RAPID ENVIRONMENTAL AND SOCIAL ASSESSMENT AND THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE

PROPOSED HOUSING COMPLEX AT OBEYSEKARAPURA ARUNODAYA MAWATHA

CONSIDERED UNDER AIIB FINANCING

Urban Regeneration Project

Compiled by Urban Development Authority

December 2018

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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
IFC-WB EHS	Environmental Health and Safety Guidelines of the World Bank
ILO	International Labor Organization
LA	Local Authority
LED	Light-Emitting Diode
NEA	National Environmental Act
NWSDB	National Water Supply and Drainage Board
PMU	Project Management Unit
RPF	Resettlement Policy Framework
SJKMC	Sri Jayawardenapura Kotte Municipal Council
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 Obesekarapura, Arunodaya Mawatha, Sri Jayawardenapura Kotte 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 Arunodaya Mawatha. This identifies the site specific impacts and the mitigation measures that are recommended.

2. Sub Project Description

2.1 Area description

The Obeysekerapura, Arunodaya Mawatha subproject site is located within the Municipal Council limits of Sri Jayawardenapura Kotte in Pale Pattu in Salipiti Korale. Obesekarapura is a Colombo city suburb, located approximately 3 km from the Colombo city centre (Colombo Fort). The project area of influence consists of the following significant establishments; the Sri Jayawardenapura Kotte Divisional Secretariat, Heen Ela (cana)l, Esala Children's Park, R.A.D. Janaka Ranawaka Ground, St. Stephen's Church, Sudharmarama Purana Viharaya, Obesekarapura Walawwa in Rajagiriya (declared a monumental structure by the Archeological Department), and Hewawitharana Vidyalaya.(school) All the above are within a 500 m radius.

The Sri Jayawardenapura Kotte Municipal Council (SJKMC) is the local council which is also the administrative capital of Sri Lanka. The Obesekarapura sub project site is located within 514C-Obesekarapura Grama Niladari Division. The underserved communities within SJKMC are most prominent in Obesekarapura, Bandaranayakepura, Polwatta and Arunodaya Mawatha.

Sri Jayawardenepura Kotte is a satellite city that falls within the urban area of Sri Lanka's capital, Colombo. SJKMC area is bounded by Kolonnawa Urban Council area to the North, the Kotikawatta–Mulleriyawa Pradeshiya Sabha area to the North-East, Kaduwela Municipal Council area to the East, Maharagama Urban Council area to the South-East, Dehiwala-Mount Lavinia Municipal Council to the South-West and Colombo Municipal Council area to the West.

There were 20 grama niladari divisions within SJKMC. It is a multi-ethnic, multi-religious urban center. The total population within the DSD is 107,508. Among them 82,841 were Buddhist, 7,827 were Roman Catholic, 6,772 Muslim, and 4,864 Hindu. The main hospital of area is 6.36km from the proposed site and is known as Sri Jayawardenapura Hospital. There is also a dedicated Eye & ENT hospital at Rajagiriya (private), a maternity hospital under construction in Nawala, a small private health centre, the Blue Cross Hospital at Rajagiriya, and another small nursing home down Park Lane, Welikada.

2.2 Site description

The subproject land location points are 6'54'59.26"N 79'53'37.41"E. The total land area demarcated for Arunodaya Mawatha housing complex under AIIB financing is 1acres 1 route and 22.70 perches and is rectangular in shape. Ministry of Lands and Parliamentary Reforms has transferred ownership to the Divisional Secretariat on behalf of UDA (Gazette notification no. 20172/22-Wednesday May 23, 2018). There are no legal cases pending related to the land. According to the survey plan, the new apartment complex will come up in LOT A and B. The northern boundary adjoins the lot 503 and 504 (underserved areas). The southern boundary borders lot 499,460 -462 (underserved areas). The

eastern boundary borders the road (Arunodaya Mawatha). The western boundary is the Ela (canal). Lot B which is bordering the canal need to be cleared for construction. There are 38 households that have been identified for relocation under this subproject. Once this subproject is completed, several underserved communities will be relocated to this site and other lands will be liberated in Obesekarapura, Arunodaya MW, and surrounding settlements. See Figure 1 for proposed development by UDA.

The drainage system is also highly polluted with garbage, effluent outfalls from the houses, etc. The area is low lying and goes under water during heavy rains. Discussions will have to be held with SLLRDC on freeing up of bottlenecks in the canal system/network to improve flow.

Figure 1: Location map

Source: UDA

2.3 Description of the Subproject

At the Obeysekerapura subproject site, 300 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. The apartment tower will consists 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 car park. Each housing unit within the apartment complex will have a minimum floor area of 500 sq.ft. Each housing unit will include living room, two bed rooms, kitchen, bath and toilet (separated) and balcony. Brief detail of the common commodities planned under the scope of work for this subproject by UDA is provided below.

- **Community facilities:**
    - Health center (500sq.ft.) will be sited on the ground floor with a toilet including a WC and wash basin.

- Community hall (minimum 1200 sq.ft.) including separate toilet for the disabled with wash basins.
- Common toilets at ground floor level will include 1 male and 1 female toilets with two wash basins separately excluding shower area.
- Nursery and daycare center at ground floor (1500sq.ft.). This will be placed close to the children's play area.
- Children play area will have suitable paving.
- Janitorial room per block is 30sq.ft. this will be lockable.

- **Common areas-** Corridors/ Walkways – clear height 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

Figure 2: Pictures of subproject site

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 and will feed into a wastewater and sewage treatment plant. Effluent from the treatment plant will conform to the WB IHE guideline requirements as provided in the Environmental and Social Management Framework. A proposal will

have to be developed to determine the capacity of the treatment facility and an emergency backup system incorporated in event of a breakdown. Solid waste will be collected by the Kotte MC, however a practical solid waste management plan should be developed to ensure cleanliness within the area. 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. No roads have been earmarked in the area for further development at present. The adjacent underserved areas have been earmarked as lands to be liberated and thereafter be utilized for mixed development.

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 applicable to the proposed site at Obeysekarapura as they will have to adopt and wastewater and sewerage treatment plants.

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. 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 38 households identified for resettlement. In total 33 people participated with 20 female participants. Discussion was carried in situ just outside their houses.

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.

This community consists of mainly Sinhalese people with a few Tamil families. Women and men both go to work mainly as labor force (information provided by participants). All are in favor of the new housing project. Discussion with officials indicates that all residents are willing to move but they don't like to settle in Salamulla which had been offered to them. They claim it is not suitable to bring up their children there due to the existing community. They requested Dematagoda if they are to shift permanently (28 in favor). 6 want to return to Arunodaya Mawatha as well.

During the discussion they pointed out other problems they face when they move to temporary locations such as disruption to their jobs such as three wheelers not having a park. Most men are three wheeler drivers. Considering these problems some people requested to remain in the same area while housing is completed. They are agreeable to a rent allowance option till the new housing is completed.

Several women are involved in vegetable trading in Fort. They were worried about being unable to park their vegetable carts in the new apartment complex.

Figure 3: Public Consultation held on 8th August



5. Grievance redress mechanism and institutional arrangements

5.1 Consultation and information disclosure

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

Once the ESMP is 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 (expected to be ready by end February 2019). Furthermore, it should be discussed with the affected people (host community and relocated persons). This is very important due to the low levels of literacy in the community. Upon written request, any person seeking information can obtain a hard copy of the Subproject documents by paying for its photocopying cost. The PMU will issue notification on the disclosure mechanism in local newspapers, ahead of initiation of implementation of the subproject, providing information on the subproject, start dates, etc. The notice will be issued by the PMU in local newspapers 1 month ahead of the implementation works. This will create awareness of the subproject implementation among the public

5.2 GRM Process

The GRM process is outlined in the ESMF and 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. Compliant 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.

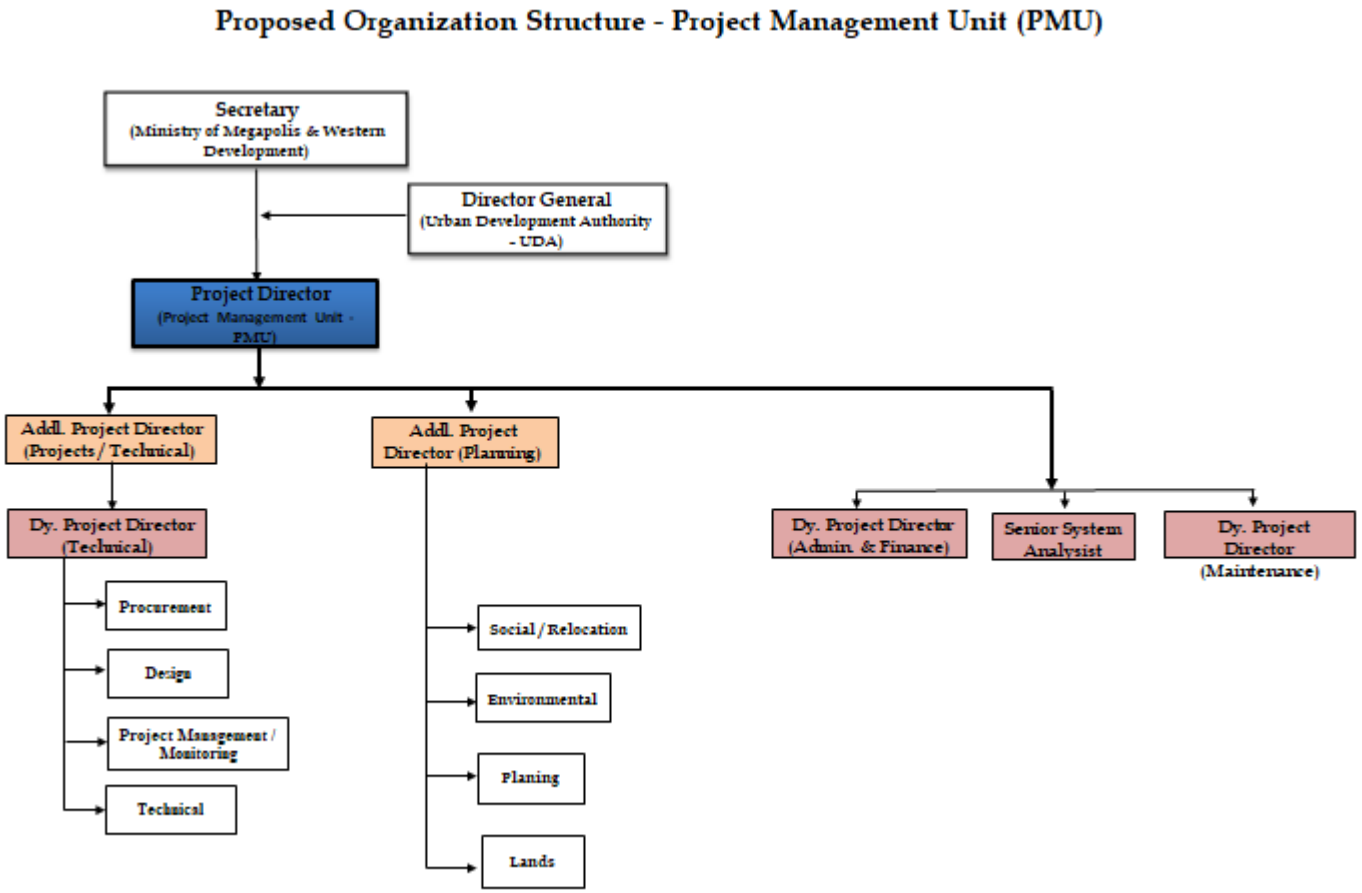
5.3. Institutional arrangements

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 (request for approval for recruitment sent and 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: Organization Structure



6. Environmental and social impacts and mitigation

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

All the environmental impacts and mitigation measures are identified in the ESMP that follows. 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 ARUNODAYA MAWATHAHOUSING DEVELOPMENT PROJECT, 514C- OBESEKARAPURA.

District: Colombo
Local Authority: - Sri Jayawardenapura Kotte (SJKMC)
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) Obtain building approval from UDA before commencement of construction. (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	Can lead to repeated destruction of lives and belongings. Can lead to disease outbursts such as dengue, influenza, cholera, etc. Flooding of garbage storage areas may lead to overall environmental pollution and disease outbreaks.	(a) Design alternatives to accommodate flooding has to be adopted. Raise building level by filling and raising DPC level. (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). (c) Maintain and improve design features such as drainage structures in consultation with SLLRDC.	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	(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 disposal with CMC, and other private parties who may be interested in recyclable waste. Build on private partnerships. (c) Since there is no central sewer system, a wastewater treatment plant and sewage treatment plant will have to be planned and	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
		designed to be adequate for the number of occupants. Clearance and recommendations from CEA will have to be obtained. Any wastewater effluent released will have to conform to NEA and SLSI. Any sewage effluent will have to meet IFC-WB EHS which override NEA standards.				
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.	-The location of utilizes 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/CEB, NWSDB	UDA PMU	Project	Pre-construction
Public consultations and social surveys Currently there is no consultation process. Last comprehensive social survey carried out in 2013. That too does not capture all required data.	Unless regular consultations are carried out with the stakeholders including community, issues that crop up during the project will go un addressed leading to problems later on.	(a) Consultations have to be carried out with residents of the land who have been re-located/to be relocated. (b) Social survey (house to house) should be conducted for all re-located households with an appropriately designed questionnaire. A social development specialist should be involved in the design of the questionnaire. (c) An analysis of existing livelihoods and livelihood losses should be studied and alternatives looked at with the help of a social development specialist. (d) The above should be carried out immediately as ideally it should be carried out before relocation.	UDA PMU (Land and Social Issues Unit) and environment specialist/officer).	UDA PMU	Project	Immediately

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		(e) Develop consultation schedule which should be done immediately before re-location, 1 month after relocation and thereafter bi annually for the 1st year. (f) Grievance mechanism to be transparent and easily accessible and visible to the affected people.				
Places of importance/cultural heritage	Unless important cultural and heritage sites are identified in advance, it may lead to damage and social unrest unless precautions are taken	(a) Identify any places of importance including religious structures, cultural/heritage structures and also community monuments within a 500m radius of the site. (b) Ensure contractor is made aware of the places above and should be sensitive to them. (c) Development of Chance-find procedures.	UDA PMU	UDA PMU		Before construction
Disaster management	Extreme climate events such as intense rainfall (flooding), cyclone etc. and fire may cause damages to lives and property.	(a) Adoption of appropriate disaster risk reduction strategy, emergency preparedness and recovery, training/orientation program for residents and construction worker, etc. (b) Identify an emergency evacuation points in the buildings. (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. Consult Fire Department. (d) Lightening receptors included.	UDA PMU / Design Consultant	UDA PMU	Project	Before construction
Design						
Risk of temporary floods	Lack of drainage within the project site will submerge the land during heavy rains In the absence of a	(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. (b) Sloping of terrain to ensure natural	UDA PMU/ Design Consultants / SLLRDC	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
	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.	drainage towards canal should be carried out. (c) Identify and develop drain plan to carry rain water towards the canal. (d) Discuss with SLLRDC on cleaning and rehabilitation of the canal system as well as opening up of any bottlenecks in the system.				
Sustainability and safety	Lack of sufficient planning to assure long-term sustainability and quality of the buildings may lead to subsidence or other infrastructure defects/disasters. Design of the apartment not meeting the requirement of the occupants may lead to disruption of the overall apartment complex.	(a) Design has to include provisions for effective maintenance and protection of the apartment buildings in the long-term. (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. (c) Each apartment should have personalized open spaces (such as balcony). (d) Adequate number of stairways should be incorporated including emergency evacuation. (e) Adequate number of elevators should be installed.	.Design Architect / PMU	PMU	UDA	During building design
Integration of energy efficiency and energy conservation in design of project components.	Unsustainable, energy inefficient, and un-economical unviable building will negatively impact the environment resource as requirement is high. In the absence of water conservation and energy efficiency of the building	The detailed designs for the project should ensure environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc.: - 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	.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
	structure, it may lead to resource constrains and increase the running cost.	lighting and energy requirement of the common areas.				
Solid waste	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.	UDA-PMU / Design architect	UDA-PMU	Project cost	During finalization of detailed designs of 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.	(a) Since 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. (b) In event of breakdown of the treatment plant, a back-up plan should be in place to store the effluent in sealed tanks till treatment plant is back in operation.	UDA - PMU	UDA PMU	Project/UDA	Design stage and again 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.	(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. (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.	Contractor/ sub-contractor	Contractor/Subcontractor. Environment officer and Environment Specialist.	Contractor fee	During demolition
Demolition of existing structures	Spoil material generated would obscure the landscape may be a health risk to the surrounding community	(a) Obtain recommendation from CEA on the disposal of demolition waste. (b) Deposal of solid waste should also conform to guidelines of SJKMC. (c) Selected disposal site by the contractor should exclude areas which are close to public and environmentally sensitive areas. (d) All debris and residual spoil materials	Obtaining CEA clearance – UDA All other items by Contractor.	Environment Officer / Specialist	Contractor fee	During demolition

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		generated from construction activities shall be re-used wherever possible. (e) Contractor will be responsible for removal of the debris according to the recommendations provided by CEA.. (f) Demarcate an area for waste collection until deposal within the construction premises and practice waste minimization practices such as recycling and composting. (g) Noise levels to be maintained according to IFC-WB EHS which override NEA standards.				

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
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.	Health and safety hazards with loose asbestos fibers for the workers.	(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 burned 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.	Contractor. Providing storage area for asbestos _UDA	Environment officer / Specialist	Contractor fee	During demolition

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
CONSTRUCTION PHASE						
Extraction of resources	Extraction of natural resources such as sand, metal, etc can case changes in the topography and can lead to environmental degradation.	(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	Cut and fill activities may cause blockages of water ways / Sedimentation. Unless, fill material is brought from a approved place, it may lead to environmental degradation.	(a) During filling operations, silt traps or appropriate measures should be taken near the canal system. (b) Construction debris should not be dispose 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 also have to be carried out by means of removing debris, possible dredging and cleaning of banks to improve water flow. (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 environmental conditions prior to start	Obtaining a suitable and representative baseline data set will be critical to the whole monitoring and audit	(a) Conduct documentation of demarcated areas for construction zone and labor camps. Include photos and GPS coordinates. (b) Conduct base line monitoring in respect of	Contractor	Contractor/ UDA PMU	Contractor fee	At commencement of operation.

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
of civil works	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.	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) Identify any potential impacts to the important structure in the area of influence such as the Obeysekara Walawwa (e) Structures in the underserved areas will have to be monitored closely during construction due to their fragility. (f) The grievance redress mechanism will have to be made clear and easily accessible.				
Setting up of labor camps This will become applicable if labor camps are setup on site 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.	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. (c) Selection of local un-skilled and skilled workers for the proposed construction activities can reduce the requirement of land for labor camps.		Specialist		
Drinking water availability at construction camp and construction site	No availability of drinking water for laborers will result in dehydration and health risk. (This is especially essential during the water scarce periods).	(a) Sufficient supply of potable water to be provided from a reputable source and maintained at the site. (b) The drinking water will be stored in a suitable size storage tank to ensure uninterrupted availability. (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.	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 fuels, emission of small	(a) Wet down and spray water at construction site. (b) Dust emissions during transportation of construction materials should be controlled by enforcing speed limits on the vehicles close to site. (c) Take steps to avoid dust emissions during loading and unloading of construction material. Tarpaulin covering is mandatory	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
	amounts of Carbon monoxide, Nitrogen dioxide and particulates from construction activities and vehicles may compromise health of the workers and surrounding community.	on trucks/lorries which are used for transporting materials. (d) All filling works are to be protected or covered in a manner to minimize dust generation (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. (f) The air quality monitoring will conform to IFC-WB EHS standards.				
Noise pollution	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 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. (b) Contractor must ensure that all vehicles and equipment used in construction shall be fitted with exhaust silencers. (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. (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	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
		development standards. These standards override the NEA standards.				
Wastewater and sewage disposal	Untreated wastewater disposal from labor camps and toilet facilities will once again contribute towards the pollution of the unless handled appropriately. Untreated sewage will contaminate and degrade surface and ground waters as well as pose health risks.	(a) Temporary wastewater pits will be put in place during the construction which will be removed once the construction is completed. (b) Any release of wastewater will meet standards set by Sri Lanka Standards Institute (SLSI) and that stipulated under the NEA. (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.	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	a) Garbage bins should be provided to all worker-based camps, No garbage will be disposed of into the environment. 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. c) Under no circumstances should the solid waste be burned on site. d) Prepare site restoration plans for approval by PIU/PMU. On completion of the works, all temporary structures will be cleared.	Contractor	PMU Environment Officer / Specialist		Weekly checks
Transport of construction material	Transportation of construction materials on road network can cause damages to the access roads.	(a) The Contractor should obtain permits from LAs to use local roads prior to transportation of construction materials, machineries etc. (b) ICTAD Operation and Re-Development of Borrow Areas Guidelines for Siting should	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
	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.	be followed in transportation, loading and unloading of construction material.				
Occupational Health and Safety of workers	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 Labor and Factory Ordinance, etc to the extent that are applicable to workers contract. (b) Develop and implement comprehensive site-specific health and safety plan on Occupational Health and Safety (c) First aid treatment will be made available for all injuries likely to be sustained during work. (d) Provide medical insurance coverage and indemnity for workers. (e) The contractor will conform to all anti dengue instructions given to him by the PHI and the PMU. (f) Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles. (g) Workers engaged in welding works will be provided with welder's protective eye shields. (h) The use of any toxic chemical will be	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
		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. (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. (j) Provide suitable communication and information on safety (k) The construction site will be properly barricaded by appropriate material of adequate height. (l) Site will be well lit to minimize accident risks.				
Chance Find	If any cultural or religious objects/structures are uncovered during excavation, unless precautions are taken it may be damaged. However, it is very unlikely that there will be any chance find for this project site as it was a former marshland that was filled in the early 1990s and is not within a culturally significant area.	(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		
Landscaping	In the absence of	(a) Project landscape activities have to be	Contractor	Environment		Towards end

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
	proper landscape, it will not be aesthetically pleasing. Landscaping should blend in with the surrounding ecosystem.	done as per either detailed design or typical design guidelines. (b) Consider greening of the peripheries by planting trees along the drainage canal. (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 near possible adjoining the canal.	/PMU	Officer / Specialist, PMU		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.	(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 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	Arunodaya Mawatha housing flat needs to undertake regular maintenance of the drainage system to avoid drainage congestions. (a) Employ staff to clean the drains and make sure that outfall for storm water is not blocked. (b) Drainage paths proposed in the survey plan shall not be blocked.	Apartment Manager	Manager / PMU Environment Officer	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
	will be a risk of water logged conditions around the site.					
Solid waste management	Lack of management of domestic waste water may cause health risks and obscure the landscape 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	(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.	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
Domestic liquid waste disposal (wastewater and sewage)	Lack of disposal of the domestic waste water in a suitable manner will lead to pollution of the surrounding environment.	(a) Wastewater and sewerage will be directed to treatment plants. Wastewater and sewage will not be released without treatment under any circumstances. (b) Ensure regular maintenance of the treatment plants. (c) Any effluent released shall conform to IFC-WB EHS or NEA/SLIS standards. Effluent shall be periodically tested. (d) Necessary clearances from CEA should be in place.	UDA PMU within 1st year and thereafter by the Condominium Management Authority	UDAPMU / Environment Officer / Specialist	UDA/ Condominium Management Authority	Effluent quality will be tested bi-annually
Maintenance of apartments and sanitary facilities and overall apartment cleanliness	Unless individual apartments are maintained including sanitary facilities, it may lead to health risks.	(a) Quarterly random checks be carried out for the 1 st 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 if required (e.g spraying of chlorine on a daily basis). .	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	(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	Observations and safety reports		UDA operation cost	Annually

Issue for concern	Environmental and social impact	Mitigation measure(s)	Implementing party (ies)	Monitoring arrangement (s)	Cost and fund source	Time frame
		covered. (d) Fire extinguishers must be placed adequately and they should be working at all times.				
Maintenance of shops	Lack of maintenance of the shop areas in the ground floor may lead to vector infestations and lead to health issues.	(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.	UDA PMU Social Development Unit	UDA PMU Social Development Unit	UDA	Within 1st year
Social issues	Unless existing and new social issues are identified, with the new environment these may get aggravated leading to an unhealthy environment.	(a) Need to evaluate the community issues. (b) Identify alternative livelihood s (c) Provide counseling services or direct to required avenues by involving necessary authorities. (d) Implement social uplift programs for the community.	UDA PMU Social Development Unit	UDA PMU Social Development Unit	UDA	Within 1st year
Onsite emergency plan for minor accidents mishaps and disaster management plan.	Damage to the property and life	(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..