

# Adjaristsqali Cascade Project ESI A Report – Volume IV

Environmental and Social Management Plan

July 2012  
Adjaristsqali Georgia LLC (AGL)





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# 1. Introduction

## 1.1 Introduction

The primary objective of an Environmental and Social Management Plan (ESMP) is to safeguard the environment, site staff and the local population from site activity which may cause harm or nuisance. This ESMP for the Adjaristsqali Hydropower Cascade Scheme (the 'Project') is intended to provide a framework to ensure transparent and effective monitoring, prevention, minimisation, mitigation, off-setting and enhancement measures to address the environmental and social impacts associated with the Project.

The management plan, which also covers monitoring, will therefore form the basis of the environmental and social protection measures implemented by Adjaristsqali Georgia LLC (AGL), part of the Clean Energy Group, and its Contractors. The implementation of the ESMP ensures that environmental, health and safety (EHS) and social performance is in accordance with international standards (including the relevant International Finance Corporation (IFC) Performance Standards, sector EHS guidelines, and also relevant European Bank for Reconstruction and Development (EBRD) Performance Requirements) and best practice.

Where relevant this volume consolidates the mitigation requirements identified in the international Environmental and Social Impact Assessment (ESIA) process (presented in Volume II of the ESIA). The ESMP will be updated and/or revised for both construction and operation phases to make the measures bespoke to the prevailing conditions as monitored during both construction and operations periods.

Responsibilities for implementation are outlined in the ESMP and fall to either AGL or the Contractors. Where responsibilities fall to the Contractors these should be implemented via a dedicated Construction Environmental Management Plan (CEMP) as part of the Contractor's own EHS Management System (preferably accredited to ISO 14001:2004 or equivalent). AGL will actively seek to monitor, audit and assess the compliance of the Contractor(s) and ensure that corrective actions are taken when necessary to maintain environmental and social performance in line with international standards.

## 1.2 Background Information

The environmental and social management requirements presented in this document have been based on the findings of the following:

- Project site visit and data collected by Mott MacDonald's project team in July and August 2011; and
- The international ESIA documentation prepared by Mott MacDonald Limited (MML) (2012).

## 1.3 Structure of ESMP

**Section 2** of this ESMP presents the various mitigation measures as identified through the ESIA process. For each of the mitigation measures, relevant standards are identified together with monitoring measures and Key Performance Indicators (KPI's). For each mitigation activity, an implementation route or sub-plan has been identified.

**Section 3** provides further outline on the various management sub-plans or procedures to be implemented as part of the ESMP by AGL (or Contractors under AGL's direction). The sub-plans are intended to ensure that the various mitigation measures / activities identified through the ESIA process are incorporated by the Project in a structured way with clear lines of responsibility and indicative budget identification / ring fencing.



**Section 4** of this ESMP outlines the various institutional arrangements to be put in place by the Project to enable the implementation of the ESMP and its various sub-plans. Where relevant, a number of capacity building measures have been identified to ensure that the institutional arrangements are appropriate and qualified for the allocated tasks.

**Section 5** of the ESMP provides an overview of monitoring and reporting requirements associated with the activities and commitments contained within the ESMP documentation. The monitoring and reporting requirements include a “management of change” capacity to the ESMP reflecting that it is intended to be a live document subject to regular review and update as the Project evolves. Furthermore, it includes various commitments to external project monitoring to satisfy the requirements of the IFC and to ensure transparency in terms of delivery of environmental and social mitigation.

**Section 6** of the ESMP identifies the overall indicative budget for implementation of the ESMP through construction and into operation. The budget as identified is subject to revision / change depending on evolution of various detailed plans but is considered to be broadly indicative of the level of commitment by the Project to mitigate environmental and social impacts identified through the ESIA process and to provide enhancement to environmental and social indices in the Project region where relevant.

## 2. Summary of Mitigation Measures

### 2.1 Overview

The mitigation measures as identified through the ESIA process are summarised in the following sub-sections. The sub-sections are split into specific discipline / media tables. For each mitigation measure or activity, relevant standards are identified together with responsibilities and timescales for implementation. Furthermore, relevant monitoring or key performance indicators are identified for each aspect of mitigation and an implementation route or sub-plan is identified. Specific sub-plans are detailed in the following Section of this ESMP.

### 2.2 Construction and Operation Mitigation Measures Summary

#### 2.2.1 Introduction

The following sub-sections address project construction and operational activities identifying specific mitigation and monitoring measures associated with environmental and social aspects where relevant and as required.

The structure of the construction related mitigation activities as presented over the following sub-sections are set out in Table 2.1.

Table 2.1: ESMP Structure

Sub-Section	Discipline / Media
2.2.2	Social Management
2.2.3	Ecology and Biodiversity Management
2.2.4	Water Resource and Water Quality Management
2.2.5	Geology and Erosion Management
2.2.6	Materials and Waste Management
2.2.7	Traffic and Transport Management
2.2.8	Noise and Vibration Management
2.2.9	Air Quality Management
2.2.10	GHG emissions Management
2.2.11	Cultural Heritage and Archaeology Management
2.2.12	Landscape and Visual Amenity

## 2.2.2 Social

Table 2.2: Summary for Social Management

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Opportunities associated with local employment benefits	Employment generation	<ul style="list-style-type: none"> <li>Disclosure of Recruitment Policy;</li> <li>Localised disclosure of need for staff and labourers in advance of opportunities arising; <i>and</i></li> <li>AGL Procurement Policy to support local enterprises.</li> </ul>	Labour code of Georgia	Contractors for construction recruitment.	AGL – Prior to and during operation.	<ul style="list-style-type: none"> <li>Disclosed Recruitment and Procurement Policies in Site Office and Municipality offices;</li> </ul>	AGL Procurement Policy
	Procurement		IFC PS2 – Labour and Working Conditions	AGL for AGL related recruitment.	Contractor - Prior to and during construction	<ul style="list-style-type: none"> <li>Municipality committee meeting minutes; and</li> <li>To be disclosed in employment offices and policy to be referred to in job adverts.</li> </ul>	Contractor Recruitment Policy
Local skills development / promote development	Employment generation	<ul style="list-style-type: none"> <li>Skills training programme for local residents.</li> </ul>	IFC PS2 – Labour and Working Conditions	AGL	To be implemented and completed within the first 18 months of construction	<ul style="list-style-type: none"> <li>Records of specialised training for local residents</li> </ul>	Contractor Skills Development Programme
Project commitment on workers rights	Employment conditions	<ul style="list-style-type: none"> <li>Develop and implement a Human Resources Policy;</li> <li>Issue each member of staff with an individual contract of employment;</li> <li>Insert clauses in contractors' agreements to ensure compliance with all policies, plans, procedures and identified mitigation measures. Also include clauses to monitor and enforce safety plans and report accidents and incidents; and</li> <li>Provide all workers with a summary of their service and training activities.</li> </ul>	IFC PS2 – Labour and Working Conditions	Contractor/ AGL	<p>Contractor - Prior to and during construction</p> <p>AGL – Prior to and during operation.</p>	<ul style="list-style-type: none"> <li>Payment of wages and bonuses on time;</li> <li>Hours worked during period and hours lost; and</li> <li>Fully described job descriptions for all roles.</li> </ul>	Contractors Human Resources Policy

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Code of Conduct for the labour force	Use of equipment, procedures and training	<ul style="list-style-type: none"> <li>Worker Code of Conduct;</li> <li>Training Program particularly covering health and safety; And</li> <li>Worker Health and Safety Plan including road safety element with penalties for violation of rules and speed limits and Permit to Work system for hazardous tasks.</li> </ul>	IFC PS2 – Labour and Working Conditions	Contractor / AGL	Contractor - Prior to and during construction AGL – Prior to and during operation	<ul style="list-style-type: none"> <li>Number of community complaints;</li> <li>Audits of Personal Protective Equipment (PPE) use; and</li> <li>Maintenance of disciplinary records.</li> </ul>	Contractor
Labour Grievance Mechanism	Labour management	<ul style="list-style-type: none"> <li>Staff grievance mechanism;</li> <li>Tool box talks on labour law and the grievance mechanism; and</li> <li>Worker grievance log to be maintained.</li> </ul>	Labour code of Georgia IFC PS2 – Labour and Working Conditions	Contractor / AGL	Contractor - Prior to and during construction  AGL – Prior to and during operation	<ul style="list-style-type: none"> <li>Documented grievance mechanism established; and</li> <li>Maintenance of complaints log and resolution process.</li> </ul>	Labour Grievance Plan
Protecting the workforce	Labour management	<ul style="list-style-type: none"> <li>Provide appropriate PPE (as identified through risk assessment);</li> <li>Emergency Response Teams;</li> <li>Emergency Preparedness and Response Plan (EPRP) to be developed covering health and safety risks to workers in emergencies;</li> <li>Incident and accident logs to be maintained; and</li> <li>Review of primary supply chain for occupational health and safety (OHS) issues, use of child or forced labour.</li> </ul>	Labour code of Georgia IFC PS2 – Labour and Working Conditions	Contractor / AGL	Contractor - Prior to and during construction  AGL – Prior to and during operation	<ul style="list-style-type: none"> <li>AGL to review Contractors Hazard and Operability (HAZOPS) and EHS Plan to ensure continuity with AGL EHS requirements (including commitment to this ESMP).</li> </ul>	Contractors Health and Safety Plans (developed separately – not part of CEMP)  Contractors Emergency Preparedness and Response Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Maintain the well-being of workers living in camps	Labour management	<ul style="list-style-type: none"> <li>Workers' Accommodation Plan.</li> </ul>	Labour code of Georgia IFC PS2 – Labour and Working Conditions Workers' accommodation: processes and standards - A guidance note by IFC and the EBRD	Contractor	Contractor - Prior to and during construction	<ul style="list-style-type: none"> <li>Worker camp audit reports, corrective measures and action plan, photographs demonstrating corrective measures implemented.</li> <li>monitored / audited by AGL</li> </ul>	Contractors Temporary Workers Accommodation Management Plan
Inform workers of HIV/AIDS and sexually transmitted disease (STD) risks and protection to minimise risk of infection to workers and communities	Labour management	<ul style="list-style-type: none"> <li>HIV/AIDS and STDs awareness and prevention briefings.</li> </ul>	Law on Public Health Law on HIV Infection/ AIDS IFC PS2 – Labour and Working Conditions	Contractor	At start of construction and updated for new workers	<ul style="list-style-type: none"> <li>Members of staff to receive brochure which raises HIV/AIDS awareness;</li> <li>Staff to sign acknowledging receipt and understanding of brochure.</li> </ul>	Contractors Health and Safety Plans (developed separately – not part of CEMP)

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Community Grievance Plan	Safeguarding community health, safety and security	<ul style="list-style-type: none"> <li>Project performance grievance mechanism;</li> <li>EPRP to be developed in collaboration with and disclosed to local communities;</li> <li>Record water use baseline prior to tunnelling;</li> <li>Provide temporary and permanent community water solutions if ground water and wells are affected;</li> <li>Advance warning that flooding of reservoirs will occur. Overseeing of flooding by AGL Project Manager; and</li> <li>Community health and safety campaign.</li> </ul>	IFC PS1 – Community Health, Safety and Security	Contractor / AGL	<p>Contractor - Prior to and during construction</p> <p>AGL – Prior to and during operation.</p>	<ul style="list-style-type: none"> <li>Maintenance of complaints log and resolution process; and</li> <li>Contact details on AGL website.</li> </ul>	Contractor Community Grievance Plan
Restrict access to sites, especially hazardous areas	Safeguarding community health, safety and security	<p>Site security measures including:</p> <ul style="list-style-type: none"> <li>Appropriate fencing; and</li> <li>Signage around site perimeter and where identified through risk assessment process.</li> </ul>	<p>IFC PS4 – Community Health, Safety and Security</p> <p>IFC EHS General Guidelines on Community Health and Safety (CHS)</p>	Contractor	Prior to and during construction	<p>Provision / review of the following documentation:</p> <ul style="list-style-type: none"> <li>Description / photographs of fencing / signage around site perimeter;</li> <li>company licenses and individual training records of security personnel proposed as per contract requirements; and</li> <li>Site registry identification system.</li> </ul>	Contractors Health and Safety Plans (developed separately – not part of CEMP)
Cultural sharing and tolerance	Induced development, population changes and the potential for cultural tension	<ul style="list-style-type: none"> <li>Modifications to procurement practices; and</li> <li>Training of all international workers in cultural sensitivities.</li> </ul>	IFC PS2 – Labour and Working Conditions	Contractor	Prior to and during construction	<ul style="list-style-type: none"> <li>Staff to sign training sheet confirming attendance.</li> </ul>	Contractors Health and Safety Plans (developed separately – not part of CEMP)

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Appropriate resettlement	Land acquisition	<ul style="list-style-type: none"> <li>Develop and implement a Land Acquisition and Livelihood Restoration Framework (LALRF);</li> <li>Aim to achieve land acquisition on the basis of willing buyer-willing seller.</li> <li>Develop either a Resettlement Action Plan (RAP) or Livelihood Restoration Plan (LRP) in accordance with LALRF</li> </ul>	IFC PS5: Land Acquisition and Involuntary Resettlement	AGL	Prior to start of construction	<ul style="list-style-type: none"> <li>Audit compliance with LALRF; and</li> <li>Audit compliance with either RAP or LRP.</li> </ul>	LALRF as well as RAP or LRP (depending on physical or economic displacement)
Community health, safety, security and wellbeing	Sediment flushing, flooding, operational activities.	<ul style="list-style-type: none"> <li>EPRP to be developed in collaboration with and disclosed to local communities;</li> <li>Advance warning and sirens before sediment flushing or flooding;</li> <li>Provision of life rings;</li> <li>Community health and safety campaign;</li> <li>Site security measures; and</li> <li>Annual open day.</li> </ul>	IFC PS4 – Community Health, Safety and Security IFC EHS General Guidelines on CHS	AGL	During operation	<ul style="list-style-type: none"> <li>Regular testing of sirens; and</li> <li>Practice drills of EPRP.</li> </ul>	AGL EHS Plan
Improved road condition and transport	Infrastructure works (roads and bridges).	<ul style="list-style-type: none"> <li>Road maintenance to leave a useful asset for communities after the construction phase.</li> </ul>	-	AGL	Following construction phase	<ul style="list-style-type: none"> <li>Monitoring of road conditions.</li> </ul>	Maintenance Procedures
Redundancy of personnel	Project closure	<ul style="list-style-type: none"> <li>Develop Retrenchment Plan</li> </ul>	IFC PS2 – Labour and Working Conditions	AGL	Prior to decommissioning	<ul style="list-style-type: none"> <li>Implement Retrenchment Plan.</li> </ul>	AGL Retrenchment Plan

### 2.2.3 Ecology and Biodiversity

Table 2.3: Summary of Key Significant Impacts on Ecological Features

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Management of biodiversity issues Habitat conservation and management	Project footprint	<ul style="list-style-type: none"> <li>Production of a draft Biodiversity Action Plan (BAP);</li> <li>Stakeholder consultation, suggest a series of one to one meetings and local communities stakeholder workshops; and</li> <li>Production of the final BAP</li> <li>Appointment of Community Wildlife Officer (CWO).</li> </ul>	National Biodiversity Strategy and Action Plan (NBSAP) for Georgia  Law of Georgia on Red List and Red Book  IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	AGL	From start of construction to end of the Project life.	<ul style="list-style-type: none"> <li>BAP completed and circulated to all stakeholders and contractors; and</li> <li>Sign off of the Adjara BAP by the Ministry of Environment.</li> </ul>	Adjara BAP
Minimise habitat loss and disturbance (terrestrial ecology)	Construction lay down, layout of associated infrastructure and temporary working areas	<ul style="list-style-type: none"> <li>Avoidance measures by design layout of associated infrastructure and location of laydown to take into consideration local environmental / ecological conditions;</li> <li>Minimise size of temporary working area;</li> <li>Develop Ecological Management Plan; and</li> </ul>	Law of the General Rules for the Protection of Wild Plants and Animals  Law of Georgia on Wildlife  Law of Georgia on Protected Areas  IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	Contractor	From start of construction to end of the Project life.	<ul style="list-style-type: none"> <li>Monthly audit of construction areas;</li> <li>KPI: All laydown and working areas restricted to pre-determined areas; and</li> <li>AGL approval of the Ecological Management Plan developed by the contractor.</li> </ul>	Ecological Management Plan



Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
	Vegetation / forestry clearance	<ul style="list-style-type: none"> <li>Develop Ecological Management Plan and</li> <li>Checking for nesting birds, mammals, amphibians and reptiles prior to vegetation clearance.</li> <li>Provide inventory of tree numbers and species to be cleared</li> <li>Liaise with AGL Community Wildlife Officer</li> <li>No clearance of sites prior to approval and surveys.</li> </ul>	IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	Contractor	Prior to and during construction	<ul style="list-style-type: none"> <li>AGL approval of the Ecological Management Plan developed by the contractor; and</li> <li>Record the number of reported incidents of bird or mammal kills.</li> </ul>	Ecological Management Plan
	Noise and light pollution from construction activities	<ul style="list-style-type: none"> <li>Minimise where possible noisy night time working;</li> <li>Use low light directional lighting to minimise light pollution;</li> <li>Regular inspection and maintenance of plant and equipment; and</li> <li>Maintain compliance with national noise standards.</li> </ul>	IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	Contractor	During construction	<ul style="list-style-type: none"> <li>Daily monitoring and monthly audit of construction activities;</li> <li>Report on number of incidents where noise levels exceed international requirements; and</li> <li>Complaints log and corrective action plan.</li> </ul>	Ecological Management Plan and Noise and Vibration Control Plan
Minimise hunting and poaching	Increased access to area; Construction workers	<ul style="list-style-type: none"> <li>Code of Conduct for construction workers banning hunting; and</li> <li>Signage highlighting hunting ban in all Project areas.</li> </ul>	<p>Law of the General Rules for the Protection of Wild Plants and Animals</p> <p>Law of Georgia on Wildlife</p> <p>Law of Georgia on Protected Areas</p> <p>IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources</p>	Contractor	From start of construction to end of the Project life.	<ul style="list-style-type: none"> <li>KPI: No recorded hunting and poaching activities; and</li> <li>Hunting prevention measures to be included within Contractor's scope through acceptance of AGL EHS requirements.</li> </ul>	Ecological Management Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Offsetting for habitat loss	Tree removal	<ul style="list-style-type: none"> <li>Reduced operating area;</li> <li>Tree inventory prior to clearance of forest habitats;</li> <li>Reforestation scheme, including habitat creation; and</li> <li>Installation of bat and birds boxes.</li> </ul>	<p>Law of the General Rules for the Protection of Wild Plants and Animals</p> <p>Law of Georgia on Wildlife</p> <p>Law of Georgia on Protected Areas</p> <p>IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources</p>	AGL / Contractor	Prior to and during site preparation works (Construction)	<ul style="list-style-type: none"> <li>Daily monitoring and monthly audit of site preparation / construction activities.</li> </ul>	Adjara BAP activities to be implemented by Contractors
Minimise habitat loss and disturbance (aquatic ecology)	In river construction works	<ul style="list-style-type: none"> <li>Minimum working areas;</li> <li>Pollution prevention measures;</li> <li>Sediment control</li> <li>Fishing ban on construction workforce; and</li> <li>No construction works during peak migration/spawning periods on the Machakhlistsqali River.</li> </ul>	<p>Law of the General Rules for the Protection of Wild Plants and Animals</p> <p>Law of Georgia on Wildlife</p> <p>Law of Georgia on Protected Areas</p> <p>IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources</p>	Contractor	Site preparation works and construction	<ul style="list-style-type: none"> <li>Daily monitoring and monthly audit of site preparation / construction activities.</li> </ul>	<p>Ecological Management Plan</p> <p>Water Resources and Water Quality Management Plan</p>
Control of invasive plant and animal species	Vegetation clearance, earthworks, and spoil disposal during construction	<ul style="list-style-type: none"> <li>Include invasive species management in HMRP; and</li> <li>Monitoring of alien species and treatment of materials contaminated by invasive plant material e.g. seeds, roots etc.</li> </ul>	<p>Law of the General Rules for the Protection of Wild Plants and Animals</p> <p>Law of Georgia on Wildlife</p> <p>Law of Georgia on Protected Areas</p> <p>IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources</p>	Contractor	Prior to and during construction	<ul style="list-style-type: none"> <li>AGL approval of the Ecological Management Plan developed by the contractor; and</li> <li>Results of invasive species survey to determine distribution at project site.</li> </ul>	Ecological Management Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Improve ecosystem services	Conserve and enhance fish stocks	<ul style="list-style-type: none"> <li>Stocking of reservoirs and river with native fish where feasible and as required..</li> </ul>	Law of the General Rules for the Protection of Wild Plants and Animals Law of Georgia on Wildlife Law of Georgia on Protected Areas IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	AGL	During operation	<ul style="list-style-type: none"> <li>Annual fisheries survey.</li> </ul>	AGL Adaptive Management Plan
Habitat conservation and management	Reinstatement of habitats	<ul style="list-style-type: none"> <li>Production of Habitat Management Plan; and</li> <li>Land purchase or land agreement and planting for habitat creation.</li> </ul>	IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	Contractor / AGL	During construction and operation	<ul style="list-style-type: none"> <li>Annual review of success of created habitat areas; and</li> <li>% of habitats re-instated to good condition within 12 months of the completion of works.</li> </ul>	Ecological Management Plan
Long-term conservation of biodiversity and ecosystem services	Habitat conservation and enhancement	<ul style="list-style-type: none"> <li>Production of the Adjaristsqali BAP, including consultation; and</li> <li>Implementation of measures and actions detailed in the BAP.</li> </ul>	IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	AGL	Upon completion of construction	<ul style="list-style-type: none"> <li>Annual review of progress towards achieving BAP objective.</li> </ul>	Adjara BAP

## 2.2.4 Water Resources and Water Quality

Table 2.4: Water Resources and Water Quality

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Protection of surface water quality for the environment	In river construction works	<ul style="list-style-type: none"> <li>Good practice construction measures.</li> </ul>	IFC EHS General Guidelines on Wastewater and Ambient Water Quality IFC EHS General Guidelines and relevant sector guidelines	Contractor	During construction	<ul style="list-style-type: none"> <li>No contamination of any surface waters;</li> <li>Regular visual water monitoring; and</li> <li>Regular review of contractor activities and implementation of CEMP by AGL Project Manager.</li> </ul>	Water Resources and Water Quality Management Plan
	Temporary storage of chemicals and oil	<ul style="list-style-type: none"> <li>Good practice construction measures; and</li> <li>Site construction compounds away from sensitive water features to avoid pollution (waste or sediment) or erosion.</li> </ul>	IFC EHS General Guidelines on Wastewater and Ambient Water Quality IFC EHS General Guidelines and relevant sector guidelines	Contractor	During construction	<ul style="list-style-type: none"> <li>Agreed and implemented management procedures; and</li> <li>No spills affecting surface water quality.</li> </ul>	Chemical, Oil, Fuel Storage and Refuelling Plan
	Excavation and spoil disposal	<ul style="list-style-type: none"> <li>Avoid altering drainage paths when placing spoil or re-routing drainage around the site; and</li> <li>Ensure sediment load in river system not increased beyond transport capacity.</li> </ul>	IFC EHS General Guidelines on Wastewater and Ambient Water Quality IFC EHS General Guidelines and relevant sector guidelines	Contractor	During construction	<ul style="list-style-type: none"> <li>Regular visual water monitoring; and</li> <li>Regular review of contractor activities and implementation of CEMP by AGL Project Manager.</li> </ul>	Water Resources and Water Quality Management Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
	Construction of access roads	<ul style="list-style-type: none"> <li>• Good practice construction measures;</li> <li>• Control measures during earthworks to minimise increase in sediment load;</li> <li>• Provision of cross drainage structures where building new / rehabilitating roads to avoid altering drainage paths; and</li> <li>• Surface treatment of road to minimise increase in sediment load.</li> </ul>	IFC EHS General Guidelines on Wastewater and Ambient Water Quality IFC EHS General Guidelines and relevant sector guidelines	Contractor	During construction	<ul style="list-style-type: none"> <li>• No contamination of any surface waters;</li> <li>• Regular visual water monitoring;</li> <li>• Regular review of contractor activities and implementation of CEMP by AGL Project Manager.</li> </ul>	Water Resources and Water Quality Management Plan
Protection of groundwater	Tunnel boring	<ul style="list-style-type: none"> <li>• Water feature survey to determine tunnel lining requirements; and</li> <li>• Compensation through alternative drinking water source</li> </ul>	IFC EHS General Guidelines on Wastewater and Ambient Water Quality IFC EHS General Guidelines and relevant sector guidelines	Contractor	During construction	<ul style="list-style-type: none"> <li>• Annual monitoring of spring water flows.</li> </ul>	Water Resources and Water Quality Management Plan  Chemical, Oil, Fuel Storage and Refuelling Plan
Minimise competition for water supply	Water use for construction / operational workforce	<ul style="list-style-type: none"> <li>• If creating a temporary water supply for the Project, ensure no adverse impact on other water users.</li> </ul>	IFC PS3: Resource Efficiency and Pollution Prevention	Contractor	During construction and during project life	<ul style="list-style-type: none"> <li>• Annual monitoring of spring water flows.</li> </ul>	Water Resources and Water Quality Management Plan
Maintain sufficient water flow for socio-economic uses	Changed / lowered flow regime due to operation of dams	<ul style="list-style-type: none"> <li>• Operate in with minimum flow requirements, confirm as part of Phase II evaluate need for alternative compensation for potential minority affected.</li> </ul>	IFC PS3: Resource Efficiency and Pollution Prevention	AGL	During operation	<ul style="list-style-type: none"> <li>• Regular flow monitoring in line with that set out in the ESIA.</li> </ul>	Adaptive Management Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Water irrigation and agricultural use	Changed / lowered flow regime due to operation of dams	<ul style="list-style-type: none"> <li>Operate in with minimum flow requirements, confirm as part of Phase II evaluate need for alternative compensation for potential minority affected.; and</li> <li>Implement catchment management scheme to ensure long-term water supply to users.</li> </ul>	IFC PS4 Community Health, Safety and Security	AGL	During operation	<ul style="list-style-type: none"> <li>Regular flow monitoring in line with that set out in the ESIA.</li> </ul>	Adaptive Management Plan
Maintain sufficient water flow for ecological uses	Changed / lowered flow regime due to operation of dams	<ul style="list-style-type: none"> <li>Operate in with minimum flow requirements, confirm as part of Phase II evaluate need for additional mitigation required in significantly affected reaches.'</li> </ul>	IFC PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	AGL	During operation	<ul style="list-style-type: none"> <li>Annual fisheries surveys; and</li> <li>Regular flow monitoring in line with that set out in the ESIA.</li> </ul>	Adaptive Management Plan
Maintain water supply to local villages	Tunnel operation changes groundwater flow	<ul style="list-style-type: none"> <li>Provide alternative supply to affected users'</li> </ul>	IFC PS4 Community Health, Safety and Security	AGL	During operation	<ul style="list-style-type: none"> <li>Annual monitoring of spring water flows.</li> </ul>	Operational Environmental Management Plan

## 2.2.5 Geology, Landslides and Seismic Risks

Table 2.5: Geology and Erosion Management (Construction)

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Prevent soil erosion and transportation	Site preparation, excavation, construction of dams and access roads	<ul style="list-style-type: none"> <li>Good engineering practice shall be undertaken to mitigate or manage soil erosion.</li> </ul>	International best practice	Contractor	During construction	<ul style="list-style-type: none"> <li>To be defined under Contractors CEMP requirements.</li> </ul>	Excavation and Soil Waste Disposal Plan  Water Resources and Water Quality Management Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Stability of slopes to prevent landslides	Road and dam construction	<ul style="list-style-type: none"> <li>Where slope instabilities are of concern, then good engineering practice shall be undertaken to mitigate or manage slope movements so as to reduce the impact on the Project and local community.</li> </ul>	International best practice	Contractor	During construction	<ul style="list-style-type: none"> <li>To be defined under Contractors CEMP requirements.</li> <li>Plans and method statements to be reviewed and approved by AGL</li> </ul>	Excavation and Soil Waste Disposal Plan  Method Statements
	Tunnel excavation	<ul style="list-style-type: none"> <li>Position tunnel portals away from landslide areas;</li> <li>Use low energy explosives in areas of low overburden; and</li> <li>Method of blasting to minimise shockwaves.</li> </ul>	International best practice	Contractor	During construction	<ul style="list-style-type: none"> <li>To be defined under Contractors CEMP requirements.</li> <li>Plans and method statements to be reviewed and approved by AGL</li> </ul>	Excavation and Soil Waste Disposal Plan  Method Statements
Prevention of ground destabilisation	Spoil disposal	<ul style="list-style-type: none"> <li>The spoil may be placed according to good engineering practice;</li> <li>Design at the toe areas of vulnerable slopes in order to improve stability and use as a source of local aggregate.</li> </ul>	International best practice	Contractor	During construction	<ul style="list-style-type: none"> <li>To be defined under Contractors CEMP requirements.</li> <li>Plans and method statements to be reviewed and approved by AGL</li> </ul>	Excavation and Soil Waste Disposal Plan  <b>Methods</b> Statements
Minimise destabilisation of slopes	Access road construction and road realignment	<ul style="list-style-type: none"> <li>The cuttings must be adequately supported / inclined according to good engineering practice;</li> <li>Reduce where possible the amount of tree felling; and</li> <li>Reinstate tree cover on cleared ground along side roads as soon as possible after road construction completed.</li> </ul>	International best practice	Contractor	During construction	<ul style="list-style-type: none"> <li>To be defined under Contractors CEMP requirements.</li> <li>Plans and method statements to be reviewed and approved by AGL</li> </ul>	Excavation and Soil Waste Disposal Plan  Method statements
Prevent soil erosion and landslide	Erosion of access roads	<ul style="list-style-type: none"> <li>Maintain integrity of road surface through regular maintenance.</li> </ul>	International best practice	AGL	During operation	<ul style="list-style-type: none"> <li>Regular visual observation.</li> </ul>	OEMP and Maintenance Procedures

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Stability of slopes to prevent landslides	Fluctuating reservoir levels during operation	<ul style="list-style-type: none"> <li>Where slope instabilities are of concern, then good engineering practice shall be undertaken to mitigate or manage slope movements so as to reduce the impact on the Project and local community.</li> </ul>	International best practice	AGL	During operation	<ul style="list-style-type: none"> <li>Regular visual observation.</li> </ul>	OEMP and Maintenance Procedures

## 2.2.6 Materials and Waste Management

Table 2.6: Materials and Waste Management

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Minimisation and safe disposal of waste	Spoil generated as a result of tunnel blasting	<ul style="list-style-type: none"> <li>Where possible, spoil material will be used as a construction material and for concrete batching; and</li> <li>Other spoil will be disposed of in spoil disposal sites which have been identified at a number of locations within the Project area.</li> </ul>	IFC PS3 Resource Efficiency and Pollution Prevention IFC EHS General Guidelines on Waste Management	Contractor	During construction	<ul style="list-style-type: none"> <li>Maintain records of amount of material disposed of to each spoil disposal site; and</li> <li>Monitor spoil disposal sites for erosion</li> </ul>	Materials Use and Waste Management Plan  Excavation and Spoil Waste Disposal Plan



Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
	Waste generated as a result of general construction activities	<ul style="list-style-type: none"> <li>Construction phase waste management plan (Appendix 4 Materials Use and Site Waste Management Plan (WMP) Framework)</li> </ul>	IFC PS3 Resource Efficiency and Pollution Prevention IFC EHS General Guidelines on Waste Management	Contractor	During construction	<ul style="list-style-type: none"> <li>Waste inventory including:                             <ul style="list-style-type: none"> <li>waste stream</li> <li>volume;</li> <li>disposal route;</li> <li>competent waste contractor; and</li> <li>date of uplift;</li> </ul> </li> <li>Audit of waste management including:                             <ul style="list-style-type: none"> <li>storage and disposal facilities;</li> <li>waste contractors; and</li> <li>waste documentation.</li> </ul> </li> </ul>	Materials Use and Waste Management Plan
	Waste generated as a result of general operational activities	<ul style="list-style-type: none"> <li>Operational phase WMP; and</li> <li>Materials Use and Site WMP Framework.</li> </ul>	IFC PS3 Resource Efficiency and Pollution Prevention IFC EHS General Guidelines on Waste Management	AGL	During operation	<ul style="list-style-type: none"> <li>As above</li> </ul>	OEMP

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Sustainable use of raw materials	Construction and operational activities	<ul style="list-style-type: none"> <li>Re-using materials on site wherever possible;</li> <li>Good housekeeping and operating practices, including inventory control to reduce amount of out-of-date, off-specification, contaminated, damaged material or excess to plant needs;</li> <li>Procurement measures to match material requirements with construction programme; and</li> <li>Substituting raw materials or inputs with less hazardous or toxic materials wherever economically and technically feasible.</li> </ul>	IFC PS3 Resource Efficiency and Pollution Prevention	<p>Contractor - during construction</p> <p>AGL - during operation</p>	Construction and operation	<ul style="list-style-type: none"> <li>Monitor materials use.</li> </ul>	
Minimise pollution	Materials handling and storage	<ul style="list-style-type: none"> <li>Appropriately covered and bunded storage located away from sensitive receptors;</li> <li>Appropriate spill kits near by (as necessary for hazardous liquids);</li> <li>Secure and protected from risk of theft or vandalism;</li> <li>Easily accessible in a safe manner; and</li> <li>Located next to any required PPE (as necessary for irritants and hazardous materials)</li> </ul>	<p>IFC PS3 Resource Efficiency and Pollution Prevention</p> <p>IFC EHS General Guidelines on Waste Management</p>	<p>Contractor – during construction</p> <p>AGL – during operation</p>	Construction and operation	<ul style="list-style-type: none"> <li>Audit of Contractor's materials storage facilities by AGL; and</li> <li>Number of pollution incidents.</li> </ul>	Chemical, Oil, Fuel Storage and Refuelling Plan

## 2.2.7 Traffic and Transportation

Table 2.7: Transport Management

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Minimise road hazards, congestion and damage to road infrastructure	Increase in general traffic (cars and trucks) volumes and Abnormal loaded vehicles	<ul style="list-style-type: none"> <li>• Re-use of excavated materials on site;</li> <li>• Contractor to develop and implement Traffic Management Plan (TMP);</li> <li>• Construction of personnel accommodation on site;</li> <li>• Provision of bus/minibus services for personnel living in nearby settlements;</li> <li>• Repair to damaged road surfaces;</li> <li>• Regular inspection and maintenance of roads used by the Project.</li> </ul>	Georgian standards	Contractors	During construction	<ul style="list-style-type: none"> <li>• AGL to review Contractors CEMP and TMP to ensure continuity with commitment in this ESMP;</li> <li>• AGL review / audit of contractors CEMP including TMP as part of audit programme;</li> <li>• Number of complaints relating to traffic and transport; and</li> <li>• Reporting of accidents and statistics by Contractor to AGL.</li> </ul>	Traffic Management Plan

## 2.2.8 Noise and Vibration

Table 2.8: Noise Management (Construction)

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Avoid noise nuisance generated by on-site plant and construction activities	Site preparation excavation and foundations, construction and blasting / tunnelling	<ul style="list-style-type: none"> <li>Restricted general hours of working to avoid sensitive periods;</li> <li>Positioning of temporary site compounds as far as reasonably practicable from sensitive receptors;</li> <li>Undertaking construction activities in accordance with good practice;</li> <li>Maintaining equipment in good working order and fitting with appropriate noise control at all times;</li> <li>Use of site terrain, material stockpiles and suitable work locations so as to screen work locations and maximise the distance between work activities and receptors;</li> <li>Consider acoustic enclosures for compressors/generators if located near sensitive receptors;</li> <li>Ensure deliveries arrive and depart so as not to disturb residents at inconvenient times;</li> <li>Setting noise limits;</li> <li>A regime of noise monitoring where appropriate; and</li> <li>Providing the public with advance notice of planned noise-generating activities.</li> </ul>	IFC EHS General Guidelines on Noise Management	Contractors	During construction	<ul style="list-style-type: none"> <li>Requirement for contractors to implement mitigation as part of the contracts;</li> <li>AGL to monitor noise levels using sound level meter at the nearest residential properties to construction activities for comparison against standards; and</li> <li>Record noise complaints and investigate using sound level meter via the community grievance mechanism.</li> </ul>	<p>Noise Vibration and Control Plan</p> <p>Community Grievance Plan</p>

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Avoid noise nuisance generated by construction traffic	Site traffic movements to and from site including abnormal loads	<ul style="list-style-type: none"> <li>• Maintaining equipment in good working order and fitting with appropriate noise control at all times;</li> <li>• Keep haulage routes well maintained;</li> <li>• Ensure deliveries arrive and depart so as not to disturb residents at inconvenient times;</li> <li>• Setting noise limits; and</li> <li>• A regime of noise monitoring where appropriate.</li> </ul>	IFC EHS General Guidelines on Noise Management	Contractor	During construction	<ul style="list-style-type: none"> <li>• As above.</li> </ul>	<p>Noise Vibration and Control Plan</p> <p>Community Grievance Plan</p>

## 2.2.9 Air Quality

Table 2.9: Air Quality Management

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Minimise dust emissions	Tunnelling, land clearing, quarrying, road construction, spoil deposition and general construction activities.	<ul style="list-style-type: none"> <li>• Minimizing dust from material handling and storage sources by using covers and/or control equipment (water suppression); and</li> <li>• Dust suppression techniques should be implemented, such as applying water or non-toxic chemicals to minimize dust from vehicle movements.</li> </ul>	IFC EHS General Guidelines on Air Emissions and Ambient Air Quality	Contractor	During construction	<ul style="list-style-type: none"> <li>• AGL Environmental Manager to undertake daily visual checks; and</li> <li>• Number of dust complaints.</li> </ul>	Air Quality Management Plan

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Minimise dust emissions	Traffic and vehicle movements on site roads	<ul style="list-style-type: none"> <li>Restrict traffic to tarmac roads as far as possible. Speed limit for all off road traffic to be &lt;20 km/hr to minimise dust; and</li> <li>All vehicles should be tarped to prevent dust generation from the loads.</li> </ul>	IFC EHS General Guidelines on Air Emissions and Ambient Air Quality	Contractor	During construction	<ul style="list-style-type: none"> <li>AGL Environmental Manager to undertake bi-weekly visual checks of construction vehicles. (violation to be reported only);</li> <li>Contractor to maintain servicing records for all vehicles; and</li> <li>AGL to review Contractors servicing records at beginning of contract and thereafter on six monthly basis for those longer term contracts lasting more than six months.</li> </ul>	Traffic Management Plan  Air Quality Management Plan
Minimise construction machinery / vehicle emissions	Construction traffic and machinery	<ul style="list-style-type: none"> <li>Manage emissions from mobile sources as per IFC EHS guidelines for Air Emissions and Ambient Air Quality; and</li> <li>Locate generators away from receptors (workers' camps and residents).</li> </ul>	IFC EHS General Guidelines on Air Emissions and Ambient Air Quality	Contractor	During construction	<ul style="list-style-type: none"> <li>AGL Environmental Manager to undertake bi-weekly visual checks of construction vehicles.</li> <li>Contractor to maintain servicing records for all machinery. and</li> <li>AGL to review Contractors servicing records at beginning of contract and thereafter on six monthly basis for those longer term contracts lasting more than six month.s.</li> </ul>	Air Quality Management Plan

## 2.2.10 Greenhouse Gases and Climate Change

Table 2.10: Climate Change Management

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Reduce Greenhouse Gas (GHG) emissions	Material sourcing	<ul style="list-style-type: none"> <li>Sourcing materials from local suppliers wherever possible to avoid potentially long distance travel for materials; and</li> <li>Use of materials recovered at site (rock and aggregates) in preference to remote suppliers.</li> </ul>	-	Contractor	During construction	<ul style="list-style-type: none"> <li>Inventory of materials to include source; and</li> <li>Procurement Policy to include requirement for sourcing most geographically local materials when ever possible.</li> </ul>	Material Use and Waste Management Plan
	Use of vehicles, construction plant and generators with emissions.	<ul style="list-style-type: none"> <li>Using well maintained diesel generators and other plant to ensure the maximum efficiency and lowest fuel/energy consumption.</li> </ul>	-	Contractor	During construction	<ul style="list-style-type: none"> <li>Record evidence of new plant being employed;</li> <li>Monitor and record of plant maintenance; and</li> <li>Monitor and record fuel consumption.</li> </ul>	Air Quality Management Plan
	Staff vehicle movements	<ul style="list-style-type: none"> <li>Controlling exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment through regular servicing; and</li> <li>Transportation scheme for workers and operation staff.</li> </ul>	-	Contractor	Construction and operation	<ul style="list-style-type: none"> <li>Provision of transportation from local pick up points;</li> <li>Monitor use of transportation provided; and</li> <li>Incentives for car sharing.</li> </ul>	Traffic Management Plan
Climate change mitigation	Forestry regeneration	<ul style="list-style-type: none"> <li>Plant new forestry to replace forestry removed for construction or lost through inundation to act as carbon sink reducing the carbon cost of construction.</li> </ul>	-	AGL	Construction and operation	<ul style="list-style-type: none"> <li>Number of trees planted.</li> </ul>	OEMP Adjara BAP

### 2.2.11 Cultural Heritage and Archaeology

Table 2.11: Archaeology / Cultural Heritage (Construction)

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Avoid damage to cultural heritage features	Powerhouse and dam construction	<ul style="list-style-type: none"> <li>Relocation or sympathetic design; and</li> <li>Use of materials for power house and dam to maintain setting of cultural heritage features.</li> </ul>	World Bank's (WB) Physical Cultural Resources Policy Guidebook IFC PS8 – Cultural Heritage Physical	Contractor	During construction	<ul style="list-style-type: none"> <li>AGL to review detailed design proposed by Contractor.</li> </ul>	Design review
Avoid damage to unrecorded archaeological heritage features	Excavation works during construction phase	<ul style="list-style-type: none"> <li>A chance find strategy will be in action across the scheme during all groundworks, with the exception of tunnelling involving drill and blast or tunnel boring machine (TBM) methods; and</li> <li>Any archaeological finds and sites will be reported immediately to the Agency for Cultural Heritage Preservation of Georgia and to the Cultural Heritage Preservation Agency of Ajara.</li> </ul>	WB's Physical Cultural Resources Policy Guidebook IFC PS8 – Cultural Heritage Physical	Contractor	During construction	<ul style="list-style-type: none"> <li>AGL to review Contractors CEMP and Chance Finds Procedure to ensure continuity with commitment in this ESMP and to audit its implementation; and</li> <li>Reporting / notification of finds to Georgian National Agency for Cultural Heritage Preservation of Georgia and to the Cultural Heritage Preservation Agency of Ajara.</li> </ul>	Archaeological Chance Finds Procedures



## 2.2.12 Landscape and Visual Amenity

Table 2.12: Landscape and Visual Amenity

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Monitoring / KPI	Implementation Route / Plan
Reduce visual intrusion of construction activities and areas	Site clearance, road construction and quarrying	<ul style="list-style-type: none"> <li>Construction sites to be kept tidy;</li> <li>Clearing of vegetation around construction sites to be minimised; and</li> <li>Landscape planting strategy to identify appropriate re-vegetation (BAP).</li> </ul>	-	Contractor	During construction	<ul style="list-style-type: none"> <li>AGL to review Contractors CEMP; and</li> <li>AGL Environmental Manager to undertake bi-weekly visual checks of construction areas.</li> </ul>	Ecological Management Plan Adjara BAP
Reduced visual footprint	Dams, powerhouses, roads etc.	<ul style="list-style-type: none"> <li>Landscape planting strategy with appropriate re-vegetation (BAP).</li> </ul>	-	Contractor / AGL	Start during construction and continue into operation	<ul style="list-style-type: none"> <li>Annual survey of re-forestation and re-vegetation.</li> </ul>	Adjara BAP

## 3. Plans, Policies and Procedures

### 3.1 Introduction

The preceding section of this ESMP identified all relevant mitigation activities relevant to the Adjara Project as identified through the ESIA. In turn, the various mitigation activities will be implemented via a number of dedicated plans. This section of the ESMP elaborates various framework plans through which the mitigation activities identified will be committed by the Project.

Prior to construction of each component in the Project, and prior to commissioning of the plant, AGL (and Contractors where relevant) will provide further detail around each of the framework plans, policies and procedures defined within this ESMP to ensure adequate management and monitoring of social and environmental aspects. Table 3.1 below summarises the key plans and policies required.

It is intended that these framework plans will be further elaborated by AGL alongside development of an Environmental, Health and Safety Management System specifically for the Project. Where relevant, under respective works contracts, the Contractor(s) will be required to implement corresponding arrangements (as directed within the ESMP).

In addition to the Stakeholder Engagement Plan included in the ESIA Volume III developed to guide the Project, the following framework plans have been defined within this ESMP:

- CEMP Framework;
- Recruitment plan;
- Human Resources Policy
- Labour grievance Plan;
- Local Skills Development Plan;
- Materials use and waste management plan;
- Traffic management plan;
- Temporary worker accommodation management plan;
- Archaeological Chance finds procedure;
- Adaptive Management Plan; and
- Biodiversity Action Plan Framework.

In addition to the above plans, the following plans will also be required by the Project:

- Community grievance mechanism;
- Emergency Preparedness and Response Plan (EPRP);
- Environmental, Health and Safety Management System.

The community grievance mechanism is provided in the ESIA Volume II. Preparation of the EPRP is a requirement of IFC Performance Standard 1 to encompass all activities of the Project. A framework EPRP is included herein with detailed plans being prepared on the basis of the hazard and operability (HAZOP) studies to be undertaken by AGL and the Contractors. The EPRP will form part of the wider suite of plans to be implemented by the AGL EHS department.

Table 3.1: Plans, Policies and Procedures

IFC Performance Standard	Plan / Policy	Objective / Content	Timescale	Responsibility	Institutional Responsibility
PS1: Assessment and management of environmental and social Risks and Impacts And PS3: Resource Efficiency and Pollution Prevention	Health and Safety management plan (developed separately by Contractor)	Safe working environment, procedures and culture. Further policies / procedures to be developed if need identified through site audits IFC PS2 – Labour and Working Conditions IFC EHS General Guidelines on Occupational Health and Safety (OHS)	Sytem in place prior to construction, additional plans and policies developed as needed	Contractor Project Manager (construction) / General Manager (operation) responsible for implementation at project / operation level.	Ministry of Environment Protection  Directorate of Environment and Natural resources of Autonomous Republic of Georgia.
	Construction Environmental Management Plan (CEMP) (see Section 3.2)	To implement mitigation activities relevant to the construction phase of the Project and to avoid, mitigate and minimise environmental and social impacts during the construction phase.  Each Contractor will be required to adopt a CEMP which will strictly follow and comply with the general IFC Environmental, Health and Safety Guidelines (EHS) during construction activities at all sites as well as incorporate specific mitigation as identified through the ESIA process. Each works contract will include a CEMP framework as a specific exhibit.	Immediately: Plan to be prepared by each Contractor and approved by AGL.	Contractor Environmental Manager and . Construction Project Manager (construction) responsible for implementation at project level.	Ministry of Environment Protection  Directorate of Environment and Natural resources of Autonomous Republic of Georgia.
	Material Use and Waste Management Plan (see appendices)	During construction phases, intended to compliment and work alongside relevant CEMPs.  Identify measures for minimisation of waste and safe disposal of construction wastes	Immediately. Plan to be prepared by each Contractor and approved by AGL..	Contractor Environmental Manager and . Construction Project Manager (construction) responsible for implementation at project level.	Ministry of Environment Protection  Directorate of Environment and Natural resources of Autonomous Republic of Georgia.
	Archaeological Chance finds procedure (see appendices)	Refer to the World Bank's Physical Cultural Resources Policy Guidebook	Immediately. Plan to be prepared by each Contractor and approved	Contractor Environmental Manager and Construction Project	Notification to the Georgian National Cultural Heritage

IFC Performance Standard	Plan / Policy	Objective / Content	Timescale	Responsibility	Institutional Responsibility
			by AGL.	Manager (construction) responsible for implementation at project level..	Agency and to the Cultural Heritage Preservation Agency of Ajara
PS2: Labour and working conditions	Recruitment Policy and Human Resources Policy (See Section appendices)	Equity in local employment benefits / minimise social conflict. Prohibit the use of child and forced labour / promote non-discrimination and equal opportunities. Special measures to promote equal employment opportunities across ethnicities and women. Refer to:	Immediately. Plan to be prepared by each Contractor and approved by AGL.	Contractor Employment Services Officer and Construction Project Manager	Labour Agency at Municipality level Ministry of Labour
	Local Skills Development Programme (see appendices)	<ul style="list-style-type: none"> <li>IFC PS2 – Labour and Working Conditions and ILO Fundamental Human Rights Conventions: Elimination of Forced and Compulsory Labour (Conventions 29/105) – ratified 1950/1999;</li> </ul>			
	Labour Grievance Plan (see appendices)	Formalised process by which grievances can be raised by the workforce during construction and operation and to allow structured investigation by AGL to review the validity, responsibility and response / action.	Immediately. Plan to be prepared by each Contractor and approved by AGL.	Construction Project Manager / Construction Employment Services Officer	Labour Agency at Municipality level
	Temporary Workers Accommodation Management Plan (see appendices)	During construction phases, intended to compliment and work alongside relevant CEMPs.	Immediately. Plan to be prepared by each Contractor and approved by AGL.	Construction Environmental Manager and Construction Project Manager	Labour Agency at Municipality level Ministry of Labour at State level
PS4: Community health, safety and security;	Emergency Preparedness and Response Plan (EPRP) (See Section 3.4)		Immediately. Plan to be prepared by each Contractor and approved by AGL.	Construction Environmental Manager and Construction Project Manager	
	Community Grievance Plan	Formalised process by which grievances can be raised by the local community and staff during construction and operation and to allow structured investigation by AGL to review the validity, responsibility and response / action. Outlined in SEP	Immediately. Plan to be prepared by each Contractor and approved by AGL.	Construction Community Liaison Officer and Construction	
	Traffic Management Plan (see Appendices)	During construction phases, intended to compliment and work alongside relevant CEMP.	Immediately. Plan to be prepared by each Contractor and approved by AGL.	Construction Environmental Manager and Construction Project Manager	Georgian Government and Municipality transport and police departments

IFC Performance Standard	Plan / Policy	Objective / Content	Timescale	Responsibility	Institutional Responsibility
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Ecological Management Plan	<ul style="list-style-type: none"> <li>Define procedures for site clearance and in-river construction works</li> <li>Surveys and inventory of species prior to site clearance</li> <li>Communication and collaboration with Community Wildlife Officer</li> <li>Define habitat reinstatement procedures</li> <li>Raise awareness among staff</li> <li>Prohibit hunting and fishing</li> <li>Implement mitigation measures defined in ESIA to minimise impacts on terrestrial and aquatic habitats.</li> </ul>	Immediately. Plan to be prepared by each Contractor and approved by AGL	Construction Environmental Manager and Construction Project Manager	Ministry of Environmental Protection  Directorate of Environment and Natural resources of Autonomous Republic of Georgia.
	Biodiversity Action Plan (BAP) (see Section 3.5)	<p>The overall goal of the Adjara BAP is to achieve no net loss in biodiversity.</p> <p>The BAP includes the following information:</p> <ul style="list-style-type: none"> <li>Determination of the regulatory requirements;</li> <li>Summaries the ecological baseline conditions;</li> <li>Summaries the key impacts of the development, and the required mitigation and offsetting measures;</li> <li>Identifies the overarching goal of the Adjara BAP;</li> <li>Outlines the processes needed to establish the conservation priorities and identification of actions for the BAP actions;</li> <li>Outlines the actions which need to be included in the implementation of the BAP; and</li> <li>Outlines the monitoring, evaluation and improvement needs of the BAP to ensure that the Adjara development meets its obligations following the ESIA</li> </ul>	Implement first phase of Adjara BAP prior to start of construction, ongoing through construction and operation .	AGL will nominate a Community Wildlife Officer(CWO) with responsibility for delivering the Adjara BAP.  Contractors will be required to have an identified Ecological Clerk of Works (ECW) to work in conjunction with the AGL CWO.	Ministry of Environment Protection  Directorate of Environment and Natural resources of Autonomous Republic of Georgia.
PS3: Resource Efficiency and Pollution	Water Resources and Water Quality	Monitoring programme for determining the downstream flow rate during periods of	Immediately. Plan to be prepared by each	Construction Environmental Manager	Ministry of Energy and Natural Resources

IFC Performance Standard	Plan / Policy	Objective / Content	Timescale	Responsibility	Institutional Responsibility
Prevention And PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Management Plan  Adaptive Management Plan	attenuated overland flow (applies to both construction phase and operational phase scenarios).  Monitoring programme to determine impacts on groundwater resources and existing abstractions as a result of sub-surface works (tunnelling etc).  The goal is to be clear as to whether water (both surface water and groundwater) resources values are being maintained. For instance, sufficient flow needs to be released to maintain aquatic biodiversity values and resource / abstraction requirements.	Contractor and approved by AGL..	and Construction Project Manager.  AGL to develop and implement Adaptive Management Plan	Ministry of Environment Protection  Directorate of Environment and Natural resources of Autonomous Republic of Georgia.

## **3.2 Construction Environmental and Social Management Plan**

### **3.2.1 Background**

The following sub-sections provide a framework of the construction environmental management plans required for construction activities and provide the implementation vehicle of specific mitigation activities identified through the ESIA process. Each Contractor will be required to provide detailed CEMPs as part of their obligations under their Contracts, including but not limited to site waste management, traffic management, temporary worker accommodation, labour working conditions, and chance find procedures. This framework CEMP will be included as an exhibit under each Contract as a basis for consistent approach to environmental and social management across various construction activities.

It is intended that the CEMPs, to be elaborated by the Contractors, will be complimented by an overall Environmental, Health and Safety Management System to be developed specifically for the Project by AGL.

All CEMPs will be required to strictly follow and comply with the general IFC Environmental, Health and Safety Guidelines (EHS) during construction activities at all construction sites.

### **3.2.2 Approach**

#### **3.2.2.1 Preparation by Contractors of CEMP**

The various Contractors will be required to prepare a dedicated CEMP compliant with this framework and requirements of the Government of Georgia which will be structured as follows:

1. A Master CEMP providing organisational and operational procedures for the implementation of both project specific mitigation as identified through the ESIA process and general best practices of the industry; and
2. Specific parallel plans and policies elaborating complimentary environmental / social management measures by themes and indicating the responsibility for implementation, technical details and how implementation will be monitored. Contractors are expected to develop these plans and policies fully in order to properly manage their construction activities in accordance with the findings of the ESIA and in compliance with the IFC EHS guidelines.

The content of the expected Contractors CEMPs and the applicable guidelines and standards are defined in each Contract as specific exhibits and the Contractor is required to impose this content. The CEMP for each Contractor will include performance / monitoring indicators consistent with those presented in Section 2 of this ESMP.

The Contractor's CEMP documentation has the following objectives:

- Provide the environmental and social policy of the construction Contractors;
- Provide operational and emergency procedures, developed to address the environmental aspects and risks associated with the construction activities as identified within the ESIA;
- Clarify the implementation and operation of the CEMP to ensure that structure and responsibilities are assigned, staff are trained, aware and competent, and that there is proper communication, documentation, operational control and emergency preparedness and response;

- Provide organisational and technical procedures for implementation of the CEMP which ensure that construction activities associated with potential environmental and social impacts are carried out in a controlled and responsible way;
- Provide checking and corrective action through monitoring and measurement; and
- Provide mechanisms for maintaining adequate records of corrective actions/monitoring to allow effective audits.

All plans produced by contractors as required by this ESMP will need to be approved by AGL ahead of implementation to check for consistency and confirm that committed mitigation activities have been adequately included and accounted for by the Contractors. Plans will be submitted to IFIs and the lenders as part of the annual, monitoring programme.

### **3.2.2.2 Contractor Monitoring of CEMP Implementation**

The various Contractors will be responsible for the implementation of the CEMP and associated plans and for monitoring and assessing how environmental and social management at each site is undertaken. This monitoring will include the activities undertaken by their sub-contractors.

The Contractors will employ specialist environmental, health and safety staff to undertake this monitoring. The Contractors will prepare and maintain reports of their inspections and ensure that corrective actions are taken when necessary and to track environmental performance. The frequency of inspections and reporting are to be agreed in advance with AGL.

### **3.2.2.3 AGL Monitoring and Auditing CEMPs Implementation**

Similarly AGL will employ specialist site based environmental, health and safety staff to undertake the monitoring of construction sites and assess compliance with the IFC EHS guidelines. A system of non-conformance, using three levels of non-conformance, will be put in place to prioritise action according to importance and severity.

The non-compliance procedure will allow for the following safeguards:

1. Work can be stopped in the event of a serious non-compliance situation;
2. Follow-up visits will be required to verify that the situation has been appropriately rectified by the Contractor; and
3. Investigations will determine the causes of incidents and evaluate if changes need to be made to documented procedures or if new procedures are required to prevent similar incidents from occurring in the future.

Periodic auditing will also take place by an independent party, two months after construction has commenced at each site and six-monthly audits after that, to verify conformance and that the proper procedures are in place.

Ongoing monitoring, non-conformance systems and auditing will allow evaluation of environmental performance, analysis of causes of problems, assessment of compliance with Contractors obligations and legal requirements, and enable timely identification of required corrective actions.



### **3.2.3 Activities**

#### **3.2.3.1 Environment**

As per the IFC EHS guidelines, the Contractors are obliged to implement all reasonable measures with regards to noise and vibration, soil erosion, air quality, solid waste, hazardous materials, wastewater discharges, and contaminated land. Furthermore, the Contractors are required to adopt and implement those specific mitigation activities identified through the ESIA process and presented in Section 2 which are relevant to their construction activities.

Parallel Plans and Policies to be developed by Contractors together with CEMP to implement specific mitigation measures identified in the ESIA, include but are not limited to the following:

- Materials and site waste management plan
- Archaeological Chance finds policy
- Biodiversity protection and reinstatement plan

#### **3.2.3.2 Labour and Working conditions**

The Contractors are obliged to implement all reasonable precautions to protect the health and safety of workers. All Contractors will be required to have a stand alone Health and Safety Management System and associated procedures which will as a minimum adhere to the IFC general EHS guidelines and ensure the health and safety of all workers employed during the construction phase of the project. As a minimum the Health and Safety Management System will contain i) identification of potential hazards to workers, particularly those that may be life threatening; ii) provision of preventative and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; iii) programme of training of workers; iv) identification and provision of required personnel and protective equipment v) documentation and reporting of occupational accidents, diseases, and incidents; and vi) emergency prevention, preparedness and response arrangements. The occupational health and safety measures identified in the Contractors Health and Safety Management System will be reviewed to ensure they are consistent with Georgian legislation and international requirements. Section 2.2.2 outlines generic mitigation measures identified as part of the ESIA which the Contractors must address as part of their Health and Safety Management System; it is not within the scope of this CEMP to define all Health and Safety Management System requirements.

In addition to stand alone Health and Safety Management System, all Contractors within their CEMPs will develop parallel plans and policies which specifically address working conditions and worker relationships, these include but are not limited to the following:

- Recruitment policy
- Labour grievance mechanism
- Temporary worker accommodation management plan

#### **3.2.3.3 Community Health, Safety and Security**

In a similar way, as per the IFC EHS guidelines, the Contractors are obliged to implement risk management strategies to protect the community from (1) physical, chemical, or other hazards associated with sites under construction, (2) hazards associated with the increased traffic, (3) communicable and vector-borne diseases associated with the population of workers.

Parallel Plans and Policies to be developed by Contractors together with CEMP to implement specific mitigation measures identified in the ESIA, include but are not limited to the following:

- Community grievance mechanism
- Traffic management plan
- Emergency Preparedness and Response Plan

#### **3.2.4 Staff and Resources**

As indicated above, the preparation, approval, implementation, and monitoring of the various activities will require specialist environmental, health and safety staff both from AGL and from the Contractor.

Dedicated equipment will also be required to undertake the monitoring of the various parameters.

Respecting IFC's general EHS Guidelines and developing a detailed CEMP (in accordance with the requirements set out in this ESMP) will be a contractual obligation for all Contractors. As such it will be the responsibility of each Contractor to staff its EHS divisions appropriately to be able to comply with these obligations. As a minimum it is expected that each Contractor will employ a full time dedicated environmental health and safety professional to manage their environmental and social obligations at all times during the execution of the contract. .

AGL as part of their environmental health and safety management system will employ a dedicated EHS Manager, assisted by two EHS officers, who will be permanent staff of AGL's environment, health and safety department. AGL will seek specialist sub-contractors to support its activities in this field, on an as-required basis.

### **3.3 Water Resources and Water Quality Management Plan**

A 3.3 Water Resources and Water Quality Management Plan will be developed for the construction phase but will be developed further to then cover operational phase monitoring of water resources impacts. For the construction phase these monitoring requirements will include attenuated flows associated with temporary coffer dams, sediment control, waste water discharges, permanent barrages/dams and any impacts on the groundwater resource and existing abstractions.

Details of the water monitoring for the operational phase are provided in Section 9.6.3 of the ESIA.

### **3.4 Emergency Preparedness and Response Plan (EPRP)**

#### **3.4.1 Background**

This section presents the proposed structure for the EPRP which the Contractors will develop for the construction phase and will be eventually updated and implemented as part of the operational phase of each of the schemes. It should be noted that this section does not constitute the final EPRP and is intended to be used as a guidance document for producing the relevant EPRP.

Aside from the EPRP, safety management will form a key component of the Operation and Maintenance (O&M) Plan which is an engineering related mechanism and not covered in detail here. The O&M Plan will be drawn up by the O&M Contractor in accordance with the requirements of the equipment manufacturers and international best practice. In accordance with International Hydropower Association guidance, the O&M Plan will include a Dam Safety Management Plan and the overriding principles within both will be that the workers and the communities in the vicinity of dams and other Project infrastructure will not be exposed to unacceptable risks. The O&M Plan will define the scale, frequency and nature of monitoring requirements, including types of instrumentation required. Any potential problems identified during monitoring will be followed up promptly with detailed investigations and, where required, will be rectified to prevent accidents or incidents from occurring. Levels of expertise needed to implement the O&M Plan will also be specified within the plan and AGL will hire the appropriate personnel.

The remainder of this section discusses the EPRP to be developed by the Contractor for the construction phase of the project. The Contractor as part of the EPRP will develop a community health and safety campaign to raise awareness within the project area and notify people of risks and measures that have been put in place.

#### **3.4.2 Objective**

An appropriate EPRP is relevant to both the construction and operational phases of the Project. The EPRP is to provide an organisational structure so that each scheme can effectively prepare for both external and internal disasters that can potentially negatively affect the Project.

Responsibility for developing the EPRP for the construction phase lies with the Contractor. Ultimately, in the preparation of the EPRP, the following process will need to be followed;

1. Perform HAZOP analysis for all three schemes and this should cover the construction and operational phases of the Project. Completion of the HAZOP should be undertaken in a workshop or series of workshops and include inputs from all relevant stakeholders (such as AGL, the contractors, local communities – particularly those downstream of dams, village heads, municipalities and local emergency services representatives as applicable).
2. Document the perceived level of risk (in a risk register) and the appropriate mitigation measures which are required to reduce risks to acceptable levels. All mitigation measures should have responsibilities and timeframes attached to them;
3. Inform potentially affected communities of significant hazards giving explanations to aid understanding;
4. Prepare the EPRP (see below for the proposed structure); and
5. Summarise and disclose the EPRP in a culturally appropriate manner.

### 3.4.3 Key Hazards

Key hazards to the Project, which present potential emergency situations, are believed to be as follows and will be considered in the development of the EPRP:

- Landslides and rockfalls
- Earthquakes
- Cofferdam failure
- Road traffic accidents
- Flooding of tunnels during construction
- Working in confined spaces
- Flood discharges and impacts on major structures (especially those higher than the return period design flood level)
- Operational phase flushing of sediment traps and significant increases in downstream levels / discharge rates
- Power cuts / outages
- Storage, handling and use of explosives
- Fuel and chemical storage, handling and use
- Fire hazard
- Weather and climatic events
- Site security
- Terrorism or civil unrest.

### 3.4.4 Structure of the EPRP

A single EPRP will be prepared which covers the construction and operational phases of all three schemes. It should include detailed policy, plans and procedures to cover each of the principle hazards which could potentially impact on the Project as identified through the HAZOP process. A proposed structure for the EPRP is as follows;

- Introduction to the EPRP;
- Legislative and Policy Framework;
- Hazard and Operability (HAZOP) Study and Risk Register;
- Audit and Evaluation Procedure for the EPRP;
- Responsibilities and Communications in Emergency Situations;
- Community Emergency Contact Details;
- Containment and control of incidents;
- Emergency Water Supply;
- Emergency Electrical Power;
- Emergency Preparedness; Evacuation;
- Emergency Preparedness; Staff Training;
- Emergency Preparedness; Planned Drills;
- Emergency Preparedness; Planned Evacuation;
- Terrorism Threat Response;
- Riot or Civil Disturbance Response;
- Earthquake Response;
- Landslide and rockfall Response;
- Fire Response;
- Severe Weather Response;
- Other Emergency Situation Response (as applicable); and
- Restoration, clean-up and remedial measures.

It should be stressed that this is an outline structure and it may be necessary to modify or add / delete these proposed headings once the process of producing the EPRP begins in earnest.

Drills of the EPRP will need to be exercised at least annually. The Contractor will inform communities and local authorities regularly as plans change and when testing is due to occur.

## **3.5 Biodiversity Action Plan**

### **3.5.1 Background**

#### **3.5.1.1 What is a Biodiversity Action Plan?**

A Biodiversity Action Plan (BAP) is a plan to conserve and enhance biodiversity: which includes a set of actions that lead to the conservation or enhancement of biodiversity, in the context of hydropower development, a specific site or project in the long-term. A BAP is required where a specific project is likely to have significant adverse impacts on biodiversity.

An Adjara BAP needs to be produced as a facilitation document to ensure that additional mitigation and offsetting measures identified within the ESIA are implemented as part of the Adjara Project.

The ESIA has followed the mitigation hierarchy to ensure impacts are resolved as early in the Project design process as feasible. The mitigation hierarchy requires that adverse impacts are firstly prevented or avoided where possible (for example through design alternatives), and then minimised or reduced through implementation of specific mitigation measures. Finally, restoration can be adopted to address adverse effects after the event. Where it is assessed that significant adverse effects remain following these measures then offsetting can be identified as a solution.

Offsets are defined as “measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented”.<sup>1</sup>

A number of significant residual impacts remain for the Project after following the mitigation hierarchy. The BAP aims to address significant residual impacts through a number of biodiversity offset mitigation measures to achieve ‘no net loss’ of biodiversity.

#### **3.5.1.2 The Process of Developing a BAP**

It is important to recognise that a BAP is not just the production of a single document which details what actions are needed for the conservation and management of biodiversity. A BAP is a process from which a BAP document is formulated through the review of previous studies and from consultation with local stakeholders. The ESIA is part of this process in that the ecological assessments of the ESIA provide the baseline upon which the BAP objectives and conservation priorities are based. There are several international guidelines on the formulation and implementation of BAPs.

As a guiding principle a BAP should include eight specific tasks<sup>2</sup>:

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<sup>1</sup> Business and Biodiversity Offsets Programme (BBOP), available at <http://bbop.forest-trends.org/index.php>. Viewed 19 March 2012.

- Task 1: Determination of the legal, regulatory, planning, permitting and third party requirements.
- Task 2: A desktop assessment of the Project.
- Task 3: A baseline survey of the biodiversity.
- Task 4: A biodiversity impact assessments.
- Task 5: Preparation of the BAP.
- Task 5.1 Establishment of priorities for conservation.
- Task 5.2 Identification of conservation actions.
- Task 6: Implementation of the BAP.
- Task 7: Monitoring, evaluation and improvement.
- Task 8: Reporting, communication and verification of BAP performance.

In relation to the Adjara Project, Tasks 1 to 4 have been completed as part of the ESIA. Tasks 5 to 8 now need to be implemented.

### **3.5.1.3 Scope of this Framework**

The purpose of this document is to outline what is needed to completed Task 5 to Task 8 in relation to the preparation, formulation and implementation of the Adjara BAP. Specifically this document includes the following information:

- Determination of the regulatory requirements (Task 1);
- Summaries the ecological baseline conditions (Task 2 and 3);
- Summaries the key impacts of the development, and the required mitigation and offsetting measures (Task 4);
- Identifies the overarching goal of the Adjara BAP (Task 5.1);
- Outlines the processes needed to establish the conservation priorities and identification of actions for the BAP actions (Task 5.1 and 5.2);
- Outlines the actions which need to be included in the implementation of the BAP (Task 6); and
- Outlines the monitoring, evaluation and improvement needs of the BAP to ensure that the Adjara development meets its obligations following the ESIA (Task 7 and 8).

The key function of this Adjara BAP framework is to act as a link between the ESIA, the ESMP and the formulation of the final Adjara BAP. It is important that the final BAP is formulated through stakeholder consultation and implemented alongside the community development plan.

### **3.5.1.4 Task 1: Determination of the of the legal, regulatory, planning, permitting and third party requirements for an Adjara BAP**

There are two key reasons why a BAP for Adjara is needed:

- To ensure that the Adjara Project complies with national policy requirements, specifically in relation to Georgia's commitment to biodiversity conservation in the hydropower; and
- To ensure that the Adjara Project implements its environmental commitments as stipulated in the Adjara ESIA.
- To meet the requirements set out in the IFC's Performance Standard 6 on Biodiversity.

### **Environmental and Social Impact Assessment Requirement**

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<sup>2</sup> Adopted from the IPIECA Guidance on Biodiversity Action Plans

A detailed ecological impact assessment was completed for the Adjara Project as part of the ESIA. The ESIA identified a number of mitigation and offsetting measures which were necessary to minimise the impacts and in the long-term to ensure that there would be no significant loss in biodiversity.

### Policy Requirements

The National Biodiversity Strategy and Action Plan (NBSAP) for Georgia (2005) sets out the goals, objectives and policies for the protection and conservation of Georgia. The NBSAP sets nine strategic goals with the vision that Georgia “will be a country where biological diversity is sustained and rehabilitated within a political, social and economic context that favours the wise use of natural resources and adequate benefit sharing”.

Georgian environmental legislation is based on internationally existing concepts and criteria. The key pieces of legislation being:

- Law of Georgia on Protection of the Environment;
- Law of the General Rules for the Protection of Wild Plants and Animals
- Law of Georgia on Protected Areas
- Law of Georgia on Wildlife
- Law of Georgia on Red List and Red Book
- Forest Code of Georgia.

The Law of Georgia on Protection of the Environment regulates legal relationship between the bodies of the state authority and physical persons/legal entities in the scope of environmental protection and consumption of natural resources on all Georgian territory including its territorial waters, airspace, continental shelf and special economic zones.

The law concerns environmental education, environmental management, economic sanctions, licensing, standards, environmental impact assessment and related issues. The law considers various aspects of ecosystem protection, protected areas, global and regional environmental management, protection of ozone layer, biodiversity and the Black Sea, as well as discusses international cooperation aspects.

The main goals of the law is promoting of biological diversity, conservation of the country-specific, rare, endemic and endangered species of flora and fauna, marine environmental protection and provision of ecological balance. The law defines the "biological diversity conservation principle", meaning that an activity should not lead to irreversible degradation of the biodiversity.

The Law of Georgia on Protected Areas gives a definition of protected areas (including national parks, reserves, State Preserves and multiple use areas) and sets frameworks of activities, permitted in those areas. Eligible activities are determined according to the area designation, territory legislation, specific provisions and protected area management plans, as well as in accordance with the requirements of international agreements and conventions, signed by Georgia. It defines limits of the natural resource use within national parks and other protected areas. Generally, following activities are prohibited in the protected areas:

- To damage or modify natural ecosystems;
- To destroy natural resources due to use or other purposes;
- To seize, damage or disturb natural ecosystems and species;
- To pollute environment;
- To introduce and multiply alien and exotic species of living organisms; and
- To import into the territory explosive or poisonous materials.



The Law of Georgia on Wildlife provides protection and restoration of the wildlife and its habitats, conservation of species diversity and genetic resources, sustainability and creating conditions for sustainable development, taking into account interests of future generations, legislative provision of the state regulation regarding animal protection and animal wildlife use.

The Law of Georgia on Red List and Red Book (2003) regulates legislative relations in the Red List of Georgia and Red Book of Georgia elaboration field, endangered species protection and use sphere, with an exception of issues, related to legislative aspects of international trade with endangered animals and plants, which, in frames of Georgian Legislation, are regulated by the convention on “International Trade with Flora and Fauna Species, Endangered by Extinction”, issued in Washington. Main objectives of the law: providing protection and recovery for endangered species, registered on Georgian territory, conservation of species diversity and genetic resources, sustainability, creation of conditions for their sustainable development by elaboration of the Red List and Red Book of Georgia and legislative regulation of the endangered species protection and use issues, under consideration of present and future generations’ interests.

There are 137 species protected under the Laws in Georgia. Together with species protected by international conventions, the number reaches 200. Most of these are listed in the International Red List (Red Data List of IUCN), Red List of Georgia and in the Conventions’ appendixes

The Forest Code of Georgia regulations relate to functions and use of forest, including protection, management of water catchment basin, wood production, etc. It allows for private ownership of forest and commercial woodcutting. According to the law, the Forest Department of Georgia does not execute commercial woodcutting itself, but controls and manages these operations and grants this function to private enterprises. However, the Forest Department carries responsibility over sanitary woodcutting and forest management. According to the Code, the Ministry of Environment Protection and Natural Resources delegated to the Department a right for issuance of a woodcutting license. The Forest Code sets categories of protected forests, including those regulating soil and catchment basins, riparian and sub-alpine forest zones, floral species of the Red List, etc. The Forest Code is a framework law and requires execution of detailed regulations.

In addition to national legislative and policy requirements under the CBD, Georgia is committed to meeting the Aitchi Targets by 2020, which need to be delivered through five strategic goals:

- Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society;
- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use;
- Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity;
- Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services; and
- Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.

The Adjara BAP will ensure compliance with each of these goals at the project level.

### **3.5.1.5 Task 2 and 3: Summary of the Ecological Baseline**

The ecological baseline has already been detailed across the Adjara area as part of the ESIA. The ESIA, in accordance with the legislative requirements of the Government of Georgia, and the international

guidance under the IFC Performance Standards was based on primary data collected during the ecological field surveys, and secondary data from the review of previous studies.

The ESIA identified a number of key ecological features within the area, notably:

- To the south of the Adjaristsqali River is the proposed Machakhela Nature Reserve. The Machakhela River (which forms part of the proposed Nature Reserve), feeds into the Chorokhi River and is upstream of the confluence with the Adjaristsqali River. A run-of-river weir and sediment trap, as part of the Khertvisi Scheme, are located within the Machakhlistsqali River.
- The main habitat throughout the Project Area of Influence (Aol) is riverine grassland with forest patches which are modified and of low conservation value.
- Four high conservation value forest habitats occur within the Project Aol, notably the hornbeam, beech and oak dominated forests, several of these natural habitats may be regarded as being critical habitats due to the presence of IUCN and Georgia Red Data Book species.
- The region, including the Adjara gorge and areas within the Project Aol, are well known as being of significant botanical interest with high floral diversity and refugia for genetic diversity of domestic cultivars. After the completion of the detailed field botanical surveys, six plant species included in Georgia Red Data Book list were identified in the Aol: chestnut (*Castanea sativa*), walnut (*Juglans regia*), Hop hornbeam (*Ostrya carpinifolia*), oak (*Quercus hartwissiana*), bladdernut (*Staphylea colchica*), and elm (*Ulmus glabra*).
- While many of these species occur with the Project Aol, few are likely to be directly impacted by the Project, but these include 17 mammal species (which includes 10 bat species), three bird species, two species of amphibians and two reptile species. The most important of these being otter, Caucasian toad, Clark's lizard, Caucasus viper and the Caucasian salamander.
- Protected species present within the Aol include the black sea salmon (*Salmo labrax*), sea trout/brown trout (*Salmo trutta*), Colchic khramulya (*Capoeta sieboldii*) and the European eel (*Anguilla anguilla*).

In addition to these ecological features, critical ecosystem services have been identified within the Project Aol and which could potentially be adversely impacted by the Project. Notably the provisioning and regulatory services which would be impacted by the hydrological changes associated with the Project.

Full details are provided in the ecology chapter of the ESIA.

#### 3.5.1.6 Task 4: Summary of Key Impacts, Mitigations and Offsetting Measures

Details of the impacts of the Adjara Project on ecology are covered in the ESIA. The ESIA also detailed mitigation measures which will be delivered through the EMSP that will subsequently significantly reduce the impact of the Adjara Project, and the residual impacts predominantly associated with construction activities that are largely temporary.

The Adjaristsqali river system within which the Project is to be developed, is of high biodiversity interest with a diversity of habitats and species characteristic of the region. Without mitigation the Project would have a large and significant impact on the biodiversity and ecosystem services. However, these impacts will be significantly reduced through the responsible implementation of the proposed measures.

The key mitigation and offsetting measures will include:

- Phase II assessment of environmental flow requirements which will take into consideration the specific ecological requirement for the river system at specific locations at specific times of the year and develop habitat enhancement measures to compensate for lost habitats as a result of reduced flows in most critically impacted areas;

- The timed release of water and sediment from the dam should mimic natural flood events;
- The introduction of fish passes on the Chirukhistsqali, Chvanistsqali, Khichauri and Khertvisi dams which will be specifically designed to effectively entice fish of all sizes into the appropriate channel. The design of the fish pass will also ensure that not only upstream passage of fish but also to ensure the safe passage of fish downstream;
- During construction sediment control procedures, including sediment traps, will be adopted that minimise mobilisation of sediments downstream, especially during the main spawning period from April to August;
- Construction of the infrastructure on the Machakhistsqali will not occur during the migratory period of black sea salmon (between early April and early September) to be reviewed prior to start of construction activities (planned to commence in 2017) of construction to determine if specific measures can be developed to prevent impacts on migration;
- All construction and operational working areas will be kept to the minimum which is required to reduce the areas of habitat loss;
- Access routes for construction and operational activities will be kept to a minimum. All off-road access will be prohibited or allowed along pre-defined routes that limit the extent of off-road activity. Plans will be implemented to minimise all construction traffic activities. These actions will significantly reduce potential impacts on habitats and disturbance to species;
- Prior to the removal of any natural forest habitat, the areas to be removed will be checked for protected and rare plant species. A detailed inventory of the species will be undertaken and records provided to the Ministry of Environmental Protection, as required by the Forest Code of Georgia;
- A detailed inventory of all tree species felled as part of the Project will be kept, and for each tree removed two trees of the same species and cultivar will be planted (as part of the Community Forestry and Habitat Creation schemes);
- Where possible, plant species of medium or higher conservation value will be translocated to new forest areas prior to the clearance of natural forests; and
- Seeds and live plants (if possible) will be translocated to conservation centres. As the translocation of plants is always associated with high risk, seed propagation should be used as well to increase chances of success and propagate enough seedlings for consequent reintroduction.

Enhancement and biodiversity offsetting measures will include:

- The production and implementation of CEMPs. These plans will detail exactly how and when the mitigation and offsetting measures summarised below will be undertaken;
- The production of a BAP for the Project, which will detail specific actions needed during the whole life and operations of the Project to protect and enhance the biodiversity across the Adjara;
- The implementation of a Habitat Creation Scheme which will ensure that there will be no net loss in natural forest habitats;
- Creation of a Community Forestry Scheme to ensure the long-term protection and conservation of forests and their ecosystem function and services;
- A Catchment Management Scheme to ensure a long-term and sustainable water supply to ensure water users and ensure ecosystem functioning; and
- Appointment of a Community Wildlife Officer who will be responsible for ensuring the delivery of the ecological aspects of the EMPs and BAP, the associated mitigation measures and environmental awareness raising amongst the local communities and businesses.

With the introduction of these measures, in the short to medium term, the residual impacts will include:

- Minor adverse impacts on natural forest habitats of high conservation value;
- Moderate adverse impacts on the riverine/aquatic habitats due the significant hydrological changes;
- Minor adverse impacts on specific relic plant species, notably the European Hop-hornbeam;

- Minor adverse impacts of Black Sea salmon and European eel populations in and around the Machakhlistsqali/Chorokhi; and
- Minor to moderate adverse impacts on otters.

However, in the long-term, once the biodiversity has adapted to the changes in the hydrological conditions and the offsetting and enhancement measure start taking effect (as implemented through the BAP), the overall impact on biodiversity is likely to be neutral to beneficial.

Table 3.2 Summary of Terrestrial Ecological Mitigation, Offsets and additional conservation actions of the Project

Type of Mitigation	Provisions to Address Ecological Impacts and Effects
Embedded mitigations (avoidance measures)	<ul style="list-style-type: none"> <li>- Reduced scheme design, with the removal of weirs and infrastructure on smaller tributaries of higher conservation value and high sensitivity.</li> <li>- Site location based on the least likely areas to cause ecological impacts.</li> </ul>
Mitigations of non-significant effects	<ul style="list-style-type: none"> <li>- Measure to control the potential spread of alien, invasive plant and animal species.</li> <li>- Habitat clearance and working areas kept to a minimum.</li> <li>- Noise disturbance and vibration level kept to below national standards.</li> <li>- All Project workers to be made aware of the ecological sensitivities and works to stop if any rare or protected species (notably mammals, including bats, birds, reptiles and amphibians) found. A qualified ecologist consults and mitigation is applied.</li> </ul>
Mitigations of significant effects	<ul style="list-style-type: none"> <li>- Tree and rare plant inventories prior to removal of high conservation value forest. Translocation of species, where possible. Replacing each lost tree with two trees of the same species and native origin.</li> <li>- Production and implementation of Habitat Reinstatement Plan.</li> <li>- Habitat clearance, where possible outside the bird nesting period. Checks for nesting bird, bats, otters, reptile and amphibians prior to clearance of habitats.</li> <li>- Ban on all hunting and fishing by Project workers.</li> <li>- Introduction of fish passes on the four main dams.</li> <li>- Minimisation of sediment release from the construction and operational activities, especially during spawning periods.</li> <li>- No in-river construction activities on the Machakhlistsqali during the peak Black Sea salmon migration periods between early April and early September to be reviewed prior to start of construction activities (planned to commence in 2017) of construction unless specific measures can be developed to prevent impacts on migration.</li> <li>- Phase II assessment and commitment for long term monitoring and engagement with stakeholders to develop adaptive management programme for environmental flows.</li> </ul>
Offsets and additional conservation actions	<ul style="list-style-type: none"> <li>- Production and implementation of a BAP, focusing on the conservation and management of key habitats and species.</li> <li>- As part of the BAP, the establishment of a Community Forest Scheme and a Catchment Management Scheme.</li> <li>- Appointment of a Community Wildlife Officer to oversee all ecology mitigation and offsetting measures and to co-ordinate and implement the BAP.</li> <li>- Creation of recreational fishing areas and stocking of reservoirs.</li> <li>- Support to a Black Sea Salmon in situ conservation programme.</li> <li>- Installation of bird and bat boxes.</li> </ul>

### **3.5.2 Approach and Activities**

#### **3.5.2.1 Goal, Objectives and Conservation Priorities**

The overall goal of the Adjara BAP is to ensure that the Adjara Project leads to a net gain in identified biodiversity values and supporting processes.

Subsequently any adverse impacts associated with the construction and operational activities of the Adjara Project have been appropriately mitigated, in accordance with the ESIA and international and national policy requirements. Offsetting measures have been proposed where the potential for any significant residual impacts remain or there is a high level of uncertainty.

The specific objectives and conservation priorities for the BAP will need to be formulated following consultation with appropriate stakeholders. An outline of what will be included in the Adjara BAP is detailed here. This is in accordance with international guidance on the formulation of a BAP. However, the objectives of the BAP must fully encompass the mitigation measures and offsets detailed in the ESIA and ESMP, which include the objectives to:

- Minimise habitat loss and disturbance;
- Minimise disturbance to mammals and birds;
- Control of invasive plant and animal species;
- Minimise hunting and fishing;
- Enhancement of biodiversity and habitats;
- Capacity building through the recruitment and training of local staff;
- Monitor and evaluate the effectiveness of the BAP.

The purpose of this framework for the BAP is to outline the process needed to formulate the BAP and to detail the actions necessary which will then form part of the BAP. Additional objectives and specific actions may be identified following the consultation process.

#### **3.5.2.2 Next Steps in the Preparation of the BAP**

A series of activities need to be undertaken to facilitate the development of the BAP. These are summarised thus:

- A draft Adjara BAP to be formulated based on this framework document and information within the ESIA and ESMP.
- Consultation to be undertaken with local stakeholders to identify the conservation priorities and actions relating to the Adjara Project.
- Production of the final Adjara BAP, including agreements on the monitoring and evaluation procedures to assess the performance of the BAP.
- Dissemination of the final Adjara BAP to stakeholders.
- Implementation of the Adjara BAP including relevant obligations of Contractors to be established as part of their respective CEMPs.
- Monitoring and evaluation of the BAP, and dissemination of results on the performance of the BAP to stakeholders, including international donor agencies.

Consultation is an integral component in the formulation of the BAP and this requires to be done in conjunction with other stakeholder activities, notably those related to community development plan. All key stakeholders will be consulted

### 3.5.2.3 Monitoring and Evaluation

Key to a successful BAP is continuous monitoring of the BAP actions and evaluation of effectiveness in meeting the BAP conservation priorities and objectives. This is critical to ensure that the proposed mitigation and offsetting measures meet the objectives of reducing the ecological impacts of the Project.

These monitoring activities need to be undertaken during construction and post construction. The actions for monitoring the ecological features during construction include, but are not limited to:

- Monitoring of the construction footprint, ensuring that habitat loss is minimised;
- Monitoring of the works to minimise the risk of spreading or introducing alien species, and checks to ensure that alien species have not been introduced; and
- Supervising, where appropriate, the clearance of vegetation to minimise disturbance to breeding birds, and implementing appropriate mitigation measures to avoid disturbance to breeding birds as necessary.

The actions for monitoring the ecological features post-construction include:

- Assessments of the recovery of the habitats and botanical diversity following reinstatement and translocation of plants for 20 years post-construction;
- Monitoring the condition of the new habitat areas created as part of the offsetting and enhancement measures for 20 years post-construction;
- Annual monitoring of fish populations and water quality during the life-time of the project during and after construction, and
- Checks and surveys for invasive alien flora and fauna every two years for 20 years.

Annual environmental reports will be submitted for review to the Ministry of Environmental Protection and other ecological bodies for their information. Information from these surveys will be regularly reviewed. If evidence suggests a decline in the ecological conditions relating to the construction and operational activities of the Project then intervention and further mitigation measures will need to be defined and implemented. Intervention measures would be facilitated through the revision and re-submission of the Adjara BAP and consultation with stakeholders.

### 3.5.3 Staff and Resources

#### 3.5.3.1 Biodiversity Staff

Similar to other environmental staff, there is an opportunity for capacity building within AGL to provide staff responsible for biodiversity action plan. AGL will nominate a Community Wildlife Officer (CWO) with responsibility for delivering the Adjara BAP and the associated mitigation and monitoring measures as outlined in the ESMP. In addition, Contractors will be required to have an identified Ecological Clerk of Works (ECW) to work in conjunction with the AGL CWO. The AGL CWO and the Contractor ECW may require training to ensure he/she is capable of fulfilling the commitments of the role. The CWO will be required to work closely with the CLO on stakeholder consultation matters.

#### 3.5.3.2 Community Wildlife Officer

The primary purpose of the CWO role is to facilitate the implementation of the BAP and the mitigation and enhancements measures associated with the Adjara Project and as stipulated in the ESMP, with the aim of helping to maintain and improve the wildlife and biodiversity interests within the Adjara Project area. This is to include, but not limited to:

- Implementation and enforcement of the mitigation measures as outlined in the ESMP.

- Facilitation of the Adjara BAP, AGL may appoint a local consultant to produce the Adjara BAP.
- To inform, explain and where necessary enforce the environmental policies associated with the Adjara Project.
- To assist in the formulation and implementation of the Habitat Reinstatement Plan, the Habitat Creation Scheme and the Community Forest Scheme for the long-term management of the forest habitats within the Adjara.
- To undertake patrols across the Project area and oversee and provide guidance on activities which may affect the biodiversity features within the Project area.
- To undertake and arrange for the clear demarcation and signage which may prohibit entry to ecologically sensitive areas.
- To provide advice to Contractors regarding the ecological sensitivities within the Project area, and if necessary supervise Contractors to ensure that they adhere to environmental requirements to minimise disturbance to flora and fauna.
- To ensure the implementation of guidelines on the prevention and management of alien species.
- To develop working relations with local community groups; land-owners, land-managers and business interests (particularly those related to recreation and tourism) by maintaining close liaison with local individuals and communities.
- Providing advice to AGL and Project staff, as necessary, in relation to the conservation and management of wildlife areas.
- To design and implement the ecological monitoring requirements for the Adjara Project, as detailed in the ESIA.

#### **3.5.4 Budget and Schedule**

The indicative budget for Phase II environmental flows assessment of up to 300,000 USD prior to and during the construction phase.

A total of up to 2.3 million USD has been set for the implementation mitigation and enhancement measures and implementation of the Adjara BAP.

During operation an indicative budget of up to 1.5 million USD has been identified for monitoring activities.



Table 3.3: Summary of Biodiversity and Ecosystem Services Mitigation Measures

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Cost estimate (USD)
Development of adaptive management system for environmental flows	Phase II Assessment - Long term data collection in significantly impacted reaches	Mitigation and enhancement	-	AGL	From May 2012	300,000 over 3years
Implementation of ecology mitigation and offsetting measures.	Appointment of Community Wildlife Officer (CWO)	-	-	AGL	From start of construction to end of the Project life.	Annual salary: 13,000 Annual vehicle and office costs: 10,000
	Checking for nesting birds, mammals, amphibians and reptiles prior to vegetation clearance	Mitigation	-	Contractor	Prior and during site preparation works (Construction)	Suggest employment of local ecologist working with the CWO to implement mitigation measures during construction  45,000 per annum during site clearance only.
	Hunting and fishing ban	Mitigation	-	Contractor (during construction), AGL (during operations)	From start of construction to end of the Project life.	Part of CWO responsibilities
	Installation of bat and birds boxes	Mitigation	-	Contractor	Prior to the start of site clearance	10,000 one off cost
Habitat conservation and management	Tree inventory prior clearance of forest habitats	Mitigation	Forest Code of Georgia	Contractor	Prior to the start of site clearance	90,000
Conservation of plant genetic diversity	Collection of seed and genetic material for transfer to ex situ genebank	Mitigation	-	Contractor	Prior to the start of site clearance	45,000



Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Cost estimate (USD)
	Collection and translocation of plant species in situ	Mitigation	-	Contractor	Prior and during site clearance	65,000
To conserve fish stock and provide ecosystem services	Stocking of reservoirs and river with fish	Offsetting	-	AGL	Programme of stocking to be formulated. Start after construction; continue to up to 2 years after completion.	180,000 establishment of fish stock, plus 10,000 annual costs for 6 years (2 yrs for each scheme)
Habitat conservation and management	Production of Habitat Creation and Reinstatement Plan	Mitigation	-	AGL	Prior to the start of construction, need for consultation and agreement with Ministry of Environmental Protection	7,500
	Reinstatement of habitats	Mitigation	-	Contractor	Reinstatement of all temporary contraction working areas, starting within 12 months of completion	350,000
	Land purchase or land agreement and planting for habitat creation	Mitigation and Offsetting	-	Contractor	During construction and completed prior to end of construction	500,000
Long-term conservation of biodiversity and ecosystem services	Production of the Adjaristsqali BAP, including consultation	Enhancement	IFC Biodiversity Guidelines; IPIECA Guide to Developing Biodiversity Action Plans	AGL	Within 12 months of the start of construction	20,000
	Implementation of measures and actions detailed in the BAP	Enhancement	-	AGL	Upon completion of construction	10,000 per annum
Water resource management	Production of Adaptive management Plan	Enhancement	-	AGL	Upon completion of construction	7,500

Objective	Activity	Mitigation / Enhancement	Standards	Responsibility	Timescales	Cost estimate (USD)
Conservation of forests	Production of Community Forest Scheme	Offsetting	-	AGL	Within 12 months of the start of construction	7,500
	Implementation of forest scheme, growing of tree stocks and planting	Offsetting	-	AGL	For 5 years from the start of operations	90,000 establishment costs, including tree stock 15,000 per annum
Monitoring of ecological conditions	Fish and water quality monitoring	Monitoring	-	AGL	Methodology and monitoring network established prior to start of construction. Annual monitoring for 10 years	14,500
	Terrestrial biodiversity monitoring	Monitoring	-	AGL	Methodology and monitoring network established prior to start of construction. Annual monitoring for 10 years	12,000
	Checks for alien, invasive species	Monitoring	-	Community Wildlife Officer	Throughout construction phase and up to one year post construction	Part of CWO responsibilities

Table 3.4: Summary of Costs

Timeline	Phase II Assess ment	CWO	bird check s	Bird and bats boxes	Tree inv.	Plant seed collec tion	Plant transl ocatio n	Fish stocks	Habita t plan	habitat reinstat ement	Land purchas e and planting	BAP produ ction	BAP activities	Adaptive managem ent plan	Forestr y Plan	Total
Pre- Constructi on	100000								7500			25000		7500	7500	147500
Shuakhevi Scheme 1	100000	23000	45000	10000	27500	13750	18750	55000					10000			303000
2	100000	23000	45000										10000			178000
3		23000	45000							95000	135000		10000		27000	335000
Koromkhet i Scheme 1		23000	45000		35000	17500	22500	70000					10000			223000
2		23000	45000										10000			78000
3		23000	45000										10000			78000
4		23000	45000							135000	180000		10000		36000	429000
Khertvisi Scheme 1		23000	45000		27500	13750	18750	55000					10000			193000
2		23000	45000										10000			78000
3		23000	45000							95000	135000		10000		27000	335000
Monitoring								145000					120000			265000
<b>Total</b>																<b>2.6 Million</b>



## 4. Institutional Arrangements and Implementation

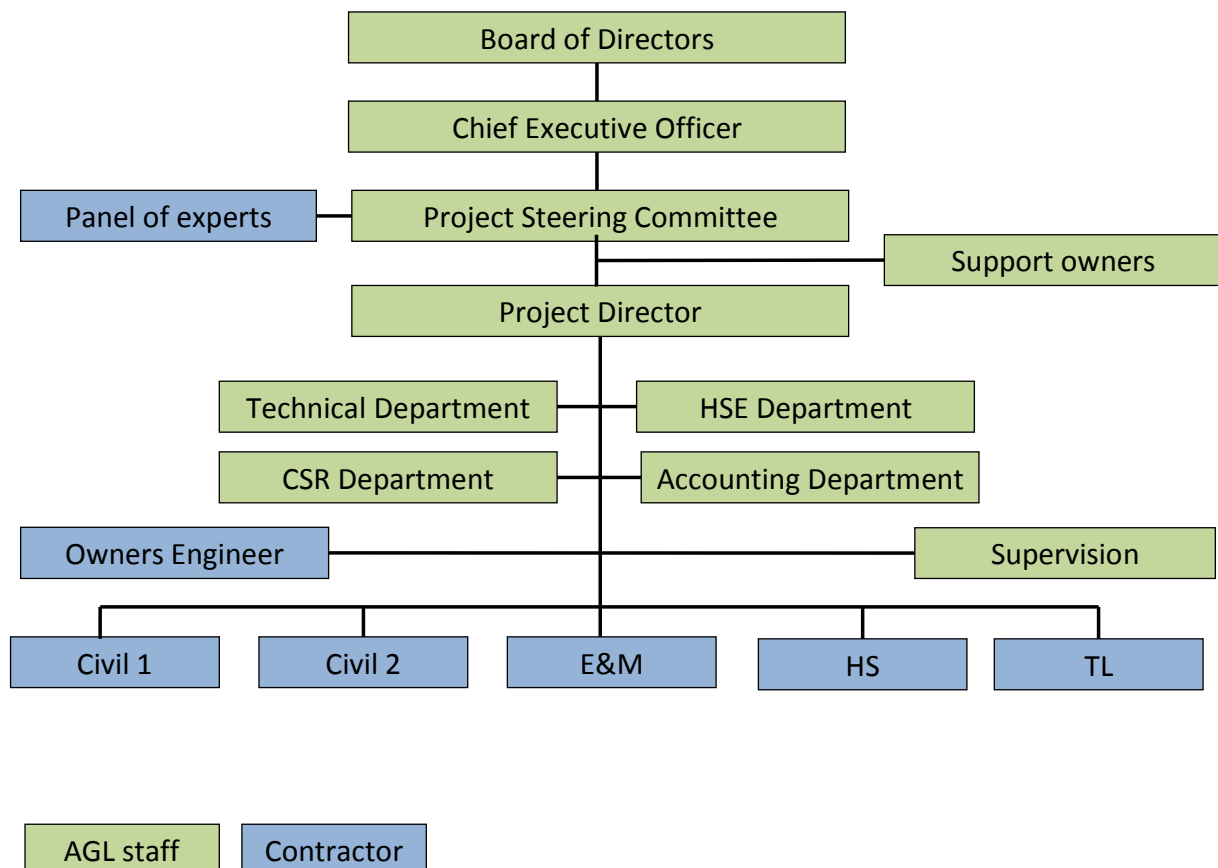
### 4.1 Construction Project Structure

#### 4.1.1 Overview

The Project Sponsors are Clean Energy Group. The Project Company set up to deliver the Project is Adjaristsqali Georgia LLC (AGL).

For the construction phase AGL is setting up a project management structure, as shown in Figure 4.1, which will take on the overall project management role for the Project.

Figure 4.1: Overall Project Structure



Source:

The project management team will include an HSE department with responsibility for development and implementation of all project environmental and social management plans in line with the findings and recommendations of the ESIA and ESMP. This will include development of a formal environmental and social policy reflecting the principles of the IFC Performance Standards.

## 4.1.2 Construction EHS Management

### 4.1.2.1 AGL Environmental Health and Safety Management

AGL, as a recently formed organisation, has not yet set up formal EHS and social policies and systems along with many of the other management systems that will need to be in place for the commencement of construction and into operation. It is their intention to develop a comprehensive EHS Department to oversee and manage all EHS issues during the construction and operational phases.

The HSE department will be responsible for management and audit of the Contractors' construction environmental and social management and monitoring responsibilities. This will be delivered through a combination of review of Contractor's construction environmental and social management plan, regular inspections and audits, and formal review and reporting as part of the overall construction monitoring process.

Whilst some evolution of the department structure, staff numbers and responsibilities will change as the Project moves through construction into operation the overall structure and roles and responsibilities will be defined during its inception and modifications implemented as required.

The EHS and social capabilities of AGL's EHS department is being developed and specific areas for support identified. In addition, AGL will be seeking external independent support from experienced environmental and social consultants in the development of its EHS department, policies, procedures and systems.

The proposed staffing structure of the EHS department is under development but is expected to consist of the key roles as set out in Table 4.1. AGL's personnel key roles and responsibilities will be set out in procedures created as part of the EHS management system, including organisational and individual working procedures.

Table 4.1: Proposed AGL EHS Department ]

Table Heading Left	Responsibility	Location	Construction	Operation
Head of EHS Department	Policy, overall responsibility, government liaison	Main Office with regular visits to site	✓	✓
EHS Officers (2)	Reporting, management of EHS system, auditing	On site	✓	✓
EHS administration staff	Administrative duties	Main Office	✓	✓
Community Wildlife Officer	Monitoring wildlife and habitats for damage or disturbance. Involvement in implementation of biodiversity action plan	On site	✓	✓
Community Liaison Officer	Community liaison	On site	✓	✓

Note: Final job titles and numbers of staff to be confirmed

AGL recognises that there is an urgent need to build its capacity to implement and manage the ESMP requirements and address any EHS issues that may arise. Recruitment for the EHS team is underway and is expected to be completed by mid 2012, with the focus at this stage being to recruit key staff with responsibility for managing construction phase environmental and social issues and implementing the ESMP. Further detail on capacity building including more detail on some of the roles set out above is provided in 4.2.3.

It is expected that for certain activities there will be a requirement to employ or contract staff on a temporary basis. This is expected to include an archaeologist, ecological specialists and staff for training either worker or the community. These staff would be expected to be located at the construction offices for the duration of their work

#### 4.1.2.2 Contractor EHS Management

All Contractors will be encouraged to adhere to the principles of ISO 14001:2004 and OHSAS 18001:2007 or equivalent if not already accredited. This standard places strong emphasis on the need for continuous improvement of the environment and health and safety management systems and resultant environmental and health and safety management performance. In addition, as part of the tender process for the construction phase there was a requirement that the Contractors provide copies of their EHS policy, procedures, an overview of their management system and an example construction EHS management plan for review. In addition the Contractors were required to include within their proposal for a dedicated EHS professional to be part of the Project team based on site full time.

The appointed Contractors will be required to agree to the following actions:

- Develop a site/project specific CEMP, the framework for which is set out in Section 3.2;
- Elaborate other parallel plans, the framework for which are set out in Sections 3.3, 3.4, 3.5, 3.7, 3.8, 3.9, 3.10 and 3.12;
- Implement the requirements of the mitigation activities in the construction ESMP via the above plans;
- Provide a construction site layout plan that identifies key activity area including laydown, accommodation and welfare blocks, parking etc. prior to commencement of works;
- Produce detailed method statements relating to key activities that include specific reference to requirements of the plans contained herein during the Project progression;
- Provide all training necessary to oversee and implement ESMP requirements;
- Be responsible for producing comprehensive suite of EHS management and coordination procedures; and
- Identify a full time person on site with dedicated EHS responsibilities to oversee works on site.

The Contractor's Project management organisation will be required to be responsible for sub-contractors' performance, including ensuring that sub-contractors adhere to the requirements of the construction ESMP.

Each Contractor will be required to have dedicated environmental and social staff to implement the CEMP and to monitor and manage this on an on-going basis. Further details on staff responsibilities are set out below. The Contractor EHS staff will be required to liaise closely with AGL's EHS staff including the provision of monthly reports, participation in weekly construction review meetings etc. The proposed Contractors EHS staffing is set out in Table 4.3.

Table 4.2: Contractors EHS Staffing

Role	Number	Responsibility	Comment
Contractors Environmental Manager and Environmental Officers	1 1-3	Management and monitoring of environmental issues and performance	Number of officers may vary depending on level of construction activity
Contractors Social and Community Liaison Officer	1	Management and monitoring of social issues and performance, Contractor community	To work closely with AGL CLO

Role	Number	Responsibility	Comment
		liaison officer	
Ecological Clerk of Works	1	Day to day monitoring, auditing, reporting etc	To work closely with Community Wildlife officer in implementing habitat protection and mitigation measures

### Environmental Officer

The Contractor will be required to nominate a person(s) be appointed to take the primary responsibility for day-to-day implementation of the CEMP and parallel management plans. The formal job description would be generally in accordance with the elements provided below.

The nominated person will carry out the following responsibilities:

- Take prime responsibility for practical implementation of the environmental management;
- Oversee and ensure the implementation of the CEMP and parallel management plans (with support from the Contractor Construction Manager (see below for further details)) and ensure all contractors and sub-contractors are in compliance with the CEMP requirements;
- Review and report performance to the Contractor Construction Manager and AGL;
- Review sub –contractors environmental protection/mitigation measures to ensure compliance with the ESMP;
- Report on a daily basis any CEMP non-compliances to the Contractor Construction Manager;
- Carryout regular environmental awareness sessions and assist personnel in applying environmental standards on site;
- Conduct regular audits/inspections to check that committed impact mitigation measures are being implemented; and
- Act as the first point of contact on environmental matters for the Contractor, for the government authorities, other external bodies and the general public.

There are certain criteria that the Contractors environmental officer will be required to have knowledge and experience in, including:

- An understanding of the international standard techniques of environmental management;
- Familiarity with local environmental legislation and the likely developments in this field;
- Practical operation of environmental monitoring techniques;
- Ability to summarise environmental data in order to produce concise and conclusive reports;
- Hold the confidence to enforce strict, but pragmatic, environmental control procedures and to motivate the construction staff to a high level of environmental awareness; and
- Minimum of five years practical experience on construction sites.

### Contractor Construction Manager

The Contractor Construction Manager will need to work to co-ordinate efforts based on inputs from the Environment Officer(s) and assist in the allocation of staff with the skills for applying the CEMP on site. It is envisaged that the Construction Manager will:

- Ensure that the Environment Officer is adequately qualified to understand and implement the CEMP;
- Nominate personnel to assist the Environment Officer as required; and
- Be responsible for communications with AGL and other Project management with regard to environmental issues and non-compliances.



### **4.1.3 Operational EHS Management**

The proposed organisational structure for the operational phase will be largely similar to that proposed for the construction phase as shown in Figure 4.1. An operational phase environmental and social management system will be developed in line with the requirements of ISO 14001.

## **4.2 Capacity / Institutional Requirements**

### **4.2.1 Introduction**

As AGL has effectively been a project start up company up to the point at which financial close will be reached its capacity to deliver on the ESMP commitment associated with the Project is recognised to need significant development. AGL has commenced a programme of recruitment of experienced Georgian environmental professionals but it recognises that during the next 2-3 years input from experienced external independent environmental and social specialists may be required. AGL is committed to developing / commissioning all required resources (external and internal) in order to ensure that the ESMP commitments are properly implemented.

This section provides a summary of the current capacity requirements needed to ensure effective implementation of the environmental and social management and monitoring measures. However this will be reviewed on a regular basis in order to identify any further staff or resources needed

### **4.2.2 EHS Systems**

The key capacity requirement will be development of an overarching Environmental and Social Management System by AGL that can encompass overall management of the construction phase and then evolve to provide a robust management system for management of environmental and social issues for all the Project components.

AGL will develop an environmental and social management system (ESMS) in line with international standards such as ISO 14001 at the corporate level. This should include the following aspects;

- Identification and production of register of environmental and social aspects;
- Preparation of register of legislation and consent requirements;
- Development of an Environmental Policy;
- Development of Environmental Improvement Plan based on legislative requirements and identified environmental aspects to be implemented through development of;
  - Environmental and Social Management and Monitoring Procedures
  - Environmental Operating Procedures
- Preparation of action lists and responsibilities; and
- Development of training materials and key performance indicators.

Inherent in the successful operation of an ESMS will be to include a review and improvement cycle whereby the regular management review of key performance indicators and the successful implementation of the ESMS on a day to day basis will ensure that it is functioning properly.

The ESMS will be developed prior to commencement of construction and expanded into a detailed suite of relevant policies and procedures relevant to operation prior to commencement of operation. Construction phase environmental and social management will be managed through the ESMS and the contractor's construction environmental management plan. The Stakeholder Engagement Plan will also be

implemented through the pre-construction and construction stage with the Community Liaison Officer taking a key part in its delivery.

### **4.2.3 Capacity Building**

#### **4.2.3.1 Environmental Staff**

There is a requirement for capacity building within AGL to implement the ESMP and successfully manage EHS and social issues during the construction and operational phases.

The key responsibilities of the HSE Department will include:

- Ensuring all commitments/requirements of ESIA are met;
- Co-ordination with various government agencies during the construction and operation phases;
- Implementation of the ESMS and oversight of all on-site environmental engineers; and
- Environmental training for on-site environmental engineers.

Adequate resource will be assigned to the HSE Department. The exact number of staff to be assigned environmental responsibilities for the construction and operational phases will be established prior to the start of that phase and kept under review to confirm that sufficient resources are available. Training for proposed on-site environmental engineer(s) will be undertaken in order to ensure they have adequate skills and knowledge to fulfil their roles.

The environmental officers will carry out the following responsibilities:

- Take prime responsibility for the environmental management of the Project as a whole in compliance with requirements of the EBRD Environmental and Social Performance Requirements and IFC Performance Standards;
- Review reporting and compliance audits undertaken by Contractors environmental officer;
- Review and report on performance of the Contractor to the State Committee on Natural Resources (as required) and to the IFC/EBRD;
- Prepare compliance reports on progress of achieving obligations identified in the AGL ESMP for submission to the IFC/EBRD;
- Report on a daily basis any ESMP non-compliances to the Contractor General Manager; and
- Act as public liaison officer representative for AGL.

#### **4.2.3.2 Social Staff**

Similar to environmental staff, there is a need for capacity building within AGL to provide staff to be responsible for social and community management. AGL will appoint a community liaison officer (CLO) with responsibility for managing the stakeholder engagement plan and other social commitments included within this ESMP, e.g. implementation of the Community Grievance Mechanism, HIV / AIDS awareness programme, the traffic safety sessions and impact enhancement commitments related to promoting the development of local communities. More details of the CLO's role are provided below.

The role of the CLO is to develop and maintain good working relationships with the local communities. Since their job will involve listening and responding to local concerns and suggestions, the CLO must have the following qualities and skills:

- Good people and communication skills;
- A good understanding of the local language and community/cultural dynamics;
- Open-mindedness and respect for the views of others;

- A solution-oriented approach;
- A high integrity/degree of trustworthiness; and
- A genuine commitment to the position and its goals.

One of the key responsibilities of the CLO will be to implement community level components of the Project's Stakeholder Engagement Plan (SEP) which includes the following activities:

- Being the main point of contact for community stakeholders to request information or lodge grievances which the CLO must process and work to resolve in a timely and satisfactory manner according to the Project's grievance mechanism;
- Disclosing all relevant information as specified in the ESIA (for example the Project employment policy proposed as mitigations, grievance mechanism), meeting with stakeholders and documenting all interactions;
- Organising meetings with stakeholders (except for media), especially the local group leaders (for instance there are women's groups, youth groups, village elders, religious leaders) and the elected and appointed local authorities to provide a regular opportunity to discuss any issues or concerns stakeholders may have.
- Support with development of local community business ideas that could apply for grants from the Municipalities.

In order to be effective, the CLO needs to have the authority to negotiate on behalf of AGL. This requires a clear reporting structure and clarification as to which decisions CLO can take unilaterally, and which are to be passed on to higher levels within the company. Direct reporting lines should be used to enable senior managers to more effectively control risks by being kept informed of field-level information in a timely manner. The more likely it is that the concerns of local stakeholders might pose a risk or reputation issue for the Project; the more important it is for the CLO to have a direct channel to senior managers.

### **Community Wildlife Officer – Job Description**

The primary purpose of the role, employed by AGL, is to facilitate the implementation of mitigation and enhancements measures associated with the Adjara Project and as stipulated in the ESMP, with the aim of helping to maintain and improve the wildlife and biodiversity interests within the Adjara Project area. This is to include, but not limited to:

- To inform, explain and where necessary enforce the environmental policies associated with the Adjara Project.
- To enforce the ban on all hunting across the Project area, raise awareness of the importance of the ban across all employees.
- To assist in the design and construction and the long-term management of the riverine/forest habitat restoration.
- Provide support in the provision of support to establish an Ecology Education Programme, involving local schools and raising awareness of biodiversity across the Project area.
- To undertake patrols across the Project area land and oversee and provide guidance on activities which may affect the biodiversity features within the Project area.
- To undertake and arrange for the clear demarcation and signage which may prohibit entry to ecologically sensitive areas.
- To provide advice to contractors regarding the ecological sensitivities within the Project area, and if necessary supervise contractors to ensure that they adhere to environmental requirements to minimise disturbance to flora and fauna.
- To ensure the implementation of IFC guidelines on the prevention and management of alien species.

- To develop working relations with local community groups; land-owners, land-managers and business interests (particularly those related to recreation and tourism) by maintaining close liaison with local individuals and communities.
- Providing advice to AGL and Project staff, as necessary, in relation to the conservation and management of wildlife areas.
- To design and implement the ecological monitoring requirements for the Adjara Project, as detailed in the ESIA.

## 5. Reporting Requirements

### 5.1 Introduction

Effective reporting is essential for rendering an ESMP (and associated ESMS) of practical value. Routine independent auditing provides the necessary impetus for continual improvement. Without these two fundamental elements, such systems simply degenerate into data collecting exercises. Performance monitoring, reporting and auditing should be carried out to ensure compliance with the requirements of this ESIA, ESMP and overall ESMS. The following provides an outline approach which is aligned to the requirements of ISO 14001. The final scope and format of all reports proposed herein will be agreed with the ADB prior to them being required and produced. Furthermore, each of these reports will be submitted to the IFC for review and disclosure.

### 5.2 Adaptive Management

The ESMP and plans contained herein will adopt an “adaptive management” approach throughout the life cycle of the Project. The creation of the plans at the outset is a fluid process with the management objectives and performance indicators tailored to the current design and objectives of the Project. The ESMP utilises to the extent possible existing project knowledge to fully address the actual environmental and social impacts of the Project at the time and allow flexibility in environmental and social management decisions made on the Project.

To ensure adaptive management of the ESMP the following actions will be implemented:

- The ESMP will be reviewed and amended in accordance to the Project design and status as it evolves. Key information about any changes to project description will be regularly reviewed (monthly) and site visits undertaken by AGL EHS staff to identify the true impacts of the Project. For example, if the pipeline route identified in the initial design differs from the pipeline route proposed for construction, then additional habitat surveys maybe required and depending on the impacts alternative ecological management techniques required.
- Ongoing evaluation of the effectiveness of measures included in the ESMP will be undertaken on a regular basis as the Project evolves and develops and throughout design, construction, operation and decommissioning of the Project. Evaluation will be undertaken through ongoing communication with, contractors, stakeholders and lenders supplemented by site audits and monitoring data review to identify weaknesses and / or gaps in the management plan. The ESMP will be changed and / or updated accordingly to ensure appropriate, robust and effective environmental and social management commensurate to the scale of the Project through its lifetime.

### 5.3 Monitoring and Reporting by AGL and Others

#### 5.3.1 Contractor Monthly Internal Reports

Each contractor will be required to prepare a monthly report for issue to the AGL Environmental Engineer. These reports should normally be no more than one or two pages in length, to summarise the following:

- Progress in implementing their CEMP and parallel management plans;
- Findings of the monitoring programmes, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- Outstanding Non-Compliance Reports (NCRs);
- Summary of any complaints by external bodies and actions taken/to be taken; and

- Relevant changes or possible changes in legislation, regulations and international practices.

Any breaches of the acceptable standards specified by law/construction permits and/or this ESIA should be reported to AGL, using a NCR Form.

### **5.3.2 AGL Monitoring of Construction Activities**

AGL will undertake, on a daily basis, compliance monitoring of the contractors' environmental and social activities as per the IFC Environmental, Health, and Safety guidelines, the approved Contractor CEMP and parallel plans to be prepared by the Contractors. Internal audits should be undertaken every six months focussing on the performance of the implementation of the Contractors' CEMP. AGL will also audit contractors' workers' accommodation camps.

Any breaches of the acceptable standards specified by law/construction permits and/or this ESIA through the AGL monitoring of contractors will be reported to the contractor, using a NCR Form.

A copy of each completed NCR (whether prepared by the contractor or AGL) should be held on file by the AGL Environment Officer, to be replaced by the reply copy when it is received. A record of corrective actions should also be made and tracked to their completion.

During the construction phase, AGL will undertake semi-annual reporting, based on their own monitoring results (e.g. air quality monitoring) as a project requirement. This will feed in to annual sustainability reporting (see below).

### **5.3.3 AGL Annual Sustainability Reporting**

During the construction phase, AGL will undertake semi-annual reporting, based on monitoring results as a project requirement. During the operational phase, the frequency of reporting will revert to annual reporting, based on monitoring results, and will again be undertaken by AGL. It will address the full range of environmental and social issues addressed in this ESIA.

Two of the most common frameworks used by international private sector companies for annual sustainability reporting are the Global Reporting Initiative (GRI) and UN Global Compact. The GRI's Sustainability Reporting Framework sets out the principles and performance indicators which organisations can use to measure and report their economic, environmental, and social performance. The GRI has been working with the IFC to align some of its reporting requirement with the IFC's PS. The Global Compact is a framework for businesses that voluntarily commit to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, the environment and anti-corruption. Global Compact companies are expected to:

- Set in motion changes to business operations so that the Global Compact and its principles become part of its strategy, culture and day-to-day operations;
- Publicly advocate the Global Compact and its principles; and
- Annually communicate on progress in implementing the ten UN Global Compact principles.

AGL's annual sustainability reporting will contribute to a positive corporate reputation.

### **5.3.4 AGL External Reporting for Regulatory Compliance**

Adhering to the external reporting requirements as set out in Georgian Legislation is important. A register of all necessary external stakeholder reporting requirements under Georgian Legislation and for regulatory compliance purposes should be developed and form part of the ESMS. The frequency of reporting, the required reporting format and the person(s) responsible for producing the report (along with any necessary specialist service providers/constructors required to assist for data collection or interpretation purposes) is to be noted in the register.

AGL will ensure that all the necessary reports are produced and submitted in a timely fashion in order to achieve ongoing regulatory compliance throughout the life of the Project. Meeting regulatory reporting requirements is to also form part of the scope for any internal audits and management reviews.

## **5.4 Annual Independent Audits and Lenders Reviews**

### **5.4.1 Independent Monitoring**

The EPs required that all 'Category A' Projects and 'Category B' projects as appropriate require independent environmental and/or social expert to verify project monitoring information.

As a minimum, throughout the first three years of the operations, arrangements should be made for an industrial environmental management specialist to carry out an independent annual audit of the existing practices against the requirements of the manual. The key objectives of the audit should be as follows:

- Report on the practical implementation of the ESMP and progress since the last visit; and
- Establish feasible improvement objectives for completion before the next visit.

These audits should be used to re-examine the continued appropriateness of the ESMP and Contractors CEMP and to provide advice on any up-dates required. Attention should be given to lessons learnt in the light of experience. In particular, consideration should be given to the monitoring programmes in place to determine whether their purpose has been served and they can therefore be terminated or reduced in frequency.

Monitoring of social issues will be important, especially with regards to worker management, workers' terms and conditions (including the labour accommodation), occupational health and safety and grievances. External monitoring will need to verify that the Project commitments to worker's rights are implemented, in particular with regards to:

- Use of child labour;
- Payment of minimum wages and overtime;
- Not taking any action to prevent employees from exercising their right of association and their right to organise and bargain collectively;
- Ensuring no workers are charged fees to gain employment on the Project;
- Implementation of plans, procedures and training for occupational health and safety;
- Non-discrimination and equal opportunity;
- Use of the labour grievance mechanism;
- The existence of human resource policies, job descriptions, written contracts;
- Provision of information to labour force regarding rights and working conditions; and
- Employee training activities.

Annual monitoring reports of the independent advisory panel will be made available for public disclosure on the Project's website and on applicable IFIs website.

#### **5.4.2 Monitoring by IFC and other Lenders**

Representatives of IFC, and if appropriate other lenders, will be involved in regular field visits to monitor the Project's progress in implementing environmental and social measures. Prior notice will be provided to the Project before field visits. AGL's field staff will provide further information of specific local environmental and social activities and help to coordinate interviews with contractors' representatives, community representatives, and government representatives, if required.



## 6. EMSP Budgets

### 6.1 Indicative Budget

The overall ESMP indicative budget up to and during construction totals 3.6 million USD before commissioning and operation of the Project. Thereafter, an indicative ESMP budget for the operational phase of 1.5 million USD over 30yrs has been set aside, although the duration of monitoring may not require to be extended over 30yrs. .

The ESMP budget is organized around the following areas:

- Company Level EHS Management, Co-ordination and Communication;
- ESMP Compliance Monitoring;
- AGL Environmental Monitoring;
- Ecological Management, Monitoring and Enhancement;
- Construction Social Management.

Table 6.1 shows its distribution over the different areas and over the key development periods of construction and early years of operation. The table also outlines the nature of the activities included.

Table 6.1: Indicative ESMP Budget (USD)

ESMP Budget	Construction		Operation
	Per Year (USD)	Total (USD)	
Company Level EHS Management, Co-ordination and Communication (10yrs)	55,000	530,000	-
ESMP Compliance Monitoring (10yrs)	10,000	100,000	-
Ecological Mitigation, Management, Monitoring and Enhancement			-
Phase II Environmental Flow Assessment (duration 3 years)	100,000	300,000	-
Biodiversity Action Plan (10yrs)	230,000	2,300,000	-
Construction Social Management (10yrs)	20,000	200,000	
Ecological Monitoring and Maintenance Operational phase (30yrs)			1,500,000

### 6.2 Reallocation of Funds / Update of Budgets

A number of costs have been estimated on the basis of the information available at the time of the preparation of the ESIA documentation. It is expected that the cost associated with some measures may change. Although a provision was always made when the budget was prepared, it is possible that budgets allocated prove to be either under-estimated or over-estimated. AGL will propose twice per year an update of the overall environmental and social budget with suggestions on the way to reallocate funds. These suggestions will be presented to lenders for review.

# Appendices

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# Appendix A. CEMP Parallel Plans and Policies

## A.1. Recruitment Policy

The Local Recruitment Policy will include but not be limited to the following:

- Policy statement of Contractors commitment to meeting Georgian Laws and international best practice with regards to recruitment and labour management including non-discrimination and equal opportunities;
- Description of the types of employment opportunities to be provided to local people from the construction and operational phases of the Project including skills levels, indicative timeframes of recruitment, remuneration and benefits packages and likely duration of Contracts;
- Description of the local recruitment processes including timely (at least one month prior to recruitment) disclosure of information about vacancies as well as the job application procedures for candidates; and
- Information about how job opportunities are advertised equitably between the different villages in the assessment area to ensure equal opportunities for all local people subject to appropriate skills availability.

Where it is justified in respect of considerations of cost and quality, AGL and its Contractors will adopt a quota for local staff. AGL will monitor Contractors in this regard, and where these quotas are not met, it will be incumbent on AGL and Contractors to demonstrate absence of appropriate skills availability among the local population. AGL will disclose this policy document to the local Municipality in the assessment area to promote transparency in the recruitment process.

## A.2. Labour Grievance Mechanism

The labour grievance mechanisms will include but will not be limited to the following:

- A Contractors policy statement where grievances can be raised by any member of staff without fear of reprisals;
- Response times for grievances categorised according to the severity of the grievance or the issue in question;
- A process for logging grievances and when and how they are closed out;
- A process for monitoring grievances to identify repeat or unresolved grievances and reporting these issues to senior management in order to expedite remedial action; and
- Contact details for staff to whom grievances should be raised.

The grievance mechanisms will be explained to all staff on appointment and a notice summarising the approach and providing contact details for staff to whom grievances should be raised will be posted in the site accommodation areas and offices.

## A.3. Temporary Worker Accommodation Management Plan

### A.3.1. Background

The ESIA Volume II identified the need for special considerations and measures to ensure that the health, safety, security and well-being of temporary workers, and where relevant, their families is upheld during the construction phase of the Project across all worker accommodation sites proposed for the project. To meet this requirement, this subsection presents a framework of the Temporary Workers Accommodation Management Plan which are to be elaborated and implemented by the Contractors during construction.

### **A.3.2. Objectives**

The overarching goal of the plans will be to ensure that workers accommodation complies with international best practice as exemplified by “Workers’ accommodation: Processes and standards, a guidance note by IFC and the EBRD” (2009).

Specific objectives of the plans will include ensuring that workers accommodation is:

- Provided free of charge to workers;
- Provides adequate living space for each worker;
- Provides sanitary, laundry and cooking facilities and potable water;
- Has adequate health, fire safety measures including first aid and medical facilities;
- Has adequate heating and ventilation; and
- Non-restrictive to workers’ freedom of movement to and from the accommodation.

The ways in which the plan is to meet these objectives is elaborated in the sub-section below.

### **A.3.3. Approach and Activities**

Temporary Worker Accommodation Management Plans will be developed for all new construction accommodation camps prior to them being inhabited as per each Contractors requirements. These plans will be developed in accordance with international best practice guidance and follow a standard format addressing the following:

- Assessment of the need for workers’ accommodation (availability of workforce, availability of existing housing; and assessment of impacts of workers’ accommodation on communities including:
  - Specific impacts during the construction phase;
  - Community infrastructure;
  - Community services and facilities;
  - Local businesses and local employment;
  - Community health and safety;
  - Community cohesion; and
  - Dismantling and reinstatement.
- Demonstrating how national and international best practice standards for workers’ accommodation will be met in relation to:
  - General living facilities;
  - Room/dormitory facilities;
  - Sanitary and toilet facilities;
  - Canteen, cooking and laundry facilities;
  - Standards for nutrition and food safety;
  - Medical facilities; and
  - Leisure, social and telecommunication facilities;
- Description of the management and monitoring approach, structure, roles and responsibilities of the accommodation area in relation to:
  - Management and staff structure;
  - Charging fees for accommodation and services;
  - Health and safety on site;
  - Security of workers’ accommodation;
  - Workers’ rights, rules and regulations;
  - Consultation and grievance mechanisms; and
  - Management of community relations.

These plans will be integrated with the fire-fighting and safety response plans.

Temporary accommodation will be provided for the construction workers for each component of the Project. The construction of the temporary accommodation and supporting facilities will be the responsibility of the Contractor. AGL will review and approve the Contractors Temporary Worker Accommodation Management Plans for the construction phase of the Project.

The Contractor will be required to appoint or assign duties a member of the construction management team to implement the Temporary Workers Accommodation Management Plans and ensure that international standards are followed and the accommodation is well maintained.

The AGL's EHS Manager will audit the accommodation facilities and workers grievance log in relation to these areas on a monthly basis and will implement corrective actions where non-compliance with the plans are identified. Monitoring reports will feed in to the overall reporting schedule for the Project as explained in section. Workers will be able to submit complaints directly to Contractors and AGL at any time through the workers' grievance mechanism.

## **A.4. Materials Use and Waste Management Plan**

### **A.4.1. Background**

This section presents a structure for a proposed site waste management plan (SWMP) which AGL and Contractors will use initially to develop further in order to create a fully bespoke SWMP for the construction phase of the Project. The SWMP should be complimentary and in parallel to the Contractors CEMP.

Once developed, the construction phase SWMP can be modified appropriately in order to become the SWMP for the operational phase of the Project.

### **A.4.2. Objective**

The overall objective of a SWMP is to ensure that waste generated is segregated and managed appropriately in order to ensure maximisation of re-use and recycling and overall waste minimisation. Furthermore, the SWMPs ensure that residual waste requiring off-site management is managed according to best practices of the industry.

Since effective materials use is a fundamental aspect of waste minimisation the SWMP draws upon and creates linkages between materials storage, handling and use and waste management.

### **A.4.3. Approach and Activities**

The following key steps will need to be considered for each SWMP:

- Identify who is responsible for each key stage and inform individuals of their responsibilities. They will be required to hold sufficient authority to ensure compliance with the WMP by other site operatives;
- Identify the types and quantities of waste produced during construction, operation and decommissioning
- Identify waste management options - Where hazardous wastes are being generated, particular attention to the arrangements for identifying and managing such waste will need to be addressed and procedures put in place;
- Identify suitable waste management sites / landfill sites - the location of waste management sites will need to be identified, ideally the most local sites should be used to minimise transportation costs. Use waste disposal contractors that comply with the environmental legislative requirements of the local and national area;
- Training - all staff must be trained to ensure they understand the requirements of the SWMP;
- Plan - using the steps above, establish indicative percentages of the waste quantities to be produced over the life span of the Project;
- Measure - the quantities of wastes produced should be recorded on a monthly basis, and where possible measures taken to re-use, reduce or recycle waste as appropriate; and
- Monitor - throughout the Project life cycle, waste management on site should be monitored, to ensure compliance with the WMP;
- Hazardous Classes – hazardous wastes should be classified according to national requirements.

Within each SWMP it may be necessary to provide bespoke disposal management plans for various waste streams, particularly those considered hazardous or which are potentially problematic in terms of storage and/or disposal. Where required, these will be prepared as supplementary documents and will be linked to the relevant WMP for each scheme. In particular, it is expected that a waste disposal management plan for the excavation and disposal of spoil material will be required.

The example SWMP given in this instance is for the overall construction phase of the Shuakhevi scheme. It has been designed to be broadly applicable to each scheme which make up the Project and each phase (i.e. construction, operation and eventual decommissioning). However, it is acknowledged that some of the SWMP headings may not be fully applicable to each aspect of the Project so it is expected that some minor modifications will need to be made in order to specifically tailor certain parts of the document. In particular, some of the roles and responsibilities may need to be redefined and this will happen prior to the commencement of each component phase.

#### **A.4.4. Implementation (Monitoring, Staff Resources, Budget)**

Each SWMP which is subsequently developed for each component of the Project will become controlled documents and form part of the CEMP documentation.

Monitoring requirements of the Contractors and AGL in relation to the elaboration and implementation of SWMPs is consistent with that described previously for the CEMPs. Staff and resources for both Contractors and AGL are the same as those previously defined for CEMP implementation. Furthermore, AGL monitoring budget is included under the overall CEMP monitoring budget previously presented.

#### **A.4.5. Example for the Construction Phase of Shuakhevi**

##### **Document Title and Number**

Document Title: Site Waste Management Plan (SWMP) for the construction phase of Shuakhevi

Document Number: TBC

##### **Version History**

Rev 1 First issue

##### **Location**

The Shuakhevi hydropower scheme is to have an installed capacity of 175 MW and is located in the municipalities of Khulo and Shuakhevi.

##### **Nature of Operations**

The construction of components (access roads, tunnels, weirs, dams and powerhouses) associated with the Shuakhevi hydropower scheme.

##### **Relevant Policy and Legislation**

###### *National Laws*

■

###### *International*

- IFC General EHS guidelines (2007)
- The IFC EHS Guidelines for Construction Materials Extraction (2007)
- The IFC Performance Standard 3 on Pollution Prevention and Abatement
- The EBRD Performance Requirement 3 on Pollution Prevention and Abatement

## Roles and Responsibilities

The Contractor's Site Manager is the SWMP co-ordinator and is therefore responsible for ensuring the instruction of workers, implementation and overseeing of the SWMP.

The Operations Manager will monitor the effectiveness of the SWMP during routine site visits. Independent audits will also be conducted. Roles and responsibilities are defined in Table 6.2.

Table 6.2: Roles and Responsibilities

Position	Name	Responsibility	Contact details
Site Manager (Contractor)	TBC	Co-ordination of the SWMP	TBC
Operation's Manager (AGL)	TBC	Monitoring the effectiveness of the SWMP	TBC
EHS Manager (AGL)	TBC	Internal auditing. Recommending changes to the SWMP	TBC
Document controller (AGL)	TBC	Logging audit findings and making amendments to the SWMP	TBC

## Distribution

The Contractor's Site Manager should distribute copies of the SWMP to each sub-contractor where relevant. This should be undertaken each time the SWMP is updated.

## Instruction and Training

The Contractor's Site Manager should provide on-site briefing via induction sessions of the SWMP and in particular the appropriate separation, handling, recycling and re-use methodologies for all waste streams. Regular toolbox talks are to be carried out on waste issues with sub-contractors expected to attend.

## Waste Management Hierarchy

From the outset the Project has looked at ways in which waste production can be minimised. All sub-contractors are likewise expected to periodically review their operations to also ensure they are minimising waste arisings wherever possible in the first instance. For more information, reference should be made to the materials storage, handling and use plan.

Residual waste materials which can't be avoided fall into three categories for management as follows:

- Re-use
- Recycle
- Recovery
- Landfill

If surplus materials can be used in the permanent works they are classified as materials which have been re-used. If they are surplus to requirements and need to be removed from site and they can be used in their present form they can be removed from site for re-use.

When the surplus material cannot be re-used in its present form but could be used in a different form, it is sent for recycling or recovery).



If any of the first three options cannot be satisfied then the only option left is to send surplus materials to landfill.

Continual review of surplus materials being produced will be ongoing and where the site set up can be changed to maximise re-use or recycling then this will be undertaken. The use of landfill is to remain the last resort.

### **Materials Storage, Handling and Use**

Best practice waste management begins with waste prevention and minimisation which is achieved through the efficient storage, handling and use of raw materials. To achieve this aim for the scheme, the following material use and handling measures have been adopted.

- Re-using materials on site wherever possible. The most significant opportunity in the construction phase is with respect to excavated spoil
- Instituting good housekeeping and operating practices, including inventory control to reduce the amount of waste resulting from materials that are out-of-date, off-specification, contaminated, damaged, or excess to plant needs
- Instituting procurement measures that recognise opportunities such as ordering the correct amount of materials to be delivered when needed, reducing the amount of packaging used by suppliers and establishing a take back system with suppliers
- Seeking ways to reduce raw material consumption through efficiency audits in the operational phase; and
- Substituting raw materials or inputs with less hazardous or toxic materials wherever economically and technically feasible.

### **Waste Management on Site**

Surplus or waste materials arise from either the materials imported to the site or from those generated on site. The Contractor is required to store and dispose of each waste stream in accordance with the measures detailed in Table 6.3.

A number of spoil disposal sites which have been identified within the Shuakhevi scheme area. In accordance with The IFC EHS Guidelines for Construction Materials Extraction, the topsoil and overburden will be carefully removed from each of the proposed spoil disposal sites and stockpiled nearby and preserved for eventual use as rehabilitation material once the spoil disposal sites are no longer required.

The principal contractor has put in place control measures at each spoil disposal site (such as spot checking of spoil loads) to ensure that only material excavated from each of the schemes is deposited there. This will be a key mitigation measure which will be required to prevent contamination with other, potential non-inert material.

Table 6.3: Waste Streams and Associated Waste Management

Waste stream	Waste classification	Source of waste	Temporary storage method	Disposal	Comments
Excavation spoil	Inert (to be confirmed after geochemical testing).	From tunnelling and foundation activities.	No storage. If quality permits, spoil material will be used for concrete formation and establishing foundations (e.g. crushed material pumped concrete, road aggregate etc). Excess material will be disposed of in spoil disposal sites.	Spoil disposal site.	Geochemical testing required to confirm re-use potential.
Concrete	Non-hazardous	Excess concrete from the construction of dams, concrete barrages and other buildings.	Segregated according to European Waste catalogue (EWC) code and suitably stored in a waste management area.	Collection by competent carrier for crushing and re-use. Potential uses include road developments and as aggregate.	None
Concrete washings	Liquid waste Potentially hazardous to the receiving environment	Cleaning of concrete batching plant.	Wash water which can't be immediately reused is to be stored in an open lined pit or open tanks so as to aid evaporation.	Concrete wash water to be reused on site wherever possible. On site concrete batching should include wash water recirculation. Remaining wash water to be stored and allowed to evaporate. Any remaining wash water to be fully treated (fine solids removed by filtration or settlement and pH corrected to 6-9) before being discharged to surface water only (i.e. not to bare ground).	None
Iron and steel scrap	Non-hazardous	Associated with formwork and reinforcement and generated during process equipment repair	Segregated according to EWC code and suitably stored in a waste management area.	Collected by competent carrier for recycling.	None
Non ferrous metal	Non-hazardous	Associated with formwork and reinforcement and generated during process equipment repair	Segregated according to EWC code and suitably stored in a waste management area.	Collected by competent carrier for recycling.	
Bricks and tiles	Non-hazardous	Associated with building works	Segregated according to EWC code and suitably stored in a waste management area.	Recovery and re-use options to be fully explored. Collected by a competent carrier. Where recovery	None

Waste stream	Waste classification	Source of waste	Temporary storage method	Disposal	Comments
				and re-use is not feasible then disposal in a licensed facility.	
Oils and lubricants	Hazardous	Generated during process equipment maintenance and repair	Hazardous. Collected in banded, segregated drums within a waste management area.	Recovery and re-use options to be fully explored. Collected by a competent carrier. Where recovery and re-use is not feasible then disposal in a licensed facility.	None
Oil contaminated cleaning cloths	Hazardous	Generated during process equipment maintenance and repair	Hazardous. Segregated according to EWC code and suitably stored in a waste management area.	Collected by competent carrier to be disposed of in a licensed facility.	None
Packaging	Non-hazardous	Associated with equipment and supply deliveries	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recycling.	None
Pallets	Non-hazardous	Associated with equipment and supply deliveries	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recovery and re-use.	None
General Domestic Waste (including food waste)	Non-hazardous	Workshops and worker facilities	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for disposal to landfill.	None
Glass	Non-hazardous	Workshops and worker facilities	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recycling.	None
Plastics	Non-hazardous	Workshops and worker facilities	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recycling.	None
Paper and cardboard	Non-hazardous	Workshops and worker facilities	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recycling.	None
Batteries	Hazardous	Workshops and worker facilities and machinery / vehicle maintenance activities	Hazardous. Segregated according to EWC code and suitably stored in a waste management area.	Recycling options to be fully explored. Collected by a competent carrier. Where recycling is not feasible then disposal in a licensed facility.	None
Fluorescent tubes	Hazardous	Workshops and worker facilities	Hazardous. Segregated according to EWC code and	Collected by a competent carrier for recovery and re-use.	None

Waste stream	Waste classification	Source of waste	Temporary storage method	Disposal	Comments
			suitably stored in a waste management area.		
Timber	Non-hazardous	Associated with building works	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recycling.	None
Paints and chemicals	Hazardous	Paint - Associated with applying a final finish to buildings and infrastructure.  Chemicals – Associated with some industrial cleaning of infrastructure components.	Hazardous. Collected in banded, segregated drums within a waste management area.	Recovery and re-use options to be fully explored. Collected by a competent carrier. Where recovery and re-use is not feasible then disposal in a licensed facility.	None
Tyres	Non-hazardous	Vehicle maintenance and repairs	Segregated according to EWC code and suitably stored in a waste management area.	Collected by a competent carrier for recycling.	None

### **Temporary Waste Storage and Segregation**

On-site waste storage facilities are provided and intended as a secure, short term store for all waste streams generated on site prior to them being collected by relevant waste carriers for final disposal

Each waste type is to be stored in the segregated waste storage facilities provided to allow recycling and reuse where appropriate. Any hazardous waste is to be segregated and stored in a separately from non-hazardous waste.

A map showing the correct waste storage locations is to be prepared by the Operation's Manager (AGL) and included as part of this SWMP in order to inform the workforce where to correctly dispose of waste materials.

Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials. If skips are clearly identified, the bulk of the workforce will deposit the correct materials into the correct skip. Skips and bins for segregation of waste identified currently are as follows:

- Iron and steel scrap
- Non-ferrous scrap
- Bricks and tiles
- Packaging
- Pallets
- Domestic waste, including food
- Glass
- Plastics
- Paper and cardboard
- Batteries
- Fluorescent tubes
- Timber

If construction processes change and new waste streams arise then the opportunity to segregate these waste streams should be explored and provisions made to allow segregation.

### **Monitoring, Reporting and Auditing Requirements**

SWMP requirements with respect to monitoring, reporting and auditing are provided in Table 6.4 and the template for recording monthly waste volumes is provided in Table 6.6.

Table 6.4: Monitoring, Reporting and Auditing Requirements

Aspect	Frequency	Responsibility	Reporting	Comments
Materials storage, handling and use audit	Once every six months	Site Manager ( Contractor)	Prepare a short report to be issued to Operation's Manager (AGL) which investigates and comments upon the following; <ul style="list-style-type: none"> <li>• The quantity and type of materials re-used on site wherever possible.</li> <li>• Findings from a materials inventory review</li> <li>• Results and findings of a materials efficiency audit</li> <li>• Any opportunities to substitute raw materials or inputs with less hazardous or toxic materials wherever economically and technically feasible.</li> </ul>	None
Waste related environmental incidents	As they arise	Member of staff who discovers the incident Site Manager ( Contractor)	Environmental incidents to be immediately reported to the Site Manager ( Contractor) and onto the Operation's Manager (AGL) upon discovery All incidents are to be recorded	None
Site walkover, including the waste storage areas	Daily	Site Manager ( Contractor)	Comments to be put into the site diary. Any issues elevated to the Operation's Manager (AGL)	None
Site walkover to monitor effectiveness of the SWMP	Approximately weekly	Operation's Manager (AGL)	Discussion's with the Site Manager ( Contractor) regarding the effectiveness of the SWMP	None
Follow a waste consignment to ensure correct final disposal	Once every six months	Site Manager ( Contractor)	Prepare a short report to be issued to Operation's Manager (AGL)	Required in accordance with IFC General EHS guidelines (2007)
Waste carrier licences to be obtained	Every time a new waste Contractor is engaged	Site Manager ( Contractor)	A copy of waste carrier licence to be kept on site	None
Waste transfer notes to be obtained	Each waste uplift from the site	Site Manager ( Contractor)	A copy of each waste transfer note to be kept on site	None
Audit of waste management practices on site and the	Monthly	EHS Manager (AGL)	Audit report to be prepared on the waste management practices on site. Report to include any recommendations and actions for improvement as applicable	None

Aspect	Frequency	Responsibility	Reporting	Comments
effectiveness of the SWMP				
Record waste volumes generated by the site and indicate the final disposal option for each waste stream by volume	Monthly	Site Manager ( Contractor)	Completed monthly and to be issued to the Operation's Manager (AGL)	None
Review of current operations to further minimise waste and current waste disposal options	Annually	Site Manager ( Contractor)	Review of the processes to highlight ways in which waste can be minimised. Review of currently available and feasible waste disposal options to ensure they continue to represent best practice. Brief report highlighting any recommendations to be issued to EHS Manager (AGL) and Operation's Manager (AGL)	None

Table 6.5: Waste volume recording

Waste stream		January	February	March	April	May	June	July	August	September	October	November	December
Excavation spoil	Re-use												
	Recycling												
	Landfill												
Concrete	Re-use												
	Recycling												
	Landfill												
Concrete washings	Re-use												
	Recycling												
	Landfill												
Iron and steel scrap	Re-use												
	Recycling												
	Landfill												
Non-ferrous scrap	Re-use												
	Recycling												
	Landfill												
Bricks and tiles	Re-use												
	Recycling												
	Landfill												
Oils and lubricants	Re-use												
	Recycling												
	Landfill												
Oil contaminated cloths	Re-use												
	Recycling												
	Landfill												
Packaging	Re-use												
	Recycling												
	Landfill												



Waste stream		January	February	March	April	May	June	July	August	September	October	November	December
<b>Pallets</b>	Re-use												
	Recycling												
	Landfill												
<b>General domestic waste</b>	Re-use												
	Recycling												
	Landfill												
<b>Glass</b>	Re-use												
	Recycling												
	Landfill												
<b>Plastics</b>	Re-use												
	Recycling												
	Landfill												
<b>Paper and cardboard</b>	Re-use												
	Recycling												
	Landfill												
<b>Batteries</b>	Re-use												
	Recycling												
	Landfill												
<b>Fluorescent tubes</b>	Re-use												
	Recycling												
	Landfill												
<b>Timber</b>	Re-use												
	Recycling												
	Landfill												
<b>Paints and chemicals</b>	Re-use												
	Recycling												
	Landfill												

Waste stream		January	February	March	April	May	June	July	August	September	October	November	December
Tyres	Re-use												
	Recycling												
	Landfill												
TOTAL	Re-use												
	Recycling												
	Landfill												

## **A.5. Traffic Management Plan**

### **A.5.1. Introduction**

Appointed contractors must agree temporary traffic management measures then adopt and monitor an appropriate way of working in consultation with the local municipality and police.

This initial Traffic Management Plan (TMP) proposes measures to enhance the efficient transport of hydropower plant components and materials to site, whilst minimising congestion and disruption which might affect general traffic and in particular the emergency services. Wear and tear on the public roads which will constitute the construction vehicle routes to site is also considered. This document represents a commitment to satisfy roads and transport commitments and will be finalised as agreed between the contractor and the relevant stakeholders prior to commencement on-site.

### **A.5.2. Abnormal Loads**

#### **A.5.2.1. Introduction**

Pre-defined access routes will be used by long, wide and/or heavy load vehicles transporting power plant components. These routes will be agreed with the relevant authorities in advance and the police will be notified. A number of abnormal loads will be generated through construction activity and will include among others the following equipment:

- Three 3-phase transformers (without oil) with an estimated weight of between 55 and 90 tonnes each (depending on size and scheme)
- pre-assembled Pelton unit with an approximate weight of 50 to 60 tonnes
- Twelve 3-boom drilling jumbo approximate weight 40 tonnes
- TBM head and main bearing
- D8 dozers approximately 40 tonnes

#### **A.5.2.2. Delivery Plan**

Plant components shall be delivered to site in sufficient time to meet the agreed erection programme, and in accordance with the requirements of the local municipality and police.

Components will be delivered to site by road and stored at the work compound or other suitable location adjacent to the defined delivery route. It will be the contractor's responsibility to identify a suitable storage location and obtain any necessary authorisations.

It is recommended that pilot escort vehicles be used to provide an escort for all abnormal load vehicles travelling to the site. The general preference in these situations is to employ a convoy system, with a vehicle at the front and rear to warn oncoming vehicles of the approaching load. The escort would also help to ensure minimised disruption of flow for other road users by pulling the convoy over at pre-identified locations to allow build up of following traffic to pass. Drivers responsible for operating the convoy should

be fully briefed on the route, where and when to make the pre-defined stops, and be aware of all contingency measures in place in the event of an incident occurring. All vehicles and lead traffic management staff shall be in contact with the use of two-way radios.

Pedestrian safety is a high priority; additional traffic management staff (requirement to be agreed with Police prior to transportation) will be made available for any locations where pedestrians are most likely to be in evidence.

Clear roadways are needed to allow transporters passage through geometrically constrained sections of the route. At strategic locations parking will require to be restricted at times of delivery.

A driver's induction for abnormal load vehicles will include;

- Safety briefing including detail of all contingency measures,
- The need for appropriate care and speed control,
- Identification of specific sensitive areas,
- Clarification of identified route, the requirement not to deviate from this route, the requirement to adhere to convoy system and pull over at pre-defined points to allow build up of traffic to pass.

As an integral part of the TMP a contingency plan will need to be developed, in consultation with the police to cover an event where an abnormal load becomes immovable on the public road, for any particular reason.

### **A.5.3. Standard Load Trucks**

#### **A.5.3.1. Delivery Plan**

General site traffic and general construction traffic will not require the presence of an escort when travelling to and from site. Drivers should however be aware of route and contingency measures as pre-defined at induction stage. Drivers of HGV are to be briefed in good road practice and will be instructed to pull over on narrow sections of road to allow build up of traffic to pass. As with the abnormal load movements this will be detailed in the driver induction and should be made clear to all relevant personnel prior to any vehicle movements.

All general site traffic and construction vehicles, including concrete related deliveries, will run to coincide with site working hours, or as required per specific planning conditions. Normal load construction vehicles will generally use a defined route, which will need to be agreed for each construction phase as works proceed along the transmission line alignment.

To avoid unnecessary clutter signage will be kept to a minimum, however temporary direction signs indicating local routes to site and site entrances (statutory and site identification boards) will be required at strategic locations on local roads. The detailed signing arrangement will be agreed between the appointed contractor in close liaison with the local municipality and the police service.

Wherever possible, arrangements will be made for site workers to be transported to site via shared transport to minimise unnecessary traffic movements locally. The contractor will be required to implement induction procedures and regular up-dates for all drivers to establish and promote an overall culture of safety and awareness of other road users.

The contractor will be required to undertake regular inspections to ensure roads are clear of mud and other debris, together with dust suppression during periods of dry weather, at locations where access tracks meet the public roads.

Adequate on-site parking facilities will be provided within the curtilage of the site to accommodate construction plant, delivery vehicles, site operatives and visitors vehicles.

A wheel and chassis wash facility which operates on a closed cycle shall be installed at a location(s) approved by the local municipality and shall be operated throughout the construction period. The public roads adjacent to site accesses and the S-1 shall be regularly cleaned (utilising mechanical brushes where appropriate) so that the presence of mud, dirt, stones and other deleterious material arising from construction activities is minimised.

Where fuels are taken to site, this will be restricted to the minimum amount required for the plant and equipment on site.

All waste materials will be removed from site in accordance with relevant waste and environmental regulations. Wherever possible, waste will be minimised and materials reused and recycled.

Access routes will be monitored by the contractor to ensure that damage to walkways, driveways, accesses, bridges, walls, verges and property does not occur. Where accidental damage occurs, the contractor will promptly make good any damage to public and private property and land.

Where road improvement works involve unavoidable impacts to walls, hedges, verges, banks and drainage channels, these features would be either realigned as part of the design of the works or (such as in the case of walls which need to be temporarily removed) re-instated following the period of construction works.

Road improvement works would use materials sympathetic to the landscape or townscape character of the area in which they are proposed.

Any requirement for works to culverts and bridges over watercourses will be agreed with the local municipality and relevant national environmental authority and the contractor will be required to adhere to any special requirements which may be specified.

In all locations, works will be kept to the minimum area necessary to safely erect the power plant and related infrastructure. Disturbance to areas outside the boundary of the power plant infrastructure and designated access roads by construction plant, vehicles and personnel would be avoided.

There will be controls on time periods when trucks could pass through sensitive communities (e.g. to avoid conflicts during village school start/finish times, community events etc.).

#### *Car and Medium Goods Vehicle Journeys*

It is probable that cars and small vans used by site operatives and visitors will use similar routes to that proposed for trucks, dependent upon their point of origin. It is not proposed to designate or restrict routes for these types of vehicles.

Wherever possible, arrangements will be made for site operatives to be transferred to/from site via mini-bus from local settlements.

Adequate on-site parking facilities will be provided within the curtilage of the site to accommodate site operatives and visitors vehicles.

#### **A.5.4. Notifications**

##### *Emergency Services*

Consistent with the procedures defined through prior consultation; the local municipality, Police and other relevant authorities will be given written notice of abnormal load deliveries associated with the project works. Weekly and daily communication will be necessary in advance of the vehicles leaving their origin by road.

The developer is committed to working with the Police and other emergency services to ensure that essential deliveries associated with the development do not cause any significant detriment to emergency service response locally.

##### *Local municipality*

The local municipality will be given four weeks written notice of the abnormal load deliveries, weekly updates will be provided as the delivery timetable is finalised with the supplier during the delivery period.

The developer will work with the local municipality to develop media awareness of the project.

The developer will work with the highway authorities to identify planned engineering works which might conflict with the delivery route times. Discussion will then be made to minimise the potential for associated disruption to local communities.

##### *Local Communities*

The developer and contractors will maintain close liaison with local community representatives, landowners and statutory consultees throughout the construction period. This would include circulation of information about ongoing activities and in particular those which could have potential to cause disturbance. A telephone number will be made available during operational hours and persons with appropriate authority to respond to calls and resolve any problems that occur would be made available.

The developer and contractors will liaise with the relevant local authority and community to identify major events in the area and to programme the construction works to ensure that these did not disrupt the local road network on those days.

Information on proposed construction deliveries and in particular abnormal load deliveries will be communicated through local notice boards as appropriate e.g. Shuakhevi, Khulo, Keda and Adjaristsqali. Additionally regular public notices will be given out through the project website, local newspapers and local radio as the project progresses.

#### **A.5.5. Contingency Plan**

The emergency/contingency plan is designed to provide a safety net which details how unplanned circumstances that may arise would be dealt with.

A meeting will be held with key stakeholders and information and comment provided at that meeting will be utilised in developing a contingency plan.

The contingency plan is particularly focused on the potential concerns regarding blockage of the public road network for a significant period as a consequence of, for instance mechanical breakdown to one of the abnormal load vehicles.

A trial run of transporter vehicle simulating the maximum length load predicted will be carried out, the trial run will be escorted by experienced traffic management specialists and the Police. The trial run will assist the project in determining likely timings and also that there are suitable locations to stop large vehicles to allow general traffic to pass. It will also allow the Police to consider locations where additional road safety (pedestrian and traffic) management would be beneficial.

#### **A.5.5.1. Assumptions**

The haulage contractor will be a specialist within the field of moving abnormal loads. The vehicles and trailers used by the hauliers will use state of the art hydraulic trailer technology and come from a modern in house fleet.

The drivers that are employed in the operation of moving the abnormal loads will be experienced at performing movements of this nature and are fully experienced in the vehicles operating capabilities and restrictions.

Pilot escort vehicles will accompany each abnormal load journey, and on certain sections of the road that are particularly narrow or single track the convoy will effectively create a temporary 'rolling road closure'. The presence of pilot escort vehicles will help to ensure the greatest possible safety when transporting abnormal loads and provide forewarning for other road users. This should result in less impedance occurring along the route and hence reduce the likelihood of a major incident occurring.

#### **A.5.5.2. Proposed Contingency Measures**

Along with planning for the foreseeable causes of impedance that could cause the abnormal load transport delay or obstruction it still remains a possibility that a vehicle may break down along the route. Should such a situation occur it is important that appropriate contingency measures are in place to cope with any such problem and essentially minimise the disruption to normal traffic flows.

## **A.6. Chance Finds Procedure**

### **A.6.1. Overview**

Effective protection of cultural heritage is based on an understanding of the key issues, appropriate assessment and the correct action to minimise damage or loss. As unknown features / objects could be encountered during works, in particular earthworks, a 'chance finds procedure' will be in place to stop works and require investigation by an archaeologist in case of such findings.

This section of the ESMP contains a 'chance finds procedure' for use by the Contractors and drilling Contractors. AGL will consult with the relevant authorities (Agency for Cultural Heritage Preservation of Georgia and the Cultural Heritage Preservation Agency of Ajara) and to ensure that it is acceptable to them and that it complies with local and national regulations. Updates or amendments will be made by the Contractors where appropriate.

### **A.6.2. Chance Finds Procedure**

#### **A.6.2.1. Definitions**

'Chance finds' are defined for the purposes of this procedure as physical cultural resources encountered unexpectedly during project implementation.

'Physical Cultural Resources' (PCR) are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, palaeontological, historical, architectural, religious, aesthetic, or other cultural significance. Their cultural interest may be at the local, provincial, national or international level.

#### **A.6.2.2. Ownership**

The ownership of any chance finds discovered on the Project will be determined by Ministry of Culture, Monument Protection and Sport and Cultural Heritage Preservation Agency of Ajara.

#### **A.6.2.3. Recognition**

So that the Contractor and employees such as equipment operators and supervisors on the Project can identify physical cultural resources, training will need to be given. Prior to commencement of works the Contractors (in collaboration with AGL) will consult with the authorities mentioned above in order to arrange training for its employees. AGL will monitor this process to ensure that effective training is given to the correct members of the workforce.

#### **A.6.2.4. Procedure Upon Discovery**

Suspension of work:

- Upon discovery of physical cultural resources, the responsible Contractor shall stop work.
- In some cases, all work will need to be suspended, in others just the work in the immediate vicinity of the find will need to stop, in others still, all work within a certain radius of the find must cease. This issue will depend on the type of find and will be informed by a qualified archaeologist.



- After stopping work, the Contractor must immediately report the discovery to AGL's Environmental Officer. The Contractor may not be entitled to claim compensation for work suspension during this period.
- AGL's Environmental Officer (in consultation with AGL management) may be entitled to suspend work and to request from the Contractor some excavations at the Contractor's expense if he thinks that a discovery was made and not reported.

Conditions and requirements for work stoppage:

- With the approval of AGL's Environmental Officer (EO), the Contractor is then required to temporarily demarcate and limit access to the site, or, the EO may decide that the item can be removed and work may continue, for example where the item is a single coin of archaeological value.

Chance Find Report:

- The Contractor will submit a Chance Find Report within one day of the find. This will record the following information:
  - Date and time of the discovery;
  - Location of the discovery;
  - Description of the PCR;
  - Estimated weight and dimensions of the find; and
  - Temporary protection that has been implemented.

The Chance Find Report will be submitted to AGL's EO, and other concerned parties as agreed with the Cultural Heritage Preservation Agency of Ajara, and in accordance with national legislation (to be agreed upon submission of this Chance Finds Procedure to the provincial authorities for their comment/approval).

AGL's EO is required to inform the cultural authority immediately following the submission of the Chance Find Report.

#### **A.6.2.5. Arrival and Actions of Cultural Authority**

The cultural authority (Cultural Heritage Preservation Agency of Ajara) undertakes to send a representative to the discovery site, who will arrive within a stipulated time frame, such as 24 hours if all work has been suspended (details will be agreed between the authority, AGL and the Contractor). The representative will determine the action to be taken which may include, but will not be limited to:

- Removal of the PCR(s) deemed to be of significance;
- Execution of further excavation within a specified distance of the discovery point; and
- Extension or reduction of the area demarcated by the Contractor.

These actions should be taken within seven calendar days of the representative arriving on site in the case of the suspension of works.

The Contractor may or may not be entitled to claim compensation for work suspension during this period (to be elaborated by AGL within the tender documents).

If the cultural authority fails to arrive within the stipulated period (for example, 24 hours), AGL's EO will have the authority to extend the period by a further stipulated time.

If the cultural authority fails to arrive after the extension period, AGL's EO may have the authority to instruct the Contractor to remove the PCR or undertake other mitigating measures and resume work.

Such additional works can be charged to the Contract. However, the Contractor may not be entitled to claim compensation for work suspension during this period.

#### **A.6.2.6. Further Suspension of Work**

During this seven calendar day period (see above section on arrival and actions of cultural authority) the cultural authority may be entitled to request the temporary suspension of the work at or in the vicinity of the discovery site for an additional period of up to 30 calendar days or longer if deemed necessary.

The Contractor may, or may not be, entitled to claim compensation for work suspension during this period (to be elaborated by AGL within the tender documents). However, the Contractor will be entitled to establish an agreement with the cultural authority for additional services or resources during this further period under a separate agreement with the cultural authority.

#### **A.6.2.7. Resumption of Work**

Following approval from the cultural authority (Cultural Heritage Preservation Agency of Ajara), AGL's EO will issue the Contractor with the instruction to recommence works.

#### **A.6.2.8. Review**

AGL's EO will review the process and amend it as necessary to ensure efficiency and effectiveness of the chance finds procedure in the future.

### **A.6.3. Implementation (Monitoring, Staff Resources, Budget)**

Each Contractor will be required to have a Chance Finds Procedure which is subsequently developed for each component of the Project will become controlled documents and form part of the CEMP documentation being parallel plans.

Monitoring requirements of the Contractors and AGL in relation to the elaboration and implementation of Chance Finds Procedure is consistent with that described previously for the CEMPs. Staff and resources for both Contractors and AGL is the same as those previously defined for CEMP implementation. Furthermore, AGL monitoring budget is included under the overall CEMP monitoring budget previously presented.

## **A.7. Skills Development Programme**

### **A.7.1. Introduction**

The Contractor will be required to develop as part of their scope of works a Local Skills Development Programme. The objective of the programme will be to provide local residents with the employability and trade skills to enable them to apply for employment during construction. This section provides a brief description of the Vocational Education system in Georgia, relevant training centres and their capacity, as well as brief overview of local skills availability and interest.

## **A.7.2. Background on Vocational Education in Georgia**

### **A.7.2.1. Vocational Education and Training system in Georgia**

The Government of Georgia is currently carrying out a reform of its vocational education and training (VET) system. This 2005 VET reform was driven mainly by the emerging skill needs of the post-Soviet economy. As part of that reform, costly and unsuitable VET centres have been closed down, leaving 38 public centres for initial VET (at higher secondary level) and four higher education institutes offering post-secondary training programmes. A programme of improvement and capacity building is underway for the 38 initial VET centres of which, by early 2010, 17 had been completed, with the remaining 21 still to undergo the same process. All VET centres must now follow commonly agreed new standards, related to generating income and encouraging demand from the private sector. These have led to the development of shorter programmes of training which focus exclusively on technical content.

A great deal of experience has thus been gained in adjusting VET programmes to the specific business requirements of certain economic sectors or to the needs of enterprises, and there is a legal base which permits such cooperation in order to increase the incomes of VET centres. Up to a certain limit, additional income compensates for the modest levels of public investment. This has resulted in experience also being gained in other areas, such as adaptation of curricula and changes to teacher and instructor in-service training. In addition to state-run VET centres there are 66 licensed VET centres, but not all are currently operating.

In support of the VET reforms, and to encourage closer co-operation between industry and VET training centres, sector committees are planned for each industrial sector. Those already established include: information and communication technologies (ICT), construction and tourism. In addition, Georgia has a small number of professional associations, the most active of which participate in the development of professional standards for construction and agriculture occupations, in collaboration with the Georgian Employers Association. These standards, adapted into training programmes and qualifications are the basis for the reformed curricula and there would be advantages in adopting the relevant ones for the training to be conducted in relation to the Adjaristsqali Hydropower Cascade projects. By 2010, 50 professional standards profiles had been developed in agriculture, tourism, construction and other services although the policy on implementing the new qualifications system still required some clarification.

Demand for training and employment related to the Adjaristsqali Project is likely to be high. The flexible Labour Code of 2006 has not yet produced the expected growth in employment despite the improved economic climate. Net employment growth was a negative 135,000 from 2002 to 2007, and a negative 43,000 between 2006 and 2007. In these two years 69,300 and 42,000 jobs were created, whereas 204,200 and 85,000 jobs were lost. Although this shows certain dynamism in terms of job creation, over 70% of created jobs were in the construction industry, which is known for frequently offering low skilled, temporary jobs. Although Georgia was adversely affected by the global financial crisis, the economy recovered in 2010-11 with GDP growth above 60% per annum. However, unemployment has remained high at 16%.

An analysis of admissions versus applications to VET centres showed that in 2008 some VET training centres, mainly those offering ICT training, registered a ratio of three applications to one training place. The same analysis confirmed that VET is attractive to all population groups, including adults with higher education, except for students completing basic education as they have concerns about the lack of an access pathway to upper-secondary education. However, as our work has already shown, although a large number of skilled and semi-skilled construction workers, both in employment and unemployed, do not

have any certification to testify to their skills, those in employment cannot afford to relinquish their posts in order to return to college.

#### A.7.2.2. Existing Vocational Education Centres

Vocational education training centres exist in Batumi and Kobuleti offering short courses in construction trades which provide a local resource in the region, but are not easily accessible to people in the Khulo Municipality. The following sections provide a brief overview of the vocational education training centres closest to the Project.

**LEPL Vocational College “Black Sea”** in Batumi: specialises in teaching and certificating school-leavers and returning adults in construction trades and hospitality. The college has benefited during 2011 from the Government’s upgrading programme and also received funding from both UNDP and USAID.

Name of institution	LEPL Vocational College “Black Sea”
Address of institution:	# 84, Lermontov str., Batumi, Georgia
Website address (if applicable)	<a href="http://www.batumiprof.ge">www.batumiprof.ge</a>
Deputy Director	Toidze Maia
Telephone no	cell: 577 17 79 20 მობ: 577 17 79 20
E-Mail address:	mia-toidze@mail.com

**LEPL Vocational College “Akhali Talga”** in Kobuleti: of a similar size and offering a similar range of courses to the Batumi College Black Sea college. It receives financial support from the Norwegian Refugees Council and from USAID and has been benefiting from the Government’s upgrading programme since 2007.

Name of institution	LEPL Vocational College “Akhali Talga”
Address of institution	# 154, Rustaveli str., Kobuleti, Georgia
Website address (if applicable)	<a href="http://www.kpc.ge">www.kpc.ge</a>
Project Manager	Irina Minashvili
Telephone no.	Tel: 8 426 26-68 51, cell: 555 19 19 51
E-Mail address	<a href="mailto:kobcollege@gmail.com">kobcollege@gmail.com</a> , <a href="mailto:irinaminashvili@gmail.com">irinaminashvili@gmail.com</a>

Both of the above training centres have programmes very relevant to the needs of the Hydropower Scheme and the businesses that will service it.

### A.7.3. Local Labour Resources

#### A.7.3.1. Local interest

As part of work to identify skills availability in the Region, a skills mapping exercise was undertaken to understand general skills and interest among the local population. Open days were held at each municipality with local residents invited to come and complete skills questionnaire. The questionnaires requested information regarding education levels, language capabilities and existing skills. Interest in the Project is strong, in the Khulo Municipality alone over 1,500 people completed the skills mapping questionnaire and registered their interest in obtaining employment during the construction phase. The As the Project is expected to train up to 600 workers, this represents a good pool of potential trainees from which to recruit. The registrations show that the pool will contain a mix of levels of experience in construction work, ranging from unskilled labouring through to skilled workers, albeit often with no certification to validate their claims to being skilled.

#### A.7.3.2. Existing Skill Capacity

The skills mapping has identified a lack of relevant skills available locally and therefore the Local Skills Development Programme will be crucial to increasing the employability of the local population in skills such as construction work, health and safety and English language.

Table 6.6: Skills in Khulo Municipality

Skills	No. of people
<b>Secondary School and Vocational Education Qualification</b>	
Skilled - Welder, painter, grinder, carpenter, stone mason, re-bars and concrete specialist, tractor and truck operator	693
Unskilled - Secondary School education without any experience in construction occupation or support services	308
Other (some experience in support services - cook, driver (B, C), etc)	348
<b>Higher Education Qualification (Bachelor, Masters, Academy, etc)</b>	
Construction (engineer, civil engineers with relevant experience)	56
Support Services (any other higher education with experience in admin, lawyer, translator, accountant, health, etc...)	58
Other	163

#### A.7.3.3. Local Economic Context

A study of social-economic state of population in five villages in Khulo has been undertaken, it should be noted that these results are not necessarily applicable to the whole region.

- Higher percentage of the population in the ages of 25-55, approximately 45 % than average of Georgia of 43 %.
- It is a quite low employment rate, only 14 % according to local survey opinion. However, this does not include people working on their own land, which many people do not consider as employment.
- Majority of working age population is employed in schools, local admin offices, medical stations or shops.

- Trend of out-migration of people from mountainous municipalities to urban centres such as Batumi in search of work. Among the surveyed village population at least one member of every fourth surveyed family (23.5%) has had an experience of migration during the last three years.
- According to official statistics unemployment levels in Adjara are over 22%, this exceeds the country average of 16.3%.
- Secondary school education level is 8 % compared to a national average of 19 %. As for higher education the average is 20 % compared to 26 % as a Georgian average.

Table 6.7: Age distribution of the population of five villages in Adjara region in relation to age distribution of the population of Georgia

Age groups	Georgia %	Adjara %
0 - 4	6.2%	2.3%
5 - 14	10.8%	14.9%
15 - 24	15.4%	13.1%
25 - 34	15.1%	17.1%
35 - 44	13.6%	17.1%
45 - 54	14.4%	10.9%
55 - 64	10.7%	10.3%
65 - 74	7.6%	7.4%