a concern in all sites, and can lead to depletion of water sources and even salinity intrusion that will adversely affect wells and agricultural fields.				
Alteration of natural drainage patterns	May occur if the irrigation channels and the waterways of the swampy areas/fallow paddy fields are blocked	Not significant	Not significant	Not significant	Not significant
Destruction to natural vegetation	Not significant	Not significant	Not significant	Not significant	Not significant
Disturbance to natural habitats and migratory pathways	The tract of paddy fields is a pathway for migratory birds. Impact from the VTC construction is not expected to be a significant disturbance to the migratory pathways unless construction takes place during the migratory season and very high levels of noise are generated.	Not significant	One of the borders of the site is the beach that leads down to a section of a coral reef and positions for stilt fishermen. Although it will be necessary to ensure continued access for local fishermen, completely unmanaged, free access between the beach and the site can lead to issues of security,	Not significant	Not significant
Disturbance to existing activities in	Construction activities will	Demolition and construction activities	Demolition and construction can lead	Demolition and construction can lead	Construction can lead to disturbance to the

Description	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
the neighborhood	generate noise, disrupting quiet atmosphere of a place of religious worship. Some buildings of the VTC are situated adjacent to the sacred chaitya and noise from its operation will cause adverse impacts on the serene environment of a place of religious worship.	will also generate a lot of noise which can disturb the on-going educational activities of the existing VTA complex.	to disturbance to the neighborhood.	to disturbance to the neighborhood.	neighborhood.
Long-term impacts from extreme weather events	Flooding from heavy rains is likely. See section a) above.	May be significant due to location near the coast	The near proximity to the sea makes the potential impact of extreme weather events such as storm surges, cyclones and strong winds highly significant. Potential impacts from higher sea levels need also be considered due to the location.	Likely to be as significant as for the general coastal zone of the area.	Less significant than all other VTA sites of the southern region, as it is located further inland than the others.
Health impacts	Although no serious health impacts are anticipated, it is notable that any unfilled pits created during construction and/or for disposal of garbage, disused tires from vehicles, plastic containers, any impervious containers including coconut shells among others could lead to breeding of vectors of dengue, malaria and possibly filaria.				
Aesthetic impacts	Unlikely to be significant provided the design and appearance of the complex blends with the surrounding buildings and				

Description	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
	natural setting.				

Table 4.2 Potential Construction and Location-Related Impacts, Eastern Region

Description	Central Camp	Kaluwanchikudi	Sammanthurai	Nintavur	Trincomalee
Soil erosion	Evidence of soil erosion on site has been noted and hence there is potential for erosion during earth excavations, especially if construction takes place during the wet season.	Not significant	Not significant	Not significant	Not significant
Water logging	Likely to be very significant as the site is lower in elevation (about 1.5 m) than the surrounding areas and is known to have stagnant water during rainy season. Locals generally refer to the site as the village pond when it collects water. Widening of roads to the site can lead to blocking of drainage channels.	Likely to be significant as the land is lower than surrounding areas, and is known to undergo short-term flooding during the monsoons.	Not significant	Not significant	Not significant
Siltation of natural waterways	There may be natural water flows during the rainy season into the site, as it is on a lower	Not significant	Not significant	Not significant	Not significant

Description	Central Camp	Kaluwanchikudi	Sammanturai	Nintavur	Trincomalee
	elevation than the surroundings				
Degradation of air quality	Not significant	Dust generated during the construction period can pose a significant adverse impact on public health as the proposed site is surrounded by a highly dense neighborhood.	Solid waste is dumped directly behind the site proposed for the VTC. This will be a potential health hazard and a nuisance to the operation of the VTA.	Not significant	Not significant
Degradation of water quality	Not significant	Not significant	Not significant	Not significant	Not significant
Depletion of water resources	Extraction of surface/ground water can lead to depletion of water sources and even salinity intrusion that will adversely affect wells and agricultural fields.	Extraction of surface/ground water can lead to depletion of water sources and even salinity intrusion that will adversely affect wells and agricultural fields.	Extraction of surface/ground water can lead to depletion of water sources and even salinity intrusion that will adversely affect wells and agricultural fields.	Extraction of surface/ground water can lead to depletion of water sources and even salinity intrusion that will adversely affect wells and agricultural fields.	Extraction of surface/ground water can lead to depletion of water sources that will adversely affect wells and agricultural fields.
Alteration of natural drainage patters	Likely to be significant as the site is on a depression of the land	Not significant	Not significant	Not significant	Not significant
Destruction of natural vegetation	Not significant	Not significant	Not significant	Not significant	Not significant
Disturbance to natural habitats and migratory	Not significant	Not significant	Not significant	Not significant	Not significant

Description	Central Camp	Kaluwanchikudi	Sammanturai	Nintavur	Trincomalee
pathways					
Disturbance to existing activities in the neighborhood	Not significant	Not significant	Not significant	Not significant	Likely to be significant
Long-term impacts from extreme weather events	Flooding from heavy rains is likely. See section a) above.	Not significant	Not significant	Not significant	Likely to be significant as the site is close to the coastal zone.
Health impacts	Any unfilled pits created during construction and/or for disposal of garbage, disused tires from vehicles, plastic containers, any impervious containers including coconut shells among others will lead to breeding of vectors of dengue, malaria and possibly filaria.	Any unfilled pits created during construction and/or for disposal of garbage, disused tires from vehicles, plastic containers, any impervious containers including coconut shells among others will lead to breeding of vectors of dengue, malaria and possibly filaria.	Any unfilled pits created during construction and/or for disposal of garbage, disused tires from vehicles, plastic containers, any impervious containers including coconut shells among others will lead to breeding of vectors of dengue, malaria and possibly filaria.	Any unfilled pits created during construction and/or for disposal of garbage, disused tires from vehicles, plastic containers, any impervious containers including coconut shells among others will lead to breeding of vectors of dengue, malaria and possibly filaria.	Any unfilled pits created during construction and/or for disposal of garbage, disused tires from vehicles, plastic containers, any impervious containers including coconut shells among others will lead to breeding of vectors of dengue, malaria and possibly filaria. Site renovations will cause dust and noise in a crowded neighborhood.
Aesthetic impacts	Unlikely to be significant, provided the complex is designed to blend adequately with the surrounding buildings and natural setting.				

4.2 Mitigation Measures

The following mitigation measures have been proposed based on the analysis of the primary activities and the likelihood, significance, and duration of impacts from the construction and operation of the VTCs.

4.2.1 Disposal of Building Rubble and Construction Debris

Debris generated in the process of construction of new buildings is one of the main environmental concerns presented by the project. The demolition of damaged buildings will largely take place only in Talalle and Koggala, and sites such as Hikkaduwa and Ahangama will generate smaller quantities of building rubble as the focus will be mainly on renovation of existing buildings and new construction. In the Southern region, suitable sites for disposal of building rubble must be identified before demolition can proceed. In the Eastern region, sites selected for construction in Central Camp, Kaluwanchikudi and Sammanturai are largely vacant blocks of land and hence disposing of building rubble will not pose significant problems.

In principle, the project should reuse components of building rubble generated on-site whenever possible, which will minimize the quantities of waste. As LEED certified sites, Ahangama and Sammanturai will specially focus on options such as re-using and recycling that will enhance the environmental sustainability of the proposed new buildings. Other sites, although not formally LEEDs certified, will follow a similar approach and adopt options that will minimize adverse environmental impacts and enhance benefits. It is therefore recommended that demolition/renovations be carried out in a way that maximizes salvaging reusable construction material from old buildings.

As for the components that cannot be re-used in new construction, disposal should be carried out in close conjunction with the methods adopted by local authorities (i.e. landfill or road fill). Measures must be taken to prevent the disposal of construction debris that will destroy natural habitats, block natural drainage paths, fill up paddy or other agricultural land and water retention sites etc. It should be noted that in Tangalla, a dump site has been observed in close proximity to the proposed site for the VTA. According to local sources, this is an illegal dumpsite and appears to be an attempt by the private owners of that part of the paddy field to fill it up and increase its value as housing land. The project will provide assistance to and encourage the VTA to remove the site from its location. A similar situation exists in Sammanturai where a large dumpsite is located directly behind the proposed VTA complex. As the LEEDs certified site, the quality of the environment of the proposed state-of-the-art VTA complex would be greatly undermined by its presence and hence the project should work with the local authorities and VTA for its relocation.

The proposed sites in the South and a few in the East are situated in localities that are urbanized. In the South there is often a tourist industry within close proximity to the sites. It should be noted that following the tsunami, the removal of debris took place very slowly. Care should be exercised not to create any more unsightly dumps of demolition waste.

4.2.2 Drinking Water Supply

Scarcity of drinking water is a common problem in all of the sites examined in the Southern region. Dug wells and tube wells contain water that is brackish, most likely due to its proximity to the sea and the shallowness of the wells. Water supply from the NWSDB main lines along the main road is available in Tangalla, Tallale, Ahangama Koggala and Hikkaduwa, although the supply is intermittent. In Tangalla, water is brought from inland locations in bowsers to the temple and/or extracted from tube wells in order to supplement the supply from the NWSDB lines during the dry season. In Koggala, water for drinking had to be transported from several kilometers inland. It should be noted that there is a large population of workers in the Free Trade Zone who are employed and living around the proposed VTA site. A proposed new project by the NWSDB to enhance its supply was eagerly anticipated by the local stakeholders who were interviewed in all of these sites. There appear to be at least three upcoming water supply projects in the southern region.

A similar situation of water scarcity has been reported from the sites in the Eastern region's well. Almost all of the sites had dug wells, but since the area was undergoing a dry spell at the time of the visit, most of the dug wells had little water, which was not suitable for drinking. In Nintavur, the VTC gets its water supplies from a nearby reservoir, and in Trincomalee potable water is supplied by the local authority. In Sammanturai, the inspected dug wells had very little water or were almost completely dry. During the wet months the situation is said to improve and people use groundwater for drinking purposes. However, there are no records of water quality data to confirm the potability of the available sources. Although drinking water will be a concern in all sites, only in Central Camp is the issue anticipated to become significant, and it is likely that drinking water will need to be brought in from external sources during both construction and operation. Ground and overhead storage tanks will be provided in each site, and water harvesting will be developed in the LEED-certified schools (Ahangama and Samanthurai).

4.2.3 Impacts on Air Quality

During construction there will be an increase in the emission of air pollutants, such as suspended particulate matter (dust and cement) and exhaust emissions from construction vehicles. This is not a significant impact, however considering the scope of construction work at each site. Sites such as Sammanturai and Central camps are not located in populated areas and hence will have fewer problems in terms of inconveniencing the public through dust generation. Other sites in the East, and all of the sites in the South, are located in densely populated areas, and as such, the contractor will need to implement safeguard measures to minimize potential adverse effects on adjacent communities.

4.2.4 Noise Levels and Vibration

Noise due to construction machinery and equipment can be as high as 75 dBA or more. Sites in Tangalla, Ahangama, Koggala and Trincomalee are situated by the side of main highways and hence the noise generated from heavy traffic on a daily basis would be higher than the noise generated by construction work. Foreseeing that this might be a problem in Tallale

where VTC training programs currently operate, the project has already worked with the relevant officials and the VTA to ensure the temporary relocation of classes. Other sites in the East will be affected in different degrees, given the nature of the surroundings which is either rural or semi-urban. However, in general, the impact from construction-related noise and vibration is not considered significant given the scope of construction activities and the time of construction period.

4.2.5 Construction Waste Generation

In the absence of details of waste generation for all sites we have presented a generic scenario for both toilet waste water and kitchen/canteen waste (waste with high amounts of oil and grease) from the operation of the VTA complexes. A septic tank for toilet waste and a holding cum oil/grease removal tank should be constructed. Effluence from both can be combined and disposed of through a soakage pit/infiltration field. The maintenance of a minimum distance of 15 m at least to the nearest well should be maintained and toilets must be located so as not prevent the pollution of water bodies. The soakage pits/infiltration fields should meet acceptable design criteria and meet site and soil conditions of each site. In view of the scarcity of fresh water in nearly all sites, we recommend the use of surface water for toilets.

4.2.6 Wastes Generated from Worker Camps

Worker camps should be provided with bins to collect garbage, which will need to be emptied regularly in a safe location. Latrines should be properly sited and designed so that pollution of watercourses does not occur.

4.2.7 Long-term Environmental Impacts

The long-term environmental impacts from the operation of the VTCs are relatively insignificant, with the exception of potential impacts that may stem from unsafe and unhygienic disposal of waste material. It is assumed that major solvent-based operations, such as spray painting are not included in the training components. Thus significant air quality issues are not expected. If such activities are included in the training programs then it is recommended that best environmental management practices with respect to air emission control are included in the design. However, solvents are expected to be used in other activities, such as washing spare parts, etc [to remove oil and grease], in training related to motor engine mechanisms and electronics. This will result in mainly used/waste solvents to be disposed as liquid waste but not as major air emission problems. As many such solvents are health hazards it is important that guidelines be provided to the VTCs about the storage, usage and disposal of waste solvent materials. The types of waste materials that are expected from the vocational training institutes, including various training-related activities are as follows:

Wastewater from Kitchen and Canteens

This mainly includes oxygen depleting organic matter, oil and grease. It is recommended that an oil and grease removal unit is installed prior to the disposal of this wastewater. There are proprietary high efficient oil and grease units available for purchase. Otherwise conventional

units can be constructed. The oil and grease removal unit shall also be designed/constructed to remove the suspended solids as well. Wastewater after removal of oil and grease and settleable suspended matter can be directed to an infiltration bed for additional treatment (where soil is acting as bio-filter) for disposal through soakage. Solids, oil and grease collected shall be disposed of suitably. Sun drying and burning in small quantities is one of the possible and the most practical methods of disposal.

Wastewater from Toilets

It is recommended that wastewater from toilets is treated first through a two compartment septic tank. Thereafter, it should be directed to an infiltration bed for additional treatment and disposal through soakage. Sludge needs to be removed periodically, based on the design. It is necessary to dispose the sludge safely. Usually in Sri Lanka, a sludge disposal service is available from Local Government Authorities of the area. The maintenance of minimum distances of 15 m, at least, to the nearest well should be maintained and toilets located to avoid pollution of water bodies. The soakage pits/infiltration fields should meet acceptable design criteria and meet site and soil conditions of each site. In view of the scarcity of fresh water in nearly all sites, we recommend the use of surface water for toilets.

General Solid Waste from Vocational Training Facilities

This waste includes paper, packaging materials, glass, plastics and garbage. The recommended method of disposal is source segregation of waste using color coded bins. A recycling program should be established at each center and paper, metals, plastic, glass can be sold to local collectors. Remaining garbage should be disposed of at Local Government Authority managed solid waste disposal sites.

Waste from Electronic Training Facilities

This will include discarded printed circuit boards, plastic, metal and batteries. All discarded printed circuits should be collected separately and sold to collectors for recovery of metal. Other waste should be source segregated using color coded bins. Metals, plastic, and glass should be sold to collectors for recycling. Remaining garbage should be disposed of at Local Authority managed solid waste disposal sites.

Waste from Motor Mechanism Training Units

This includes waste oil, grease and other solid waste of plastic, rubber and metal. Waste oil and grease should be collected and sold to collectors for reuse. Other waste should be source segregated using color coded bins. Metals, plastics, and glass should be sold to collectors for recycling. Remaining garbage should be disposed of at Local Authority managed solid waste disposal sites.

Waste from Bakery Units

This includes organic waste and oil and grease. Oil and grease should be recovered from waste stream using oil and grease separation unit. Disposal is similar to (a) above.

Construction Training Waste

This consists of debris and demolition of constructed items. Disposal of this waste should be at Local Authority solid waste disposal site.

Refrigerant gases

The refrigerants used in the training should conform to international conventions on ozone layer protection. As a responsible professional technical training institute the VTA should take an initiative to identify the equipment that is still using atmospherically-destructive chemicals and make plans to replace those as a plan to phase out from emitting such harmful gasses to further damage the ozone layer.

Mitigation of environmental impacts is one of the most significant gaps in VTA's current curriculum. Through this program, VERC will work to insert relevant activities into the existing curriculum. The major skill areas with potential impact are: engine repair, welding, and refrigeration. All three generate waste, and the first two are sources of gases. Furthermore, if the program builds a swimming pool in Ahangama (under consideration to support tourism training), it will be critical to include appropriate methods for handling and storing chlorine.

The buildings themselves are designed to include appropriate storage and disposal spaces for any potentially harmful materials (glues and other adhesives used in cabinet making, for example). Motor oil is the most pervasive, and Caltex has already established a program for environmentally-sound disposal of used motor oil, which will be instituted at each center as appropriate. VERC will develop operation manuals for the building systems, which will address environmental issues and standard operating procedures for maintenance, waste disposal, and other environmental concerns.

Sri Lanka has initiated action on popularizing the concept of cleaner production through the National Cleaner Production Centre which is now in operation. The VTA should establish formal links with this organization and seek to put in place a program that will introduce the concept of cleaner production, demonstrate the connections between cleaner production and environmental, social and economic benefits to its trainees. It is also an opportune time for the VTA to introduce the concept of sustainable development through its national scale vocational training education.

CHAPTER FIVE: ENVIRONMENTAL MANAGEMENT ACTION PLAN

5.1 Environmental Management Action Plan

The Environmental Management Action Plan (EMAP) for the VTA centers, detailed below, will minimize adverse environmental and social impacts that could arise from project activities. The EMAP should form part of the bid documents and shall be considered alongside the specifications. The prescriptions detailed in the EMAP are therefore mandatory in nature and contractually binding. The EMAP will be equally applicable to sub-contractors including nominated sub-contractors, if any. The main contractor will be responsible for the compliance with the requirements of the EMAP by sub-contractors, including nominated sub-contractors. The “Engineer” on behalf of the Employer will enforce and monitor the compliance of EMAP by the contractor.

Environmental Issues	Protection and Preventative Measures That Have To Be Taken By The Contractor		
1.	Earthwork and Soil Conservation		
1.1	Disposal of Debris and Spoil		
		(a)	Dredged spoil shall be disposed of only at a location specified by the approving authority under recommended guidelines.
		(b)	All other debris and residual spoil material, including any remaining earth shall be disposed only at locations approved by the engineer for such a purpose. If directed by the Engineer the contractor shall obtain the necessary approval from the relevant local authority for disposal of debris and spoil at the specified location.
		(c)	The debris and spoil shall be disposed in such a manner that (i) drainage paths are not blocked (ii) the disposed material should not be washed away by runoff/floods and (iii) should not be a nuisance to the public.
		(d)	If the Engineer consents, the contractor can dispose the debris and spoil as a filling material provided that the contractor can ensure that such material is used for legally-acceptable purposes with disposal conducted in an environmentally acceptable manner.
1.2	Protection of Ground Cover and Vegetation		
		(a)	Construction vehicles, machinery and equipment shall be used and stationed only in the areas of work and in any other designated areas by the Engineer.

Environmental Issues		Protection and Preventative Measures That Have To Be Taken By The Contractor	
		(b)	Contractor shall provide necessary instructions to drivers and operators not to destroy ground vegetation cover unnecessarily.
1.3	Prevention of Soil Erosion		
		(a)	Work that leads to heavy erosion shall be avoided during the raining season. If such activities need to be continued during the rainy season, prior approval must be obtained from the Engineer by submitting a proposal on actions that will be undertaken by the contractor to prevent erosion.
		(b)	The work, permanent or temporary, shall consist of measures as per design or as directed by the Engineer to control soil erosion, sedimentation and water pollution to the satisfaction of the Engineer. Typical measures include the use of berms, dikes, sediment basins, fiber mats, mulches, grasses, slope drains and other devices. All sedimentation and pollution control works and maintenance thereof are deemed as incidental to the earthwork or other items of work and no separate payment will be made for their implementation.
1.4	Contamination of Soil by Fuel and Lubricants		
		(a)	Vehicle/machinery and equipment serving and maintenance work shall be carried out only in designated locations/service stations approved by the Engineer.
		(b)	Waste oil, other petroleum products and untreated wastewater shall not be discharged on ground so that it causes soil pollution. Adequate measures shall be taken against pollution of soil by spillage of petroleum/oil products from storage tanks and containers. All waste petroleum products shall be disposed of in accordance with the guidelines issued by the CEA or the engineer.
		(c)	Sites used for vehicle and plant service and maintenance shall be restored back to their initial status. Site restoration will be considered as incidental to work.
1.8	Disposal of Harmful Construction Wastes		
		(a)	Contractor, prior to the commencement of work, shall provide list of harmful, hazardous and risky chemicals/materials, if any, that will be used in the project work to the Engineer. The Contractor shall also provide the list of places where such chemicals/materials or their containers or other harmful materials have been dumped as waste at the end of the project.
		(b)	New disposal sites shall not be created as part of this project. Disposal of such waste shall occur at the sites designated by the CEA or the Engineer.

Environmental Issues		Protection and Preventative Measures That Have To Be Taken By The Contractor	
		(c)	Contractor shall clean up any area including water bodies affected/contaminated (if any) as directed by the Engineer at his own cost.
1.9	Sand Mining and Quarry Operations		
		(a)	Sand mining sites and rock quarries from where sand and metal aggregate is obtained shall have approval from the Geological Survey and Mines Bureau as well as the current Environmental Protection License. It is recommended not to obtain material from mines/quarries that have on-going disputes with the community.
		(b)	The maintenance and rehabilitation of the access roads in the event of damage by the contractor's operations shall be a responsibility of the contractor.
2.	Water – Protection of Water Sources and Quality		
2.1	Contamination of Water from Construction-Related Wastes		
		(a)	The discharge standards promulgated under the National Environmental Act shall be strictly adhered to. All waste arising from the project is to be disposed in a manner that is acceptable to the Engineer and as per the guidelines/instructions issued by the CEA.
2.2	Contamination from Fuel and Lubricants		
		(a)	All vehicle and plant maintenance and servicing stations shall be located and operated as per the conditions and/or guidelines issued by the Engineer/Central Environmental Authority.
2.3	Locating, Sanitation and Waste Disposal in Construction Camps		
		(a)	Setting up of labor camps shall have the Engineer's approval and shall comply with any guidelines/recommendations issued by the CEA/LA. Construction laborers' camps shall not be located within a reasonable distance of waterways, near to a site or premises of religious, cultural or archaeological importance, school or any other sensitive area.
		(b)	Labor camps shall be provided with adequate and appropriate facilities for disposal of sewerage and solid waste. The sewage systems shall be properly designed, built and operated so that no pollution to ground or adjacent water bodies/watercourses takes place. Garbage bins shall be provided in the camps and regularly emptied. Garbage should be disposed off in a hygienic manner, to the satisfaction of the relevant norms. Compliance with the relevant regulations and guidelines issued by the CEA/LA shall be strictly adhered to.

Environmental Issues		Protection and Preventative Measures That Have To Be Taken By The Contractor	
		(c)	Contractor shall ensure that all camps are kept clean and hygienic. Necessary measures shall be taken to prevent breeding of vectors.
		(d)	Contractor shall report any outbreak of infectious disease of importance in a labor camp to the Engineer and the Medical Officer of Health (MOH) or to the Public Health Inspector (PHI) of the area immediately. Contractor shall carry out all instructions issued by the authorities, if any.
		(e)	Contractor shall adhere to the CEA recommendations on disposal of wastewater. Wastewater shall not be discharge to ground or waterways in a manner that will cause unacceptable surface or ground water pollution.
		(f)	All relevant provisions of the Factories Act and any other relevant regulations aimed at safety and health of workers shall be adhered to.
		(g)	Contractor shall remove the labor camps fully after construction is complete, empty septic tanks, if instructed by the engineer shall be closed; remove all garbage, debris and clean and restore the area back to its former condition.
	2.4	Wastage of Water and Waste Minimization	
		(a)	Contractor will minimize wastage of water in the construction process/operations.
		(b)	Contractor shall educate and made employees aware of water conservation, waste minimization and safe disposal of waste.
	2.5	Extraction of Water	
		(a)	Contractor is responsible for arranging adequate supply of water for the project purpose throughout the construction period. Contractor shall not obtain water for his purposes including for labor camps from public or community water supplies without approval from the relevant authority.
		(b)	Contractor shall not extract water from groundwater or from surface water bodies without permission from the Engineer. If directed by the Engineer the contractor must obtain approval from the relevant agency for extraction of water prior to the commencement of the project.
		(c)	Contractor may use the natural sources of water subject to the provision that any claim arising out of conflicts with other users of the said natural sources of water shall be made good entirely by the contractor.

3.	Prevention of Water Logging		
	3.1	Blockage of drainage paths and drains	
		(a)	Contractor's activities shall not lead to water logging as a result of blocked drainage paths and drains. The contractor shall take all measures necessary or as directed by the Engineer to keep all drainage paths and drains clear of blockage at all times.
		(b)	If water logging or stagnation of water is caused by contractor's activities, contractors shall provide suitable means to (a) prevent loss of access to any land or property and (b) prevent damage to land and property. Contractor shall compensate for any loss of income or damage as a result.
4.	Air Pollution		
	4.1	Generation of Dust	
		(a)	Contractor shall effectively manage the dust generating activities such as earthwork during periods of high winds.
		(b)	All stockpiles of material generating dust shall be located sufficiently away from sensitive receptors.
		(c)	All vehicles delivering materials shall be covered to avoid spillage and dust emission.
		(d)	Contractor shall avoid (where possible) and take suitable action to prevent dirt and mud being carried to the roads (particularly following wet weather).
		(e)	Contractor shall enforce vehicle speed limits to minimize dust generation.
		(f)	Contractor shall spray water for dust suppression on all exposed areas as required (note: the use of waste water / waste oil for dust suppression is prohibited).
		(g)	All cleared areas shall be rehabilitated progressively.
		(h)	All earthwork shall be protected to minimize generation of dust.
		(i)	All existing highways and roads used by vehicles of the contractor, or any of his sub-contractor or supplies of materials or plant and similarly roads which are part of the works shall be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles.

		(j)	Clearance shall be effected immediately by manual sweeping and removal of debris, or, if so directed by the Engineer, by mechanical sweeping and clearing equipment, and all dust, mud and other debris shall be removed satisfactorily. Additionally, if so directed by the Engineer, the paved areas/road surfaces shall be hosed or watered using appropriate equipments.
		(k)	Plants, machinery and equipment shall be so handled (including dismantling) to minimize generation of dust.
		(l)	Contractor shall take precautions to reduce the level of dust emission from the batching plants up to the satisfaction of the Engineer in accordance with the relevant emission norms.
4.2	Emission from Batching Plants		
		(a)	The batching plants shall be sited in accordance with Engineer's guidelines. It is recommended that batching plants to be located sufficiently away from sensitive sites. Sensitive sites include vulnerable habitats, religious, cultural and archaeological sites, residential areas, schools and industrial areas.
4.3	Odor and Offensive Smells		
		(a)	Contractor shall take all precautions to prevent odor and offensive smell emanating from chemicals and processes applied in construction works or from labor camps. In a situation when/where odor or offensive smell does occur contractor shall take immediate action to rectify the situation. Contractor is responsible for any compensation involved with any health issue arisen out of bad odor and offensive smells.
		(b)	The waste disposal and sewerage treatment system for the labor camps shall be properly designed, built and operated so that no odor is generated. Compliance with the regulations on health and safety as well as CEA guidelines if any shall be strictly adhered to.
4.4	Emission from Construction Vehicles, Equipment and Machinery		
		(a)	The emission standards promulgated under the National Environment Act shall be strictly adhered to.
		(b)	All vehicles, equipment and machinery used for construction shall be regularly serviced and well maintained to ensure that emission levels comply with the relevant standards.
5.	Noise Pollution and Vibration		
5.1	Noise from Vehicles, Plants and Equipment.		
		(a)	All machinery and equipment should be well maintained and fitted with noise reduction devices in accordance with manufacturer's instructions.

		(b)	All vehicles and equipment used in construction shall be fitted with exhaust silencers. During routine servicing operations, the effectiveness of exhaust silencers shall be checked and if found to be defective shall be replaced. Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of sound emission. Non-compliant plant(s) shall be removed from site.
		(c)	Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws shall not exceed 75 dB(A).
		(d)	Maintenance of vehicles, equipment and machinery shall be regular and proper, to the satisfaction of the Engineer, to keep noise from these at a minimum.
		(e)	Workers in vicinity of strong noise, and workers working with or in crushing, compaction, batching or concrete mixing operations shall be provided with protective gear.
5.2	Vibration		
		(a)	Contractor shall take appropriate action to ensure that construction work does not result in damage to adjacent properties due to vibration.
		(b)	Prior to commencement of any activity that generates vibration (such as blasting), the Contractor shall undertake a condition survey of existing structures within the zone of influence, as agreed with the Engineer.
		(c)	Contractor shall carry out monitoring at the nearest vibration sensitive receptor during blasting or when other equipments causing vibration are used.
		(d)	Contractor shall modify the method of construction until compliance with the criteria occurs, in the instance that vibration levels exceed the relevant vibration criteria.
		(f)	Contractor shall pay due consideration to vibration impacts of blasting on adjoining structures. Explosive loads shall be determined so that excessive vibration can be avoided and blasts shall be controlled blasting in nature. Notwithstanding to these provisions contractor is liable for any damage caused by blasting work.
6.	Impact on Flora		
6.1	Loss or Damage to Trees and Vegetation		
		(a)	All works shall be carried out in a manner that the destruction to the flora and their habitats is minimized. Trees and vegetation shall be felled / removed only if they impinge directly on the permanent works or necessary temporary works. In all such cases contractor shall take prior approval from the Engineer.

		(b)	Contractor shall make every effort to avoid removal and/or destruction of trees of religious, cultural and aesthetic significance. If such action is unavoidable the Engineer shall be informed in advance and carry out public consultation and report on the same should be submitted to the Engineer.
		(c)	Contractor shall adhere to the guidelines and recommendations made by the Central Environmental Authority, if any, with regard to felling of trees and removal of vegetation.
7.	Impact on Fauna		
	7.1	Loss, Damage or Disruption to Fauna	
		(a)	All works shall be carried out in such a manner that the destruction or disruption to the fauna and their habitats is minimized.
		(b)	Construction workers shall be instructed to protect fauna aquatic life as well as their habitats. Hunting, poaching and unauthorized fishing by project workers is not allowed.
8.	Disruption to Users		
	8.1	Loss of Access	
		(a)	At all possible times, work in the sites shall be planned and carried out in a way that will minimize obstruction to other uses of the site and the surrounding area. The contractor should identify such uses and consult the people on such matters and notify them of anticipated times of construction activities.
		(b)	At all times, Contractor shall provide safe and convenient passage for vehicles and pedestrians livestock to and from side roads and property accesses connecting the access road. Work that affects the use of access roads and existing accesses shall not be undertaken without providing adequate provisions to the prior satisfaction of the Engineer.
		(b)	The works shall not interfere unnecessarily or improperly with the convenience of public by use and occupation of public or private roads, railways and any other access footpaths to or of properties whether public or private.
		(c)	On completion of the works, all temporary obstructions to access shall be cleared away, all rubbish and piles of debris that obstruct access be cleared to the satisfaction of the Engineer.
	8.2	Traffic Jams and Congestion	
		(a)	Contractor shall assess the impact of his activities on traffic in access roads and plan for minimizing traffic-related inconvenience to public shall be submitted to the Engineer for approval. If directed by the Engineer the contractor shall obtain the consent for the traffic arrangement from the Local Police.

		(b)	Any temporary diversion of traffic to facilitate construction work shall have the approval of the Engineer. If directed by the Engineer the contractor shall obtain the consent for the traffic arrangement from the Local Police.
		(d)	Contractor shall ensure that the running surface is always properly maintained, particularly during the monsoon so that no disruption to the traffic flow occurs.
		(e)	The temporary traffic detours shall be kept free of dust by frequent application of water, if necessary.
		(f)	Personnel used for traffic control by the contractor shall be properly trained, provided with proper gear including communication equipment and luminous jackets for night use. All signs, barricades, pavement markings used for traffic management should be to the standards and approved by the Engineer/ Police.
	8.3	Traffic Control and Safety	
		(a)	Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic using the access roads.
9.	Accidents and Risks		
	9.1	Public and Worker Safety	
		(a)	All reasonable precautions will be taken to prevent danger of the workers and the public from accidents such as fire, explosions, blasts, falling rocks, falling to excavated pits, breaking flood diversions, chemical sprays, unsafe power supply lines etc.
		(b)	Contractor shall comply with requirements for the safety of the workmen as per the International Labor Organization (ILO) convention No. 62 and Safety and Health regulations of the Factory Ordinance of Sri Lanka to the extent that those are applicable to this contract. The contractor shall supply all necessary safety appliances such as safety goggles, helmets, masks, boots, etc., to the workers and staff.
	9.2	Prevention of Risks of Electrocutation	
		(a)	All electrical wiring and supply-related work should conform to relevant Sri Lankan Standards. Adequate precautions will be taken to prevent danger of electrocution from electrical equipment and power supply lines including distribution boards, transformers, etc. Measures such as danger signboards, danger/red lights, fencing and lights will be provided to protect the public and workers. All electric power driven machines to be used in the construction shall be free from defect, be properly maintained and kept in good working order, be regularly inspected to the satisfaction of the Engineer.

	9.3	Risk at Hazardous Activity	
		(a)	All workers employed in hazardous activities shall be provided with necessary protective gear. These activities include mixing asphalt material, cement, lime mortars, concrete etc., welding work, work at crushing plants, blasting work, operators of machinery and equipment such as power saws, etc.
		(b)	The use of any toxic chemical shall be strictly in accordance with the manufacturer's instructions. The Engineer shall be notified of toxic chemicals that are planned to be used in all contract-related activities. A register of all toxic chemicals delivered to the site shall be kept and maintained up to date by the Contractor. The register shall include the trade name, physical properties and characteristics, chemical ingredients, health and safety hazard information, safe handling and storage procedures, and emergency and first aid procedures for the product.
10	Health and Safety		
	10.1	Prevention of Vector-based Diseases	
		(a)	Contractor shall take necessary actions to prevent breeding of mosquitoes at places of work, labor camps, plus office and store buildings. Stagnation of water in all areas including gutters, used and empty cans, containers, tires, etc. shall be prevented. Approved chemicals to destroy mosquitoes and larvae should be regularly applied.
		(b)	Contractor shall keep all places of work, labor camps, plus office and store buildings clean devoid of garbage to prevent breeding of rats and other vectors such as flies.
	10.2	Workers Health and Safety	
		(a)	Contractor shall comply with the provisions in Health and Safety regulations under the Factory Ordinance with regard to provision of health and safety measures and amenities at work place(s), and to engineer-specific requirements.
	10.2	First Aid	
		(a)	At every workplace, a first aid kit shall be provided as per the regulations. At every workplace an ambulance room containing the prescribed equipment and nursing staff shall be provided.
	10.3	Potable Water	
		(a)	In every workplace and labor camps potable water shall be available through out the day in sufficient quantities. Water should be easily accessible. In general cold potable water is acceptable.
	10.4	Hygiene	

		(a)	Contractor shall provide and maintain necessary (temporary) living accommodation and ancillary facilities for labor to standards and scale approved by the resident engineer.
		(b)	At every workplace and labor camp a sufficient number of bathing facilities, latrines and urinals shall be provided in accordance with the Health and Safety regulations and/or as directed by the Engineer. These bathroom and toilet facilities shall be suitably located within the workplace/buildings. Latrines shall be cleaned at least three times daily in the morning, midday and evening and kept in a strict sanitary condition. If women are employed, separate latrines and urinals, screened from those for men and marked in the vernacular shall be provided. There shall be an adequate supply of water, within and close to latrines and urinals.
		(c)	The sewage system for the camp must be properly designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place. Compliance with the relevant legislation must be strictly adhered to.
		(d)	Garbage bins must be provided in the camp and regularly emptied and the garbage disposed off in a hygienic manner. Construction camps shall have a clean hygienic environment and adequate health care shall be provided for the work force.
		(d)	Unless otherwise arranged for by the Local Authority, the contractor shall arrange proper disposal of sludge from septic tanks. The contractor shall obtain approval for such disposal from the Public Health Inspector of the area.
11	Protection of Archaeological, Cultural and Religious Places and Properties		
	11.1	Chance Found Archaeological Property	
		(a)	All fossils, coins, articles of value of antiquity and structures and other remains or things of geological or archaeological interest etc. discovered on the site and/or during construction work shall be the property of the Government of Sri Lanka, and shall be dealt with as per provisions of the relevant legislation.
		(b)	Contractor shall take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing and shall, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same, awaiting which all work shall be stopped in the respective area.
		(c)	If directed by the Engineers the Contractor shall obtain advice and assistance from the Department of Archaeology of Sri Lanka on conservation measures to be taken with regard to the artifacts prior to recommencement of work in the area.

12	Environmental Enhancement		
	12.1	Handling Environmental Issues during Construction	
		(a)	Contractor will appoint a suitably qualified Environmental Officer following the award of the contract. The Environmental Officer will be the primary point of contact for assistance with all environmental issues during the pre-construction and construction phases. He/She shall be responsible for the ensuing implementation of this EMAP.
		(b)	Contractor shall appoint a person responsible for community liaison and to handle public complaints regarding environmental/social related matters. All public complaints will be entered into the Complaints Register. The Environmental Officer will promptly investigate and review environmental complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints. A register of all complaints is to be passed to the Engineer within 24 hrs of when they are received, with the action taken by the Environmental Officer on complaints thereof.
		(c)	Contractor shall develop suitable method to receive complaints. The complain register shall be placed at a convenient place, easily accessible by the public.
		(d)	The employer shall develop a monitoring plan for implementation of the EMAP. The contractor shall be responsible for reporting the implementation of the EMAP to the employer based on an agreed reporting format either monthly or periodically, as agreeable. The report should carry observations of the Engineer who will continuously monitor compliance with the EMAP. Periodic field supervision shall be undertaken by the employer (or representatives) to make observations on the implementation progress of the EMP.
13	Operational impacts		The longer term impacts from the operation of the VTCs should be monitored and mitigated through a comprehensive environmental management program developed for each site by the VTA.
14	Programmatic impacts		The VTA shall develop a plan to integrate the environmental concerns that arise from the types of micro- and small enterprises that are supported by the training into their instructional programs. This should include training of VTC instructors on identifying environmental issues that arise from micro- and small enterprise development and methods of mitigating them. The VTA can also consider establishing links with national level agencies on cleaner production technologies.

5.2 Recommendations and Conclusions

Of all the sites in the southern region, Ahangama and Tangalla initially posed the most serious environmental issues. In Ahangama, the siting of some of the buildings within the set back zone requires approval from the Coast Conservation Department, which during the preparation of this environmental assessment, was already obtained. The potential hazards from extreme weather events affecting the sea at this site is also a cause for concern and should be given due consideration. At Tangalla, flooding potential of the fallow paddy fields and marshy area on one side of the site should be assessed.

The next most important aspect of the establishment of VTCs is water resources. This affects all sites of the southern region and if any extraction of ground water is to be carried out, the locations, quantities and quality need to be assessed thoroughly by the appropriate authorities, namely NWSDB, before construction. As mentioned previously, however, the NWSDB is currently implementing various water supply projects, which should address all concerns raised in this report related to water availability.

All other environmental issues that arise from construction of VTCs in the southern region can be adequately mitigated through the EMAP and its recommendations.

In the Eastern region, the sites of Central Camp and Trincomalee have the most important issues to be addressed before construction. Central Camp is in danger of being inundated with flood water as it is in a depression of the ground; however, all facility designs have incorporated storm water disposal systems and have considered safe placement of floor levels with respect to flood levels. Problems of water scarcity are also present in most of the Eastern region sites and the recommendations made for the South are applicable.

All other environmental issues that arise from construction of VTCs in the Eastern region can be adequately mitigated through the EMAP and its recommendations.

Recommendations from the EA will be incorporated into the technical specifications of the construction tender documents. The authority in charge of construction and completion of all the VTA centers should have a monitoring plan to ensure that all environmental concerns raised in this report are addressed during the construction phases. In addition, the Vocational Training Authority of Sri Lanka should build in a programmatic approach to address environmental issues that arise through its training programs.

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Appendix 1: Environmental Checklist

Environmental Checklist for Assessing Suitability of Sites for Construction of Vocational Training Institutes and Associated Environmental Impacts.

Date : _____ Time : _____

Name of person/s filling the questionnaire: _____

No	Item	Details		
LOCATION DETAILS				
1	Name of the Site			
2	District			
3	Divisional Secretary Division (s)			
4	Local Authority			
5	Grama Niladari Division (s)			
6	GPS reference points of the project site			
SITE CHARACTERISTICS				
7	Extent of the land demarcated for the proposed development			
8	Distance from the coast line (m)			
9	Present Land Ownership	State	Private	Other (specify)
10	Present land-use of the site (physical structures, human activity, ecological features)			
11	Infrastructure facilities available at the site (roads, water, electricity and other)			
12	Does the site /project require any:			
		Yes	No	If yes, give the extent (in ha) or number of trees
	Reclamation of land, wetlands			
	Clearing of forest			

	Felling of trees					
PROJECT ACTIVITIES						
13	Brief description of the activities proposed to be carried out at the site.	<u>Site Preparation Activities</u> (Demolition of existing structures, ground preparation etc)				
		Construction of new buildings, access roads and other services				
DESCRIPTION OF THE ENVIRONMENT						
PHYSICAL						
14	Topography & Landforms (map)	Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are available provide them				
15	Relief (difference in elevation from highest point to lowest point)	Low <20m	Medium 20-40m	High 40-60	> 60m	
16	Slope	Low <30%	Medium 30-40 %	High 40-60 %	Very High > 60%	
17	Position of activities on Slope	Bottom	Mid-slope	Upper-slope		
18	Soil (Great Soil Group) – Please see the list below					
19	Soil Depth	Shallow < 20cm	Moderate 20 – 100 cm	Deep >100cm		
20	Is there evidence of soil erosion on the site?					
	If yes, erosion on site is	Low	Medium	High		
21	Annual dry period					
22	Source of fresh Surface Water available in the	Spring/ Canal	Tank/Reservoir	Perennial Stream	Seasonal Stream	None

	project area					
23	Present Surface Water Use	Domestic	Washing/Bathing	Irrigation	Animal use	
24	Surface Water Quality	Poor (6-11 yes answers)	Moderate (3-5 yes answers)	Good (0-2 yes answers)		
	Identification of surface water quality problems			Yes	No	
i	Are there latrines within 15 m of the source/s identified in section (21)?					
ii	Are there latrines on higher grounds than the water source?					
iii	Are there other sources of pollution to be identified within 15 m of the water source?					
iv	Are there human settlements upstream or surrounding the water source/s?					
v	Are there agricultural activities in the catchment area upstream of the intake?					
vi	Are agro-chemicals used in agricultural land within the catchment area?					
vii	Do people practice open defecation in or near the water source?					
viii	Are animals bathed in the water-source upstream of the intake?					
xi	Do people wash clothes upstream of the intake?					
x	Is there evidence of soil erosion on the embankments upstream of the intake?					
25	Ground Water Availability on-site	Dug Well	Tube Well	Other (specify)		
26	Present Ground Water Use	Domestic	Washing/Bathing	Irrigation	Animal use	
27	Ground Water Quality	Poor	Moderate	Good		
	Identification of ground water quality problems			Yes	No	
i	Are there latrines within 15 m of the source/s identified in section (25)?					
ii	Are there latrines on higher grounds than the well?					
iii	Are there other sources of pollution to be identified within 15 m of the well? (any industrial activity that has been harbored previously on this site)					
iv	Are there intensive agricultural activities in the area?					
v	Are agro-chemicals used in agricultural land within the catchment area?					

vi	Is the groundwater brackish and hard in wells on-site, if any, or wells nearby?				
vii	Is there evidence of salinity intrusion in the groundwater of the area				
28	Incidence of Natural Disasters	Floods	Prolonged droughts	Cyclones/tidal waves	Other
29	Geological Hazards	Landslides -	Rock falls	Subsidence	Other –
ECOLOGICAL (Impact Zone to be taken as 500m from the middle of the project site)					
30	Habitat Types in the Project Site (indicate the % of each habitat type)	Natural forest (%), degraded forest(%), natural scrubland(%), degraded scrubland(%), riverine forest, grassland(%), abandoned agricultural land(%), marsh(%), lagoon(%), estuary(%), coastal scrub(%), mangrove(%), salt marsh(%), home-gardens(%), Other (%) (List)			
31	Habitat types within 250m radius from the site periphery (indicate the % of each habitat type)	Natural forest (%), degraded forest(%), natural scrubland(%), degraded scrubland(%), riverine forest, grassland(%), abandoned agricultural land(%), marsh(%), lagoon(%), estuary(%), coastal scrub(%), mangrove(%), salt marsh(%), home-gardens(%), Other (%) (List)			
32	Habitat types within 500m radius from the site periphery (indicate the % of each habitat type)	Natural forest (%), degraded forest(%), natural scrubland(%), degraded scrubland(%), riverine forest, grassland(%), abandoned agricultural land(%), marsh(%), lagoon(%), estuary(%), coastal scrub(%), mangrove(%), salt marsh(%), home-gardens(%), Other (%) (List)			
33	Are there any environmentally and culturally sensitive areas within 250m of the site?	Protected Areas	Migratory pathways of animals	Archeological sites	Wetlands Mangroves strands
34	Are there any plants of conservation importance within 250m (endemic and threatened species)? If yes, provide a list				
35	Are there any animals of conservation importance within 250m (endemic and threatened species)? If yes, provide a list				
ENVIRONMENTAL SENSITIVITY					
36. Does the project wholly or partly fall within any of the following areas?					
	Area	Yes	No	Unaware	
a	100m from the boundaries of or within any area declared under the National Heritage Wilderness Act No 4 of 1988				

b	100m from the boundaries of or within any area declared under the Forest Ordinance (Chapter 451)			
c	Coastal zone as defined in the Coast Conservation Act No 57 of 1981			
d	Any erodible area declared under the Soil Conservation Act (Chapter 450)			
e	Any Flood Area declared under the Flood Protection Ordinance (Chapter 449)			
f	Any flood protection area declared under the Sri Lanka Land Reclamation and Development Corporation Act 15 of 1968 as amended by Act No 52 of 1982			
g	60 meters from the bank of a public stream as defined in the Crown Lands Ordinance (Chapter 454) and having width of more than 25 meters at any point of its course			
h	Any reservations beyond the full supply level of a reservoir.			
i	Any archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188).			
j	Any area declared under the Botanic Gardens Ordinance (Chapter 446).			
k	Within 100 meters from the boundaries of, or within, any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (Chapter 469)			
l	100 meters from the high flood level contour of or within, a public lake as defined in the Crown Lands Ordinance (Chapter 454) including those declared under section 71 of the said Ordinance			
m	Within a distance of one mile of the boundary of a <u>National Reserve</u> declared under the Fauna and Flora Protection Ordinance			

CONSTRUCTION MATERIAL AVAILABILITY

37	What are the sources available locally from where construction material can be sources legally?	Type	Name of location	Distance from site
		Sand		
		Rubble		
		Timber		
		Tiles		
38	If site preparation involves demolition/renovation of			

	existing buildings, what material can be salvaged for re-use in the proposed new structures?						
ENVIRONMENTAL IMPACT AND MITIGATION / ENHANCEMENT DURING CONSTRUCTION PERIOD							
	IMPACT					MITIGATION/ ENHANCEMENT	
		H	M	L	N/A		
39	Soil erosion (from excavations, cut & fill operations etc)						
40	Water pollution (from siltation, discharge of waste matter etc)						
41	Noise pollution						
42	Solid waste generation						
43	Sewage generation					Cesspool	Sewage Pond
						Septic Tank	Other
44	Loss of vegetation cover						
45	Salinity instruction due abstraction of water						
45	Habitat loss or fragmentation						
46	General disturbance to animal behavior						
47	Interference with normal movement of animals						
48	Irreversible/irreparable environmental change						
ENVIRONMENTAL IMPACT AND MITIGATION / ENHANCEMENT DURING OPERATION PERIOD							
49	Sewerage Disposal	Cesspool				Sewage Pond	
		Septic Tank				Other	
50	Solid Waste Disposal						

51	Drinking Water Supply	Common Dug Well	Yes / No	Individual dug well	Yes / No
		Common Tube Well	Yes / No	Town supply – pipe	Yes / No
		Spring	Yes / No	Town supply – Stand post	Yes / No
52	Alteration to storm water drainage pattern	No changes	No major Changes	Major changes	

SUMMARY OF ENVIRONMENTAL IMPACTS ARISING OUT OF THE PROJECT & RECOMMENDATIONS

53	Identification of environmental impacts due to this Project	
54	<p>Overall observation and recommendations:</p> <p>(a) Does this site require further detailed field assessments to understand and analyze environmental issues?</p> <p>(b.) If the answer is “Yes” briefly describe the issues and type of investigations that need to be undertaken.</p> <p>(c) Will this site be abandoned after this analysis; please state the reasons.</p> <p>(d) Does the proposed site meet the urban planning requirements under the UDA and Local Authority regulations? If the answer is “No”, what needs to be done to meet these requirements; if the answer is “Yes”, has the project site obtained the necessary</p>	

	approvals? (e) In addition to the above issues, please indicate any additional observations, recommendations if any	
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ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

Impact	Mitigatory Measure	Monitoring Indicator	Responsible Agency	Frequency of Monitoring	Reporting Procedure

****Great Soil Groups of Sri Lanka: Dry Zone**

- | | | | |
|--------|-----------------------|--------|---------------------|
| 1. RBE | Reddish Brown Earths | 6. SS | Solodized Solonetz |
| 2. LHG | Low Humic Gley | 7. R | Regosols |
| 3. NBS | Noncalcic Brown Soils | 8. G | Grumusols |
| 4. RYL | Red Yellow Latosols | 9. IBL | Immature Brown Soil |
| 5. A | Alluvial Soils | | |

Appendix 2: LEED Certification Form

A.2.1 LEEDS Certification Form: Sammanthurai/Eastern Province

LEED-NC		LEED-NC Version 2.2 Registered Project Checklist		Sri Lanka Tsunami Reconstruction Program - Vocational Training Schools		Samanturai, Eastern Province, Sri Lanka	
Yes	?	No					
12		2		Sustainable Sites		18 Points	
Y				Prereq 1	Construction Activity Pollution Prevention	Required	
1				Credit 1	Site Selection	1	
			1	Credit 2	Development Density & Community Connectivity	1	
			1	Credit 3	Brownfield Redevelopment	1	
1				Credit 4.1	Alternative Transportation, Public Transportation Access	1	
1				Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1	
1				Credit 4.3	Alternative Transportation, Low-Emitting and Fuel-Efficient Vehicles	1	
1				Credit 4.4	Alternative Transportation, Parking Capacity	1	
1				Credit 5.1	Site Development, Protect or Restore Habitat	1	
1				Credit 5.2	Site Development, Maximize Open Space	1	
1				Credit 6.1	Stormwater Design, Quantity Control	1	
1				Credit 6.2	Stormwater Design, Quality Control	1	
1				Credit 7.1	Heat Island Effect, Non-Roof	1	
1				Credit 7.2	Heat Island Effect, Roof	1	
1				Credit 8	Light Pollution Reduction	1	
5				Water Efficiency		8 Points	
1				Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1	
1				Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1	
1				Credit 2	Innovative Wastewater Technologies	1	
1				Credit 3.1	Water Use Reduction, 20% Reduction	1	
1				Credit 3.2	Water Use Reduction, 30% Reduction	1	
1		10		Energy & Atmosphere		17 Points	
Y				Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required	
Y				Prereq 2	Minimum Energy Performance	Required	
Y				Prereq 3	Fundamental Refrigerant Management	Required	
			6	Credit 1	Optimize Energy Performance	1 to 10	
1				Credit 2	On-Site Renewable Energy	1 to 3	
			1	Credit 3	Enhanced Commissioning	1	
			1	Credit 4	Enhanced Refrigerant Management	1	
			1	Credit 5	Measurement & Verification	1	
			1	Credit 6	Green Power	1	

continued...

Yes	?	No		
7	3	3	Materials & Resources	13 Points
Y			Prereq 1	Storage & Collection of Recyclables Required
		1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof 1
		1	Credit 1.2	Building Reuse, Maintain 100% of Existing Walls, Floors & Roof 1
		1	Credit 1.3	Building Reuse, Maintain 50% of Interior Non-Structural Elements 1
1			Credit 2.1	Construction Waste Management, Divert 50% from Disposal 1
	1		Credit 2.2	Construction Waste Management, Divert 75% from Disposal 1
1			Credit 3.1	Materials Reuse, 5% 1
1			Credit 3.2	Materials Reuse, 10% 1
1			Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer) 1
	1		Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer) 1
1			Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally 1
	1		Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally 1
1			Credit 6	Rapidly Renewable Materials 1
1			Credit 7	Certified Wood 1
Yes	?	No		
5	4	6	Indoor Environmental Quality	15 Points
Y			Prereq 1	Minimum IAQ Performance Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control Required
1			Credit 1	Outdoor Air Delivery Monitoring 1
		1	Credit 2	Increased Ventilation 1
		1	Credit 3.1	Construction IAQ Management Plan, During Construction 1
		1	Credit 3.2	Construction IAQ Management Plan, Before Occupancy 1
	1		Credit 4.1	Low-Emitting Materials, Adhesives & Sealants 1
1			Credit 4.2	Low-Emitting Materials, Paints & Coatings 1
	1		Credit 4.3	Low-Emitting Materials, Carpet Systems 1
	1		Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products 1
1			Credit 5	Indoor Chemical & Pollutant Source Control 1
	1		Credit 6.1	Controllability of Systems, Lighting 1
		1	Credit 6.2	Controllability of Systems, Thermal Comfort 1
		1	Credit 7.1	Thermal Comfort, Design 1
		1	Credit 7.2	Thermal Comfort, Verification 1
1			Credit 8.1	Daylight & Views, Daylight 75% of Spaces 1
1			Credit 8.2	Daylight & Views, Views for 90% of Spaces 1
Yes	?	No		
5			Innovation & Design Process	5 Points
1			Credit 1.1	Innovation in Design: Provide Specific Title 1
1			Credit 1.2	Innovation in Design: Provide Specific Title 1
1			Credit 1.3	Innovation in Design: Provide Specific Title 1
1			Credit 1.4	Innovation in Design: Provide Specific Title 1
1			Credit 2	LEED® Accredited Professional 1
Yes	?	No		
35	13	21	Project Totals (pre-certification estimates)	69 Points
Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points				

A.2.2 LEEDS Certification Form: Ahangama/Southern Province

LEED-NC		LEED-NC Version 2.2 Registered Project Checklist		Sri Lanka Tsunami Reconstruction Program - Vocational Training Schools		Ahangama, Southern Province, Sri Lanka	
Yes	?	No					
12		2		Sustainable Sites		14 Points	
Y				Prereq 1	Construction Activity Pollution Prevention	Required	
1				Credit 1	Site Selection		1
			1	Credit 2	Development Density & Community Connectivity		1
			1	Credit 3	Brownfield Redevelopment		1
1				Credit 4.1	Alternative Transportation, Public Transportation Access		1
1				Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms		1
1				Credit 4.3	Alternative Transportation, Low-Emitting and Fuel-Efficient Vehicles		1
1				Credit 4.4	Alternative Transportation, Parking Capacity		1
1				Credit 5.1	Site Development, Protect or Restore Habitat		1
1				Credit 5.2	Site Development, Maximize Open Space		1
1				Credit 6.1	Stormwater Design, Quantity Control		1
1				Credit 6.2	Stormwater Design, Quality Control		1
1				Credit 7.1	Heat Island Effect, Non-Roof		1
1				Credit 7.2	Heat Island Effect, Roof		1
1				Credit 8	Light Pollution Reduction		1
5				Water Efficiency		3 Points	
1				Credit 1.1	Water Efficient Landscaping, Reduce by 50%		1
1				Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation		1
1				Credit 2	Innovative Wastewater Technologies		1
1				Credit 3.1	Water Use Reduction, 20% Reduction		1
1				Credit 3.2	Water Use Reduction, 30% Reduction		1
1		10		Energy & Atmosphere		17 Points	
1				Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required	
1				Prereq 2	Minimum Energy Performance	Required	
1				Prereq 3	Fundamental Refrigerant Management	Required	
			5	Credit 1	Optimize Energy Performance		1 to 10
1				Credit 2	On-Site Renewable Energy		1 to 3
			1	Credit 3	Enhanced Commissioning		1
			1	Credit 4	Enhanced Refrigerant Management		1
			1	Credit 5	Measurement & Verification		1
			1	Credit 6	Green Power		1

continued...

Yes	?	No				
8	2	3	Materials & Resources			13 Points
Y			Prereq 1	Storage & Collection of Recyclables		Required
		1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof		1
		1	Credit 1.2	Building Reuse, Maintain 100% of Existing Walls, Floors & Roof		1
		1	Credit 1.3	Building Reuse, Maintain 50% of Interior Non-Structural Elements		1
1			Credit 2.1	Construction Waste Management, Divert 50% from Disposal		1
	1		Credit 2.2	Construction Waste Management, Divert 75% from Disposal		1
1			Credit 3.1	Materials Reuse, 5%		1
1			Credit 3.2	Materials Reuse, 10%		1
1			Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)		1
	1		Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)		1
1			Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally		1
1			Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally		1
1			Credit 6	Rapidly Renewable Materials		1
1			Credit 7	Certified Wood		1
Yes	?	No				
5	4	6	Indoor Environmental Quality			15 Points
Y			Prereq 1	Minimum IAQ Performance		Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control		Required
1			Credit 1	Outdoor Air Delivery Monitoring		1
		1	Credit 2	Increased Ventilation		1
		1	Credit 3.1	Construction IAQ Management Plan, During Construction		1
		1	Credit 3.2	Construction IAQ Management Plan, Before Occupancy		1
	1		Credit 4.1	Low-Emitting Materials, Adhesives & Sealants		1
1			Credit 4.2	Low-Emitting Materials, Paints & Coatings		1
	1		Credit 4.3	Low-Emitting Materials, Carpet Systems		1
	1		Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products		1
1			Credit 5	Indoor Chemical & Pollutant Source Control		1
	1		Credit 6.1	Controllability of Systems, Lighting		1
	1		Credit 6.2	Controllability of Systems, Thermal Comfort		1
		1	Credit 7.1	Thermal Comfort, Design		1
		1	Credit 7.2	Thermal Comfort, Verification		1
1			Credit 8.1	Daylight & Views, Daylight 75% of Spaces		1
1			Credit 8.2	Daylight & Views, Views for 90% of Spaces		1
Yes	?	No				
5			Innovation & Design Process			5 Points
1			Credit 1.1	Innovation in Design: Provide Specific Title		1
1			Credit 1.2	Innovation in Design: Provide Specific Title		1
1			Credit 1.3	Innovation in Design: Provide Specific Title		1
1			Credit 1.4	Innovation in Design: Provide Specific Title		1
1			Credit 2	LEED® Accredited Professional		1
Yes	?	No				
36	12	21	Project Totals (pre-certification estimates)			69 Points
Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points						

Appendix 3: Relevant Approvals and Applicable Regulations/Laws

Subject area	Regulation/Legislation	Relevance of the regulation to this project	Authority for approval
Utilization of water resources from public streams	Crown Lands Ordinance	To control the right to use and manage water in public stream/lake.	Divisional Secretary
Reduce, mitigate and control environmental impacts due to the project	EIA regulations	The regulations are aimed at maintaining the environmental quality of the affected areas	CEA/PAA
Acquisition of land (if necessary)	Land Acquisition Act	Acquisition of private lands for public works	Divisional Secretary
Local Authority development approval	Pradeshiya Sabah (PS) Ordinance	Planning/Development permit	PS
Pollution control	National Environmental Act 1. Noise 2. Water pollution 3. Air Control Regulations	To control noise pollution and water pollution during construction	CEA
Disposal of solid waste and spoil	PS Ordinance	Manage the disposal of solid waste and spoil	PS
Changes to roads (if necessary)	RDA Act Local Authority Ordinances	Connecting internal roads to public roads	RDA, PRDA, PS

Appendix 4: Availability of Construction Materials

A.4.1 Construction materials available in the sites of the Southern region

Type	Tangalla	Tallale	Ahangama	Koggala	Hikkaduwa
Sand	There are serious restrictions on river sand mining in the Tangalla area and most construction activities depend on river sand excavated and transported in the Embilipitiya area more than 30 km away.	Even though there are several large rivers and tributaries in the region of the proposed constructions, due to large scale and serious nature of negative impacts of sand mining, the regulations on sand mining are being enforced by national and local authorities. As such, river sand cannot be extracted from the nearest available locations without permits which may or may not be forthcoming depending on the locality. The local construction materials suppliers should be able to provide precise information on sources and quantities.			
Rubble	Not available on site but available from construction materials suppliers	Some limited amount can be used from demolition of buildings	Some limited amount can be used from demolition of buildings	A fair amount can be salvaged from demolition of existing building	Not available on site available from construction materials suppliers
Timber	Not available on site but available from construction materials suppliers	Available from local construction materials suppliers	Available from local construction materials suppliers	A reasonable amount can be salvaged from the demolition of the existing building	Not available on site available from construction materials suppliers
Tiles	Most of the supplies come from the main tile making region of the North Western Province such as Dankotuwa and are stock piled by local construction material suppliers.				
Cement	From local construction materials suppliers.				
Concrete stones	Not available on site but available from construction materials suppliers	Some can be salvaged from demolition of existing buildings	Not available on site available from construction materials suppliers	Some can be salvaged from demolition of existing building	Not available on site available from construction materials suppliers
Bricks	Available from local construction materials suppliers.				

A.4.2 Construction materials available in the sites of the Eastern region

Type	Central Camp	Kaluwanchykudy	Sammanturai	Nintavur
Sand	Mungile Aru (3 km)	Mungile Aru (25 km)	Mungile Aru (18 km)	Kaliyodaiaru/Oluvil (6 km)
Rubble	Sammanturai (15 km)	Welikandae (105 km)	Sammanturai	Sammanturai (15 km)
Timber	Sammanturai (15km)	Oddamavadie (67 km)	Sammanturai	Nintavur
Tiles	Ampara (15 km)	Kattankudy (30 km)	Ampara (20 km)	Ampara (24 km)
Cement	Ampara (15 km)	Kattankudy (30 km)	Ampara (20 km)	Ampara (24 km)
Concrete stones	Sammanturai (15 km)		Sammanturai	
Bricks	Nanakadu (10km)	Vaepavedduwan (50 km)	Sammanturai	Nynakadu (8 km)

Appendix 5: Flora and fauna in the Southern region sites

A.5.1 List of flora recorded from proposed VTC sites in the South.

A rapid survey (except at night) was made through direct visual observation to prepare a species inventory and to identify possible ecological impacts within the proposed project area. Higher plants (except some common fern species) were only type observed in this survey

Summary of the flora species recorded during the field visits to five sites in the South.

Site	Total Number	Endemic Species	Nationally Threatened	Globally Threatened	Exotic Species
Tangalla	61	0	0	0	10
Talalle	49	0	0	0	15
Ahangama	33	0	0	0	10
Koggala	29	0	0	0	11
Hikkaduwa	40	0	0	0	12
Total	124	0	0	0	28

ABBREVIATIONS

TS – Taxonomic status

T – Tree

H – Herbaceous

N – Native

CS – Conservation status

S – Shrub

C – Climber or Creeper

I – Introduced

A.5.2 Detailed list of plant species recorded during the field visits in the South

Family	Species Name	Common Name	Habit	TS	CS	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
Acanthaceae	<i>Barleria prionitis</i>	Katu karandu	H	N		1				
Amaranthaceae	<i>Achyranthes aspera</i>	Gas karal heba	H	N		1	1	1	1	1
Amaranthaceae	<i>Aerva lanata</i>	Pol pala	H	N		1	1		1	
Anacardiaceae	<i>Lannea coromandelica</i>	Hik	T	N			1			
Anacardiaceae	<i>Mangifera indica</i>	Amba	T	I						1
Apocynaceae	<i>Catharanthus roceus</i>	Mini mal	H	I			1			
Apocynaceae	<i>Cerbera odollam</i>	Gon kaduru	T	N						1
Apocynaceae	<i>Ichnocarpus frutescens</i>	Garandi wel	C	N			1			
Apocynaceae	<i>Plumeria obtusa</i>	Araliya	T	I					1	1
Apocynaceae	<i>Thevetia peruviana</i>	Kaha kaneru	T	I		1				
Araceae	<i>Colocasia esculenta</i>	Gahala	H	N				1		1
Arecaceae	<i>Calamus rotang</i>	Heen wewel	C	N		1				
Arecaceae	<i>Cocos nucifera</i>	Pol	T	N		1	1		1	1
Arecaceae	<i>Phoenix pusilla</i>	Indi	T	N		1				
Asclepiadaceae	<i>Calotropis gigantea</i>	Wara	S	N		1	1		1	
Asclepiadaceae	<i>Pergularia daemia</i>		C	N			1			
Asteraceae	<i>Eclipta prostrata</i>	Kikirindiya	H	N				1		
Asteraceae	<i>Eupatorium odoratum</i>	Podisinnamaran	S	I		1	1	1		
Asteraceae	<i>Mikania cordata</i>	Vatu palu	C	N				1	1	1
Asteraceae	<i>Tridax procumbens</i>		H	I		1	1	1	1	1
Asteraceae	<i>Vernonia cinerea</i>	Monara kudumbiya	H	N		1	1	1		1
Asteraceae	<i>Wedelia trilobata</i>		C	I				1		
Asteraceae	<i>Xanthium indicum</i>	Uru kossa	H	N				1		
Balsaminaceae	<i>Hydrocera triflora</i>	Diya kudalu	H	N						1
Capparaceae	<i>Capparis sepiaria</i>		C	N		1				
Capparaceae	<i>Cleome viscosa</i>	Wal aba	H	N					1	1
Capparaceae	<i>Crateva adansonii</i>	Lunu warana	T	N		1				

Family	Species Name	Common Name	Habit	TS	CS	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
Caricaceae	<i>Carica papaya</i>	Papol	T	I		1			1	
Clusiaceae	<i>Calophyllum inophyllum</i>	Domba	T	N				1		
Colchicaceae	<i>Gloriosa superba</i>	Niyagala	H	N			1			1
Combretaceae	<i>Terminalia catappa</i>	Kottan	T	I				1	1	
Commelinaceae	<i>Commelina sp.</i>	Gira pala	H	N					1	1
Convolvulaceae	<i>Ipomoea obscura</i>	Tel kola	C	N		1				
Convolvulaceae	<i>Ipomoea pes-caprae</i>	Bin thamburu	C	N		1	1	1		
Convolvulaceae	<i>Ipomoea pes-tigridis</i>	Divi adiya	C	N			1			
Cucurbitaceae	<i>Coccinia grandis</i>	Kowakka	C	N		1			1	1
Cyperaceae	<i>Cyperus rotundus</i>	Kaladuru	H	N		1		1		
Cyperaceae	<i>Cyperus sp.</i>		H	N		1				1
Cyperaceae	<i>Eleocharis sp.</i>		H	N		1				
Cyperaceae	<i>Fimbristylis sp.</i>		H	N		1				
Euphorbiaceae	<i>Acalypha indica</i>	Kuppameniya	H	N		1			1	
Euphorbiaceae	<i>Croton bonplandianus</i>		H	I		1	1			
Euphorbiaceae	<i>Croton hirtus</i>		H	I			1			1
Euphorbiaceae	<i>Croton laccifer</i>	Gas kepetiya	S	N		1				
Euphorbiaceae	<i>Euphorbia heterophylla</i>		H	I						1
Euphorbiaceae	<i>Flueggea leucopyrus</i>	Katu pila	S	N		1				
Euphorbiaceae	<i>Glochidion zeylanicum</i>	Hunu kirilla	S	N						1
Euphorbiaceae	<i>Ricinus communis</i>	Beheth endaru	S	I			1	1	1	
Euphorbiaceae	<i>Sapium indicum</i>	Kiri makulu	T	N		1				
Fabaceae	<i>Acacia caesia</i>		C	N		1				
Fabaceae	<i>Acacia melanoxylon</i>		T	I			1			
Fabaceae	<i>Caesalpinia bonduc</i>	Kumburu wel	C	N			1			
Fabaceae	<i>Canavalia rosea</i>		C	N			1			
Fabaceae	<i>Cassia occidentalis</i>	Peni tora	H	N		1	1		1	
Fabaceae	<i>Cassia tora</i>	Peti tora	H	N		1	1	1		

Family	Species Name	Common Name	Habit	TS	CS	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
Fabaceae	<i>Crotalaria laburnifolia</i>		H	N		1				
Fabaceae	<i>Crotalaria verrucosa</i>		H	N			1			
Fabaceae	<i>Desmodium triflorum</i>	Heen undupiyaliya	H	N		1	1	1	1	
Fabaceae	<i>Gliricidia sepium</i>	Weta mara	T	I		1	1	1		1
Fabaceae	<i>Leucaena leucocephala</i>	Ipil ipil	T	N			1			1
Fabaceae	<i>Mimosa pudica</i>	Nidikumba	H	I		1	1	1	1	1
Fabaceae	<i>Tamarindus indica</i>	Siyabala	T	I			1			
Fabaceae	<i>Tephrosia villosa</i>	Bu pila	H	N			1			
Goodeniaceae	<i>Scaevola taccada</i>	Takkada	S	N				1		
Hydrocharitaceae	<i>Ottelia alismoides</i>		H	N		1				
Lamiaceae	<i>Hyptis suaveolens</i>		H	I			1			1
Lamiaceae	<i>Leucas zeylanica</i>	Thumba	H	N			1			1
Lamiaceae	<i>Ocimum americanum</i>	Heen tala	H	N		1				
Lamiaceae	<i>Ocimum gratissimum</i>	Gas tala	H	N			1			
Lecythidaceae	<i>Barringtonia racemosa</i>	Diya mudilla	T	N						1
Malvaceae	<i>Abutilon indicum</i>	Anoda	S	N		1	1			
Malvaceae	<i>Hibiscus tiliaceus</i>	Belipatta	T	N				1		1
Malvaceae	<i>Hibiscus vitifolius</i>	Maha epala	H	N			1			
Malvaceae	<i>Sida acuta</i>	Gas bevila	H	N		1				1
Malvaceae	<i>Thespesia populnea</i>	Suriya	T	N		1		1		
Malvaceae	<i>Urena lobata</i>	Patta epala	H	N						1
Malvaceae	<i>Wissadula periplocifolia</i>		H	N			1			
Meliaceae	<i>Azadirachta indica</i>	Kohomba	T	N		1	1			1
Menispermaceae	<i>Anamirta cocculus</i>	Titta wel	C	N						1
Menispermaceae	<i>Pachygone ovata</i>		C	N		1				
Moraceae	<i>Ficus drupacea</i>		T	N					1	
Moraceae	<i>Ficus religiosa</i>		T	I					1	
Moraceae	<i>Ficus tinctoria</i>		T	N					1	

Family	Species Name	Common Name	Habit	TS	CS	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
Moraceae	<i>Streblus asper</i>	Nitulla	T	N		1				
Musaceae	<i>Musa x paradisiaca</i>	Kesel	H	I				1		
Myrtaceae	<i>Psidium guajava</i>	Pera	T	I					1	
Nyctaginaceae	<i>Boerhavia diffusa</i>	Pita sudu pala	H	N		1	1	1	1	1
Nymphaeaceae	<i>Nymphaea pubescens</i>	Olu	H	N		1				
Onagraceae	<i>Ludwigia perennis</i>		H	N						1
Pandanaceae	<i>Pandanus odoratissimus</i>	Wetake	S	N			1	1		
Passifloraceae	<i>Passiflora foetida</i>		C	I		1	1	1	1	1
Pedaliaceae	<i>Pedaliium murex</i>	Et nerenchi	H	N			1			
Periplocaceae	<i>Hemidesmus indicus</i>	Iramusu	C	N			1			
Poaceae	<i>Cynodon dactylon</i>		H	N		1	1	1	1	1
Poaceae	<i>Panicum maximum</i>	Rata tana	H	I			1			
Poaceae	<i>Panicum repens</i>	Etora	H	N		1				
Polygonaceae	<i>Polygonum tomentosum</i>	Sudu kimbulwenna	H	N						1
Pontederiaceae	<i>Monochoria vaginalis</i>	Jabara	H	N		1				
Pteridaceae	<i>Acrostichum aureum</i>		H	N						1
Rhamnaceae	<i>Ziziphus mauritiana</i>	Dembara	T	N		1				
Rhamnaceae	<i>Ziziphus oenoplia</i>	Heen eraminiya	C	N		1				
Rubiaceae	<i>Ixora pavetta</i>	Maha rathmal	T	N		1				
Rubiaceae	<i>Morinda citrifolia</i>	Ahu	T	N				1	1	
Rubiaceae	<i>Nauclea orientalis</i>	Bakmi	T	N						1
Rutaceae	<i>Aegle marmelos</i>	Beli	T	I						1
Rutaceae	<i>Limonia acidissima</i>	Divul	T	N		1				
Salvadoraceae	<i>Azima tetraacantha</i>	Ballankatu	S	N		1				
Salvadoraceae	<i>Salvadora persica</i>	Malithan	T	N		1				
Salviniaceae	<i>Salvinia molesta</i>		H	I						1
Sapindaceae	<i>Cardiospermum halicacabum</i>	Wel penela	C	N		1	1	1	1	
Sapindaceae	<i>Schleichera oleosa</i>	Koon	T	N						1

Family	Species Name	Common Name	Habit	TS	CS	Tangalla	Talalle	Ahangama	Koggala	Hikkaduwa
Scrophulariaceae	<i>Bacopa monnieri</i>	Lunu wila	H	N		1		1		
Solanaceae	<i>Datura metel</i>	Kalu attana	H	N			1			
Solanaceae	<i>Physalia micrantha</i>	Mottu	H	N				1		
Tiliaceae	<i>Grewia orientalis</i>	Wel keliya	C	N		1				
Typhaceae	<i>Typha angustifolia</i>	Hambupan	H	N		1				
Verbenaceae	<i>Clerodendrum inerme</i>		S	N				1		
Verbenaceae	<i>Lantana camara</i>	Gandapana	S	I		1	1		1	1
Verbenaceae	<i>Phyla nudiflora</i>	Hiramana deththa	H	N		1		1	1	
Verbenaceae	<i>Premna obtusifolia</i>	Maha midi	S	N			1			
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Balu nakura	H	I			1	1	1	
Verbenaceae	<i>Tectona grandis</i>	Tekka	T	I		1				
Vitaceae	<i>Cissus quadrangularis</i>	Heressa	C	N		1				
Vitaceae	<i>Cissus vitiginea</i>		C	N			1			

A.5.3 List of flora and fauna recorded from sites in the Eastern region

List of Abbreviations

HA	–	Habit
TS	–	Taxonomic Status
CS	–	Conservation Status
HG	–	Home and hotel gardens
SD	–	Sand dunes
SB	–	Sand bar
RL	–	River outlet and Lagoon
RP	–	Riparian area
RS	–	Road sides
TR	–	Threatened
T	–	Tree
S	–	Shrub
H	–	Herb
E	–	Endemic
N	–	Native
I	–	Introduced
C	–	Climber or Creeper

5.2.1 Central Camp

(a) List of flora

Species Name	Common Name	HA	TS	CS	HG	SD	SB	RL	RP	RS
Family Graminae										
<i>Oryza sativa</i>	Rice/paddy	H	N	NO	1	0	0	0	1	0
<i>Cynodon dactylon</i>	Lawn grass type	H	N	NO	0	0	0	0	0	1
Family Palmae										
<i>Cocos nucifera</i>	Coconut/Pol	T	N	NO	1	0	0	0	0	0
<i>Borassus flabellifer</i>	Palmyraha	T	I	NO	1	0	0	0	0	1
Family Meliaceae										
<i>Azadirachta indica</i>	Neem	T	I	NO	1	0	0	0	0	1
Family Euphorbiaceae										
<i>Croton sp</i>		S	I	NO	1	0	0	0	0	0
<i>Ricinus communis</i>	Castor	S	N	NO	0	0	0	0	0	1
Family Polygonaceae										
<i>Polygonum sp</i>		H	N	NO	1	0	0	0	0	0
Family Asclepiadaceae										
<i>Calotropis gigantean</i>	Wara	S	N	NO	0	0	0	0	0	1
Family Caricaceae										
<i>Carica papaya</i>	Papaya	T	I	NO	1	0	0	0	0	0
Family Spindaceae										
<i>Schleichera oleosa</i>		T	N	NO	0	0	0	0	0	1
Family Moringaceae										
<i>Moringa oleifera</i>	Drum stick	T	N	NO	1	0	0	0	0	0
Family Malvaceae										
<i>Abutilon sp</i>		H	N	NO	0	0	0	0	0	1
Family Sterculiaceae										
<i>Pterospermum canescens</i>		S	N	NO	0	0	0	0	0	1
Family Leguminosae										
<i>Gliricidia sepium</i>		T	N	NO	0	0	0	0	0	1
<i>Cassia sophera</i>		T	N	NO	0	0	0	0	0	1
<i>Bauhinia sp</i>		T	N	NO	0	0	0	0	0	1
<i>Erythrina sp</i>		T	N	NO	0	0	0	0	0	0
<i>Abrus precatorius</i>		C	N	NO	0	0	0	0	0	1
Family Ebenaceae										
<i>Maba buxifolia</i>		S	N	NO	1	0	0	0	0	0
Family Saprotaceae										

<i>Madhuca longifolia</i>		T	N	NO	0	0	0	0	0	1
Family Anacardiaceae										
<i>Mangifera indica</i>	Mango	T	N	NO	1	0	0	0	0	0
<i>Lannea coromandelica</i>		T	N	NO	0	0	0	0	0	1
Family Moraceae										
<i>Artocarpus heterophyllus</i>		T	N	NO	1	0	0	0	0	0
<i>Ficus religiosa</i>		T	N	NO	0	0	0	0	0	1
Family Musaceae										
<i>Musa paradisiacal</i>	Banana	T	N	NO	1	0	0	0	0	0
Family Rutaceae										
<i>Murraya koenigii</i>		T	N	NO	1	0	0	0	0	0
<i>Citrus sp</i>	Lemon	S	N	NO	1	0	0	0	0	0
Family Rubiaceae										
<i>Morinda tinctoria</i>		T	N	NO	0	0	0	0	0	1
Family Araceae										
<i>Colocasia esculenta</i>		H	N	NO	0	0	0	0	0	1
Family Verbenaceae										
<i>Lantana camara</i>		S	N	NO	0	0	0	0	0	1
<i>Vitex trifolia</i>		C	N	NO	0	0	0	0	0	1
<i>Hydrilla sp</i>		C	N	NO	0	0	0	0	1	0
Family Salviniaceae										
<i>Salvinia sp</i>		C	N	NO	0	0	0	1	1	0

(b) List of faunal species:

SS: Species status CS: Conservation status LG- Lagoon
EX- Exotic TR- Threatened RA- Riparian area
EN- Endemic HG- Home Gardens
MI- Migrant SD- Sand dune
(source IUCN Sri Lanka 2000) SB- Sand bar

Family and Scientific Name	Common Name	SS	CS	Habitat Types			
				HG	SD& SB	LG	RA
Family Bovidae							
<i>Capra sp</i>	Goat		NO	+	-		+
<i>Bos sp</i>	Cattle		NO	+	-		+

Family Passeridae									
<i>Passer sp</i>	Sparrow		NO	+	-				+
Family Phasianidae									
<i>Gallus domesticus</i>	Chicken		NO	+	-				+
Family Canidae									
<i>Canis sp</i>	Dog		NO	+	-				+
Family Corvidae									
	<i>Corvus sp.</i> Crow		NO	+	-				+

5.2.2 Kaluwanchikudy

a) List of flora

Species Name	Common Name	HA	TS	CS	HG	SD	SB	RL	RP	RS
Family Solanaceae										
<i>Solonam melongena</i>	Brinjal	S	N	NO	1	0	0	0	0	0
<i>Capsicum annum</i>	Chillie	S	N	NO	1	0	0	0	0	0
Family Musaceae										
<i>Musa paradisiacal</i>	Banana	T	N	NO	1	0	0	0	0	0
Family Cucurbitaceae										
<i>Cucurbita maxima</i>		C	N	NO	1	0	0	0	0	0
Family Amaranthaceae										
<i>Alternanthera sessilis</i>		H	N	NO	1	0	0	0	0	1
<i>Amaranthus sp</i>		S	N	NO	1	0	0	0	0	0
Family Compositae										
<i>Tridax procumbens</i>		C	I	NO	0	0	0	0	0	1
Family Anacardiaceae										
<i>Anacardium occidentale</i>	Cashew	T	I	NO	1	0	0	0	0	0
<i>Mangifera indica</i>	Mango	T	N	NO	1	0	0	0	0	0
Family Malvaceae										
<i>Hibiscus esculentus</i>	Ladies finger	S	N	NO	1	0	0	0	0	0
Family Moringaceae										
<i>Moringa oleifera</i>	Drum stick	T	N	NO	1	0	0	0	0	0
Family Melastomaceae										
<i>Memecylon sp</i>		S	N	NO	0	0	0	0	0	1
Family Palmae										
<i>Borass flabellifer</i>	Palmyraha	T	I	NO	1	0	0	0	0	1
<i>Clamus rotang</i>	Cane	C	N	NO	0	0	0	0	0	1
<i>Cocos nucifera</i>	Coconut	T	N	NO	1	0	0	0	0	0

<i>Phoenix sp</i>	Wild date	S	N	NO	0	0	0	0	0	1
Family Leguminosae										
<i>Acacia sp</i>		T	N	NO	0	0	0	0	0	1
<i>Crotolaria sp</i>		S	N	NO	1	0	0	0	0	0
<i>Sesbania grandiflora</i>		T	N	NO	1	0	0	0	0	0
<i>Mimosa pudica</i>	Touch me not	C	N	NO	0	0	0	0	0	1
<i>Tephrosia purpurea</i>		C	N	NO	0	0	0	0	0	1
<i>Desmodium sp</i>		C	N	NO	0	0	0	0	0	1
Family Rubiaceae										
<i>Borreria hispida</i>		C	N	NO	0	0	0	0	0	1
Family Euphorbiaceae										
<i>Manihot esculenta</i>		S	I	NO	1	0	0	0	0	0
<i>Acalypha indica</i>		H	N	NO	0	0	0	0	0	1
<i>Euphorbia tirucalli</i>		S	N	NO	0	0	0	0	0	1
<i>Phyllanthus sp</i>		H	N	NO	0	0	0	0	0	1
Family Meliaceae										
<i>Azadirachta indica</i>	Neem	T	I	NO	1	0	0	0	0	1
Family Cassuarinaceae										
<i>Casuarina equisetifolia</i>		T	I	NO	1	0	0	0	0	1
Family Moraceae										
<i>Ficus benghalensis</i>		T	N	NO	0	0	0	0	0	1
<i>Ficus religiosa</i>		T	N	NO	0	0	0	0	0	1
Family Labiatae										
<i>Ocimum sp</i>		S	N	NO	1	0	0	0	0	0
Family Punicaceae										
<i>Punica granatum</i>	Pomegranate	S	N	NO	1	0	0	0	0	0
Family Verbenaceae										
<i>Tectona grandis</i>	Teak	T	I	NO	0	0	0	0	0	1
Family Asparagaceae										
<i>Asparagus racemosus</i>	Hatawariya	C	N	NO	0	0	0	0	0	1
Family Myrtaceae										
<i>Eucalyptus camaldulensis</i>	Gum or Vicks tree	T	I	NO	0	0	0	0	0	1
<i>Psidium guajava</i>		T	N	NO	1	0	0	0	0	0
Family Convolvulaceae										
<i>Ipomoea pes-caprae</i>		C	N	NO	0	0	0	0	0	1
Family Typhaceae										
<i>Typha angustifolia</i>		S	N	NO	0	0	0	0	0	1

b) List of fauna

SS: Species status
EX- Exotic

CS: Conservation status
TR- Threatened

LG- Lagoon
RA- Riparian area

Family Apocynaceae											
<i>Plumeria acuminata</i>		T	N	NO	1	0	0	0	0	0	0
Family Moraceae											
<i>Artocarpus heterophyllus</i>		T	N	NO	1	0	0	0	0	0	0
Family Asclepiadaceae											
<i>Calotropis gigantean</i>		S	N	NO	0	0	0	0	0	0	1
Family Euphorbiaceae											
<i>Ricinus communis</i>	castor	S	N	NO	0	0	0	0	0	0	1

b) List of fauna

SS: Species status

EX- Exotic

EN- Endemic

MI- Migrant

(Source:IUCN Sri Lanka 2000) SB – Sand bar

CS: Conservation status

TR- Threatened

HG- Home Gardens

SD- Sand dune

LG- Lagoon

RA- Riparian area

Family and Scientific Name	Common Name	SS	CS	Habitat Types			
				HG	SD&SB	LG	RA
Family Canidae							
<i>Canis sp</i>	Dog			+			+
<i>Centropus sp</i>				+			+
Family Bovidae							
<i>Bos sp</i>	Cattle			+			+
Family Accipitridae							
<i>Harphyhaliaetus sp</i>	Eagle			+			+

5.2.3 Ninthavur

a) List of flora

Species Name	Common Name	HA	TS	CS	HG	SD	SB	RL	RP	RS
Family Combretaceae										
<i>Terminalia catappa</i>		T	N	NO	0	0	0	0	1	1
Family Anacardiaceae										
<i>Camphosperma zeylanica</i>		T	N	NO	0	0	0	0	0	1
Family Passifloraceae										
<i>Passiflora sp</i>	Wild passion fruit	C	N	NO	0	0	0	0	0	1
Family Musaceae										

<i>Musa paradisiacal</i>	Banana	T	N	NO	1	0	0	0	0	0
Family Caricaceae										
<i>Carica papaya</i>	papaw	T	N	NO	1	0	0	0	0	0
Family Leguminosae										
<i>Abrus precatorius</i>		C	N	NO	0	0	0	0	0	1
<i>Mimosa pudica</i>	Touch me not	C	N	NO	0	0	0	0	0	1
<i>Gliricidia sepium</i>		T	N	NO	1	0	0	0	0	1
Family Moraceae										
<i>Artocarpus heterophyllus</i>		T	N	NO	1	0	0	0	0	0
<i>Ficus benghalensis</i>	Baniyan	T	N	NO	0	0	0	0	0	1
Family Palmae										
<i>Cocos nucifera</i>		T	N	NO	1	0	0	0	0	0
<i>Borassus flabellifer</i>		T	I	NO	0	0	0	0	0	1
Family Malvaceae										
<i>Goosypium herbaceum</i>		S	N	NO	1	0	0	0	0	0
<i>Urena lobata</i>		S	N	NO	1	0	0	0	0	1
Family Capparidaceae										
<i>Cadaba fruticosa</i>		C	N	NO	0	0	0	0	0	1
Family Rutaceae										
<i>Murraya koenigii</i>		T	N	NO	1	0	0	0	0	0
Family Tiliace										
<i>Berrya cordifolia</i>		T	N	NO	0	0	0	0	0	1
Family Meliaceae										
<i>Azadirachta indica</i>	Neem	T	N	NO	1	0	0	0	0	1
Family Pandanaceae										
<i>Pandanus tectorius</i>		T	N	NO	0	0	0	0	1	0
Family Moringaceae										
<i>Moringa oleifera</i>	Drum stick	T	N	NO	1	0	0	0	0	0
Family Punicaceae										
<i>Punica granatum</i>	Pomegranate	T	N	NO	1	0	0	0	0	0
Family Compositae										
<i>Tridax procumbens</i>		C	I	NO	0	0	0	0	0	1
Family Apocynaceae										
<i>Plumeria acuminata</i>		T	N	NO	1	0	0	0	0	0
Family Asclepiadaceae										
<i>Calotropis gigantean</i>		S	N	NO	0	0	0	0	0	1
Family Gramineae										

<i>Cynodon dactylon</i>		H	N	NO	1	0	0	0	0	1
<i>Oryza sativa</i> Rice		H	N	NO	1	0	0	0	1	0
Family Myrtaceae										
<i>Psidium guajava</i>		T	N	NO	1	0	0	0	0	0
Family Martyniaceae										
<i>Martynia annua</i>		S	N	NO	0	0	0	0	0	1
Family Anacardiaceae										
<i>Mangifera indica</i> Mango		T	N	NO	1	0	0	0	0	0
Family Cannaceae										
<i>Canna indica</i>		S	N	NO	1	0	0	0	0	0
Family Pentederiaceae										
<i>Eichhornia crassipes</i>		C	N	NO	0	0	0	0	1	0

b) List of fauna

SS: Species status CS: Conservation status LG- Lagoon
 EX- Exotic TR- Threatened RA- Riparian area
 EN- Endemic HG- Home Gardens
 MI- Migrant SD- Sand dune
 (Source:IUCN Sri Lanka 2000) SB- Sand bar

Family and Scientific Name	Common Name	SS	CS	Habitat Types			
				HG	SD& SB	LG	RA
Family Bovidae							
<i>Bos sp</i>	Cattle			+			+
Family Corvidae							
<i>Corvus sp</i>	Crow			+			+
Order Testudines							
<i>Phrynops sp</i>	Turtle			+			+
Family Papilionidae							
<i>Ornithoptera sp</i>	Butterfly			+			+

Appendix 6: GoSL Approvals Received to Date

**PERMIT FOR A DEVELOPMENT ACTIVITY ISSUED UNDER
PART III - SECTION 14 OF THE COAST CONSERVATION
ACT No. 57 OF 1981**

Permit No. PV/06/724

Name of Permit Holder Vocational Training Authority of Sri Lanka
(Surname) (Other Names)

Postal Address : Nipunatha Piyasa, No. 354/2, Elvitigala Road, Colombo 05.

Nature of Development Activity Construction of Vocational Training School (23300 Sq. ft.)

Location of Development Activity : No. 30, 14th Lane, Colombo 03

Province : Southern

District : Galle

Local Authority : Habaraduwa

Particulars of Survey Plan submitted by applicant :

Drawing No. Sec./1/567 and dated 22.06.2006. prepared by Survey Engineering Co. Ltd. P.O. Box 22, Wattala.

Duration of Permit : 12.12.2006 to 11.12.2007

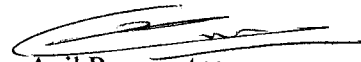
Conditions Attached (1) All constructions should be confined to the Drawing No: Sec/1/567 and dated 22.06.2006 prepared by survey Engineering Co. Ltd., P.O.Box 22, Wattala.


Signature & Designation of Authorised Officer.

(Issued for and on behalf of the Director/
Coast Conservation)

Date : 2006/12/12

- 2) A 35 m set back area landward from permanent vegetation line of the beach front should be maintained as a structure free area..
- 3) All constructions should be carried out in accordance with building plans submitted to the developer to the Coast Conservation Department.
- 4) Necessary clearance from the Habaraduwa Pradeshiya Saba and other relevant Government Agencies should be obtained prior to commencement of the constructions.
- 5) Proposed construction should not obstruct to the proposed beach access as indicated in the plan in red.
- 6) Sewage or waste water should not be emitted to the beach or the coastal waters.
- 7) Proposed construction should not obstruct the existing beach accesses and fishing activities in the area.
- 7) This permit will be invalid if violation of any of the above conditions. In such a case this Department will consider relevant structures as unauthorized and will take action to demolish them.



Anil Premaratne
Actg. Addl. Director/Coast Conservation
for Director/Coast Conservation.

CC.

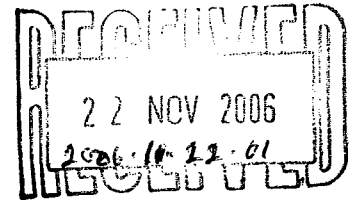
1. Divisional Secretary,
Divisional Secretariat,
Habaraduwa.
2. Chairman,
Pradeshiya Sabawa,
Habaraduwa.
3. Actg. Area Engineer, CCD, Galle
4. Inspector, Coastal Zone Operation Division, CCD, Galle.



Engineering Consultants Limited

Ref. 3236/GN/22/06

21st November 2006



CH2M HILL

Mr. Thomes Genne
Design Manager
CH2MHILL
No. 7, Bullers Lane,
Colombo 07,

Dear Tom,

VOCATIONAL TRAINING CENTRES IN THE SOUTHERN EASTERN PROVINCES

PLANNING CLEARANCE

Here with we enclose Planning Clearance for the Nine Vocational Training Centres obtained from the UDA for your reference.

Although this work is not in our scope we have arranged for the approvals and will follow up with the planning application to respective local authorities to obtain building permits. We hope that the building permits for all nine Schools shall be available before the end of the year.

However the statutory payment and incidental expenditure with respect to arranging the planning approval needs to be reimbursed since this expenditure is not provided for in our fees.

We shall submit a claim for reimbursement of such expenditure once this process is complete and the total expenditure incurred is computed.

Yours sincerely,
ENGINEERING CONSULTANTS LTD


PIYAL SILVA
Director/CEO
Architecture and Buildings Group

CH2M HILL/SLTRP	
Contract #	3A
Date:	22/11/06
Action:	Tom
Copies:	Circulation:
Tom	Tom Rick Sri Lanka
Subject File:	3A - 05
Main File:	

Original drawings with Tom.



MEMBER OF
THE ASSOCIATION OF
CONSULTING ENGINEERS SRI LANKA
AFFILIATED TO FIDIC.



දුරකථන } 2875916 2875917 2875918 2873652
தொலைபேசி } 2875919 2875920 2873644 2875333
Telephone } 2873647 2873649 2873651
இணையத்தலம் } www.uda.lk
Web Site }

ෆැක්ස් } 2873637
தொலை நகல் }
Fax }

6 හා 7 වැනි මහල, සෙත්තිරිපාය, බත්තරමුල්ල
6, 7 ஆம் மாடிகள், "செத்திரிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

My No. 05/02/01/329/508/2006/SP
31 October, 2006

Archt. Piyal Silva,
Director – Architecture and Building Group,
M/s Engineering Consultants Ltd.,
No. 3, Swarna Place,
Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Koggala, Habaraduwa Tsunami Reconstruction Programme by USAID.

This is with reference to your application dated 19th October, 2006 enclosing Building Plan for Vocational Training Centre to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for Vocational Training Centre is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Habaraduwa Pradeshiya Sabha.**

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,


Actg. Director (Enforcement)
Urban Development Authority

- | | | | | |
|-----|-----|---|---|-------------------------|
| Cc. | 1. | District Secretary, Galle | - | for information please |
| | 2. | Divisional Secretary, Habaraduwa | - | for information please. |
| | 3. | Chairman, Habaraduwa Pradeshiya Sabha | - | for information please. |
| | 4. | Chairman, Urban Development Authority | - | for information please |
| | 5. | Director General, UDA | - | for information please. |
| | 6. | Addl. Director General, UDA | - | for information please. |
| | 7. | Dy. Director General (Planning – Zone I)UDA | - | for information please. |
| | 8. | CEO (RADA), UDA | - | for information please. |
| | 9. | Director (Lands)/UDA | - | for information please. |
| | 10. | Director (GIS)/UDA | - | for information please. |
| | 11. | Dy. Director (SP) UDA Sub Office | - | for information please |
| | 12. | Dy. Director, UDA Office(Tsunami)
Galle UDA Sub Office | - | for information please. |

329-507#





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6, 7 ஆம் மாடிகள், "செத்திரிபாய", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

My No. 05/02/01/329/507/2006/SP

3/ October, 2006

Archt. Piyal Silva,
Director – Architecture and Building Group,
M/s Engineering Consultants Ltd.,
No. 3, Swarna Place,
Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Narigama, Hikkaduwa Tsunami Reconstruction Programme by USAID.

This is with reference to your application dated 19th October, 2006 enclosing Building Plan for Vocational Training Centre to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for Vocational Training Centre is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Hikkaduwa Pradeshiya Sabha.**

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,

Actg. Director (Enforcement)
Urban Development Authority

- | | | | | |
|-----|-----|---|---|-------------------------|
| Cc. | 1. | District Secretary, Galle | - | for information please |
| | 2. | Divisional Secretary, Hikkaduwa | - | for information please. |
| | 3. | Chairman, Hikkaduwa Pradeshiya Sabha | - | for information please. |
| | 4. | Chairman, Urban Development Authority | - | for information please |
| | 5. | Director General, UDA | - | for information please. |
| | 6. | Addl. Director General, UDA | - | for information please. |
| | 7. | Dy. Director General (Planning – Zone I)UDA | - | for information please. |
| | 8. | CEO (RADA), UDA | - | for information please. |
| | 9. | Director (Lands)/UDA | - | for information please. |
| | 10. | Director (GIS)/UDA | - | for information please. |
| | 11. | Dy. Director (SP) UDA Sub Office | - | for information please |
| | 12. | Dy. Director , UDA Sub Office(Tsunami)
Galle UDA | - | for information please. |

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6, 7 ஆம் மாடிகள், "செத்திரிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsripaya, Battaramulla.

My No. 05/02/01/329/510/2006/SP
31 October, 2006

Archt. Piyal Silva,
Director – Architecture and Building Group,
M/s Engineering Consultants Ltd.,
No. 3, Swarna Place,
Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Talalla, Dickwella Tsunami Reconstruction Programme by USAID.

This is with reference to your application dated 19th October, 2006 enclosing Building Plan for Vocational Training Centre to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for Vocational Training Centre is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Dickwella Pradeshiya Sabha.**

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully

Actg. Director (Enforcement)
Urban Development Authority

- | | | | | |
|-----|-----|--|---|-------------------------|
| Cc. | 1. | District Secretary, Matara | - | for information please |
| | 2. | Divisional Secretary, Dickwella | - | for information please. |
| | 3. | Chairman, Dickwella Pradeshiya Sabha | - | for information please. |
| | 4. | Chairman, Urban Development Authority | - | for information please |
| | 5. | Director General, UDA | - | for information please. |
| | 6. | Addl. Director General, UDA | - | for information please. |
| | 7. | Dy. Director General (Planning – Zone I)UDA | - | for information please. |
| | 8. | CEO (RADA), UDA | - | for information please. |
| | 9. | Director (Lands)/UDA | - | for information please. |
| | 10. | Director (GIS)/UDA | - | for information please. |
| | 11. | Dy. Director (SP) UDA Matara | - | for information please |
| | 12. | Dy. Director , In Charge UDA Office (Tsunami)
Matara UDA Office | - | for information please. |

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6, 7 ஆம் மாடிகள், "செத்சிறிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsripaya, Battaramulla.

My No. 05/02/01/329/511/2006/SP

31 October, 2006

Archt. Piyal Silva,
Director – Architecture and Building Group,
M/s Engineering Consultants Ltd.,
No. 3, Swarna Place,
Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Henakaduwa Temple Land, Tangalle Tsunami Reconstruction Programme by USAID.

This is with reference to your application dated 19th October, 2006 enclosing Building Plan for Vocational Training Centre to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for Vocational Training Centre is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Tangalle Urban Council.**

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,

Actg. Director (Enforcement)
Urban Development Authority

- | | | | | |
|-----|-----|--|---|-------------------------|
| Cc. | 1. | District Secretary, Matara | - | for information please |
| | 2. | Divisional Secretary, Tangalle | - | for information please. |
| | 3. | Chairman, Tangalle Urban Council | - | for information please. |
| | 4. | Chairman, Urban Development Authority | - | for information please |
| | 5. | Director General, UDA | - | for information please. |
| | 6. | Addl. Director General, UDA | - | for information please. |
| | 7. | Dy. Director General (Planning – Zone I)UDA | - | for information please. |
| | 8. | CEO (RADA), UDA | - | for information please. |
| | 9. | Director (Lands)/UDA | - | for information please. |
| | 10. | Director (GIS)/UDA | - | for information please. |
| | 11. | Dy. Director (SP) UDA Sub Office | - | for information please |
| | 12. | Dy. Director , In Charge UDA Office (Tsunami)
Matara UDA Office | - | for information please. |

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6, 7 ஆம் மாடிகள், "செத்சிறிபாய", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

My No. 05/02/01/329/509/2006/SP
3/ October, 2006

Archt. Piyal Silva,
Director – Architecture and Building Group,
M/s Engineering Consultants Ltd.,
No. 3, Swarna Place,
Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Ahangama, Weligama Tsunami Reconstruction Programme by USAID.

This is with reference to your application dated 19th October, 2006 enclosing Building Plan for Vocational Training Centre to be constructed at the above location.

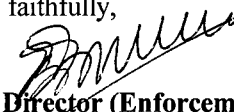
This Authority wishes to inform you that the Building Plan submitted by you for Vocational Training Centre is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Weligama Pradeshiya Sabha.**

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,


Actg. Director (Enforcement)
Urban Development Authority

- Cc.
- | | | | |
|-----|--|---|-------------------------|
| 1. | District Secretary, Matara | - | for information please |
| 2. | Divisional Secretary, Weligama | - | for information please. |
| 3. | Chairman, Weligama Pradeshiya Sabha | - | for information please. |
| 4. | Chairman, Urban Development Authority | - | for information please |
| 5. | Director General, UDA | - | for information please. |
| 6. | Addl. Director General, UDA | - | for information please. |
| 7. | Dy. Director General (Planning – Zone I)UDA | - | for information please. |
| 8. | CEO (RADA), UDA | - | for information please. |
| 9. | Director (Lands)/UDA | - | for information please. |
| 10. | Director (GIS)/UDA | - | for information please. |
| 11. | Dy. Director (SP) UDA Matara | - | for information please |
| 12. | Dy. Director , In Charge UDA Office (Tsunami)
Matara UDA Office | - | for information please. |

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6, 7 ஆம் மாடிகள், "செத்சிறிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

My No. 05/02/01/329/512/06/EP
10 November, 2006

Archt. Piyal Silva,
Director,
M/s. Engineering Consultants Ltd.,
No. 03, Swarna Place, Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Ninthavur for Resettlement of Families Affected by Tsunami Reconstruction Project.

This is with reference to your application dated **24th October, 2006** enclosing Building Plan for **Vocational Training Centre** to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for **Vocational Training Centre** is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Special Commissioner, Akkaraipattu Pradeshiya Sabha**.

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,

Actg. Director (Enforcement)
Urban Development Authority

- | | | | | |
|-----|-----|---|---|-------------------------|
| Cc. | 1. | District Secretary, Ampara | - | for information please |
| | 2. | Divisional Secretary, Akkaraipattu | - | for information please. |
| | 3. | Special Commissioner, Akkaraipattu Pradeshiya Sabha | - | for information please. |
| | 4. | Chairman, Urban Development Authority | - | for information please |
| | 5. | Director General, UDA | - | for information please. |
| | 6. | Addl. Director General, UDA | - | for information please. |
| | 7. | Dy. Director General (Planning – Zone I) UDA | - | for information please. |
| | 8. | CEO (RADA), UDA | - | for information please. |
| | 9. | Director (Lands)/UDA | - | for information please. |
| | 10. | Director (GIS)/UDA | - | for information please. |
| | 11. | Dir Director (EP) UDA | - | for information please |
| | 12. | Director UDA Office, Kalmunai. | - | for information please. |





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6, 7 ஆம் மாடிகள், "செத்திரிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

My No. 05/02/01/329/514/06/EP
// November, 2006

Archt. Piyal Silva,
Director,
M/s. Engineering Consultants Ltd.,
No. 03, Swarna Place, Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Kalawanchikudy, Batticaloa – Tsunami Reconstruction Project

This is with reference to your application dated 24th October, 2006 enclosing Building Plan for Vocational Training Centre to be constructed at the above location.

This Authority wishes to inform you that the Layout Plan and Building Plan submitted by you for Vocational Training Centre is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Urban Council Batticaloa**.

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,


Actg. Director (Enforcement)
Urban Development Authority

- Cc.
1. District Secretary, Batticaloa - for information please
 2. Divisional Secretary, Mammunai South - for information please.
 3. Chairman, Urban Council Batticaloa Mammunai P.S. - for information please.
 4. Chairman, Urban Development Authority - for information please
 5. Director General, UDA - for information please.
 6. Addl. Director General, UDA - for information please.
 7. Dy. Director General (Planning – Zone I)UDA - for information please.
 8. CEO (RADA), UDA - for information please.
 9. Director (Lands)/UDA - for information please.
 10. Director (GIS)/UDA - for information please.
 11. Dy. Director (EP) Batticaloa, UDA - for information please
 12. Mr. Chandradasa, UDA Office - for information please.
Kalmunai





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6, 7 ஆம் மாடிகள், "செத்திரிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

இணையத்தளம் } www.uda.lk
Web Site }
My No. 05/02/01/329/513/06/EP
November, 2006

Archt. Piyal Silva,
Director,
M/s. Engineering Consultants Ltd.,
No. 03, Swarna Place, Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Central Camp Ampara – Tsunami Reconstruction Project

This is with reference to your application dated **24th October, 2006** enclosing Building Plan for **Vocational Training Centre** to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for **Vocational Training Centre** is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Chairman, Urban Council Ampara**.

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,

Actg. Director (Enforcement)
Urban Development Authority

- Cc.
- | | | | |
|-----|--|---|-------------------------|
| 1. | District Secretary, Ampara | - | for information please |
| 2. | Divisional Secretary, Ampara | - | for information please. |
| 3. | Chairman, Urban Council Ampara | - | for information please. |
| 4. | Chairman, Urban Development Authority | - | for information please |
| 5. | Director General, UDA | - | for information please. |
| 6. | Addl. Director General, UDA | - | for information please. |
| 7. | Dy. Director General (Planning – Zone I)UDA | - | for information please. |
| 8. | CEO (RADA), UDA | - | for information please. |
| 9. | Director (Lands)/UDA | - | for information please. |
| 10. | Director (GIS)/UDA | - | for information please. |
| 11. | ✓ Actg. Director (EP) Ampara UDA | - | for information please |
| 12. | Mr. Chandradasa, Director
UDA Office (Tsunami) Kalmunai | - | for information please. |





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6, 7 ஆம் மாடிகள், "செத்திறிபாய்", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

My No. 05/02/01/329/515/06/EP
// November, 2006

Archt. Piyal Silva,
Director,
M/s. Engineering Consultants Ltd.,
No. 03, Swarna Place, Nawala Road,
Rajagiriya.

Dear Sir,

Proposed Vocational Training Centre at Samanthurai Tsunami Reconstruction Project

This is with reference to your application dated **24th October, 2006** enclosing Building Plan for **Vocational Training Centre** to be constructed at the above location.

This Authority wishes to inform you that the Building Plan submitted by you for **Vocational Training Centre** is acceptable from a Planning Point of View subject to following.

- Sub Division Plan is prepared incorporating storm water drains and other infrastructure facilities.
- Building Plan is prepared in accordance with the Planning and Building Regulations of the Urban Development Authority.
- Proposed buildings should be constructed to sustain in the event of a future natural disaster.

You are therefore required to prepare the Building Plan accordingly and obtain approval from **Special Commissioner, Samanthurai Pradeshiya Sabha**.

Attached please find a copy of Building Plan for which this clearance is granted.

Yours faithfully,

Actg. Director (Enforcement)
Urban Development Authority

- Cc.
1. District Secretary, Ampara - for information please
 2. Divisional Secretary, Ampara - for information please.
 3. Special Commissioner, Samanthurai Pradeshiya Sabha - for information please.
 4. Chairman, Urban Development Authority - for information please
 5. Director General, UDA - for information please.
 6. Addl. Director General, UDA - for information please.
 7. Dy. Director General (Planning – Zone I)UDA - for information please.
 8. CEO (RADA), UDA - for information please.
 9. Director (Lands)/UDA - for information please.
 10. Director (GIS)/UDA - for information please.
 11. Dy. Director (EP) UDA - for information please
 12. Director UDA Office, Kalmunai. - for information please.

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