

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

Urban Regeneration Project

UDA

February, 2019

TABLE OF CONTENTS

1. Introduction	3
2. Sub Project Description	3
2.1 Area description.....	3
2.2 Site description	4
2.3 Description of the Subproject	5
2.4 Infrastructure	6
3. Policy and legal framework	6
3.1 Applicable Measurable Environmental Legislations relevant to subproject	6
4. Public consultation	7
4.1 Approach to Public Consultation.....	7
4.2 Finding	7
5. Grievance redress mechanism and institutional arrangements	8
5.1 Consultation and information disclosure.....	8
5.2 GRM Process.....	9
5.3. Institutional arrangements.....	9
6. Environmental and social impacts and mitigation	12
Implementing Agency: Urban Development Authority (UDA)	13

ABBREVIATIONS

AIIB	Asian Infrastructure Development 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) has agreed to finance initially 6 subprojects from the overall program 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 will support the redevelopment of the freed land as a result of this project including the provision of public amenities. Component 3 will (USD 10M) will 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 Madampitiya mainly as a requirement for AIIB. The current document will briefly discuss the subproject project area, sub project description/scope, policy and legal framework, consultations, institutional framework and grievance redress mechanism. It also provides a comprehensive environmental and social management plan (ESMP) for the proposed development site at Madampitiya. This identifies the site specific impacts and the mitigation measures that are recommended.

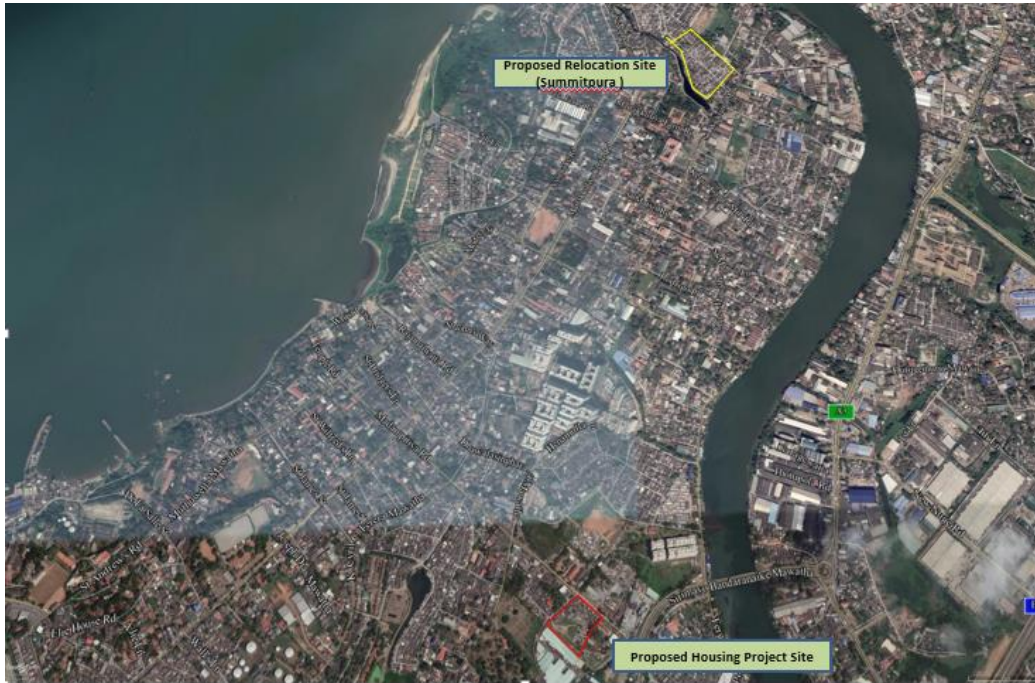
2. Sub Project Description

2.1 Area description

The subproject site is located in Madampitiya, Colombo 15 located approximately 4 km from the Colombo city centre (Colombo Fort). The project area of influence (within 500m radius) consists of the following places of significance; Mattakuliya police station, Kelanai River, Institute of Higher National

Diploma in Engineering, Ocean University of Sri Lanka, central fish market. The Crow Island beach is about 1 km from the proposed site. The total population in Madampitiya is 12,970 and consists of a multi-ethnic.

2.2 Site description



The Proposed land is situated in Madampitiya is within the Colombo Municipal Council (CMC) limits. The land location points are 06°57'15.11N 79°52'17.04"E. The land is rectangular in shape. The total land area demarcated for Madampitiya housing complex under AIB financing is 4 acres 1 route and 38.80 perches and is rectangular in shape. The land ownership is with UDA and there are no legal cases pending related to the land.

The proposed land consist of three plots of land marked in the survey plan as No 1, No 2, and No 3. Lot 1 is currently marsh land containing 38 permanent buildings. Lot No 2 is garden and lot No 3 is a garden with permanent buildings. The northern boundary adjoins the Galamola watta road and Madampitiya road. The eastern boundary borders with Madampitiya Road and the Canal (Ela). The southern boundary borders a road and the western boundary boarded with Lot D and Galamolawatta road.

The proposed site is being cleared of the low income housing. It was observed that some areas were already cleared without any demarcation of boundaries and no safety measures appeared to be adopted. The drainage system is polluted with garbage, effluent outfalls from the houses, etc. See Figure 2 for some pictures of the subproject location. The area is low lying and has a risk of flooding during heavy rains. Under the current subproject, 60 remaining households will be relocated.

Currently discussions are under way on the relocation of the remaining houses. This will be carried out in accordance to the RPF.

Figure 2: Pictures of subproject site



2.3 Description of the Subproject

700 housing units have been proposed for the Madampitiya subproject. 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 15 floors. 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 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 500 sq.ft. Each housing unit will consist of a 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 t maintained 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.

2.4 Infrastructure

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 which is already available. 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. Other infrastructure development in the area includes widening of Madampitiya Road as part of the development plan for the overall Madampitiya area.

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 applicable legislation 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 needs to be cleared and reviewed by the

Environmental Consultative Committee (ECC). This is not applicable in the case of Madampitiya 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 requirement and that 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

4.1 Approach to Public Consultation

A consultative meeting was held on 8th of August, 2018 for the residents from the subproject site. In total 60 people participated including 39 female participants. Discussion was carried out in the Temple on Madampitiya Road.

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.

4.2 Findings

From the information collected, the resident community consisted of a predominantly Sinhala community with a few Muslim and Tamil families. Family sizes averaged around 5. Most of the female community stays at home and men go to work mainly as three wheeler drivers. Some women work as house helpers. Few people were engaged in business and permanent jobs. This information was based on information provided by the participants. A formal household/resettle survey will have to be carried out to ascertain true situation.

Some are in favor of the new housing project, and others aren't but they understand that they will have to move. All of them want to return to the same location, they do not want to move to Methsanda Sevana or Henamulla as they are very concerned about the living conditions and providing a good environment for their children. When asked, they reacted positively to the option of being given a rent allowance during the transition period. They also requested that they be housed within the first 5

floors of the apartment building. Some requested that they be housed according to their “level/class/income levels”.

There were a few people who were frustrated about the allocation of a housing unit as they claimed they have put their whole life savings into the house and that should be evaluated. These were people living the bigger houses near Madampitiya Road. These people had been given registration certificates for their house and they are paying taxes to CMC. UDA will discuss these matters and reach a consensus with the people.

Figure 3: Public Consultation held on 8th August at Madampitiya



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 cleared 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 (this is to discourage use of paper and wastage). 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 (expected to be ready 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 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 For complex grievances relating to resettlement refer the Resettlement Policy Framework (RPF) at http://www.uda.gov.lk/upload/attach/RPF/RPF_updated.pdf.

5.3. Institutional arrangements

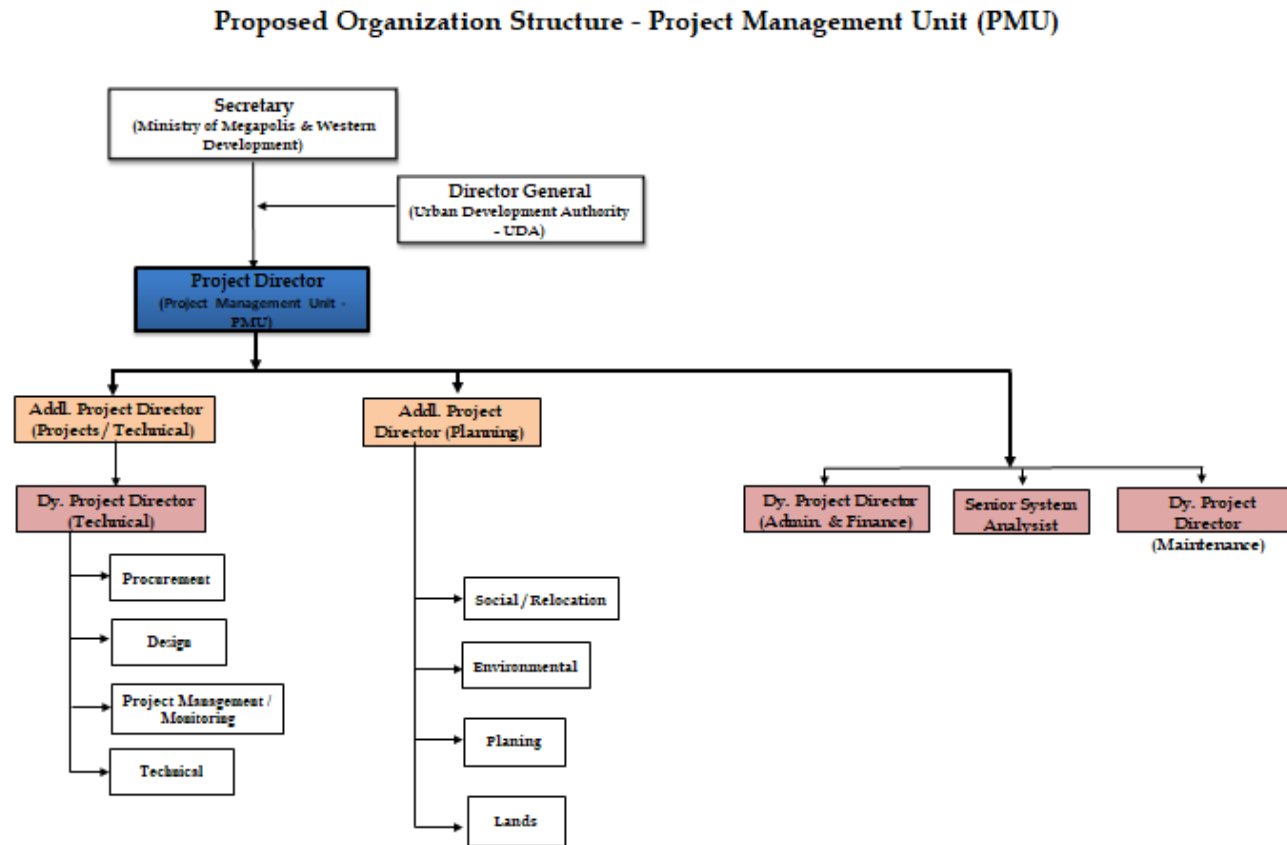
The institutional arrangement of UDA is provided in Figure 3. Most of the environmental and social management activities related to this subproject will come directly under the Additional Project Director (Planning). Under the current setup, there is a well-established social division to carry out the

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 (advertising and recruitment clearance is being obtained at the moment. They expect to recruit by end February 2019). 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 4. Organizational 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). 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 MADAMPITIYA 318 WATTA HOUSING DEVELOPMENT PROJECT,
MADAMPITIYA, COLOMBO 15**

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
Planning						
Clearance for the project	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) . (c) COC should be in place before moving people in. (d) Environmental recommendation must be obtained from CEA for demolition waste. (e) SLLRDC to be 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. Also obtain any guidelines required by SLLRDC to be followed during demolition and construction. Identify any bottlenecks in canal drainage system that may require rectification to reduce incidence of floods during heavy rains.	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
Flood prone sites	<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 has to be adopted. Raise building level by filling and raising DPC level.</p> <p>(b) Brief assessment has to 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) Maintain and improve design features such as drainage structures in consultation with SLLRDC. Identify any bottlenecks in the drainage system.</p>	UDA PMU	UDA PMU	UDA	Before design phase
Structural considerations for sustainability of project.	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
Waste management	Lack of a waste management plan will lead to environmental pollution	<p>(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.</p> <p>(b) Carry out discussions on solid waste 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</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
		central sewer system).				
Utilities	Establishment of utilities for the houses such as water, telecommunication and electricity will disrupt the services to the project associated establishments and communities. Access road for construction and future use should be included.	<ul style="list-style-type: none"> -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. -Contractor should prepare a contingency plan to include actions to be done in case of unintentional interruption of services. 	Contractor/C EB, NWSDB	UDA PMU	Project	Pre-construction

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<p>Public consultations and social surveys</p> <p>Currently there is no consultation process. Last comprehensive social survey carried out in 2013. That too does not capture all required data.</p>	<p>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>	<p>(a) Consultations have to be carried out with residents of the land who have been re-located/to be relocated.</p> <p>(b) Social survey (house to house) should be conducted for all re-located households (60 remaining) with an appropriately designed questionnaire. A social development specialist should be involved in the design of the questionnaire.</p> <p>(c) An analysis of existing livelihoods and livelihood losses should be studied and alternatives looked at with the help of a social development specialist.</p> <p>(d) The above should be carried out immediately as ideally it should be carried out before relocation.</p> <p>(e) Develop consultation schedule which should be done immediately before relocation, 1 month after relocation and thereafter bi annually for the 1st year.</p> <p>(f) Grievance mechanism to be transparent and easily accessible and visible to the affected people.</p>	<p>UDA PMU (Land and Social Issues Unit and environment specialist/officer)</p>	<p>UDA PMU</p>	<p>Project</p>	<p>Immediately</p>
<p>Places of importance/cultural heritage</p>	<p>Unless important cultural and heritage sites are identified in advance, it may lead to damage and social unrest unless precautions are taken</p>	<p>(a) Identify any places of importance including religious structures, cultural/heritage structures and also community monuments within a 500m radius of the site.</p> <p>(b) Ensure contractor is made aware of the places above and should be sensitive to them.</p> <p>(c) Development of Chance-find procedures</p>	<p>UDA PMU</p>	<p>UDA PMU</p>		<p>Before construction</p>
<p>Disaster management</p>	<p>Extreme climate events such as intense rainfall</p>	<p>(a) Adoption of appropriate disaster risk reduction strategy, emergency</p>	<p>UDA PMU / Design</p>	<p>UDA PMU</p>	<p>Project</p>	<p>Before construction</p>

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	(flooding), cyclone etc. and fire may cause damages to lives and property.	<p>preparedness and recovery, training/orientation program for residents and construction worker, etc.</p> <p>(b) Identify an emergency evacuation points in the buildings.</p> <p>(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 the Fire Department.</p> <p>(d) Lightening receptors included.</p>	Consultant			
Design						
Risk of temporary floods	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.	<p>(a) Land level will have to be raised through filling provided there is no impact on the surrounding areas. Otherwise design alternatives will have to be looked at.</p> <p>(b) Sloping of terrain to ensure natural drainage towards canal should be carried out.</p> <p>(c) Identify and develop drain plan to carry rain water towards the canal.</p> <p>(d) Discuss with SLLRDC on cleaning and rehabilitation of the canal system.</p>	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
Sustainability and safety	<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) Each apartment should have personalized open spaces (such as balcony).</p> <p>(d) Adequate number of stairways should be incorporated including emergency evacuation.</p> <p>(e) Adequate number of elevators should be installed.</p>	.Design Architect / PMU	PMU	UDA	During building design
Integration of energy efficiency and energy conservation in design of project components.	<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 running cost.</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"> - Usage of recyclable materials like wood substitutes. - Use water efficient fittings for the apartments. - Installation of sustainable energy efficiency certified equipment. - Usage of energy efficient lighting fixtures (LED) - Provision of photovoltaic cells on roofs for solar power atleast to cover the common lighting and energy requirement of the common areas. 	.		Project cost	
Solid waste Currently the proposed site is being used	Lack of properly designed disposal mechanisms for solid waste may lead to	(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	UDA-PMU / Design architect	UDA-PMU	Project cost	During finalization of detailed designs of

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
as a garbage dump by adjoining low income housing development	contamination of surface and ground water resources and pollution of the surrounding environment with garbage.	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.				housing buildings Before construction
Wastewater and sewage	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 at end of construction.
Occupational Health, Safety, and essential facilities	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.
DEMOLITION PHASE						

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
Safety measures to be adopted.	Unless safety measures are adopted during demolition, it may lead to health issues and accidents.	<ul style="list-style-type: none"> (a) Once occupants have moved out, provide a few days for them to come back for anything they have left behind. (b) Former occupants shall not remove any infrastructure components unless with prior permission from the Construction Supervision Contractor (c) Area to be demolished shall be completely cordoned off with some form of fencing. No entry sign boards will be put up. (d) All power and water supplies shall be turned off prior to demolition. (e) Workers involved in demolition will wear safety gear such as hard hats, eye protection, gloves, etc. (f) All workers involved in the demolition activities shall be covered under the labor law and insured. (g) Adequate potable water to be provided to the workers to ensure maintenance of health and hygiene especially since the site is highly polluted. (h) A shaded rest area for the workers should be provided for the workers within the project site. 				
Demolition of existing structures	Spoil material generated would obscure the landscape may be a health risk to the surrounding community	<ul style="list-style-type: none"> (a) Obtain recommendation from CEA on the disposal of demolition waste. (b) Deposal of solid waste should also conform to guidelines of CMC. (c) Selected disposal site by the 				

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		<p>contractor should exclude areas which are close to public and environmentally sensitive areas.</p> <p>(d) All debris and residual spoil materials generated from construction activities shall be re-used wherever possible.</p> <p>(e) Contractor will be responsible for removal of the debris according to the recommendations provided by CEA.</p> <p>(f) Demarcate an area for waste collection until disposal within the construction premises and practice waste minimization practices such as recycling and composting.</p> <p>(g) Noise levels to be maintained according to IFC-WB EHS which override NEA standards.</p>				

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
<p>Safe handling of asbestos 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"> (a) Follow the rules outlined in the NEA. (Guidelines are also provided as part of the ESMF). (b) Workers should be educated on safe handling of asbestos. Asbestos sheets should be removed without damaging them as far as possible to reduce any health risk. (c) Asbestos should not be burnt under any circumstances. (d) Asbestos should be separated from other spoil material. It should be discarded to an appropriate location in consultation with the CEA. Till discarded, it should be stored in an appropriate and safe storage area. (e) Transportation of the asbestos sheets should be carried out under covered conditions. (f) All asbestos handlers should be attired with safety accessories including masks, gloves, eye protection etc. (g) UDA should identify a site for the safe storage of asbestos till CEA provides a solution for the disposal of asbestos 	<p>Contractor/sub-contractor</p>	<p>Contractor/Subcontractor. Environment officer/Environment Specialist.</p>	<p>Contractor fee</p>	<p>During demolition</p>
<p>CONSTRUCTION PHASE</p>						

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
Extraction of resources	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"> (a) Ensure ICTAD Guidelines are followed. (b) All sand and aggregate should be brought in from places with permits. (c) Wherever possible, use of sea sand should be adopted to minimize the impacts on river beds. 	Contractor	Contractor	Contractor fee	Spot checks
Land Preparation	<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> <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"> (a) During filling operations, silt traps or appropriate measures should be taken near the canal system. (b) Construction debris should not be disposed in the canal (c) 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. (d) Fill material should only be brought in through permit holders. ICTAD guidelines to be followed. (e) Canal upgrading and cleansing will have to be carried out by means of removing debris, possible dredging and cleaning of banks to improve water flow. Consult with SLLRDC. (f) 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. 	Contractor	PMU Environmental Officer/ Specialist/ Contract Supervision Consultant.	Project cost	Weekly during construction
Establishment of baseline environmenta	Obtaining a suitable and representative baseline data set will be	(a) Conduct documentation of demarcated areas for construction zone and labor camps. Include photos and GPS	Contractor	Contractor/ UDA PMU	Contractor fee	At commencement of

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
I conditions prior to start of civil works	critical to the whole monitoring and audit process because it forms the standard against which environmental impacts are assessed. 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.	coordinates. (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. (c) Conduct structural surveys of the surrounding buildings and the underserved areas to establish any existing defects/damages. (d) Structures in the underserved areas will have to be monitored closely during construction due to their fragility. (e) The grievance redress mechanism will have to be made clear and easily accessible.				operation.
Setting up of labor camps This will become applicable if labor camps are set only.	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.	(a) Location of labor camps should be approved by the UDA PMU and comply with guidelines/recommendations issued by CEA and LAs. (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. (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.	Contractor	Contractor / Environment Officer /Specialist	Contractor fee	As required
Resources mobilization and	Allocation of space for storage yard for construction material,	(a) Use local materials as much as possible to reduce the need for storage space (b) Storage of construction materials should	Contractor	PMU Environment Officer /		Onset of construction

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
allocation of space	labor camp, project office requires addition amount of space.	<p>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.</p> <p>(c) Selection of local un-skilled and skilled workers for the proposed construction activities can reduce the requirement of land for labor camps.</p>		Specialist		
Drinking water availability at construction camp and construction site	No availability of drinking water for labours will result in dehydration and health risk. (This is especially essential during the water scarce periods).	<p>(a) Sufficient supply of potable water to be 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>	Contractor	PMU Environment Officer/Specialist		Weekly checks
Dust and construction equipment emissions	Impact from dust generation leads to Poor air quality release of Volatile Organic Compound (VOC) from storage sites and transfer of vehicle/equipment	<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</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
	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>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>				
Noise pollution	Construction noise can disturb surroundings	<p>(a) All machinery, equipment and vehicles should 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) 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</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
		of noise is located for construction activities will conform to IFC-WB EHS mix development standards. These standards override the NEA standards.				
Wastewater and sewage disposal	<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.
Solid Waste disposal	Waste generated from labor 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 should be provided to all worker-based camps, No garbage will be 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>	Contractor	PMU Environment Officer / Specialist		Weekly checks
Transport of construction	Transportation of construction materials	(a) The Contractor should obtain permits from LAs to use local roads prior to	Contractor	PMU Environment	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
material	<p>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>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>		Officer / Specialist		
Occupational Health and Safety of workers	Absence of plan will lead to death to the worker and economic cost to the project	<p>(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.</p> <p>(b) Develop and implement comprehensive site-specific health and safety plan on Occupational Health and Safety</p> <p>(c) First aid treatment will be made available for all injuries likely to be sustained during work.</p> <p>(d) Provide medical insurance coverage and indemnity for workers.</p> <p>(e) The contractor will 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., will be provided with protective footwear and protective</p>	Contractor	PMU Environment Officer	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>goggles.</p> <p>(g) Workers engaged in welding works will be provided with welder's protective eye shields.</p> <p>(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.</p> <p>(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.</p> <p>(j) Provide suitable communication and information on safety</p> <p>(k) The construction site will be properly barricaded by appropriate material of adequate height.</p> <p>(l) Site will be well lit to minimize accident risks.</p>				
Chance Find	<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 former</p>	<p>(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.</p> <p>(b) Educate workers 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
	marshland that was filled in the early 1990s and is not within a culturally significant area.					
Landscaping	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"> (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 for the apartment complex at Madampitiya. 	Contractor /PMU	PMU Environment Officer / Specialist		Towards end of construction
OPERATIONAL PHASE						
Environmental conditions and parameters	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"> (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.
Drainage Congestions	Stagnation or blocking the water flows may occur due to sediments, improper disposal of garbage during	<ul style="list-style-type: none"> (a) Madampitiya housing flat needs to undertake regular maintenance of the drainage system to avoid drainage congestions. (b) Employ staff to clean the drains and make 	Apartment Manager	PMU/ Environment Officer/Specialist	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>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>sure that outfall for storm water is not blocked. (c) Drainage paths proposed in the survey plan shall not be blocked.</p>				
Solid waste management	<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 (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. (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. (d) Notices will be put up on garbage disposal. No littering signs, in or around the premises. No spitting signs to be put up. (e) Educational programs on general cleanliness and littering to be carried out continuously with and incentive.</p>	CMC / Manager	Manager / PMU Environment Officer/Specialist.	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
Maintenance of apartments and sanitary facilities and overall apartment cleanliness	Unless individual apartments are maintained including sanitary facilities, it may lead to health risks.	<ul style="list-style-type: none"> (a) Quarterly random checks be carried out for the 1st year. Thereafter annual random checks. (b) Ensure proper maintenance of the sanitary facilities. Train residents in plumbing, etc as a livelihood option. (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. (d) Public area cleanliness has to be maintained. Sanitization program should be considered (e.g spraying of chlorine on a daily basis) if required. . 	Manager	PMU Environment Officer/ Specialist	UDA	Spot checks carried out Monthly for the first 3 months and thereafter bi-annually.
Safety of residence:	Risk of accidental deaths due to negligence	<ul style="list-style-type: none"> (a) Train the residence on managing risk and emergencies. (b) Provision of first aid kit and train the teachers on usage. (c) Emergency switches should be properly covered. (d) Fire extinguishers must be placed adequately and they should be working at all times. 	Manager	PMU Environment Officer/ Specialist	UDA	Spot checks carried out Monthly for the first 3 months and thereafter bi-annually.

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
Maintenance of shops	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"> (a) Provide guidelines on cleanliness and maintenance. (b) In event that there are food shops, PHI checks and adoption of food safety regulations should be adopted. (c) Carry out spot checks. 	Manager	PMU Environment Officer/ Specialist	UDA	Spot checks carried out Monthly for the first 3 months and thereafter bi-annually.
Social issues	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"> (a) Need to evaluate the community issues. (b) Identify alternative livelihoods (c) Provide counseling services or direct to required avenues by involving necessary authorities. (d) Implement social uplift programs for the community. 	Manager/ PMU Social Development Unit	PMU PMU Social Development Unit	UDA	Within 1 st year.
Onsite emergency plan for minor accidents mishaps and disaster management plan.	Damage to the property and life	<ul style="list-style-type: none"> (a) UDA should prepare an onsite emergency plan in event of minor accidents. (b) A in house plan in event of a natural disaster should be developed to address urban floods tornados and cyclones. (c) Awareness on fire management should be provided to residents. This should include evacuation procedures and use of equipment. 	Manager / PMU / Fire Department	PMU	UDA	Mock drills / awareness carried out once in 3 months.