

**RAPID ENVIRONMENTAL AND SOCIAL ASSESSMENT  
AND THE ENVIRONMENTAL AND SOCIAL MANAGEMENT  
PLAN FOR THE  
PROPOSED HOUSING COMPLEX IN COLAMBAGE  
MAWATHA  
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 Colombege Mawatha, Colombo 6 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 Colombege Mawatha. This identifies the site-specific impacts and the mitigation measures that are recommended.

## **2. Sub Project Description**

### **2.1 Area description**

The Colabage Mawatha project site is located in Kirulapone, within the Municipal Council (MC) limits of Colombo in Palle Pattu of Salipita Korale. Kirulapone is located approximately 6 km from the center of Colombo (Colombo Fort). According to the City of Colombo Development Plan amendment in 2008, Kirulapone is categorized as a primarily residential zone with commercial establishments. The project

area of influence consists of the following significant establishments; Open University of Sri Lanka, Kirulapone Railway and High Level road which are within a 500 m radius. The total population in Kirulapone is 17,846 and among them 7221 are employed. Site area is bounded by D.M Colambage Mawatha, 7<sup>th</sup> Lane, 5<sup>th</sup> Lane and Poorwarama Road. See Figure 1 for site location area and UDA's development plan for the area.

Figure 1: Location of the project site and the development plan for the area



Source: UDA

Project site is bounded with two 30 feet wide roads called 5<sup>th</sup> Lane and 7<sup>th</sup> Lane. Both lanes are residential. A dry weather park is proposed near the western boundary of the site. The project area has an important canal system. Under the action project of canal development, UDA plans to connect all small canals to the Kirulapone canal and water front development has been proposed for Colambage Mawatha. This is expected to support freight transport with a boat system.

## 2.2 Site description

The Proposed land is situated in Kirulapone within the CMC limits. The land location points are 6°52'42.86"N 79°53'02.76"E. The land is rectangular in shape and the total land area demarcated for Colambage Mawatha housing complex under proposed AIIB financing is 2 acres 0 route and 24.31 perches. The land ownership is with UDA and there are no legal cases pending related to land ownership. The northern boundary is demarcated with a drainage canal (Ela) beyond which is an underserved settlement. The southern boundary borders a drainage canal reservation of 2.5m. The western boundary borders a 7m wide canal. The eastern boundary borders a 10m road reservation. Beyond the road, the land use is middle to high income housing.

The proposed site is a cleared site where building construction had begun in 2014 under an Indian contractor. However, the sub project had been stalled after completion of the piling and groundwork. There is no re-location of people involved under this sub project. At the time of the site visit, there was a temporary cattle shed with 4 cows and 5 buffalos which were being reared for milk. A temporary waterhole was also established for the buffalos. UDA had temporarily allowed the owner to use this property for the cattle when he was relocated from Kalinga Place to Maligawatte. When asked whether he is willing to adopt an alternative livelihood he was not in favor of it. He does not want to give up his cattle. UDA will have to work out a strategy to resolve the problem as the cattle will have to be re-located. UDA has temporarily also rented the land for vehicle parking to Metro Colombo Solid Waste Management Project.

Some waste disposal including ceiling sheets/plywood boards were observed at the site. The drainage canal system around the proposed land was overgrown with weeds and there were some solid waste including glass.

*Figure 2: Pictures of the proposed land*



At Colabage Mawatha, 624 new housing units have been proposed. 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 the ground floor and another 11 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 and one janitorial room per block. Each apartment tower will also have a health center and a parking area. Each housing unit within the apartment complex will have a minimum floor area of 450 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.

## 2.3 Infrastructure development

Water supply for the new apartment complex will be through the Water Supply and Drainage Board. Water supply will be taken through a sump dedicated for the apartment complex. This will ensure that there is no disruption to the water supply of the resident communities. Each housing unit will be provided with a separate water meter so that they pay according to their consumption. Plumbing for wastewater and sewage will be done separately but will both be connected to the CMC Central Sewer System. The wastewater project is currently laying the pipelines in the area and is expected to be ready by 2020 for connection along Colambage Mawatha. Dedicated 3 phase electricity will be provided along with a dedicated transformer. Each housing unit will be provided with an electricity meter but the occupant will be responsible for obtaining the connection directly from the Ceylon Electricity Board.

## 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 and cleared by the Environmental Consultative Committee (ECC). This is not applicable in the case of Colabage Mawatha 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 has been categorized as A. Colombege Mawatha. 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.

#### **4. Public consultation**

A consultation meeting was carried out at Colabage Mawatha with the host community on 21<sup>st</sup> January 2019. The meeting was held just outside the proposed development site. The community that participated included those from the underserved area adjacent to the proposed land. The middle and upper income host community opposite the proposed land did not participate in the meeting due to unavailability. The meeting was fairly short as the community was disgruntled saying that they have been promised with many things but they have not got anything. They requested that the higher officials of UDA provide them with some conformation on what they will gain before they engage in any consultation. All present refused to sign an attendance sheet so no analysis is provided. However, there were about 50-60 people present both male and female. UDA will have to follow up on the required awareness raising and clarifications to the adjoining underserved community. UDA will also have to have a separate consultation with the middle and upper income housing that is situated opposite the proposed land to raise awareness and to accommodate any of their concerns. This will be done by mid February 2019.

Those present claim that there are 22 households that are paying tax and that they have a right to the land (this is outside the proposed development site – host community). These have now been identified as lands to be liberated. UDA will look into this in more detail by holding consultations with these stakeholders. These meetings will be held by mid February 2019 and the Resettlement Policy (RPF) will also be applied if and where necessary. Once the meetings are complete, UDA will share the minutes of the meetings.



## **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 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 (by end February 2019). This will create awareness of the subproject implementation among the public

### **5.2 GRM Process**

The GRM process is outlined in the ESMF and 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 (these can be named or anonymous). A complaints box will be made available at the project site as well and site managers will be made aware on the need to accommodate grievances of the surrounding community. 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 center (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. For complex grievances relating to resettlement refer the Resettlement Policy Framework (RPF) at [http://www.uda.gov.lk/upload/attach/RPF/RPF\\_updated.pdf](http://www.uda.gov.lk/upload/attach/RPF/RPF_updated.pdf)

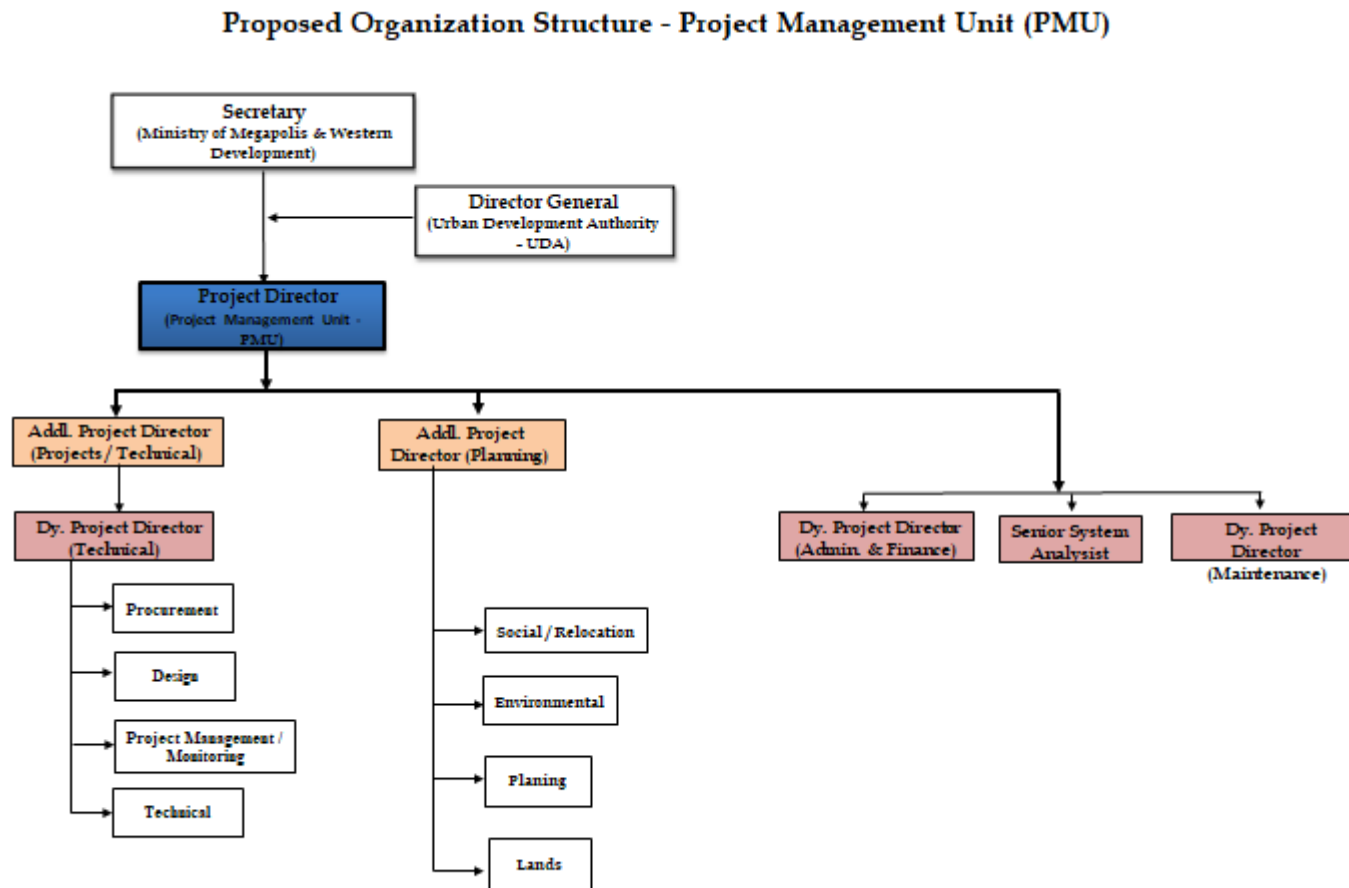
### **5.3. Institutional arrangements**

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 (expected to be recruited before end February 2019) and letter to advertise has been sent for approval. 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. PMU 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. All activities will be subject to the Environmental and Social Management Framework (ESMF) of the UDA for the URP. This document is available in English, Tamil and Sinhala on the UDA website ([http://www.uda.gov.lk/upload/attach/ESMPF/ESMF\\_updated.pdf](http://www.uda.gov.lk/upload/attach/ESMPF/ESMF_updated.pdf)). All detailed guidelines and standards for environmental and social safeguards to be followed are provided in the ESMF for the overall URP.

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 COLAMBAGE MAWATHA  
HOUSING DEVELOPMENT PROJECT, KIRULAPONE**

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.	(a) Environmental clearance for overall project should be obtained from CEA. (b) Obtain building approval from UDA before commencement of construction.. (c) COC should be in place before moving people in. (d) SLLRDC be notified of 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. Also obtain any guidelines required by SLLRDC to be followed during construction.	UDA PMU (Planning)	UDA Addl. Project Director Planning	Project cost	Before construction
<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 study should be carried out so that recommendations can be followed in the structural design of the building.	UDA/outsource	UDA PMU	Project cost	Before building design
<b>Waste management</b>	Lack of a waste management plan will lead to environmental pollution	(a) A waste management plan has to be developed for the apartment complex. It should identify quantities of the different types of waste, potential options for disposal. (b) Carry out discussions on solid waste				

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		<p>disposal with CMC, and other private parties who may be interested in recyclable waste. Build on private partnerships.</p> <p>(c) Determine mode of wastewater and sewerage disposal (identified as the central sewer system).</p>				
<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.	<p>-The location of utilities and operators of utilities to be impacted should be identified and documented in detailed project design documents to prevent unnecessary disruption of services during the construction phase.</p> <p>-Contractor should prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</p>	Contractor/C EB, NWSDB	UDA PMU	Project	Pre-construction
<b>Public consultations and social surveys</b>	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.	<p>(a) Consultations should be carried out with the host community, essentially the middle to high income households. Awareness on the subproject should be raised and any concerns heard prior to commencement of construction.</p> <p>(b) Awareness on grievance redress mechanism and information disclosure shared with all stakeholders and host community. Special consultations will be held with the host communities. (a) with underserved areas to provide them with reassurance on relocation. This will be carried out with the involvement of higher officials of the URP; (b) with middle income and higher income household to accommodate any grievances.</p> <p>(c) Grievance mechanism to be transparent and easily accessible and visible to the affected people.</p>	UDA PMU (Land and Social Issues Unit) and environment specialist/officer)	UDA PMU	Project	<b>Immediately (by end February)</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	<ul style="list-style-type: none"> <li>(a) Identify any places of importance including religious structures, cultural/heritage structures and also community monuments within a 500m radius of the site.</li> <li>(b) Ensure contractor is made aware of the places above and should be sensitive to them.</li> <li>(c) Development of Chance-find procedures.</li> </ul>				
<b>Disaster management</b>	Extreme climate events such as intense rainfall (flooding), cyclone etc. and fire may cause damages to lives and property.	<ul style="list-style-type: none"> <li>(a) Adoption of appropriate disaster risk reduction strategy, emergency preparedness and recovery, training/orientation program for residents and construction worker, etc.</li> <li>(b) Identify an emergency evacuation points in the buildings.</li> <li>(c) An emergency alarm system has to be in place in all the buildings. Fire prevention measures to be adopted such as sprinklers, extinguishers, etc. Carry out in consultation with Fire Department.</li> <li>(d) Lightening receptors included.</li> </ul>	UDA PMU / Design Consultant	UDA PMU	Project	Before construction
<b>Design</b>						
<b>Risk of temporary floods</b>	unless proper maintenance 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	<ul style="list-style-type: none"> <li>(a) Sloping of terrain to ensure natural drainage towards canal should be carried out.</li> <li>(b) Identify and develop drain plan to carry rain water towards the canal.</li> <li>(c) Discuss with SLLRDC on cleaning and rehabilitation of the canal system.</li> </ul>	UDA PMU/ Design Consultants	UDA PMU		Development of detailed design.

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	incidence of vector born disease.					
<b>Sustainability and safety</b>	<p>Lack of sufficient planning to assure long-term sustainability and quality of the buildings may lead to subsidence or other infrastructure defects/disasters.</p> <p>Design of the apartment not meeting the requirement of the occupants may lead to disruption of the overall apartment complex.</p>	<p>(a) Design has to include provisions for effective maintenance and protection of the apartment buildings in the long-term.</p> <p>(b) Implement Standards Codes for design (such as UDA and ICTAD), appropriate wind load factor and soil stability and net allowable carrying capacity and skin friction should be considered.</p> <p>(c) Concept of privacy should be considered where the design ensures minimal visibility from one apartment to another as this may lead to conflicts.</p> <p>(d) Each apartment should have personalized open spaces (such as balcony).</p> <p>(e) Adequate number of stairways should be incorporated including emergency evacuation.</p> <p>(f) Adequate number of elevators should be installed.</p>	.Design Architect / PMU	PMU	UDA	During building design
<b>Integration of energy efficiency and energy conservation in design of project components.</b>	<p>Unsustainable, energy inefficient, and un-economical unviable building will negatively impact the environment resource as requirement is high.</p> <p>In the absence of water conservation and energy efficiency of the building structure, it may lead to resource constrains and increase the</p>	<p>The detailed designs for the project should ensure environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc.:</p> <ul style="list-style-type: none"> <li>- Usage of recyclable materials like wood substitutes.</li> <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>	.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
	running cost.					
<b>Solid waste</b>	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.	(a) Solid waste management plan has to be developed for the new apartment complex with estimated quantities of the different types of solid waste generated and identified means of disposal. (b) Incorporate solid waste storage area in the plan with source segregation and storage capacity for 3 days. This should be planned at the ground level.	Design Architect / PMU	UDA PMU	Project cost/ UDA	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.	(c) Wastewater and sewage to be connected to the central sewer line. (d) In event that wastewater and sewage is not connected to the central sewer line, treatment plants will have to be put in place with effluent meeting IFC-WB EHS which override NEA standards.	UDA - PMU	UDA PMU	Project/UDA	Design stage and again end of construction.
<b>Occupational Health, Safety, and essential facilities</b>	Lack of safety measures within the design will lead to fire and increase occupational safety hazards.	(a) Design should include fire safety specifications (appropriate number of stairways, emergency exits, etc.). (b) Provisions should be incorporated to accommodate residence with disabilities.	Design Architect	UDA PMU	Project cost	At design stage and during construction.
<b>Social conflicts</b>	Unless privacy considerations are taken into account, it may lead to conflict.	(a) Design should take into account privacy of residents, i.e seeing through into bedrooms from one apartment to another should be avoided.	Design architect	UDA PMU	Project cost	At design stage and during construction.
<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) Ensure ICTAD Guidelines are followed.</li> <li>(b) All sand and aggregate should be brought in from places with permits.</li> <li>(c) Wherever possible, use of sea sand should be adopted to minimize the impacts on river beds.</li> </ul>	Contractor	Contractor / Environmental Officer/Specialist	Contractor fee	During construction (annual 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 a approved place, it may lead to environmental degradation.</p>	<ul style="list-style-type: none"> <li>(a) Construction debris should not be disposed in the canal</li> <li>(b) In some instances canal embankments will have to be raised. This will have to be carried out with the relevant authority such as SLLRDC, LA.</li> <li>(c) Fill material should only be brought in through permit holders. ICTAD guidelines to be followed.</li> <li>(d) Noise has to 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
<b>Establishment of baseline environmental conditions prior to start of civil works</b>	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.	<ul style="list-style-type: none"> <li>(a) Conduct documentation of demarcated areas for construction zone and labor camps. Include photos and GPS coordinates.</li> <li>(b) Conduct base line monitoring in respect of ambient air quality, water quality, and noise levels and water quality as per monitoring plan. Baseline monitoring for water quality, air quality and noise, will be audited prior to the start of construction and thereafter carried out during the life cycle of the subproject..</li> <li>(c) The grievance redress mechanism will</li> </ul>	Contractor	Contractor		

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		have to be made clear and easily accessible.				
<b>Setting up of labor camps</b>	Unless guidelines on labor camps are followed it can lead to environmental pollution. It can also lead to health, hygiene and safety issues for the workers.	<ul style="list-style-type: none"> <li>(a) Location of labor camps should be approved by the UDA PMU and 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 labor 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) should be provided to the site of construction/labor camps</li> </ul>	Contractor	Contractor / Environment officer /specialist	Contractor fee	As required
<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 as much as possible to reduce the need for storage space</li> <li>(b) Storage of construction materials should be located sufficiently away from the road frontage. Sand, rubble, metal bitumen and cement should be covered. All cement, bitumen (barrels), oil and other chemicals should be stored and handled on an impervious surface above ground level (e.g. concrete slab) and should be enclosed ensuring that no storm water flows in to the structures. There should be adequate ventilation to avoid accumulation of fumes and offensive odor that could be harmful.</li> <li>(c) Selection of local un-skilled and skilled workers for the proposed construction activities can reduce the requirement of land for labor camps.</li> </ul>	Contractor	PMU Environment Officer/ Specialist		Onset of construction
<b>Drinking</b>	No availability of	(a) Sufficient supply of potable water to be	Contractor	PMU		Weekly

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>water availability at construction camp and construction site</b>	drinking water for laborers will result in dehydration and health risk. (This is especially essential during the water scarce periods).	<p>provided from a reputable source and maintained at the site.</p> <p>(b) The drinking water will be stored in a suitable size storage tank to ensure uninterrupted availability.</p> <p>(c) Contractor will 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.</p>		Environment Officer/ Specialist		checks
<b>Dust and construction equipment emissions</b>	Impact from dust generation leads to Poor air quality release of Volatile Organic Compound (VOC) from 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>(a) Wet down and spray water at construction site.</p> <p>(b) Dust emissions during transportation of construction materials should be controlled by enforcing speed limits on the vehicles close to site.</p> <p>(c) Take steps 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 are to 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 will conform to IFC-WB EHS standards.</p>	Contractor	PMU Environment Officer/ Specialist		Weekly checks
<b>Noise pollution</b>	Construction noise can disturb surroundings	(a) All machinery, equipment and vehicles should be maintained in a good condition by engaging skilled mechanics and regularly maintained. National Emission	Contractor	PMU Environment Officer/ Specialist		Onset of construction, thereafter once in 3

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		<p>Standards (1994). Noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinance, no 924/12) should strictly be implemented for crushers, construction vehicles and equipment.</p> <p>(b) Contractor must 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> <p>(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.</p>				months.
<b>Wastewater and sewage disposal</b>	<p>Untreated wastewater disposal from labor 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 labor camps, officer's	a) Garbage bins should be provided to all worker-based camps, No garbage will be	Contractor	PMU Environment		Weekly checks

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	accommodations may impose several negative environmental and social impacts to the subproject affected area including impact on ecology, public health and scenic beauty	<p>disposed of into the environment.</p> <p>b) Practice cleanliness and good housekeeping practices on site. There should be a demarcated waste storage area on site. Provision of proper drainage facilities to minimize water stagnation around worker-based camps.</p> <p>c) Under no circumstances should the solid waste be burned on site.</p> <p>d) Prepare site restoration plans for approval by PIU/PMU. On completion of the works, all temporary structures will be cleared.</p>		Officer / Specialist		
<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 should 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 should be followed in transportation, loading and unloading of construction material.</p>	Contractor	PMU Environment Officer	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	(a) Contactor to comply with ADB Environmental, Health, and Safety Guidelines, 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.	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
		<ul style="list-style-type: none"> <li>(b) Develop and implement comprehensive site-specific health and safety plan on Occupational Health and Safety</li> <li>(c) First aid treatment will be made available for all injuries likely to be sustained during work.</li> <li>(d) Provide medical insurance coverage and indemnity for workers.</li> <li>(e) The contractor will conform to all anti dengue instructions given to him by the PHI and the PMU.</li> <li>(f) Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles.</li> <li>(g) Workers engaged in welding works will be provided with welder's protective eye shields.</li> <li>(h) The use of any toxic chemical will be strictly in accordance with the manufacturer's instructions. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the contractor.</li> <li>(i) Use of licensed and trained vehicle operators, workers should adopt necessary safety measures as stated in the contract including using of hard hats, boots, gloves and appropriate clothing.</li> <li>(j) Provide suitable communication and information on safety</li> <li>(k) The construction site will be properly barricaded by appropriate material of adequate height.</li> <li>(l) Site will be well lit to minimize accident risks.</li> </ul>				

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<b>Chance Find</b>	If any cultural or religious objects/structures are uncovered during excavation, unless precautions are taken it may be damaged.	(a) In event that a chance find is uncovered, all work on the site must be stopped and the Department of Archaeology informed. They will thereafter visit the site and provide instructions/recommendations on the way forward. (b) Educate workers on chance find procedures.	Contractor	Contractor		During land preparation
<b>Landscaping</b>	In the absence of proper landscape, it will not be aesthetically pleasing. Landscaping should blend in with the surrounding ecosystem.	(a) Project landscape activities have to be done as per either detailed design or typical design guidelines. (b) Consider greening of the peripheries by planting trees along the drainage canals. (c) Keep maximum possible buffer between the buildings and drainage canals. (d) Adopt paving integrated with grass in open spaces that need to be paved to reduce the heat factor and also encourage infiltration of water during rains. (e) Plan for a recreational area being made common with the already built apartment complex at Colambage Mawatha.	Contractor /PMU	Environment Officer, PMU		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.	(a) Periodic monitoring of the ambient air quality, noise level, surface water quality, soil quality in the subproject area as suggested in the monitoring plan through an approved monitoring authority. (b) Residents need to be educated especially on noise levels within the complex especially at night. (c) Awareness programs to be carried out on cleanliness and rules of apartment dwelling.	Apartment Manager	PMU	UDA	Monthly in the first 3 months and thereafter as required.
<b>Drainage Congestions</b>	Stagnation or blocking the water flows may	Colambage Mawatha housing flat needs to 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>(a) Employ staff to clean the drains and make sure that outfall for storm water is not blocked.</p> <p>(b) 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 is disposed by the Local Authority</p> <p>(b) Ensure demarcated solid waste storage area with source separation for organic waste and other domestic non-organic waste. This storage facility should be able to accommodate solid waste up to atleast 3 days.</p> <p>(c) Explore possibility of providing garbage collectors with trollies to collect and bring down to the collection areas. Could be residents. This will 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 to be put up.</p> <p>(e) Educational programs on general cleanliness and littering to be carried out continuously with and incentive.</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
<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.	<ul style="list-style-type: none"> <li>(a) Quarterly random checks be carried out for the 1<sup>st</sup> year. Thereafter annual random checks.</li> <li>(b) Ensure proper maintenance of the sanitary facilities. Train residents in plumbing, etc as a livelihood option.</li> <li>(c) Provide a suitable sump and overhead tank, taking into account the daily requirement of water to ensure uninterrupted water supply for the sanitary facilities.</li> <li>(d) Public area cleanliness has to be maintained. Sanitization program should be considered if required for common areas (e.g spraying of chlorine on a daily basis).</li> </ul>	Manager	PMU Environment Officer/ Specialist	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	<ul style="list-style-type: none"> <li>(a) Train the residence on managing risk and emergencies.</li> <li>(b) Provision of first aid kit and train the teachers on usage.</li> <li>(c) Emergency switches should be properly covered.</li> <li>(d) Fire extinguishers must be placed adequately and they should be working at all times.</li> </ul>	Observations and safety reports	PMU Environment Officer/ Specialist	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
<b>Maintenance of shop s</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) Provide guidelines on cleanliness and maintenance.</li> <li>(b) In event that there are food shops, PHI checks and adoption of food safety regulations should be adopted.</li> <li>(c) Carry out spot checks.</li> </ul>	UDA- PMU	Manager		As required
<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) Need to evaluate the community issues.</li> <li>(b) Identify alternative livelihood s</li> <li>(c) Provide counseling services or direct to required avenues by involving necessary authorities.</li> <li>(d) Implement social uplift programs for the community.</li> </ul>	UDA PMU Social Development Unit	UDA PMU Social Development Unit		At the beginning
<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 should prepare an onsite emergency plan in event of minor accidents.</li> <li>(b) A in house plan in event of a natural disaster should be developed to address urban floods tornados and cyclones.</li> <li>(c) Awareness on fire management should be provided to residents. This should include evacuation procedures and use of equipment.</li> </ul>	Manager / PMU / Fire Department	PMU Environment Officer/ Specialist / Fire Department	UDA	Mock drills / awareness carried out once in 3 months..