

**RAPID ENVIRONMENTAL AND SOCIAL ASSESSMENT  
AND THE ENVIRONMENTAL AND SOCIAL MANAGEMENT  
PLAN FOR THE  
PROPOSED HOUSING COMPLEX IN APPLE WATTA  
CONSIDERED UNDER AIIB FINANCING**

**Urban Regeneration Project**

**Urban Development Authority**

**August 2018**

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## **ABBREVIATIONS**

AIIB -	Asian Infrastructure Investment Bank
CEA -	Central Environmental Authority
CMC -	Colombo Municipal Council
COC –	Certificate of Conformity
DPC –	Damp-Proof Course
ESMP -	Environmental and Social Management Plan
ESMF -	Environmental and Social Management Framework
ECC -	Environmental Consultative Committee
GPS –	Global position System
ILO –	International Labor Organization
LA -	Local Authority
LED –	Light-Emitting Diode
NEA -	National Environmental Act
NWSDB –	National Water Supply and Drainage Board
PIU –	Project Implementation Unit
PMU –	Project Management Unit
RPF -	Resettlement Policy Framework
SLLRDC –	Sri Lanka Land Reclamation and Development Cooperation
SLSI –	Sri Lanka Standards Institute
UDA –	Urban Development Authority
URB -	Urban Regeneration Program

## **1. Introduction**

Over fifty percent of the Colombo city population lives in shanties, slums or dilapidated old housing schemes, which occupied nine percent of the total land extent of the city. The Urban Development Authority (UDA) has identified 68,812 families living in 1,499 community clusters (underserved settlements spread over an area of 900 acres) which do not have a healthy environment for human habitation and access to basic infrastructure facilities such as clean water, electricity, sanitation etc. Under the Urban Regeneration Program (URB) started in 2011, UDA aims to construct 70,000 housing units of acceptable standard for relocation of underserved settlements of the city of Colombo and its immediate suburbs. This is in accordance with government policy to enhance the livelihoods of the under privileged communities. The URP is consistent with the GoSL's housing policy aim of ensuring affordable access to adequate housing for everyone, and with the Megapolis Master Plan, which envisages the relocation of households currently living in slums into new housing schemes with adequate standards and optimization of land use of prime locations for high utility and economic returns, as an important step towards transforming Colombo into a city with a clean and pleasing environment and a model for national development.

The Asian Infrastructure Investment Bank (AIIB) is in the process of preparing a project that would initially finance six subprojects under Phase II of the URB. Under Component 1 (USD 220M), it would finance the construction of housing for approximately 4,500 families (3,830 under the six subproject). Under Component 2 (USD 50 M), AIIB would support the redevelopment of the freed land as a result of this project including the provision of public amenities. Component 3 (USD 10M) would support additional technical support and project management including systems to improve the sustainability and quality of apartment building maintenance, and support to strengthen UDA capacity to manage environmental and social issues.

This rapid environmental and social assessment was carried out for Apple Watte, Maligawatte West and will discuss the subproject project area, sub project description/scope, policy and legal framework, consultations, institutional framework and grievance redress mechanism. It provides a comprehensive environmental and social management plan (ESMP) for the proposed development site at Apple Watte. This identifies the site-specific impacts and the mitigation measures that are recommended.

## **2. Sub Project Description**

### **2.1 Area description**

The Apple Watte project site is located in Maligawatte West, Colombo 10. Maligawatta is located approximately 3 km north-east from the city center (Colombo Fort). The project area of influence consists of the following significant establishments; the St Sebastian canal, Maligawatta market, Jumma Masjid, Maligawatta Hindu temple, Hemamali Balika vidyalaya, Baron Jathika Vidyalaya,

Darussalam Collage, Rajasinghe Boys School, and Maradana railway station which are within a 500m radius. The total population in Maligawatta West is 8,968 (Department of Census, 2012) and consists of a predominantly Muslim community with a large area consisting of underserved settlements (see Figure 1). Maligawatte was a marshland which was transformed in the late 1980s into a township of houses and shop houses. Maligawatte area was a neglected area in terms of education and employment opportunities to the youth leading to a breeding ground for violence and illegal activities (<http://www.island.lk/2009/08/12/features6.html>). The area is subject to flooding during heavy rains.

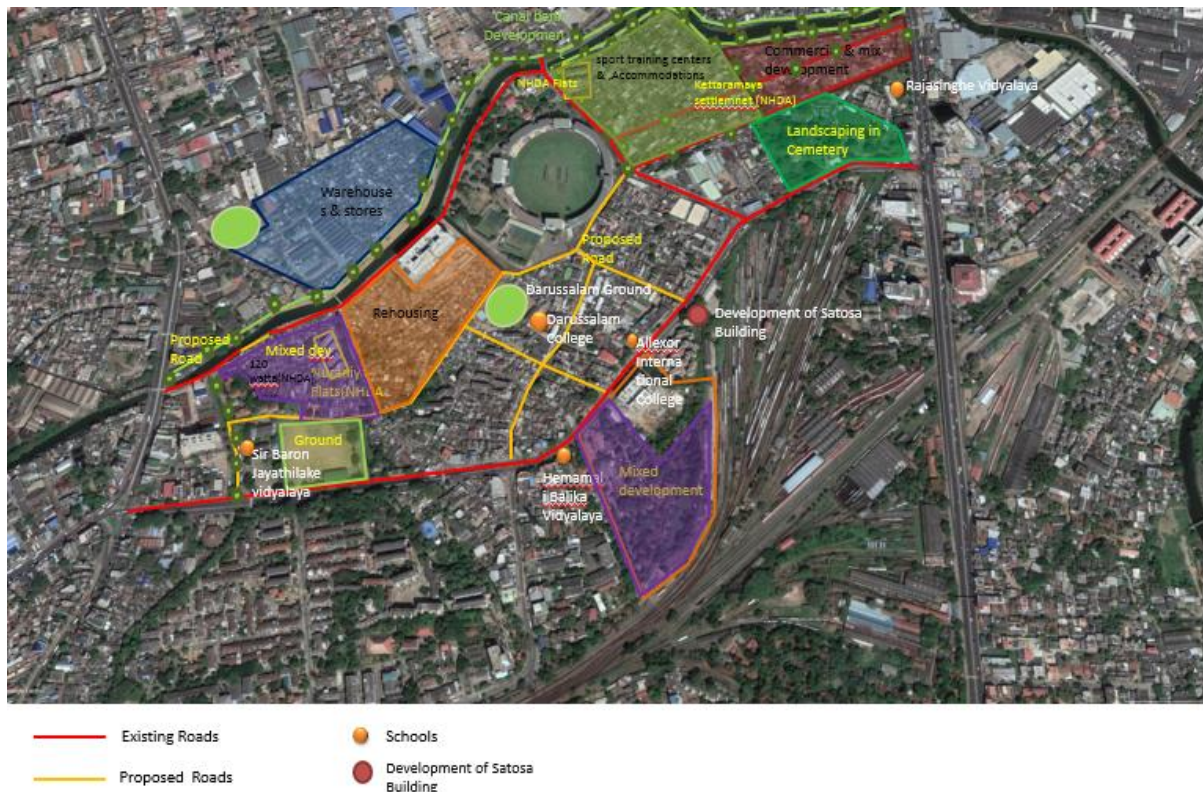
Figure 1: Maligawatta Land use



Source: UDA

The UDA plan for the development of the Maligawatta area include the rehousing at Apple Watta and 120 watta with relocation of existing settlements, development of sport training centers and accommodation facilities. It is identified for commercial and mixed development (see Figure 2). Other areas in Maligawatte have been identified for port related activities (including warehouses and stores) within the Port Related Activity Zone, further development of existing grounds in the area, landscaping of the Cemetery, and development of schools and cooperate shops close to the project area. Road development activities and Sebastian Canal Bank Development project are some of the other activities identified for the area (see Figure 2).

Figure 2: Key projects in Maligawatta



Source: UDA

### 2.3 Site description

The Proposed land situated in Maligawatta west is within the Colombo Municipal Council (CMC) limits. The land location points are 6°56'16.26"N 79°52'13.46"E. The land is rectangular in shape. The total land area demarcated for Apple Watta housing complex under the proposed AIIB financing is approximately 3 acres (the land is currently being surveyed for exact extent) and is rectangular in shape. At the time of the field visit there were 30 households remaining in the identified area. The land ownership is with UDA and there are no legal cases pending related to land ownership. According to the survey plan, the new apartment complex will come up in LOT 1B. The northern boundary adjoins the already constructed apartment complex beyond which is Temple Road and the main canal. The southern boundary borders a drainage canal (Ela) beyond which is a remaining underserved community of about 168 households. The eastern boundary also borders a drainage canal. The western boundary is Lot 1 C.

The proposed site is being cleared of the last of the low-income housing. It was observed that demolition was taking place without any demarcation of boundaries and no safety measures had been adopted. The land is polluted with dumping of garbage from the adjoining apartment complex (see Figure 3). The drainage system is also highly polluted with garbage and effluent outfalls from the former unauthorized settlement. The area is low lying and goes under water during heavy rains. At the time of the site visit, 30 households remained at the site. They had not been relocated along with the others as they were considered ineligible under the current UDA policy / eligibility criteria (i.e. considered as sub-

families). However, they will become eligible under the agreed cut-off date (i.e. the commencement date of the resettlement survey). Currently their relocation is under discussion and will most likely be permanently relocated to Salamulla. In total 380 (excluding the remaining 30) households have been relocated to liberate the proposed site for the new development. These residents were relocated 4 months ago to the newly constructed apartment complex at Apple Watte (adjoining the proposed land for current project).

### 2.3 Description of the Subproject

Figure 3: Pictures of proposed project site



700 housing units have been proposed for the new site. A layout plan was unavailable at the time of assessment. It will be developed by the design and build contractor upon award of the bid. Each apartment tower will consist of a ground floor and another 15 floors. The ground floor will consist of courtyards (open to sky), shops, community hall, maintenance office, nursery and day care center, common toilets, police post cum fire commanding center, one janitorial room per block, and car park. Each apartment tower will also have a health center. Each housing unit within the apartment complex will have a minimum floor area of 500 sq.ft. Each housing unit will include living room, two bed rooms, kitchen, bath and toilet (separated) and balcony. Brief detail of the common commodities planned under the scope of work for this subproject by UDA is provided below.

- **Community facilities:**

- Health center (500sq.ft.) will be sited on the ground floor with a toilet including a WC and wash basin.
- Community hall (minimum 1200 sq.ft.) including separate toilet for the disabled with wash basins.

- Common toilets at ground floor level will include 1 male and 1 female toilets with two wash basins separately excluding shower area.
- Nursery and daycare center at ground floor (1500sq.ft.). This will be placed close to the children's play area.
- Children play area will have suitable paving.
- Janitorial room per block is 30sq.ft. this will be lockable.
- **Common areas-** Corridors/ Walkways – clear height to be maintained at 2.7m for typical floors. No obstructions for this clear height and no manholes are allowed within the corridors
- **Sump location:** Sump to be located to place where repairing and cleaning is easy.
- **Garbage collection:** Proper solid waste management proposal to be submitted with method of collecting garbage block wise.
- **Car park:** To be paved with interlocking pave blocks / asphalt with drainage.

### 3. Policy and legal framework

#### 3.1 Applicable Measurable Environmental Legislations relevant to subproject

In Sri Lanka, there are over 70 laws that directly or indirectly relate to protecting and conserving the natural environment and human health. While most of these laws address specific issues pertaining to environment in the respective sector, it was the introduction and enactment of the National Environmental Act (NEA) that provided the overarching legal basis for regulation of pollution and protection of the environment in a comprehensive manner. The executing authority is the Central Environmental Authority (CEA). All the legislation applicable to the overall project is discussed in the Environmental and Social Management Framework of UDA under this project. Under the NEA, CEA has declared this project under the “non-prescribed” category thus being exempted from the Environmental Impact Assessment Regulation. However, in event that there is an independent wastewater and sewage treatment systems, it would need to be cleared and reviewed by the Environmental Consultative Committee (ECC). This is not applicable in the case of Apple Watte as it will connect directly to the central sewer system of Colombo under CMC.

A separate Resettlement Policy Framework (RPF) is being prepared for the project to strengthen the existing one as a requirement of the AIIB Environmental and Social Framework.

Under the AIIB Environmental and Social classification, the project and subproject has been categorized as A. Therefore, a rapid environmental assessment is carried out along with a detailed ESMP to bridge the gap between the national requirements and the policies and standards of AIIB. Gaps between the AIIB requirement and the local legislations for environment and social welfare are minimal but wherever there are any gaps, they been identified in the ESMF and have been incorporated in the subproject ESMP. Any such gaps in resettlement will be covered under the RPF.

## 4. Public consultation

### 2.1 Approach to Public Consultation

A consultative meeting was held on 8<sup>th</sup> of August, 2018. Residents from around the project area (also underserved) participated. Unfortunately, the existing households to be relocated were not present as they were in discussion with UDA on relocation. In total 68 people participated with 50 female participants. The discussion was carried out in the community hall of the Apple Watta apartment complex, which is already built and occupied.

During the meeting, the participants were informed of the proposed project and potential environmental impacts due to the subproject. Thereafter, time was allowed for questions and answers to facilitate interaction with the stakeholders, exchange of information, collect their opinion on the environmental issues and any other issues that needed addressing.

It was mainly a Muslim community with where female community stay at home and men go to work mainly as labour force (according to information provided by participants). All are in favor of the new housing project, with some requesting immediate housing due to the very poor conditions of their current accommodation. The average family size is 5.

Observations from the already relocated community from the cleared land to the current apartment complex shows that they need support with the change in lifestyle as common courtyards are currently unusable due to excessive spitting. This has led to dirty and unhealthy conditions in the common areas. Discussion with officials indicates that all residents are willing to move.

*Figure 2: Public Consultation held on 8<sup>th</sup> August*



## **5. Grievance redress mechanism and institutional arrangements**

### **5.1 Consultation and information disclosure**

To ensure continued public and stakeholder participation in the housing project life cycle, periodic consultations shall be taken up at regular intervals at site during implementation. This participatory process will ensure that all views of the people are adequately reviewed and suitably incorporated in the design and implementation process.

Once the ESMP is approved by the UDA and AIIB, an electronic version of all subproject related documents including the ESMP and RPF will be placed on the official websites of AIIB and UDA. Furthermore, it should be discussed with the affected people (host community and relocated persons). This is very important due to the low levels of literacy in the community. Upon written request, any person seeking information can obtain a hard copy of the Subproject documents by paying for its photocopying cost. The PMU will issue notification on the disclosure mechanism in local newspapers, ahead of initiation of implementation of the subproject, providing information on the subproject, start dates, etc. The notice will be issued by the PMU in local newspapers 1 month ahead of the implementation works. This will create awareness of the subproject implementation among the public

### **5.2 GRM Process**

The GRM process is outlined in the ESMF and is also addressed under the RPF. Any person having any complaints or requests can submit a written letter to the Urban Regeneration Program office at UDA. A complaints box will be made available at the project site as well. If unable to write, they can request assistance from a UDA officer to lodge the complaint/request.

**Registering complaints.** The PMU and site office shall keep records of all grievances received including contact details of complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date these were affected and final outcome. For this a complaint register will be maintained at each sub-subproject site. The complaint will be registered by the aggrieved party by duly filling the form provided, (refer Annex 12) PIU established a public response centre (PRC) helpline specifically addresses the issues arising out of subproject implementation. Complainant can be registered via any of the following means: Through Public Response Center Help Line.

Land Line Number:011-2875913

Mobile No: 0777-323607

WhatsApp: 0777-323607

E-mail: priyanthagodegama@gmail.com

In the event that the complainant is illiterate, the complaint will be recorded with the assistance of site in charge. The cost for functioning of GRC will be accounted for by PMU of UDA. Detailed formal GRM process is outlined in the RPF.

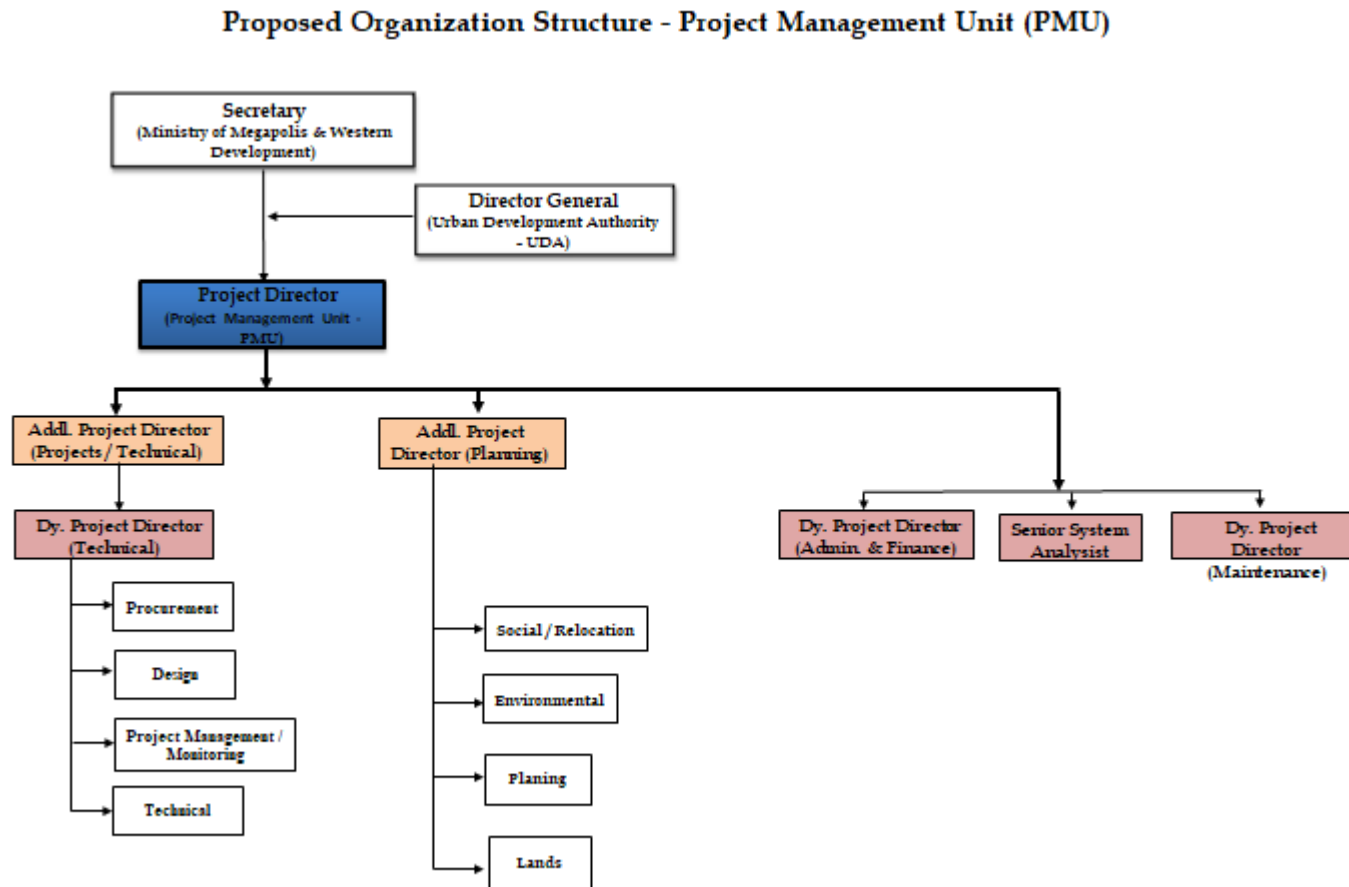
### **5.3. Institutional arrangements**

The institutional arrangement of UDA is provided in Figure 3. Most of the environmental and social management activities related to this subproject will come directly under the Additional Project Director (Planning). Under the current setup, there is a well-established social division to carry out the social work related to the subprojects. However, it appears that some expert inputs may be required to guide this unit in survey development identification of necessary studies that are required.

The environment component is currently lacking, though 2 cadres have been identified (environment specialist and officer). UDA needs to recruit these cadres without delay. Upon recruitment, they may also require some level of capacity building unless they have worked in similar environments. The environmental team will have to be responsible for all reporting and monitoring activities.

During the defect liability period and the transition period thereafter (maximum 1 year) of the operation phase, The Building Manager coming under the Project Director (Maintenance) will also have a major role to play. He will have to be made aware of the requirement. The apartments will thereafter be handed over to the Condominium Management Authority where they will establish a Management Corporation for the maintenance.

Figure 3: Organization Structure



## **6. Environmental and social impacts and mitigation**

Essentially, the subproject will provide a positive impact on the environmental conditions of the area giving rise to a cleaner and healthier environment if all aspects are managed properly. Potential impacts during demolition and construction have been identified and these are deemed temporary and minimal. The social impacts, behavioral changes along with transition in living conditions and lifestyles are the more important aspects that need to be monitored and supported in the sub project. But overall, under this project the underserved community affected will also benefit by improved living conditions and infrastructure which is expected to have a spin off positive effect on livelihoods, educational levels etc.

All the environmental impacts and mitigation measures are identified in the ESMP that follows.

Monitoring of the ESMP will be carried out by the UDA PMU. The planning and design phases will be closely monitored by the Additional Project Director (Projects/Technical) who will be supported by the Deputy Project Director (Technical). Monitoring and reporting of environmental and social safeguards during the demolition and construction period will be carried out under the Additional Project Director Planning. He/she will be supported by the social/relocation and environmental teams (see Figure 6). Monitoring will be carried out at the various intervals indicated in the ESMP however; UDA will prepare a quarterly update report on environmental and social safeguards.

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR PROPOSED APPLE WATTA HOUSING DEVELOPMENT PROJECT,  
MALIGAWATTE WEST**

**District: Colombo**

**Local Authority: - Colombo Municipal Council (CMC)**

**Implementing Agency: Urban Development Authority (UDA)**

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Planning</b>						
<b>Clearance for the project</b>	Unless UDA building approval is obtained for new building it will not be in compliance with national environmental and social regulations.	<ul style="list-style-type: none"> <li>(a) Environmental clearance for overall project shall be obtained from CEA.</li> <li>(b) Building approval from UDA in place before commencement of construction.</li> <li>(c) COC obtained before moving people in.</li> <li>(d) Environmental recommendation obtained from CEA for demolition waste.</li> <li>(e) SLLRDC notified of demolition and construction activities and agreements reached on cleaning of drainage/canal system around the project site and discuss any canal infrastructure development that may be required with filling of site. Any guidelines required by SLLRDC to be followed during demolition and construction will be considered. Any bottlenecks in canal drainage system that may require rectification to reduce incidence of floods during heavy rains will be identified.</li> </ul>	UDA PMU (Planning)	UDA Addl. Project Director Planning	Project cost	Before construction

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Flood prone sites</b>	<p>Can lead to repeated destruction of lives and belongings.</p> <p>Can lead to disease outbursts such as dengue, influenza, cholera, etc.</p> <p>Flooding of garbage storage areas may lead to overall environmental pollution and disease outbreaks.</p>	<p>(a) Design alternatives to accommodate flooding to be adopted. Building level will be raised by filling and raising DPC level.</p> <p>(b) Brief assessment will be carried out to see if there will be any impact of filling and raising the land on the surrounding area (mainly flooding scenario).</p> <p>(c) Design features such as drainage structures will be maintained and improved in consultation with SLLRDC .</p>	UDA PMU	UDA PMU	UDA	Before design phase
<b>Structural considerations for sustainability of project.</b>	Lack of sufficient planning to assure long-term sustainability of the improvements and ensure protection of the housing units	Geotechnical will be carried out so that recommendations can be followed in the structural design of the building.	UDA/outsour ce	UDA PMU	Project cost	Before building design
<b>Waste management</b>	Lack of a waste management plan will lead to environmental pollution	<p>(a) A waste management plan will be developed for the apartment complex. It should identify quantities of the different types of waste, potential options for disposal.</p> <p>(b) Discussions on on solid waste disposal will be carried out with CMC, and other private parties who may be interested in recyclable waste. Private partnerships will be explored.</p>	UDA PMU	UDA PMU	Project cost	Before building design

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		(c) Determine mode of wastewater and sewerage disposal (identified as the central sewer system).				
<b>Utilities</b>	Establishment of utilities for the houses such as water, telecommunication and electricity will disrupt the services to the project associated establishments and communities.	<ul style="list-style-type: none"> <li>-The location of utilities and operators of utilities to be impacted will be identified and documented in detailed project design documents to prevent unnecessary disruption of services during the construction phase.</li> <li>-Contractor will prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</li> </ul>	Contractor/C EB, NWSDB	UDA PMU	Project	Pre-construction
<b>Public consultations and social surveys</b> Currently there is no consultation process. Last comprehensive social/resettlement survey carried out in 2013. That too does not capture all required data.	Unless regular consultations are carried out with the stakeholders including community, issues that crop up during the project will go unaddressed leading to problems later on.	<ul style="list-style-type: none"> <li>(a) Consultations will be carried out with residents of the land who have been re-located/to be relocated.</li> <li>(b) Resettlement survey (house to house) will be conducted for all re-located households (30 remaining at Apple Watte) with an appropriately designed questionnaire. A social development specialist shall be involved in the design of the questionnaire.</li> <li>(c) An analysis of existing livelihoods and livelihood losses will be studied and alternatives looked at with the help of a social development specialist.</li> <li>(d) The above will be carried out immediately as ideally it should be carried out before relocation.</li> <li>(e) UDA will develop consultation schedule which should be done immediately before re-location, 1 month after relocation and thereafter bi annually for the 1<sup>st</sup> year.</li> <li>(f) Grievance mechanism will be transparent and easily accessible and visible to the affected people.</li> </ul>	UDA PMU (Land and Social Issues Unit)	UDA PMU	Project	<b>Immediately</b>

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Places of importance/cultural heritage</b>	Unless important cultural and heritage sites are identified in advance, it may lead to damage and social unrest unless precautions are taken	(a) Any places of importance including religious structures, cultural/heritage structures and also community monuments within a 500m radius of the site will be identified early on. (b) Contractor will be made aware of the places above and shall be sensitive to them.				
<b>Disaster management</b>	Extreme climate events such as intense rainfall (flooding), cyclone etc. and fire may cause damages to lives and property.	(a) Appropriate disaster risk reduction strategy, emergency preparedness and recovery, training/orientation program for residents and construction worker, etc. will be adopted. (b) Emergency evacuation points in the buildings shall be identified. (c) An emergency alarm system shall be in place in all the buildings. Fire prevention measures shall be adopted such as sprinklers, extinguishers, etc Carry out in consultation with Fire Department. (d) Lightning receptors included.	UDA PMU / Design Consultant	UDA PMU	Project	Before construction

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Design</b>						
<b>Risk of temporary floods</b>	Lack of drainage within the project site will submerge the land during heavy rains In the absence of a proper storm water drainage system, there will be a risk of water logged conditions around the site which will increase the incidence of vector born disease.	(a) Land level will have to be raised through filling provided there is no impact on the surrounding areas. Otherwise design alternatives will be looked at. (b) Sloping of terrain to ensure natural drainage towards canal shall be carried out. (c) Drain plan to carry rain water towards the canal shall be developed. (d) Discussion with SLLRDC on cleaning and rehabilitation of the canal system shall be carried out.	UDA PMU/ Design Consultants	UDA PMU		Development of detailed design.
<b>Sustainability and safety</b>	Lack of sufficient planning to assure long-term sustainability and quality of the buildings may lead to subsidence or other infrastructure defects/disasters.  Design of the apartment not meeting the requirement of the occupants may lead to disruption of the overall apartment complex.	(a) Design shall include provisions for effective maintenance and protection of the apartment buildings in the long-term. (b) Standards Codes for design (such as UDA and ICTAD), appropriate wind load factor and soil stability and net allowable carrying capacity and skin friction shall be considered. (c) Each apartment shall have personalized open spaces (such as balcony). (d) Adequate number of stairways shall be incorporated including emergency evacuation. (e) Adequate number of elevators shall be installed.	.Design Architect / PMU	PMU	UDA	During building design
<b>Integration of energy efficiency and energy conservation in design</b>	Unsustainable, energy inefficient, and un-economical unviable building will negatively impact the environment resource	The detailed designs for the project shall ensure environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc.: - Usage of recyclable materials like wood substitutes.	.Design Architect /PMU	PMU	UDA	During building design

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>of project components.</b>	as requirement is high.  In the absence of water conservation and energy efficiency of the building structure, it may lead to resource constraints and increase the running cost.	<ul style="list-style-type: none"> <li>- Use water efficient fittings for the apartments.</li> <li>- Installation of sustainable energy efficiency certified equipment.</li> <li>- Usage of energy efficient lighting fixtures (LED)</li> <li>- Provision of photovoltaic cells on roofs for solar power atleast to cover the common lighting and energy requirement of the common areas.</li> </ul>				
<b>Solid waste</b> Currently the proposed site is being used as a garbage dump by adjoining low income housing development	Lack of properly designed disposal mechanisms for solid waste may lead to contamination of surface and ground water resources and pollution of the surrounding environment with garbage.	<ul style="list-style-type: none"> <li>(a) Solid waste management plan shall be developed for the new apartment complex with estimated quantities of the different types of solid waste generated and identified means of disposal.</li> <li>(b) Solid waste storage area shall be incorporated in the plan with source segregation and storage capacity for 3 days. This shall be planned at the ground level.</li> </ul>	UDA-PMU / Design architect	UDA-PMU	Project cost	During finalization of detailed designs of housing buildings Before construction
<b>Wastewater and sewage</b>	Unless waste water and sewage are either treated or connected to a central system, it will lead to pollution of waterways and may pose a health risk to community in instances of overflows and floods.	<ul style="list-style-type: none"> <li>(c) Wastewater and sewage shall be connected to the central sewer line.</li> <li>(d) In event that wastewater and sewage is not connected to the central sewer line, treatment plants shall be put in place with effluent meeting IFC-WB EHS which override NEA standards.</li> </ul>	UDA - PMU	UDA PMU	Project/UDA	Design stage and again end of construction.
<b>Occupational Health, Safety, and</b>	Lack of safety measures within the design will lead to fire and increase	(a) Design shall include fire safety specifications (appropriate number of stairways, emergency exits, etc.).	Design Architect	UDA PMU	Project cost	At design stage and

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>essential facilities</b>	occupational safety hazards.	(b) Provisions shall be incorporated to accommodate residence with disabilities.				during construction.
<b>DEMOLITION PHASE</b>						
<b>Safety measures to be adopted.</b>	Unless safety measures are adopted during demolition, it may lead to health issues and accidents.	<ul style="list-style-type: none"> <li>(a) Once occupants have moved out, a few days will be provided for them to come back for anything they have left behind.</li> <li>(b) Former occupants shall not remove any infrastructure components unless with prior permission from the Construction Supervision Contractor.</li> <li>(c) Area to be demolished shall be completely cordoned off. No entry sign boards will be put up.</li> <li>(d) All power and water supplies shall be turned off prior to demolition.</li> <li>(e) Workers involved in demolition must wear safety gear such as hard hats, eye protection, gloves, etc.</li> <li>(f) All workers involved in the demolition activities shall be covered under the labour law and insured.</li> <li>(g) Adequate potable water to be provided to the workers to ensure maintenance of health and hygiene especially since the site is highly polluted.</li> <li>(h) A shaded rest area for the workers shall be provided for the workers within the project site.</li> </ul>	Contractor/sub-contractor	Contractor/Subcontractor.  Environment officer and Environment Specialist.	Contractor fee	During demolition

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Demolition of existing structures</b>	Spoil material generated would obscure the landscape may be a health risk to the surrounding community	<ul style="list-style-type: none"> <li>(a) Recommendation from CEA on the disposal of demolition waste shall be obtained.</li> <li>(b) Disposal of solid waste shall conform to guidelines of CMC.</li> <li>(c) Selected disposal site by the contractor shall exclude areas which are close to public and environmentally sensitive areas.</li> <li>(d) All debris and residual spoil materials generated from construction activities shall be re-used wherever possible.</li> <li>(e) Contractor will be responsible for removal of the debris according to the recommendations provided by CEA.</li> <li>(f) Since demolition debris is mixed with garbage, garbage waste shall be separated and disposed of separately for which CMC will be consulted and involved. Also discussion will be carried out directly with Dompe Sanitary Fill officials on possibility of directing the garbage component there as it is a large quantity.</li> <li>(g) An area for waste collection until disposal within the construction premises will be demarcated and waste minimization practices such as recycling and composting shall be considered.</li> <li>(h) Noise levels to be maintained according to IFC-WB EHS which override NEA standards.</li> </ul>	<p>Obtaining CEA clearance – UDA</p> <p>All other items by Contractor.</p>	Environment Officer ;/ Specialist	Contractor fee	During demolition

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<p><b>Safe handling of asbestos</b> In Sri Lanka, the use of blue asbestos fibers has been banned for the last 5 years. Current asbestos sheets use white fibers, considered less of a health hazard. Government discussions are underway on the appropriate disposal of asbestos.</p>	<p>Health and safety hazards with loose asbestos fibers for the workers.</p>	<ul style="list-style-type: none"> <li>(a) Rules outlined in the NEA shall be followed. (Guidelines are also provided as part of the ESMF).</li> <li>(b) Workers shall be educated on safe handling of asbestos. Asbestos sheets should be removed without damaging them as far as possible to reduce any health risk.</li> <li>(c) Asbestos shall not be burned under any circumstances.</li> <li>(d) Asbestos shall be separated from other spoil material. It will be discarded to an appropriate location in consultation with the CEA. Till discarded, it shall be stored in an appropriate and safe storage area.</li> <li>(e) Transportation of the asbestos sheets shall be carried out under covered conditions.</li> <li>(f) All asbestos handlers shall be attired with safety accessories including masks, gloves, eye protection etc.</li> <li>(g) UDA will identify a site for the safe storage of asbestos till CEA provides a solution for the disposal of asbestos.</li> </ul>	<p>Contractor.  Providing storage area for asbestos _UDA</p>	<p>Environment officer / Specialist</p>	<p>Contractor fee</p>	<p>During demolition</p>
<b>CONSTRUCTION PHASE</b>						

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Extraction of resources</b>	Extraction of natural resources such as sand, metal, etc. can cause changes in the topography and can lead to environmental degradation.	<ul style="list-style-type: none"> <li>(a) ICTAD Guidelines shall be followed.</li> <li>(b) All sand and aggregate shall be brought in from places with permits.</li> <li>(c) Wherever possible, use of sea sand shall be adopted to minimize the impacts on river beds.</li> </ul>	Contractor	Contractor	Contractor fee	Spot checks
<b>Land Preparation</b>	<p>Cut and fill activities may cause blockages of water ways / Sedimentation.</p> <p>Unless, fill material is brought from an approved place, it may lead to environmental degradation.</p> <p>If land is polluted, unless cleaned and sanitized, it may lead to health issues and vector issues affecting other existing community and future communities.</p>	<ul style="list-style-type: none"> <li>(a) During filling operations, silt traps or appropriate measures shall be taken near the canal system.</li> <li>(b) Construction debris shall not be disposed in the canal</li> <li>(c) In some instances, canal embankments will have to be raised. This will be carried out with the relevant authority such as SLLRDC, LA.</li> <li>(d) Fill material shall only be brought in through permit holders. ICTAD guidelines shall be followed.</li> <li>(e) Cleansing of the land shall be carried out using acceptable methodologies under the NEA (e.g. chlorine (bleach) at concentration: 50 to 100 ppm).. Canal upgrading and cleansing shall also be carried out by means of removing debris, possible dredging and cleaning of banks to improve water flow.</li> <li>(f) Noise shall be kept under control by regular maintenance of equipment and vehicles “no honking” board shall be placed near the boundaries. Noisy activity shall be prohibited during night time.</li> </ul>	Contractor	PMU Environmental Officer/ Specialist/ Contract Supervision Consultant.	Project cost	Weekly during construction

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Establishment of baseline environmental conditions prior to start of civil works</b>	<p>Obtaining a suitable and representative baseline data set will be critical to the whole monitoring and audit process because it forms the standard against which environmental impacts are assessed.</p> <p>Construction activities such as piling and high vibration activities may also lead to damage of structures in the surrounding area where there are still over 100 slum dwellings remaining.</p>	<ul style="list-style-type: none"> <li>(a) Documentation of demarcated areas for construction zone and labour camps shall be carried out. Include photos and GPS coordinates. This is applicable only if there are on site labour camps.</li> <li>(b) Base line monitoring in respect of ambient air quality, water quality, and noise levels and water quality shall be carried out. Baseline monitoring for water quality, air quality and noise, shall be audited prior to the start of construction and thereafter carried out during the construction phase of the subproject.</li> <li>(c) Structural surveys of the surrounding buildings and the underserved areas shall be carried out to establish any existing defects/damages.</li> <li>(d) Structures in the underserved areas shall be monitored closely during construction due to their fragility.</li> <li>(e) The grievance redress mechanism shall be made clear and easily accessible.</li> </ul>	Contractor	Contractor/ UDA PMU	Contractor fee	At commencement of operation.
<p><b>Setting up of labour camps</b></p> <p>This will only become applicable if labour camps are established.</p>	<p>Unless guidelines on labour camps are followed it can lead to environmental pollution. It can also lead to health, hygiene and safety issues for the workers.</p>	<ul style="list-style-type: none"> <li>(a) Location of labour camps shall be approved by the UDA PMU and shall comply with guidelines/recommendations issued by CEA and LAs.</li> <li>(b) Sitting of the construction camp shall be as per the guidelines provided by ICTAD with adequate space provision for labour camp and construction equipment within the site.</li> <li>(c) Proper solid waste disposal, sanitation and sewerage facilities (drinking water, urinals, toilets and wash rooms) shall be provided to the site of construction/labour camps.</li> </ul>	Contractor	Contractor / Environment Officer /Specialist	Contractor fee	As required

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Resources mobilization and allocation of space</b>	Allocation of space for storage yard for construction material, labour camp, project office requires addition amount of space.	<ul style="list-style-type: none"> <li>(a) Use local materials shall be practiced as much as possible to reduce the need for storage space</li> <li>(b) Storage of construction materials shall be located sufficiently away from the road frontage. Sand, rubble, metal bitumen and cement shall be covered. All cement, bitumen (barrels), oil and other chemicals shall be stored and handled on an impervious surface above ground level (e.g. concrete slab) and shall be enclosed ensuring that no storm water flows in to the structures. There shall be adequate ventilation to avoid accumulation of fumes and offensive odor that could be harmful.</li> <li>(c) Un-skilled and skilled workers for the proposed construction activities shall be sourced locally where possible to reduce the requirement of land for labor camps.</li> </ul>	Contractor	PMU Environment Officer / Specialist		Onset of construction
<b>Drinking water availability at construction camp and construction site</b>	No availability of drinking water for labourers will result in dehydration and health risk. (This is especially essential during the water scarce periods).	<ul style="list-style-type: none"> <li>(a) Sufficient supply of potable water shall be provided from a reputable source and maintained at the site.</li> <li>(b) The drinking water shall be stored in a suitable size storage tank to ensure uninterrupted availability.</li> <li>(c) Contractor shall submit his plan on ensuring water availability at the site for drinking sanitation and construction. The original source of the water supplied by the tankers will be recorded if brought in from outside.</li> </ul>	Contractor	PMU Environment Officer / Specialist		Weekly checks
<b>Dust and construction equipment emissions</b>	Impact from dust generation leads to Poor air quality release of Volatile Organic Compound (VOC) from	<ul style="list-style-type: none"> <li>(a) Dust control shall be carried out by wetting down and spraying water at construction site.</li> <li>(b) Dust emissions during transportation of construction materials shall be controlled by</li> </ul>	Contractor	PMU Environment Officer / Specialist		Weekly checks

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	storage sites and transfer of vehicle/equipment fuels, emission of small amounts of Carbon monoxide, Nitrogen dioxide and particulates from construction activities and vehicles may compromise health of the workers and surrounding community.	<p>enforcing speed limits on the vehicles close to site.</p> <p>(c) Precautions shall be taken to avoid dust emissions during loading and unloading of construction material. Tarpaulin covering is mandatory on trucks/lorries which are used for transporting materials.</p> <p>(d) All filling works shall be protected or covered in a manner to minimize dust generation</p> <p>(e) All vehicles, equipment, and machinery used for construction shall conform to the Sri Lankan government vehicle emission test. For equipment emission norms as specified in air emission gazette under the NEA.</p> <p>(f) The air quality monitoring shall conform to IFC-WB EHS standards.</p>				
<b>Noise pollution</b>	Construction noise can disturb surroundings	<p>(a) All machinery, equipment and vehicles shall be maintained in a good condition by engaging skilled mechanics and regularly maintained. National Emission Standards (1994). Noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinance, no 924/12) shall be strictly be implemented for crushers, construction vehicles and equipment.</p> <p>(b) Contractor shall ensure that all vehicles and equipment used in construction shall be fitted with exhaust silencers.</p> <p>(c) At the construction sites, noisy construction work such as crushing, operation of diesel generator sets, use of high noise generation equipment shall be stopped during the night time between 10:00 p.m. to 6:00 a.m.</p>	Contractor	PMU Environment Officer/ Specialist		Onset of construction, thereafter once in 3 months.

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		(d) The maximum permissible noise levels at boundaries of the land in which the source of noise is located for construction activities will conform to IFC-WB EHS mix development standards. These standards override the NEA standards.				
<b>Wastewater and sewage disposal</b>	<p>Untreated wastewater disposal from labour camps and toilet facilities will once again contribute towards the pollution of the unless handled appropriately.</p> <p>Untreated sewage will contaminate and degrade surface and ground waters as well as pose health risks.</p>	<p>(a) Temporary wastewater pits will be put in place during the construction which will be removed once the construction is completed.</p> <p>(b) Any release of wastewater will meet standards set by Sri Lanka Standards Institute (SLSI) and that stipulated under the NEA.</p> <p>(c) Temporary sewage pits (sealed) will have to be established which will be removed once construction is over. Any release of sewage will have to conform to IFC-WB-EHS standards if released in to the environment at any point.</p>	Contractor	PMU Environment Officer/ specialist		Onset of construction activities.
<b>Solid Waste disposal</b>	Waste generated from labour camps, officer's accommodations may impose several negative environmental and social impacts to the subproject affected area including impact on ecology, public health and scenic beauty	<p>a) Garbage bins shall be provided to all worker-based camps, No garbage will be disposed of into the environment.</p> <p>b) Cleanliness and good housekeeping shall be practiced on site. There shall be a demarcated waste storage area on site. Provision of proper drainage facilities to minimize water stagnation around worker-based camps shall be carried out.</p> <p>c) Under no circumstances shall the solid waste be burned on site.</p> <p>d) Site restoration plans for approval by PIU/PMU shall be prepared. On completion of the works, all temporary structures will be cleared.</p>	Contractor	PMU Environment Officer / Specialist		Weekly checks

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Transport of construction material</b>	<p>Transportation of construction materials on road network can cause damages to the access roads.</p> <p>Transportation of construction material, loading and unloading shuttering and metal poles and handling of heavy objects may increase the risk and injury to workers. It may also pose a nuisance to the surrounding community.</p>	<p>(a) The Contractor shall obtain permits from LAs to use local roads prior to transportation of construction materials, machineries etc.</p> <p>(b) ICTAD Operation and Re-Development of Borrow Areas Guidelines for Siting shall be followed in transportation, loading and unloading of construction material.</p>	Contractor	PMU Environment Officer / Specialist	Contractor fee	Once in 2 weeks
<b>Occupational Health and Safety of workers</b>	Absence of plan will lead to death to the worker and economic cost to the project	<p>(a) Contractor shall comply with Labor Organization (ILO) convention No. 62, ILO Convention 138 and 182 on Child Labour and Factory Ordinance, etc to the extent that are applicable to workers contract.</p> <p>(b) Contractor shall develop and implement a comprehensive site-specific health and safety plan on Occupational Health and Safety</p> <p>(c) First aid treatment shall be made available for all injuries likely to be sustained during work.</p> <p>(d) Medical insurance coverage and indemnity for workers shall be in place for all.</p> <p>(e) The contractor shall conform to all anti dengue instructions given to him by the PHI and the PMU.</p> <p>(f) Workers employed on mixing cement, lime mortars, concrete, etc., shall be provided</p>	Contractor	PMU Environment Officer / Specialist	Contractor fee	Once in 2 weeks

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		<p>with protective footwear and protective goggles.</p> <p>(g) Workers engaged in welding works shall be provided with welder's protective eye shields.</p> <p>(h) The use of any toxic chemical shall be strictly in accordance with the manufacturer's instructions. A register of all toxic chemicals delivered to the site shall be kept and maintained up to date by the contractor.</p> <p>(i) Use of licensed and trained vehicle operators, workers shall adopt necessary safety measures as stated in the contract including using of hard hats, boots, gloves and appropriate clothing.</p> <p>(j) Suitable communication and information on safety shall be provided.</p> <p>(k) The construction site shall be properly barricaded by appropriate material of adequate height.</p> <p>(l) Site shall be well lit to minimize accident risks.</p>				
<b>Chance Find</b>	<p>If any cultural or religious objects/structures are uncovered during excavation, unless precautions are taken it may be damaged.</p> <p>However, it is very unlikely that there will be any chance find for this project site as it was a</p>	<p>(a) In event that a chance find is uncovered, all work on the site shall be stopped and the Department of Archaeology informed. Thereafter instructions/recommendations provided on the way forward shall be adopted.</p> <p>(b) Workers shall be educated on chance find procedures.</p>	Contractor	Contractor		

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	former marshland that was filled in the early 1990s and is not within a culturally significant area.					
<b>Landscaping</b>	In the absence of proper landscape, it will not be aesthetically pleasing. Landscaping should blend in with the surrounding ecosystem.	<ul style="list-style-type: none"> <li>(a) Project landscape activities shall be done as per either detailed design or typical design guidelines.</li> <li>(b) Greening of the peripheries by planting trees along the drainage canals shall be considered.</li> <li>(c) Maximum possible buffer shall be maintained between the buildings and drainage canals.</li> <li>(d) Paving integrated with grass in open spaces that need to be paved shall be adopted to reduce the heat factor and also encourage infiltration of water during rains.</li> <li>(e) A recreational area shall be developed as a as a common area with already built apartment complex at Apple Watte.</li> </ul>	Contractor /PMU	PMU Environment Officer / Specialist		Towards end of construction
<b>OPERATIONAL PHASE</b>						
<b>Environmental conditions and parameters</b>	Unless regular monitoring is conducted, it may lead to environmental pollution and cleanliness issues during the operation of the Apartment complex.	<ul style="list-style-type: none"> <li>(a) Periodic monitoring of the ambient air quality, noise level, surface water quality, soil quality in the subproject area shall be carried out through an approved monitoring authority.</li> <li>(b) Residents shall be educated especially on noise levels within the complex especially at night.</li> <li>(c) Awareness programs shall be carried out on cleanliness and rules of apartment dwelling.</li> </ul>	Apartment Manager	PMU	UDA	Monthly in the first 3 months and thereafter as required.
<b>Drainage Congestion</b>	Stagnation or blocking the water flows may	(a) Apple Watta Apartment Complex shall undertake regular maintenance of the	Apartment Manager	PMU	UDA	Once in 4 months

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	<p>occur due to sediments, improper disposal of garbage during maintenance activities or ignorance. This will provide suitable habitats for vectors like mosquitoes etc. In the absence of a proper storm water drainage system there will be a risk of water logged conditions around the site.</p>	<p>drainage system to avoid drainage congestions.</p> <p>(b) Staff shall be employed to clean the drains and make sure that outfall for storm water is not blocked.</p> <p>(c) Drainage paths proposed in the survey plan shall not be blocked.</p>				
<b>Solid waste management</b>	<p>Lack of management of domestic waste water may cause health risks and obscure the landscape</p> <p>Though solid waste collection will be on a daily basis, in event that is a disruption to the service it will lead to build up. These can lead to an increase in vector population and health risks</p>	<p>(a) Waste disposal shall be carried out by the Local Authority</p> <p>(b) Demarcated solid waste storage area with source separation for organic waste and other domestic non-organic waste shall be maintained. This storage facility will be able to accommodate solid waste up to at least 3 days.</p> <p>(c) Possibility of providing garbage collectors with trollies to collect and bring down the garbage to the collection areas shall be explored. Could be residents. This will</p>	CMC / Manager	Manager / PMU Environment Officer.	UDA	Once in 3 months

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		<p>reduce throwing of garbage from the windows, etc.</p> <p>(d) Notices will be put up on garbage disposal. No littering signs, in or around the premises. No spitting signs will be put up.</p> <p>(e) Educational programs on general cleanliness and littering shall be carried out continuously.</p>				
<b>Maintenance of apartments and sanitary facilities and overall apartment cleanliness</b>	Unless individual apartments are maintained including sanitary facilities, it may lead to health risks.	<p>(a) Quarterly random checks will be carried out for the 1st year. Thereafter annual random checks.</p> <p>(b) Maintenance of the sanitary facilities shall be monitored. Residents shall be trained in plumbing, etc as a livelihood option.</p> <p>(c) A suitable sump and overhead tank shall be provided, taking into account the daily requirement of water to ensure uninterrupted water supply for the sanitary facilities.</p> <p>(d) Public area cleanliness shall be maintained and observations from already constructed Apple Watte apartments show that spitting and spitting of chewed betel creates a very unhealthy environment and unpleasant odor. Sanitization program shall be considered (e.g spraying of chlorine on a daily basis).</p>	Manager	PMU Environment Officer	UDA	Spot checks carried out Monthly for the first 3 months and thereafter bi-annually.
<b>Safety of residents:</b>	Risk of accidental deaths due to negligence	(a) The residents shall be trained on managing risk and emergencies.	Observations and safety reports		UDA operation cost	Annually

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		<ul style="list-style-type: none"> <li>(b) Emergency switches shall be properly covered.</li> <li>(c) Fire extinguishers shall be placed adequately and they shall be working at all times.</li> </ul>				
<b>Maintenance of shops</b>	Lack of maintenance of the shop areas in the ground floor may lead to vector infestations and lead to health issues.	<ul style="list-style-type: none"> <li>(a) Guidelines on cleanliness and maintenance shall be provided.</li> <li>(b) In event that there are food shops, PHI checks and adoption of food safety regulations shall be adopted.</li> <li>(c) Spot checks shall be carried out.</li> </ul>	PHI, Police	PHI Police		
<b>Social issues</b>	Unless existing and new social issues are identified, with the new environment these may get aggravated leading to an unhealthy environment.	<ul style="list-style-type: none"> <li>(a) Community issues shall be evaluated.</li> <li>(b) Alternative livelihoods shall be identified.</li> <li>(c) Counseling services shall be provided or people directed to required avenues by involving necessary authorities.</li> <li>(d) Social uplift programs for the community shall be implemented.</li> </ul>	UDA PMU Social Development Unit	UDA PMU Social Development Unit	UDA	Within 1 <sup>st</sup> year
<b>Onsite emergency plan for minor accidents mishaps and disaster management plan.</b>	Damage to the property and life	<ul style="list-style-type: none"> <li>(a) UDA shall prepare an onsite emergency plan in event of minor accidents.</li> <li>(b) An in house plan in event of a natural disaster shall be developed to address urban floods tornados and cyclones.</li> <li>(c) Awareness on fire management shall be provided to residents. This will include evacuation procedures and use of equipment.</li> </ul>	Manager / PMU / Fire Department	PMU	UDA	Mock drills / awareness carried out once in 3 months..