Regional Environmental Review, Environmental Assessment and Management Framework and Resettlement Policy Framework
Azerbaijan Motorway Improvement and Development

REGIONAL ENVIRONMENTAL REVIEW

November 2005

Scott Wilson Central Asia in association with VMV Ltd, Baku
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<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>asi</td>
<td>above sea level</td>
</tr>
<tr>
<td>BP</td>
<td>Bank Procedure</td>
</tr>
<tr>
<td>CENN</td>
<td>Caucasus Environmental NGO Network</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>EA&amp;MF</td>
<td>Environmental Assessment and Management Framework</td>
</tr>
<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EMP</td>
<td>Environmental Management Plan</td>
</tr>
<tr>
<td>EP</td>
<td>Environmental Protection</td>
</tr>
<tr>
<td>ESS</td>
<td>Ecology &amp; Safety Sector (Department in RTSD)</td>
</tr>
<tr>
<td>fSCE</td>
<td>former State Committee for Ecology</td>
</tr>
<tr>
<td>fSU</td>
<td>former Soviet Union</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environment Fund</td>
</tr>
<tr>
<td>ha</td>
<td>hectare</td>
</tr>
<tr>
<td>IBRD</td>
<td>International Bank for International Development</td>
</tr>
<tr>
<td>IBA</td>
<td>Important Bird Area</td>
</tr>
<tr>
<td>IDA</td>
<td>International Development Association</td>
</tr>
<tr>
<td>IFI</td>
<td>International Financing Institution</td>
</tr>
<tr>
<td>km</td>
<td>kilometre</td>
</tr>
<tr>
<td>LAD</td>
<td>Land Acquisition Department</td>
</tr>
<tr>
<td>LAP</td>
<td>Land Acquisition Plan</td>
</tr>
<tr>
<td>MED</td>
<td>Ministry of Economic Development</td>
</tr>
<tr>
<td>m</td>
<td>metre</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MENR</td>
<td>Ministry of Ecology and Natural Resources</td>
</tr>
<tr>
<td>MYST</td>
<td>Ministry of Youth, Sport and Tourism</td>
</tr>
<tr>
<td>MoT</td>
<td>Ministry of Transport</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Government Organisation</td>
</tr>
<tr>
<td>OD</td>
<td>Operational Directive</td>
</tr>
<tr>
<td>OP</td>
<td>Operational Policy</td>
</tr>
<tr>
<td>PIU</td>
<td>Project Implementation Unit</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>RER</td>
<td>Regional Environmental Review</td>
</tr>
<tr>
<td>ROW</td>
<td>Right Of Way</td>
</tr>
<tr>
<td>RPF</td>
<td>Resettlement Policy Framework</td>
</tr>
<tr>
<td>RTSD</td>
<td>Road Transport Service Department</td>
</tr>
<tr>
<td>SEA</td>
<td>Strategic Environmental Assessment</td>
</tr>
<tr>
<td>SEE</td>
<td>State Ecological Expertise</td>
</tr>
<tr>
<td>SNIP</td>
<td>Soviet Technical Norms and Rules</td>
</tr>
<tr>
<td>SPPRED</td>
<td>State Programme on Poverty Reduction and Economic Development</td>
</tr>
<tr>
<td>TEnS</td>
<td>Trans-European (Transport) Networks</td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TRACECA</td>
<td>TRAnsport Corridor Europe Caucasus Asia</td>
</tr>
<tr>
<td>UNECE</td>
<td>United National Economic Commission for Europe</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>US$</td>
<td>United States dollars</td>
</tr>
<tr>
<td>vpd</td>
<td>vehicles per day</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank (i.e. IBRD and IDA)</td>
</tr>
</tbody>
</table>
"The road is life."
"If there is no road close to you, you are without life in the villages."

Discussions in Lenkeran, Jalilabad and Bilasuvar, 9th-11th August 2005

1 INTRODUCTION

1.1 Background Information

The Government of Azerbaijan has requested the World Bank’s (WB) support for improving several road segments to the west and south of Baku over a period of several years. It is proposed that the Azerbaijan Motorway Improvement and Development or ‘Highway II’ Project (‘the Project’) would include the:

- Rehabilitation of existing roads between Baku and Shamakhi, a 120 km section of the east-west transport between Baku and Tbilisi;
- Upgrade of the M3 Motorway between Alyat and Astara, including expansion of the existing 2 lane road to a 4 lane road, and construction of new 4 lane roads and bypasses around key towns.

The first year’s implementation programme will rehabilitate sections of the Baku-Shamakhi road and the first 22 km of the M3 Motorway south of Alyat. These and other works planned under the Project are referred to as sub-projects. Other works will be advanced in year two or later.

On 11th July 2005, the Ministry of Transport’s Road Transport Service Department (RTSD) and Scott Wilson Central Asia signed a contract to prepare a Regional Environmental Review (RER), Environmental Assessment & Management Framework (EA&MF) and Resettlement Policy Framework (RPF) in connection with the proposed Project. The RER, EA&MF and RPF are presented as separate but inter-related documents.

The RER, EA&MF and RPF have been designed to facilitate Project implementation and to ensure compliance with Azerbaijan’s legislation, procedures and policies, international Conventions and WB safeguard policies, in particular in terms of environment, resettlement and land acquisition. The RER is a broad overview of the policy, environmental and socio-economic implications of the entire Project scope. The EA&MF and RPF are practical guidance documents which outline the procedures for the management of environmental and social issues of sub-projects. These documents will be disclosed in country and in WB’s InfoShop prior to further WB appraisal. The project would then be divided in sections (sub-projects) and each section design would include appropriate specific Environmental Impact Assessments (EIA), Environmental Management Plans (EMP) and Land Acquisition Plans (LAP)/Resettlement Action Plans (RAP) with adequate disclosure.

In simple terms, the purpose of the RER is to provide information about key environmental and socio-economic issues in the Project-affected area to decision-makers within the Government and funding institutions to help them make informed decisions about:

- the selection of road improvement scenario and, if/where a new road is the preferred option,
- the optimal location for the alignment
- selection of appropriate alternatives to consider within the individual sub-projects

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1 The World Bank’s Disclosure Policy requires that safeguard-related documents be disclosed before appraisal (i) at the InfoShop and (ii) in-country, at publicly accessible locations and in a form and language that are accessible to potentially affected persons.
Regional Environmental Review, Environmental Assessment & Management
Framework and Resettlement Policy Framework

Once the scenario/alignment have been selected for a specific section of road, the EA&MF and RPF
will be used by the Government and WB to manage environmental studies, land acquisition, any
required resettlement of people and properties, and to guide the compulsory public consultation
process.

1.2 Purpose of Regional Environmental Review

RER is intended to be a tool to help development planners design investment strategies, programmes
and projects that are environmentally sustainable for a region as a whole. RER takes into account the
opportunities and limitations represented by the environment of a region and assesses on-going and
planned activities from a regional perspective. For example, RER may be required where WB is
considering supporting a Project in a region with major uncertainties about ecological functions and
relationships.

International experience suggests that RER can provide the following benefits:

- Eliminate at an early stage investments that might generate particularly adverse environmental
  impacts;
- Provide a baseline overview of environmental conditions within the study corridor;
- Assist governments in forming a long-term view of regional planning and increase the
  transparency of the planning process;
- Analyse the institutional and legal framework relevant to the particular region, identifying
  institutional and jurisdictional gaps and recommending improvements;
- Collect and organise regional environmental data, identifying data gaps and needs at an early
  stage;
- Allowing for comprehensive planning of region-wide environmental management and monitoring;
- Providing a basis for collaboration and coordination across administrative boundaries and between
  sector-specific authorities to help avoid contradictions in policy and planning and enhance
  efficiency;
- Strengthen preparation and implementation of individual projects within the region,
  recommending criteria for environmental screening, analysis and review of projects and setting
  standards and guidelines for project implementation;
- Provide a means for public participation in shaping the future development of the region.

The purpose of this RER is to provide background information and Review to help decision-making
within RTSD, WB and other interested organisations in relation to planning and implementing the
proposed road improvement programme. It is hoped that both lender and borrower will give due
consideration to the findings and recommendations of the RER.

2 PROJECT DESCRIPTION INCLUDING ALTERNATIVES

“What is your objective here? Is it to link Alyat to Astara or is it to serve the people?”

Discussion in Bilasuvar, 11th August 2005

2.1 Regional Context

2.1.1 General Environmental and Socio-Cultural Context

Table 2.1 Azerbaijan – Key Statistics (2004)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>8.2 million</td>
</tr>
<tr>
<td>Population per square km:</td>
<td>93</td>
</tr>
<tr>
<td>Population growth:</td>
<td>0.8%</td>
</tr>
<tr>
<td>Life expectancy:</td>
<td>65 years</td>
</tr>
<tr>
<td>Population below national poverty line (%):</td>
<td>50%</td>
</tr>
<tr>
<td>Gross Domestic Product (GDP):</td>
<td>US$ 7.1 billion</td>
</tr>
<tr>
<td>GDP Growth per person:</td>
<td>10.4%</td>
</tr>
<tr>
<td>GDP growth:</td>
<td>11.2%</td>
</tr>
</tbody>
</table>


Azerbaijan is a South- or Trans-Caucasus country. The Caucasus region exhibits a number of common environmental, social and economic characteristics which are outlined in Table 2.2. The region has a particularly wide variety of landscapes (humid to arid, sub-tropical to glacial and plain to mountain) and biodiversity (including a high level of endemic and relict species).

Table 2.2 Common Characteristics of Caucasus Region

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Features</td>
<td>• High landscape diversity</td>
</tr>
<tr>
<td></td>
<td>• High biological diversity within a moderate climatic zone</td>
</tr>
<tr>
<td></td>
<td>• Ethnic-religious and cultural diversity</td>
</tr>
<tr>
<td></td>
<td>• Relatively high percentage of intact ecosystems and high overall environmental quality with a few existing environmental ‘hot spots’</td>
</tr>
<tr>
<td>Challenges</td>
<td>• Economic and social problems specific to countries in transition (e.g. overall decline of economic activities, severe budget constraints, high domestic and foreign indebtedness, low Gross Domestic Product (GDP) growth rate; institutional weakness)</td>
</tr>
<tr>
<td></td>
<td>• Geopolitical instability (e.g. ethnic wars, political upheavals)</td>
</tr>
<tr>
<td></td>
<td>• Unequal distribution of water resources</td>
</tr>
<tr>
<td></td>
<td>• Deforestation</td>
</tr>
<tr>
<td></td>
<td>• Soil degradation and desertification</td>
</tr>
<tr>
<td></td>
<td>• High occurrence of natural disasters (e.g. flooding, earthquakes, drought)</td>
</tr>
<tr>
<td>Emerging Issues</td>
<td>• Oil spill and biodiversity fragmentation related to existing and planned oil and gas pipeline projects</td>
</tr>
<tr>
<td></td>
<td>• Problems associated with environmental pollution and transit of dangerous goods in the TRACECA(^1) corridor</td>
</tr>
</tbody>
</table>

Source: UNEP (2002) Caucasus Environmental Outlook

\(^1\) European Commission Programme to develop a transport corridor with an east-west axis across the Black Sea, through the Caucasus and the Caspian Sea to Central Asia. The objectives are: (i) To support the political and economic independence of the republics by enhancing their capacity to access European and World Markets through alternative transport routes; (ii) To encourage further regional cooperation among the partner states; (iii) To use TRACECA as a catalyst to attract the support of IFIs and private investors; (iv) To link TRACECA to the Trans-European Networks.
2.1.2 Economic Development

Azerbaijan’s economy has strong potential to grow rapidly in the years ahead. Economic prospects are bright on the short and middle terms, hinging heavily on the development of the oil and gas sectors. The overall GDP is estimated to increase from US$8.5 billion in 2004 to US$22.2 billion in 2008, with non-oil GDP increasing from US$5.7 billion in 2004 to US$10 billion in 2008 (in current US$).

The oil and gas resources are considerable, but finite, peaking in about 10 years’ time and then declining rapidly.

Poverty is widespread in Azerbaijan, with the highest incidence of income poor people apparently located in urban areas outside of Baku (i.e. provincial towns), followed by rural areas, with the lowest incidence in Baku city itself. The risk of poverty is higher for households headed by unemployed people and pensioners. In rural areas, agriculture is the major source of income for the non-poor. Income from employment is the second most important source of income in rural areas. It is widely recognised that poverty is not only measured using monetary indicators, but also in terms of access to essential services and goods. Many of the rural population lack access to basic sanitation and health services due not only to lack of money but also the absence of such goods and services, due to the collapse of the infrastructure or to the need for repairs.

The way that economic growth translates into poverty reduction is through rising employment and increased labour productivity. The most difficult challenge Azerbaijan faces, which is well understood by the Government, is to avoid the path followed by many natural resource rich countries, wherein their citizens derive little benefit from the influx of oil revenues. This will require designing and implementing a policy agenda that leads to poverty reduction and improves incomes as well as equity for current and future generations, while maintaining macroeconomic and financial stability.

To reach this goal, on the basis of what is known about poverty and living standards in Azerbaijan, the government has designed a State Programme on Poverty Reduction and Economic Development (SPPRED) based on six key strategic aims:

- the facilitation of an enabling environment for the growth of income-generating opportunities;
- the maintenance of macro-economic stability;
- improvement in the quality of, and equity in access to, basic health and education services;
- improvement of infrastructure (including roads, delivery of utility services, communications, irrigation);
- reform of the existing system of social protection to give more effective protection to the vulnerable;
- improvement of the living conditions and opportunities for refugees and internally displaced persons.

Achieving growth in the non-oil sector, e.g. agriculture and tourism, will be critical to achieving the objectives of the SPPRED. While the oil sector will contribute to the majority of GDP growth, the magnitude of poverty reduction will be dependent on achieving the growth in the non-oil sectors. Agricultural is essential to the rural economy, with strong linkages to a variety of non-farming activities, e.g. agro-processing industry, handicrafts, retail, distribution, transport construction and other aspects of rural infrastructure.

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5 According to Azerbaijan (2003) SPPRED 2003-2005, using an absolute poverty line of 120,000 manats (US$ 25.8) per month – based on the cost of a minimum food consumption basket which guarantees a daily calorie intake of 2,200 kilocalories – an estimated 49% of Azerbaijan’s population lives in poverty; with a relative poverty line set at 72,000 manats (US$ 15.5) per month, an estimated 17% of the population live in extreme poverty.
The development of infrastructure is one of the six major strategic pillars of the SPPRED and is as critical to further expansion of the non-oil sector as it is for improving the living standards of the low-income population.

2.1.3 Transport Sector

Azerbaijan's geographical position makes it an important east-west link between Middle & Central Asia and Europe and north-south between the Russian Federation and the Middle East. Key road and rail transport corridors are located in the Caucasus. There are also a number of pipelines, including the recently completed Baku-Tblisi-Ceyhan oil pipeline.

Trade with its neighbours, both transit and bilateral, is an important feature of the Azeri economy. With much of the non-oil trade being small size shipments transported by road to neighbouring countries, access to international markets requires the provision of suitable road transport infrastructure on corridors, ready to meet mid-term strong traffic increase, to replace the presently narrow, low quality roads. In 2004, the transport sector accounted for 7% of the country's gross domestic product (GDP). The transport sector is vitally important to the domestic economy, linking the rural population with urban and international markets.

Approximately 56% of the Azerbaijan's main road network is considered to be in a poor state, and about 1,000 km (30%) of rail track requires reconstruction. In the former Soviet Union (fSU), the main road network was not designed for carrying heavy trucks. Maximum design axle loads were 10 tonnes. Heavy and long distance traffic was carried by rail which still carries considerable volumes of heavy cargo, particularly oil products. The emergence of heavy road traffic has contributed to the deterioration of the road network.

In 2002, the total vehicle fleet was 517,000 and is currently rising: 12,000 vehicles were imported in 2003 and 37,000 in 2004. This trend is likely to gain further momentum following the strong growth of the GDP, as the middle class should widen and get broad access to car property.

According to the World Bank Trade and Transport Facilitation Policy Note (November 2003), each ton of transit cargo generates between US$20 and US$40 of direct economic activity for the various transport intermediaries, in Azerbaijan. The Policy Note considers that since the transport intermediaries are currently profitable, additional transit would both generate employment opportunities in logistics to upgrade infrastructure and invest in new areas. In addition, there are other value added elements generated or induced by transit traffic than services, e.g. various ancillary services, added commercial opportunities, value-added activities like re-labelling, packaging, light processing, consolidation and redistribution to the Central Asian and Caucasus countries.

SPPRED actions involving the transport sector include: (i) restructuring and modernisation of sector institutions, including the Ministry of Transport; (ii) rehabilitation of the East-West road; (iii) improvement of rural roads, including their management and financing; (iv) facilitating trade.

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8 The Azeri road network comprises 18.723 km of road, which divides into 958 km of major arterial ('magistral') roads, 1,216 km of minor arterial ('republican') roads, and 4,312 km of 'collector' roads. The remaining part of the RTSD network consists of 'local' roads. Half of the total network is paved, and much is in a poor state of disrepair with three-quarters in need of rehabilitation. 191 km only are 4-lane highways.
9 The Azeri rail network comprises 2,932 km of railways, the principal mode of freight transport. Much of the rail track and rolling stock is in need of repair or replacement. A US$ 20.2 million loan from EBRD will be used for reconstruction of the most important segments along the main Baku-Georgia rail line.
10 Around 49 passenger private car per 1,000 inhabitants, which is very low by comparison with European norms. It was 35 in 1995 and 39 in 1999.
The upgrading of the east-west road corridor (Baku-Ganja-Kazakh-Georgian border through Alyat and a more direct route through Shamakhi) and North-South road corridor (Russian border-Baku-Alyat-Astara-Iranian border), in particular, and better connections to rural areas are among the most important infrastructure requiring attention. As such, investment in road infrastructure is the main priority outlined in the draft Public Investment Programme of Azerbaijan.

The major international funding institutions (IFIs) involved in developing the transport sector in Azerbaijan are European Bank for Reconstruction and Development (EBRD), Islamic Development Bank, Kuwait Fund, Saudi Fund, ADB and WB.

Table 2.3 shows RTSD’s programme of road projects for the period 2005-2008.
<table>
<thead>
<tr>
<th>No.</th>
<th>Project Name</th>
<th>Length, km</th>
<th>Funding Source</th>
<th>Construction Period</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hajigabul-Kurdamir road</td>
<td>85.6</td>
<td>EBRD</td>
<td>May 2005-October 2007</td>
<td>Road construction was scheduled to begin on 14 May 2005</td>
</tr>
<tr>
<td>2</td>
<td>Kurdamir-Ujar road</td>
<td>46.2</td>
<td>Negotiations being held with</td>
<td>2006-2007</td>
<td>Draft Loan Agreement executed and submitted to Azerbaijan Government</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kuwait Fund, Azerbaijan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ujar-Yevlakh road</td>
<td>53.0</td>
<td>IsDB, OPEC, Azerbaijan Government</td>
<td>December 2005-December 2007</td>
<td>Bidding being held for project review and construction supervision</td>
</tr>
<tr>
<td>4</td>
<td>Yevlakh-Ganja road</td>
<td>88.8</td>
<td>IsDB, ADB, SDF, Azerbaijan</td>
<td>December 2005-December 2007</td>
<td>Loan Agreement concluded between with IsDB, ADB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Government</td>
<td></td>
<td>submitted Memorandum to Azerbaijan Government for</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>signing and SDF evaluation mission expected to visit Baku in</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>late August, early September</td>
</tr>
<tr>
<td>5</td>
<td>Shamkir-Qazakh road</td>
<td>73.0</td>
<td>World Bank, Azerbaijan Government</td>
<td>February 2004-August 2005</td>
<td>Road constructions works are on. The contract expected to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>prolonged to the end of year due to additional volume of work</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>project will be applied for funding of this project.</td>
</tr>
<tr>
<td>8</td>
<td>Baku-Quba-Russian state border road</td>
<td>208</td>
<td>Czech Export Bank and European</td>
<td>2005-2007</td>
<td>By prior arrangement with EBRD, Loan Agreement to the sum of 100 mln</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Length of</td>
<td>Bank of Reconstruction and</td>
<td></td>
<td>USD is expected to be signed soon. Bank's Committee of Directors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the new road will be 198 km)</td>
<td>Development</td>
<td></td>
<td>approved Loan Agreement. Loan Agreement to the sum of 180 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>USD concluded with CEB on 10 June 2005.</td>
</tr>
<tr>
<td>9</td>
<td>Alyat-Astara-Iranian state border road</td>
<td>243</td>
<td>Preliminary agreement reached</td>
<td>2006-2008</td>
<td>Loan Agreement expected to be signed with IFI this year.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Length of</td>
<td>between World Bank and Azerbaijan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>the new road will be 192 km)</td>
<td>Government on road financing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azerbaijan Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Baku Bypass</td>
<td>21.5</td>
<td>Abu Dhabi, Kuwait Fund,</td>
<td>November 2005-May 2008</td>
<td>Bidding held for choosing consultant to prepare detailed design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azerbaijan Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Baku-Shamakhi-Muganli road</td>
<td>124</td>
<td>World Bank gave preliminary</td>
<td>2006-2007</td>
<td>Bidding held for choosing consultant to prepare detailed design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>consent to finance this road.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azerbaijan Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>395.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Baku-Quba-Russian state border road</td>
<td>208</td>
<td>Czech Export Bank and European</td>
<td>2005-2007</td>
<td>By prior arrangement with EBRD, Loan Agreement to the sum of 100 mln</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Length of</td>
<td>Bank of Reconstruction and</td>
<td></td>
<td>USD is expected to be signed soon. Bank's Committee of Directors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the new road will be 198 km)</td>
<td>Development</td>
<td></td>
<td>approved Loan Agreement. Loan Agreement to the sum of 180 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>USD concluded with CEB on 10 June 2005.</td>
</tr>
<tr>
<td>9</td>
<td>Alyat-Astara-Iranian state border road</td>
<td>243</td>
<td>Preliminary agreement reached</td>
<td>2006-2008</td>
<td>Loan Agreement expected to be signed with IFI this year.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Length of</td>
<td>between World Bank and Azerbaijan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>the new road will be 192 km)</td>
<td>Government on road financing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azerbaijan Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Baku Bypass</td>
<td>21.5</td>
<td>Abu Dhabi, Kuwait Fund,</td>
<td>November 2005-May 2008</td>
<td>Bidding held for choosing consultant to prepare detailed design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azerbaijan Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Baku-Shamakhi-Muganli road</td>
<td>124</td>
<td>World Bank gave preliminary</td>
<td>2006-2007</td>
<td>Bidding held for choosing consultant to prepare detailed design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>consent to finance this road.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azerbaijan Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>992.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
All sections of the east-west corridor to Georgia are scheduled to be upgraded by 2007, with secured funding, while the North-South corridor is to be completed by 2008, with the Baku-Russian Federation section being financed by EBRD. Discussions are underway with Iran, ADB, World Bank and other funders for developing the Baku-Iranian border section. Details of ADB’s proposed Project Preparation Technical Assistance (PPTA) for the Southern Road Corridor Improvement Project (Alyat-Astara Road), which includes development of the cross-border facility at Astara, are provided below.\footnote{ADB PPTA: (N) AZE 391760-01 Southern Road Corridor Improvement (Alyat-Astara Road) on ADB website 19 July 2005. Objectives and Scope: The objective of the project is to improve a section of the road from Alyat to Astara, develop the cross-border facility at Astara, enhance sustainability by supporting sectoral policy and institutional reforms, and provide accessibility to poor areas in the south. The goal of the project is to facilitate development of the North-South Corridor that will reduce transport cost and improve regional cooperation. The project will also contribute to economic development of the southern region of Azerbaijan by providing better access to the population centres.}

Other transport infrastructure developments either recently implemented or planned in southern Azerbaijan include:

- Upgrading of Lenkaran airport to international standards.
- Construction of Astara freight terminal (completed).
- Construction of new rail link between Astara (Azerbaijan) and Astara (Iran).
- Development of cross-border facility at Astara (possibly ADB funded).

2.1.4 Traffic Safety

Road traffic accidents can have a variety of causes, as indicated in Table 2.4. All of the hazards listed in the table were identified during one five-hour journey between Baku and Lenkeran in August 2005. A number of incidents involving potential head-on collisions between vehicles were noted at that time.
Table 2.4 Traffic Hazards on Azerbaijan Roads

<table>
<thead>
<tr>
<th>Category</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road-Related Hazards</td>
<td>Uneven road surface</td>
</tr>
<tr>
<td></td>
<td>Tight corners/poor visibility</td>
</tr>
<tr>
<td></td>
<td>Lack of distinct road junctions</td>
</tr>
<tr>
<td></td>
<td>Inadequate road furniture, e.g. road markings and guard rails</td>
</tr>
<tr>
<td></td>
<td>Inadequate directional road signage</td>
</tr>
<tr>
<td></td>
<td>Inadequate advance warning of road works and temporary contra-flow</td>
</tr>
<tr>
<td>Transport-related Hazards</td>
<td>Overloaded vehicles</td>
</tr>
<tr>
<td></td>
<td>Defective/un-roadworthy vehicles</td>
</tr>
<tr>
<td></td>
<td>Slow vehicles, e.g. road maintenance and agricultural vehicles</td>
</tr>
<tr>
<td></td>
<td>Vehicles travelling at night with no or inadequate front and rear lights</td>
</tr>
<tr>
<td>Driver Behaviour-related Hazards</td>
<td>Inexperienced or inadequately trained drivers</td>
</tr>
<tr>
<td></td>
<td>Drunk and/or over-tired drivers</td>
</tr>
<tr>
<td></td>
<td>General poor standard of driving</td>
</tr>
<tr>
<td></td>
<td>Drivers driving too fast for road conditions</td>
</tr>
<tr>
<td></td>
<td>Drivers mis-judging the distance between them and on-coming vehicles</td>
</tr>
<tr>
<td></td>
<td>when overtaking or when crossing opposite carriageway</td>
</tr>
<tr>
<td></td>
<td>Drivers mis-judging the length of vehicles they are overtaking</td>
</tr>
<tr>
<td></td>
<td>Drivers not indicating prior to leaving or turning across carriageway</td>
</tr>
<tr>
<td></td>
<td>Drivers stopping suddenly, without warning (e.g. drop/pick up passengers</td>
</tr>
<tr>
<td></td>
<td>or to buy fruit and vegetables or other goods from roadside vendors)</td>
</tr>
<tr>
<td></td>
<td>Drivers stopping to pick up passengers whilst driving around roundabouts</td>
</tr>
<tr>
<td></td>
<td>Drivers flashing headlights to alert on-coming traffic of their existence,</td>
</tr>
<tr>
<td></td>
<td>which has effect of temporarily blinding driver of on-coming vehicles</td>
</tr>
<tr>
<td>Other Hazards</td>
<td>Pedestrians walking alongside or crossing road</td>
</tr>
<tr>
<td></td>
<td>Unsupervised herds of cattle, sheep and goats crossing road</td>
</tr>
<tr>
<td></td>
<td>Unsupervised flocks of geese crossing road</td>
</tr>
<tr>
<td></td>
<td>Lone cattle standing in road at night</td>
</tr>
<tr>
<td></td>
<td>Piles of building materials stored temporarily in road</td>
</tr>
</tbody>
</table>

2.2 Proposed Overall Project

The main Project objective is to reduce road transport costs and improve access, transit and safety within Azerbaijan’s East-West and North-South corridors, through the implementation of a number of sub-projects involving the rehabilitation of the Baku-Shamakhi road and the upgrading of some sections of the Alyat-Astara (Baku-Iran border) road.

For road users, the Project would lead to better road quality meeting mid-term traffic projections, better safety through new alignments and bypass of cities, avoiding hazardous crossing of villages by heavy transit traffic, lower travel costs and a shorter travel time.

Sustainability for Azerbaijan is expected to come from good returns on investments through the strong growth of the traffic on the concerned roads, the decrease in fatal injury thanks to bypasses of cities and better safety standards, and the development of improved road technical specifications. It would enhance economic integration within the country and foster economic growth, especially non-oil growth which is more likely to reduce poverty.

The proposed Project would focus on:

(i) **Rehabilitating the 2nd category road linking Baku to Shamakhi**

Approximately 120 km of the Baku-Shamakhi road between Baku (km 10) and Muglani village, west of Shamakhi (km 134) needs urgently to be repaired, both for the economic re-vitalization of the region and for safety reasons.
(ii) **Upgrading some sections of the Alyat-Astara road of the Baku-Iran road (M3)**

The Alyat-Astara road, with a length of 230 km, would be widened to a four lanes 1st category road mostly along a new alignment (see options discussed in Section 2.3), which would shorten it by about 40 km and bypass the main cities.

The proposed Project also offers an opportunity to further modernize the sector, through training of RTSD staff in project planning and monitoring, enhanced design of roads and improved quality of data to plan maintenance.

### 2.3 Baku-Shamaki Road

#### 2.3.1 ‘Without Project’ scenario

The Baku-Shamakhi road is a section of the shortest way from Baku to Georgia and to western Azerbaijan. As well as many long, straight sections through unpopulated semi-desert areas, the road includes a number of steep, winding sections through the mountains with tight, blind corners. The road surface, which was constructed around “40 years ago” (Head, Local Executive Power, Shamakhi) is uneven in many places due to structural problems, damage from overloaded heavy vehicles and repeated ‘patching’ of the surface during road maintenance.

According to RTSD, 33 accidents were registered in the course of the year 2004 with 29 fatalities and 43 injured. This trend continues in 2005, where 11 accidents resulted in 6 fatalities and 9 injured over a 5 months period between January and May. The aftermath of one such head-on collision between a truck and a car involving several fatalities was observed during a site visit in July 2005. The accident occurred on a long, straight section of road with excellent visibility, a good surface without potholes and dry road conditions. The most likely reason was over-speeding and driver error. Additional accident figures are given in Chapter 4.1.

Without the Project, the overall condition of the Baku-Shamakhi road is likely to deteriorate further and, in the absence of improved driver behaviour, the number of accidents with associated injuries and fatalities will inevitably increase.

#### 2.3.2 Upgrading scenario

The proposed Project would focus on rehabilitating km 10 to km 134 of the 2nd category road linking Baku to Muglani village, west of Shamakhi. According to the ToR for the *Preparation of Detailed Design and Environmental Assessment of Baku-Shamakhi-Muglani section of the Baku-Shamakhi-Yevlakh road*, a six month study with WB funding which is currently at the Tender stage, the proposed works will have the following features:

- Reconstruction of the existing two lane road including pavement strengthening, with possible spot realignments at locations where the current design jeopardises traffic safety;
- Widening by adding a climbing lane where a long and steep gradient may affect travel speed or safety because of heavy vehicle traffic;
- Maximum total width of the road to be constructed is 11.5 m total (15 m with climbing lanes);
- Lane width is 7.5 m (2x3.75 m + 3.5 m for climbing lane);
- Maximum shoulder width is 2 m (2x2 m), paved with asphalt concrete;
- Cross-fall in the carriageway is 2% and in the shoulders is 4%;
- Intersections with other roads designed to international standards.

All of the proposed works will be accommodated within the existing Right of Way (ROW), which extends 30m to either side of the centreline of the road (i.e. 60m wide in total).
Improvements to the road will include traffic safety features including illumination, road signs, road marking and road furniture, including appropriate road safety barriers (guardrails). Other issues to be considered include the need for construction of culverts and animal crossings, and the division of the works into lots (packages) to allow simultaneous construction without interference between lots.

An overview of existing environmental and socio-economic conditions of the Baku-Shamakhi region is given in Chapter 4. A broad assessment of the key potential environmental and socio-economic impacts of upgrading the existing road is described in Chapter 6.

2.4 Alyat-Astara Road

Four alternative development options for the Alyat-Astara road, including the ‘without project’ scenario, are discussed below. A schematic overview of the alternative development options is presented in Figure 2.1.

2.4.1 ‘Without Project’ scenario

The Baku-Alyat-Astara road (M4/M3) is a 313 km road which runs from Baku to the Iranian border in a north-south direction. Between Baku and Alyat, the road is a four-lane section of the M4 which links to the newly improved Alyat to Hajigabul (Qazimammad) road. Between Alyat and Astara, the 240 km long and mainly two-lane M3 links the district centres of Alyat-Salyan-Bilasuvar-Jalilabad-Masally-Lenkeran-Astara. According to a road engineer in Jalilabad, “the existing road was built in 1941, during the war. It was very difficult to build a normal road. It was planned to build a road near to the railway (which is an ancient north-south route) but there was not enough money”.

The surface condition of the existing M3 road is variable, particularly in sections between the district centres. From Alyat, the road passes through the centre of Salyan (crossing the Kura river by a major bridge), via a winding route through Bilasuvar (where a 11.8 km bypass has been planned and partly constructed), bypassing the centre of Jalilabad, through the built up areas of Goytapa and Masally, via a T-junction with the Qizilagac-Qumbasi extension of the M3 near Tazakand and the built up area of Leman (Port Illic), around the bypass at Lenkeran city and via a narrow, winding route to Astara. The terrain through which the road passes is effectively flat up to the section between Lenkeran city and Astara, where the road has a slightly undulating profile along the base of the hills.

Traffic on Baku to Astara is currently about 10,000 vehicles per day (vpd) between Baku and Alyat, falling to around 7,000 vpd after Alyat and then ranging between 3,000 to 5,000 vpd near the Iranian border. Table 2.5 shows the numbers and nationalities of lorries entering and leaving Azerbaijan through the Astara frontier per year from 1996-2003. Most vehicles entering the country are Iranian; most vehicles leaving are Azeri. Access to information on facilities in the border area is restricted. The road conditions south of the border are unknown. Factors other than road conditions, such as international agreements/tensions and official/unofficial tariff levels, may affect levels of cross-border traffic.

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12 Work on site associated with the reconstruction of the two-lane Hajigabul to Kudamir road, due to be reconstructed (and widened to four-lane standard for 3.5 km) with EBRD funding, is currently scheduled to commence in September 2005.
13 According to discussions at the offices of the Local Executive Power, the Bilasuvar bypass is 60% constructed and requires “just asphalting and construction of a bridge”. The bypass effectively cut the corner of the existing M3, reducing the route by 4 km and remove transit traffic from the centre of the city.
15 It is questionable whether these traffic figures, even with optimistic traffic projections, would in themselves justify construction of a new 4 lane road.
16 The term lorry is not defined in the report.
### Table 2.5 Number of lorries crossing Azerbaijan-Iran border at Astara (1996-2003)

<table>
<thead>
<tr>
<th>Nationality/Year</th>
<th>Azerbaijan</th>
<th>Iran</th>
<th>Turkmenistan</th>
<th>Turkey</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lorries entering Azerbaijan at Astara</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>1,459</td>
<td>11,778</td>
<td>0</td>
<td>27</td>
<td>28</td>
<td>13,292</td>
</tr>
<tr>
<td>1997</td>
<td>2,471</td>
<td>10,169</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>12,647</td>
</tr>
<tr>
<td>1998</td>
<td>3,240</td>
<td>9,195</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12,399</td>
</tr>
<tr>
<td>1999</td>
<td>3,286</td>
<td>9,830</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13,116</td>
</tr>
<tr>
<td>2000</td>
<td>3,761</td>
<td>11,491</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>15,254</td>
</tr>
<tr>
<td>2001</td>
<td>4,335</td>
<td>9,948</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>14,290</td>
</tr>
<tr>
<td>2002</td>
<td>5,856</td>
<td>7,023</td>
<td>0</td>
<td>0</td>
<td>45</td>
<td>12,924</td>
</tr>
<tr>
<td>2003</td>
<td>7,224</td>
<td>4,151</td>
<td>0</td>
<td>6</td>
<td>193</td>
<td>11,774</td>
</tr>
</tbody>
</table>

| Lorries leaving Azerbaijan at Astara | | | | | | |
| 1996             | 1,764      | 2,011 | 0             | 5      | 12    | 3,792 |
| 1997             | 948        | 767   | 0             | 3      | 3     | 1,721 |
| 1998             | 217        | 1,187 | 0             | 2      | 1     | 1,407 |
| 1999             | 558        | 1,821 | 0             | 1      | 1     | 2,381 |
| 2000             | 1,291      | 1,006 | 0             | 0      | 4     | 2,301 |
| 2001             | 1,106      | 824   | 1             | 0      | 9     | 1,940 |
| 2002             | 2,032      | 623   | 0             | 0      | 9     | 2,664 |
| 2003             | 5,032      | 596   | 0             | 0      | 36    | 5,658 |

**Total lorry movements across border at Astara**

<table>
<thead>
<tr>
<th>Total</th>
<th>Average per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>17,084</td>
</tr>
<tr>
<td>1997</td>
<td>14,368</td>
</tr>
<tr>
<td>1998</td>
<td>13,806</td>
</tr>
<tr>
<td>1999</td>
<td>15,497</td>
</tr>
<tr>
<td>2000</td>
<td>17,555</td>
</tr>
<tr>
<td>2001</td>
<td>16,230</td>
</tr>
<tr>
<td>2002</td>
<td>15,588</td>
</tr>
<tr>
<td>2003</td>
<td>17,432</td>
</tr>
</tbody>
</table>

Source: Passillo Consultants (2005)

According to RTSD, there were 95 road accidents reported during 2005 with 42 fatalities and 139 people injured. During January-May 2005, there were 11 accidents reported leading to 6 deaths and 9 people injured. Two of the deaths in 2004 in two separate incidents were attributed to the road condition. Typical traffic hazards observed during just one recent car journey on the Alyat-Astara road are listed in Table 2.4 and further figures provided in Chapter 5.1.
Insert Figure 2.1 Schematic Overview of Alternative Development Options
Without the some form of intervention and investment in addition to the current routine road maintenance programme, the condition of some sections of the Alyat-Astara road is likely to deteriorate further.

2.4.2 Upgrading existing road with selected bypasses

One of the options for improving the Alyat-Astara road would be to widen the existing road to four-lane standard between settlements and to construct bypasses around existing centres of population. During meetings with officials and representatives of municipalities at the offices of the Local Executive Powers in Lenkeran city, Masally, Jalilabad, Bilasuvar and Salyan, this option was either strongly preferred or discussed as a viable alternative to construction of a new road. Only in Masally and Astara was this not considered to be the preferred option due to:

- the extent of the built up area around Goytapa and Masally,
- the winding nature of the existing road and the location of adjacent graveyards and mosques between the Lenkeran bypass and the border at Astara (see Appendix C for comments from the district meetings).

At Lenkeran city, it was suggested that if a new road was constructed, it should link with the existing bypass around the city.

2.4.3 Iranian study

In August 2004, an Iranian-funded consultancy was appointed to identify potential alignments for improvements to the Alyat-Astara road. The Initial Report describing five alignment variants A-E was submitted to RTSD in February 2005. Access to this document has not been made available to the RER study team. It is understood from information received via WB that the variants are approximately as follows:

- **Variant A**: Alyat-Yenikand, Yenikand-Salyan, Salyan-Shorsulu – construct new M4-M3 link at Astara and all new road construction bypassing Salyan; Shorsulu-Sarcuvar, south of Masally – all new road construction approximately parallel to and west of the existing Baku-Astara railway (referred to elsewhere in this report as the ‘Railway’ alignment), intersecting with an existing road near Jalilabad and up to three existing roads near Masally, Sarcuvar-Lenkeran-all new road construction west of existing road; Lenkeran-Astara – all new road construction east of existing road; construction of 7 new intersections with existing roads/main cities at Astara, Yenikand, Shorsulu, Jalilabad, Masally, Lenkeran and Astara; construction of 52 new bridges;
- **Variant B**: Alyat-Yenikand – construct new M4-M3 link at Alyat then widen existing road to Yenikand, new road construction bypassing Yenikand; Yenikand-Shorsulu – widen existing road between Yenikand and Salyan; Salyan-Shorsulu – link to Variant A at Shorsulu (no details of intersections/bridges);
- **Variant C**: Shorsulu-Hasanli – construct new direct route east of railway linking Shorsulu and existing road at Hasanli, near Masally (no details of intersections/bridges);
- **Variant D**: Shorsulu-Sarcuvar – construct new direct route (referred to elsewhere in this report as the Direct alignment) between Shorsulu-Sarcuvar, east of railway. No intermediate links to existing roads (construct one new bridge).
- **Variant E**: Lenkeran-Astara – all new road construction lying west, then east, then west, then east of the existing road (no details of intersections/bridges).

It is important to note that the proposed alignment for the new road (and its variants) identified by the Iranian consultants only exist currently as a number of indicative lines on a 1:100,000 map dating back 17 One intersection at Masally planned; potential for additional links to existing roads near Goytapa and Hasanli, near Masally
to the period 1974-1991, so it is not possible at this stage in Project development to identify accurately where the proposed road alignment(s) will be located, nor what areas will be included within the required 60 m wide road corridor.

The first Interim Report (issued in June 2005)\(^{18}\) covers the section between km 70 and km 102. It is understood that RTSD’s preferred alignment between Alyat and Salyan is Variant B of the Iranian study, including an intersection linking the M3-M4 at Alyat and bypasses around Yenikand and Salyan as described in Variant A\(^{19}\).

A three month study funded by WB for the \textit{Environmental Assessment and Preliminary Design for a 22 km section of the Alyat-Astara Road} between Alyat and Salyan is currently underway (August/September 2005). In this section, it is proposed to construct a four-lane road within the existing Right of Way (ROW)\(^{20}\). No land acquisition or resettlement issues will occur in this section. According to the ToR, the road will have the following features:

- Reconstruction of the existing 2 lane 22 km road section to 4 lane standard;
- Maximum width of the road is 27.5 m;
- Carriageway width is 15 m (2x7.5 m);
- Number of lanes is 4;
- Width of shoulder is 3.75 m (2x3.75 m) of which 2.5 m (2x2.5 m) should be paved with asphalt concrete (the indicative slope ratio is 1:3);
- Cross-fall in the carriageway should be 2% and in the shoulders 4%;
- Central strip width should be 1.5-5 m, depending on the equipment it carries. If it is less than or equal to 3 m wide, it will be stabilised and surfaced to facilitate maintenance. If not, it can be grassed and planted with shrubs, unless its width and the site topography enable the natural ground and existing vegetation to be preserved. In this case, a 1 m wide berm is maintained at the edge of the left hard strip;
- Separate-graded intersections should be designed, if required, in intersections of other roads with the Alyat-Astara road. The road should have dual carriageway with 4 lanes. The pavement should be designed in accordance with national standards.

Further studies are currently underway by the Iranian study consultants to cover the remainder of the route, none of which include proposals to improve any sections of the existing M3 road.

\textbf{2.4.4 Direct alignment}

It is understood that the alignment which is currently preferred by RTSD for the section south of Yenikand - the one for which studies by the Iranian consultants are ongoing - includes a direct route (Variant D of the Iranian study) across an extensive area of wetlands and pasturelands between Shorsulu and Sarcuvar\(^{21,22}\), south of Masally, where it crosses the existing M3. Construction of this alignment would shorten the existing route between Baku and Astara by about 40 km.

It is understood from discussions with RTSD’s Investment Division and Road Maintenance Department that the main attraction of this alignment is the reduction of the distance between Baku and Astara. The comment was also made that this road may be a toll road.

\(^{18}\) Passillo Consultants (2005), already referred to

\(^{19}\) RTSD letter to Passillo consultants ref. 02/310 dated 4th March 2005: ...we inform that giving preference to the version of choice A and approaching to the version B at the distance of 0+000 km – 29+000 of this version...

\(^{20}\) Right of Way extends 30 m to either side of the centreline of the road (i.e. 60 m wide in total).

\(^{21}\) RTSD letter to Passillo consultants ref. 02/310 dated 4th March 2005: ...we inform that giving preference to the version of choice A ... and using of the version D at the part of 86+000 km to 133+400 km...

\(^{22}\) In July 2005, RTSD indicated that the RER should not consider any variants apart from its preferred option. This approach would not have been in accordance the ToR.
As one person commented during the local consultations "What is your objective here? Is it to link Alyat to Astara or is it to serve the people?"

If the main purpose of the proposed Project is solely to expedite movement of traffic between the Azerbaijan-Iran border at Astara and Baku, then distance is one of the factors to take into account. According to available information, there would be no intersections constructed between this alignment and existing cities between Shorsulu and Lenkeran: it seems unthinkable that there would not be an intermediate intersection located somewhere near Sarcuvar, Masally and the analysis in the RER is based on this assumption.

However, if the purpose of the Project not just to expedite Astara-Baku traffic movements but is also to help facilitate widespread medium-to-long term economic benefits by provision of improved transport links between major centres of population in southern Azerbaijan, the Astara border, Baku and other parts of the country and region, then other factors apart from distance – for example, the number of links between the new road and the existing road network – need to be taken into account.

2.4.5 ‘Railway’ alignment

This alignment (Variant A of the Iranian study) for the section between Shorsulu and Sarcuvar runs approximately parallel to and west of the existing Baku-Astara railway, intersecting with an existing road near Jalilabad and up to three existing roads near Masally.

Table 2.6 summarises the approximate length and landtake outside the existing ROW, assuming a 60 m wide road corridor, required by the Variants A/B and D.

<table>
<thead>
<tr>
<th>Section</th>
<th>Location (approx.)</th>
<th>Length (approx.)</th>
<th>Landtake (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alyat-Yenikand</td>
<td>Km 1-km 30</td>
<td>30 km</td>
<td>3024 ha</td>
</tr>
<tr>
<td>Yenikand-Salyan (Kura river)</td>
<td>Km 30-km 53</td>
<td>23 km</td>
<td>138 ha</td>
</tr>
<tr>
<td>Salyan-Shorsulu (M3 crossing)</td>
<td>Km 53-km 79</td>
<td>26 km</td>
<td>156 ha</td>
</tr>
<tr>
<td>Shorsulu-Sarcuvar (M3 crossing)</td>
<td>Km 79-km 137</td>
<td>58 km</td>
<td>348 ha</td>
</tr>
<tr>
<td>- ‘Railway’ alignment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sarcuvar-Lenkeran (M3 crossing)</td>
<td>Km 137 – km 167</td>
<td>30 km</td>
<td>180 ha</td>
</tr>
<tr>
<td>Lenkeran-Astara</td>
<td>Km 167 – km 197</td>
<td>30 km</td>
<td>180 ha</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>197 km</td>
<td>1,032 ha</td>
</tr>
<tr>
<td>Variant D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorsulu-Sarcuvar (M3 crossing)</td>
<td>Km 79-km 13</td>
<td>54 km</td>
<td>324 ha</td>
</tr>
<tr>
<td>- Direct alignment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>193 km</td>
<td>1,008 ha</td>
</tr>
</tbody>
</table>

An overview of existing environmental and socio-economic conditions of the Alyat-Astara region is given in Chapter 5. A broad assessment of the key potential environmental and socio-economic impacts of these alternative development scenarios – excluding the 22 km section between Alyat and Yenikand for which detailed design is currently being undertaken - is provided in Chapter 7.

2.5 Implementation Arrangements

The proposed highway development programme is to take place over a period of several years. The first year’s implementation programme will rehabilitate sections of the Baku-Shamakhi road and the first 22 km of the M3 Motorway south of Alyat. Other works will be advanced in year two or later. It is currently envisaged that there will be between 8 and 12 sub-projects.

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23 One intersection at Masally planned; potential for additional links to existing roads near Goytapa and Hasanli, near Masally
24 Most of proposed works involve widening existing road within existing ROW
25 One hectare = 10,000 square metres
The overall engineering feasibility study for RTSD’s preferred option is currently being undertaken. The EA&MF and RPF are being developed in parallel with the RER. The EA&MF and RPF are practical guidance documents outlining the procedures for the management of environmental and social issues of sub-projects. Detailed designs will be produced for each sub-project, with the design phase for each section including studies to develop appropriate site-specific EIA, EMP and LAP/RAP. The environmental assessment work for all sub-projects may be let as a single contract.
3 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

"Near the road the Ministry of Transport is already (currently) demolishing all things for the widening of the road. If the settlement or shop was built up to 1989, it has not been demolished. But if it was built after 1989, it is demolished without compensation."

“That is the law on transit roads: all development must be 30 m away from either side of the centre-line."

“I had a shop near the road (which was demolished without compensation) although I had a document (giving permission) from the Local Executive Power.”

Discussions in Lenkeran, 9th August 2005

3.1 Institutional Framework

3.1.1 Environment

The key environmental institution in Azerbaijan is the Ministry of Ecology and Natural Resources (MENR). MENR, which was formed from the former State Committee for Ecology and Natural Resources Utilisation, was established by Presidential Decree in 2001. At that time, MENR took over the functions of several other state bodies such as the departments of Hydrometeorology, Geology, Forestry and Fishery. MENR’s activities are sub-divided into the following main areas:

- Environmental policy development
- Environmental protection
- Water monitoring and management
- Protection of marine (Caspian Sea) bio-resources
- Forest management
- Bioresources and protected areas management

MENR’s State Ecological Expertise (SEE) department (under the Department of Environmental Policy and Environmental Protection) is responsible for the review and approval of environmental impact assessments (EIAs) submitted by developers.

The other government institution involved in the preparation and implementation of the Project is RTSD, in particular the Highway II Project Implementation Unit and the Ecology and Safety Sector (ESS), a relatively new department established under RTSD’s Road Maintenance Unit. RTSD’s ESS will have the responsibility for ensuring the implementation of the recommendations contained in the EA&MF and for ensuring compliance with national environmental standards.

There are over 60 ecological Non-Government Organisations (NGOs) in Azerbaijan.

3.1.2 Land Acquisition and Resettlement

The RTSD’s Road Protection Service (RPS) is responsible for control of the road reserve and vehicle overload control. The RPS has spearheaded the preparation of the inventories of properties within the road reserve, coordinating the local representatives of each of the authorities with designated responsibilities for the inventory. The RPS has a central office in Baku, and several regional offices throughout the country.

The RTSD (through its Traffic Regulation sector) is required to issue permits to build and operate developments within the road reserve. This requirement was first introduced in the 1989 Decree No. 461, however most of the owners of buildings within the road reserve either (i) did not apply to RTSD for this permission; or (ii) constructed buildings within the 60 metre wide road reserve, despite having received a permit from RTSD for construction outside the road reserve.
Protection of the road reserve, and prevention of further encroachment is also the responsibility of the Ministry of Transport (designated to the RPS) with the Ministry of Internal Affairs and local Executive Authorities (local district governments).

The local Executive Powers and Municipalities have general powers for approving new building developments in respect of planning requirements, appearance, architectural style and construction standards. Local officers are required to instruct building owners to stop construction of illegal buildings in the road reserve, and obliges them to seek permission from the Ministry of Transport and the State Committee on Mapping and Land approval for any such developments. The February 2004 Decree also requires the Local Executive Powers and Municipalities to participate with the Ministry of Internal Affairs, Ministry of Economic Development, Ministry of Finance and the State Committee of Construction and Architecture in preparing inventories of all structures in the road reserve, identifying their legitimacy and value. These inventories are required to be submitted to the Cabinet of Ministers who then directs appropriate action.

The Land Acquisition Department (LAD) is relatively a new department within RTSD. This department will be tasked with carrying out future resettlement procedures and will have that have responsibility for the coordination studies including their consultation and disclosure; liaison with the relevant ministries and agencies regarding approvals and clearances; and the practical implementation of related plans.

### 3.2 Legal, Regulatory and Policy Framework

#### 3.2.1 National Policies on Environment, Poverty Reduction & Economic Growth

National Millennium Development Goals (MDGs) which are relevant to the proposed Project are listed in Table 3.1.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 1: Reduction of poverty</td>
<td>Target 1: Reduce, between 2002 and 2015, the proportion of people whose per capita monthly income is below the country’s absolute poverty line.</td>
</tr>
<tr>
<td></td>
<td>Target 2: Reduce, between 2002 and 2015, the proportion of people in extreme poverty. Halve the share of the population living below the relative poverty line of the country.</td>
</tr>
<tr>
<td>Goal 7: Ensure environmental sustainability</td>
<td>Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources</td>
</tr>
<tr>
<td></td>
<td>Indicator 27: Proportion of land covered by forest</td>
</tr>
<tr>
<td></td>
<td>Indicator 28: Land area protected to maintain biological diversity</td>
</tr>
</tbody>
</table>


As outlined in Chapter 2, the government has designed a State Programme on Poverty Reduction and Economic Development (SPPRED). Selected policy measures and actions within SPPRED which have been to help Azerbaijan achieve its MDGs of poverty reduction and environmental sustainability and which are relevant to the proposed WB Programme are listed in Table 3.2.

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26 As multiple permits are required for construction in the right of way, those from local executive authorities and municipalities are only part of this process. Gaining all required permits is the responsibility of the applicant, however the February 2004 decree law places new emphasis on the role of local agencies in ensuring that the Ministry of Transport approvals are in place before they grant local approval.
Table 3.2  Azerbaijan State Programme on Poverty Reduction & Economic Growth (2003-2005) - selected policies

<table>
<thead>
<tr>
<th>Measures and Actions</th>
<th>Date of Implementation</th>
<th>Responsible Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Investment in Utilities and Infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstructing motor-roads</td>
<td>Ongoing-2005+</td>
<td>Ministry of Economic Development (MED),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ministry of Transport (MoT), IFIs</td>
</tr>
<tr>
<td>Construction of new railway Astara (Iran)-Astara (Azerbaijan)</td>
<td>2003-2005+</td>
<td>MED, MoT</td>
</tr>
<tr>
<td>Environmental Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involving the public in assessment of environmental impact</td>
<td>2003-2005+</td>
<td>MENR, LEB</td>
</tr>
</tbody>
</table>

Source: www.economy.gov.az/PRSP/

3.2.2 National Laws and Regulations on Environmental Protection

The constitution of the Republic of Azerbaijan defines principles for environmental protection, ownership of natural resources and regulations for their use. The legislative framework relating to the environment consists of:

- Parliamentary legislation that establishes the State regulation of strictly protected natural areas, and the protection and use of the environment and biodiversity
- Presidential Decrees and orders and the resolutions of the Cabinet of Ministers that ensure the implementation of the major provisions of the laws
- By-laws of the executive authorities (Ministries and Committees) that specify the activities to implement the laws
- International Agreements and Conventions to which Azerbaijan is a signatory


National EIA Policy, Legal and Regulatory Framework

The current EIA system in Azerbaijan is rooted in the old Soviet central planning system and largely follows the procedure of State Ecological Expertise (SEE) adopted by the former Soviet Union in the late 1980s. Unlike EIA, and in line with the definitions of SEE in the Law on Environmental Protection, the core purpose of the SEE system lies in the formal verification by state authorities of all submitted developments for their possible environmental impacts, regardless of their scale, sector type or nature. In addition to EIA, Strategic Environmental Assessment (SEA), which deals with policies, plans and programmes, is another task within the responsibilities of SEE administration. To date, however, SEA has never been carried out in the country.

The basic procedures for the conduct of EIA are laid down in the 1996 *Handbook on the EIA Process in Azerbaijan*. Although these provisions are not technically legally binding, compliance with them is to all intents and purposes regarded as mandatory.

Various independent and comprehensive studies on the environmental policy of Azerbaijan and the related legal and regulatory framework have recently concluded that there is an urgent need for preparing a new national EIA legislation. A specific issue raised in this context was the requirement to streamline the EIA process with the provisions of various international environmental Conventions that Azerbaijan is a party to.

It is understood from discussions with MENR’s SEE in August 2005 that a new guidance document for EIA is in the process of being prepared. The main difference between the existing guidance and the new one is the provision for public involvement in the EIA process and a screening list for projects requiring EIA. The policy of involving the public in the assessment of environmental impact is one of a range of measures included in the *Azerbaijan State Programme on Poverty Reduction and Growth (SPPRED)* due for implementation in the period 2003-2005. Legal status is also envisaged for this document through approval by the Cabinet of Ministers.

The legal acts and documents that form the basis for Azerbaijan’s current EIA system are listed in the following table.

**Table 3.3 Legislative Basis of EIA System in Azerbaijan**

<table>
<thead>
<tr>
<th>Legislative Document</th>
<th>Year of Adoption</th>
<th>System Implied</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIA Handbook</td>
<td>1999</td>
<td>EIA</td>
</tr>
<tr>
<td>Law on Environmental Protection, Clause VIII: State Ecological Expertise (SEE)</td>
<td>1999</td>
<td>SEE</td>
</tr>
<tr>
<td>Decree on the Ratification of the Espoo Convention</td>
<td>1999</td>
<td>EIA</td>
</tr>
<tr>
<td>Decree Accession to the Aarhus Convention</td>
<td>2000</td>
<td>EIA</td>
</tr>
</tbody>
</table>

**Law on Environmental Protection**

Environmental protection in Azerbaijan is governed by the *Law on Environmental Protection* (EP) of 1999. The Law establishes the main environmental protection principles, and the rights and obligations of the State, public associations and citizens regarding environmental protection. The Law states that SEE is the official EIA procedure in Azerbaijan, but it is not a specific EIA related legislative document. According to Article 54.2 of the Law, EIAs are subject to SEE which means that the MENR is responsible for the review and approval of EIA reports submitted by developers. The Law on EP defines SEE as ‘the identification of conformity of the environmental conditions with qualitative standards and ecological requirements in order to identify, prevent and forecast the possible negative impact of an economic activity on the environment and related consequences’.

The Law on EP establishes the basis for the SEE procedure, which can be seen as a stand-alone check of compliance of the proposed activity with the relevant environmental standards (e.g. for pollution levels and discharges, noise). All EIA reports are prepared by developers are submitted to the

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28 Technical Assistance Consultancy for Institutional Strengthening (August / September 2004), which included a Legislative Gap Analysis and was conducted with support of the EU
30 UNECE Convention on EIA in a Trans-boundary Context
31 UNECE Convention on Access to Information, Public Participation and Decision Making and Access to Justice in Environmental Matters
environmental authority (MENR) responsible for SEE in accordance with Article 54.2 of the law. In addition, the Law on EP determines that projects cannot be approved without a positive SEE resolution.

In its Articles 81 and 82, the Law on EP specifically provides for the application of international agreements in case their provisions are different from those of the Azerbaijani legislation. This relates, among other things, to the Espoo and Aarhus Conventions, which therefore become directly applicable to the EIA process in Azerbaijan (see section 2.4).

The EIA Handbook

The procedures for the conduct of EIA are laid down in the Handbook for the EIA Process in Azerbaijan of 1996, which defines EIA as 'a process whereby the potential environmental consequences of development proposals are identified and evaluated from the point of view of the physical, biological, and socio-economic environment, and ways and means are developed by which negative impacts are either avoided or minimised to acceptable levels' (paragraph 1.1). This definition encourages developers to design their proposals in a way least harmful for the environment.

According to these procedures the following phases can be distinguished in the EIA process in Azerbaijan:

(i) Submission of Application and Initial Examination

The developer submits to MENR head office or any of its regional branches a formal application, the format and content of which must comply with the indications given in section 7.2 of the Handbook. During the first stage of the EIA process, which is one month, an initial examination of the application of the proposed activity is made by the MENR and the expected impacts of the proposed activity are considered. This may include preliminary consultations with other agencies, (non government organisations) NGOs, experts and initial public inquiries. On the condition that the activity is likely to cause only minor impacts on the environment, the application may be approved with some conditions. If the activity is assessed to result in significant impacts, a full EIA is required. A decision on processing charges is taken and a scoping meeting of representatives of the applicant, invited experts and invited members of the public is organized and chaired by the MENR. Based on the outcome of this meeting, the MENR will notify the developer on the required scope and depth of the investigation and public consultation during the EIA study.

(ii) Review of EIA Report through MENR/the Environment Expert Review Group

The second stage of the EIA process lasts three months, during which the EIA documentation that has been submitted by the developer is investigated by MENR. At this stage, an environment review expert group of 5-11 skilled and experienced members (e.g. members of the Academy of Science, university staff or officials from other ministries) is formed. There are no firm requirements on group composition, but MENR has a roster of experts and composes each commission based on case-specific considerations. This environment review expert group is chaired by MENR and carries out the public submissions, investigations and consultations. Finally, a written review of documentation together with recommendations is submitted by the environmental review expert group to the MENR.

(iii) Decision by MENR

At this stage, MENR decides on whether to refuse the application or to approve it, with or without conditions. Conditions for the approval that might be typically be considered in the present context mainly relate to the construction phase and may include site management; noise; dust, discharges to the air land, subsurface or water, solid waste management, fire risk, emergency contingency plans, etc. If the application is approved with conditions, either the activity starts or the developer decides to
appeal against the conditions. If the application is accepted, the developer must provide a report to MENR on progress within 12 months of the MENR decision.

During construction of the project, the developer must monitor parameters as indicated in MENR’s approval. If project designs change significantly from those studied in the feasibility phase EIA, additional reports on the impacts of the changes may be requested by MENR. Controls are made by MENR on the accuracy and the reliability of the developer’s monitoring results. If it appears that there is a risk of the conditions being breached, the MENR will issue a warning on the developer. If the conditions are breached, the developer is obliged to stop whatever activity is causing the breach of the conditions. In such a case the MENR may reconsider the approval, possibly with the participation of the Environmental Review Expert Group, and the conditions of approval may be reviewed.

Figure 3.1 show the sequence of events and the actors involved at the various stages of the EIA process.

The procedures of the Handbook on EIA in Azerbaijan cover all major stages/components of the internationally recognized EIA process like screening, scoping, conduct of base-line studies, EA report preparation and review and post-EIA monitoring. The Handbook establishes the main principles and elements of the ‘western-type’ EIA process, i.e.

- the sequence of events, roles and responsibilities of developers and Government institutions, charges;
- the purpose and scope of the EIA report;
- public participation in the process;
- the environmental review and decision;
- the process involves various stakeholders, considers public opinion and aims at environmentally conscious decision making.

A distinctive screening list with activities that are likely to cause significant environmental impact is not established either by the Law on EP nor by the EIA Handbook.

In relation to public participation, the Law on EP and the EIA Handbook do not contain clear regulations/procedures on public participation and the access for the public to the relevant information and thus do not meet international requirements for public participation at the present time. However, from discussions in August 2005 with MENR’s Deputy Director for State Ecological Expertise, it is understood that new national guidance incorporating these requirements is in the process of being prepared.

Further information relating to the EIA process in Azerbaijan, including how its requirements will be taken into account in Project preparation and implementation, is presented in the Environmental Assessment and Management Framework (EA&MF).
Figure 3.1 EIA Procedures According To: ‘Handbook for the EIA Process in Azerbaijan’ 1996

for a better overview this chart only shows the procedure for projects of expected significant environmental / social impacts requiring full EIA and does not cover the appeal process

Initial Examination
within 1 month after submission of application

Preliminary consideration of application and initial consultation with other agencies, experts and the public

Decision on EIA to be conducted and determination of processing charges

Scoping meeting with experts, community representatives and NGOs to determine the scope of the EIA study

Submission of a project brief / application

Notification of the developer on the scope and depth of the

EIA Study / EMP including consultations & investigations

Submission of the draft EIA report

Review of EIA Report through MENR / Env. Review Expert Group
3 months

EIA document made available for public review

Review of the draft EIA report and incorporation of public submissions

Formulation of a recommendation and submission of review document to MENR

Decision with a written explanation

Publication of EIA review document and the decision on either approval or rejection

Approval of the Project with conditions* 

Rejection of the Project

*once a permit / approval has been given the developer must commence work and submit a report of progress within 12 months

Construction and Operational Phase

Compliance monitoring

Surprise checks*

Key Actors in the EIA Process:

EIA Environmental Impact Assessment
EMP Environmental Management Plan
MENR Ministry of Ecology and Natural Resources
NGO Non-Government Organisation

Scott Wilson Central Asia
D110125RER

November 2005
3.2.2 National Laws and Regulations on Land Acquisition and Resettlement

The current legislation related to the status and control of the road reserves has its foundations in the land laws of the Soviet era. Prohibition of activities in the road reserve is outlined in the 1989 Road Decree, which itself refers to an earlier legal instrument, Number 228 of 3rd July 1976. Since independence, a Decree on the Application of the Road Law of 2000, and a recent Decree No. 18 of February 2004 on additional activities aimed at regulated usage of the road reserve, have provided greater clarity on the situation of the road reserve. Summaries of instructions given in these and other decrees are given in the following sections.

1976 Road Decree

The 1976 Decree refers back to a Russian state construction standard SNiP 467/74 that defined the requirements for a 60 metre wide road reserve for State and Republican Roads and a 25 metre wide road reserve for Local Roads. This decree gives legal standing to the width requirements for road reserves given in the construction standard.

1989 Road Decree No. 461

The 1989 decree again reinforces the road reserve width requirements given in the 1976 Decree. Article 7 outlines prohibited activities and constructions in the road reserve and assigns rights for the roads authority to evict illegal occupants on 15 days notice, at the conclusion of which, the roads authority may demolish the constructions without compensation and use the resultant materials in the construction of the road. This 1989 decree also formalised a procedure for the road authority to review and authorise applications for developments within 200 metres of each side of the road centreline in respect of aspects including maintenance of the road reserve and access provisions to the main road.

2000 Decree on Application of the Road Law

One of the main purposes of this decree was to update the 1989 decree, especially in regard to the designation of responsible agencies. Article 14 outlined that the width of road reserves will be confirmed by the Cabinet of Ministers. Processes for inclusion of new areas into the road reserve, and acquisition of affected properties, are described, and it is stated that those permitted to use lands within the road reserve must be notified of the conditions of this use upon agreement of use terms. Article 33 states that commercial enterprise may be undertaken with Roads Authority approval within the road reserve.

2004 Decree on Additional Activities Aimed at Regulating the Usage of Road Reserves in the Republic of Azerbaijan

This recent decree designates responsible agencies for various issues relating to the road reserve and adjacent land use, including the preparation of an inventory of national road reserves to identify illegal and legal occupiers and properties, and for ongoing maintenance and protection of the road reserve. These inventories indicating the legitimacy and value of all occupiers and properties were required to be submitted to the Cabinet of Ministers.

Other Legal Instruments

Azeri Law has the following instruments which provide instruction on matters relating to land, land acquisition and compensation for other property losses:

- The Land Code, 25 June 1999;
- The Civil Code, 1 December 1998;

32 The road reserve width is defined as being 30 metres wide on each side of the centre-line, totaling 60 metres.
Aspects of these instruments that relate to the use and protection of the road reserve are given in the following sections.

**Land Code dated 25 June 1999**

When land is required for projects of national interest, compensation is initially offered on the basis of valuations made in accordance with a standard code (no. 158 dated 1998). If landowners are unhappy with this valuation, there is scope for agreeing a revised valuation. In the event that such agreement cannot be reached, the acquiring authority can process its application for acquisition through the courts, but this is often a long and complex process. The landowner also has an option for seeking recourse through the courts. The Land Code also allows for exchange land to be given, that is equivalent to the land being acquired.

Chapter 21 describes the procedures for resolution of land disputes both in and out of courts. Where a relevant local executive authority decides a land case, the decision shall come into force immediately and this decision will not be terminated by the lodgement of a complaint with the relevant court. Articles 110 and 111 describe wilful occupation of land plots and implementation of illegal constructions on land plots as violations of the land legislation and state that these are prohibited acts. The articles state that such land plots will be returned to the relevant authorities without reimbursement of the expenses incurred during the illegal utilization. Rehabilitation of the lands should also be carried out by the illegal occupants, at their own expense.

**Civil Code dated 1 December 1998**

This Civil Code states that any rights to immovable properties must be registered with the State, and that land may be recalled from owners for state or municipal needs as approved by the relevant courts.


This resolution outlines procedures for the compulsory acquisition of land for state or municipal needs.

**Cabinet of Ministers Resolution No 110 – On Approval of Regulations for an Inventory Cost estimation of Buildings Owned by Natural Persons dated June 1999**

This resolution outlines procedures for acquisition and compensation valuation for affected buildings and immovable properties. It refers to the standard code No. 58 that is to be used for making valuations of land and property to be acquired. These valuations are made on the basis of standard unit rates for different types of construction in different regions of Azerbaijan.

According to the above mentioned the legislation, there are 3 possible scenarios of land acquisition:

- **Land owner is provided with the equal size and quality of land**

- **Land owner is compensated by proponents of the land acquisition on the basis of current markets prices**

- **Dispute is the subject of court consideration**

The Government of Azerbaijan is represented in the regions by the local offices of line ministries which in some cases may cover more than one district. In this Project, the Ministry of Transport represented by RTSD is the main stakeholder due to their responsibilities in road construction.
Compensation Valuation Methods in Azerbaijan

Land, Crop and Tree Compensation

Procedures for valuation for compensation and other purposes are laid down in the Land Law, the Land Code, as well as the following legal instruments:

- Resolution #42 on Some Normative and Legal Acts relating to the Land Code;
- Cabinet of Ministers Resolution No 110 – On Approval of Regulations for an Inventory Cost estimation of Buildings.

For agricultural land, base land values are established using the Former Soviet Union (FSU) based cadastre system which values land based on land attributes (productivity of soils and regional agricultural characteristics), input costs and typical revenues achieved in each district. Cadastre based values are then reviewed in each district by a Valuation Commission and adjusted upwards where necessary to reflect changes in crop types and productions levels. Market prices for valuing crop production are determined based on local market prices.

Annual Crops

Compensation payable for loss of annual crops is determined by the Valuation Commission for each district that uses certified data on the productivity of crops and average price of produce as issued by the district Department of Statistics.

Perennial Crops (Trees, Shrubs and Vines)

Perennial crops such as fruit trees, grape vines, and currant bushes are valued on a per tree or per shrub basis by applying a standard formula.

Permanent Acquisition of Land

The land compensation price must be based on the market price, provided that such price is not less than the cadastral or normative price for the subject land (Land Code, article 96.5). Normative or cadastral rates for lands in each district are established by Cabinet of Ministers Resolution No. 158 On Establishment of New Normative Prices for Land in the Azerbaijan Republic (23 July, 1998).

The Project will pay compensation for permanent acquisition of land based on negotiated rates. The government normative or cadastral rates will be the minimum.

During land privatisation, land titles allocated to families had all members of the family as of 1996 listed on the land parcel ownership certificate. In these cases, the household head is responsible for signing project documentation relating to leases or assignment of rights. The household head must, however, obtain the written consent of all other people listed on the ownership documents.

Compensation for Immovable Assets and Land Attachments

This covers a range of items such as fences, walls, animal enclosures, small irrigation channels, drains, wells, hand pumps, artesian bores, water pumps, hay sheds, animal shelters and roads. These items will be valued on the basis of full replacement cost.

Compensation for Temporary Access Roads

Compensation for temporary access roads will be calculated on a similar basis to the land temporarily acquired for the highway construction. Compensation will cover the following components:

---

33 The procedure to be used in preparing these certificates is prescribed in Cabinet of Ministers Resolution No. 164 (25 November, 1996).
Loss of annual crop production
Potential crop yield reduction for three years
Loss of any trees or perennial crops
Loss of use of grazing land
Loss of immovable assets and land attachments.

Upon construction of completion, the land used for temporary access roads will be reinstated to its pre-project condition and returned to the owner or user.

Entitlements
According to RTSD sources, for each land acquisition process, RTSD adopts a policy for entitlements that accords with Azeri legislation and within this legislation seeks to ensure that fair and proper entitlements are provided to all people who might be affected by the road rehabilitation works. The following tables are examples of a recent entitlement matrix for a recent and similar road project in Azerbaijan.

Further information on the Land Acquisition and Resettlement process in Azerbaijan, including how its requirements will be taken into account in Project preparation and implementation, is presented in the Resettlement Policy Framework.

3.2.3 Other National Road Sector Laws and Regulations

Other laws and regulations relevant to the road sector in Azerbaijan are summarised below:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azeri Law on Automobile Roads (March 10, 2000) Section 39: Protection of the Environment</td>
<td>Spells out that any construction or reconstruction of roads requires the official approval of the Ecological Committee, that state of the art technology must be applied and that the chemicals that are used must be environmentally sound. The unit of the Ministry responsible for road environment must approve the proposed environmental, health and safety norms of the construction.</td>
</tr>
<tr>
<td>SNIP 2.05.02-85 Building Code &amp; Regulations for Automobile Roads Ch. 3: Environmental Protection</td>
<td>Indicates the general need to minimize adverse environmental impacts in road design and provides, for instructions on the removal and re-use of top soil (no. 3.4); the need to provide buffer between the road and populated areas and to carry out noise reduction measures to assure compliance with the relevant sanitary norms (no. 3.9); on the dumping of excess materials (no. 3.12).</td>
</tr>
<tr>
<td>The Law of the Republic of Azerbaijan on Sanitary and Epidemiological Safety, 1993 Section III: Responsibilities of State Bodies, Agencies, Companies... on the Provision of Sanitary and Epidemiological Safety</td>
<td>General framework provisions on the requirement to provide healthy and safe conditions at workplaces and work camps (and many others) in compliance with the relevant sanitary hygiene, construction regulations and norms (particularly items 14, 15 and 16).</td>
</tr>
<tr>
<td>Safety Regulations for Construction, Rehabilitation and Maintenance of Roads 1978</td>
<td>Comprehensive compilation of safety rules to technical safety requirements of road construction equipment, operation and maintenance of asphalt plants, work in borrow sites, loading and unloading operations, work with toxic substances, etc.</td>
</tr>
<tr>
<td>SNIP III-4-80 Norms of Construction Safety</td>
<td>Detailed regulations on construction worker's health and safety. Chapters 2 and 5 provide organizational procedures of construction and work sites and material transport. Annex 9 contains standards on maximum concentrations of toxic substances in the air of working zones; Annex 11 specifically claims that workers need to be informed and trained about sanitation and health care issues and the specific hazards of their work.</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Guidelines for Road Construction, Management and Design, February 7, 2000</strong></td>
<td>Addresses environmental issues in road design, construction and maintenance.</td>
</tr>
<tr>
<td><strong>Part I: Planning of Automobile Roads</strong></td>
<td>Requires to minimize the impacts on the ecological, geological, hydro-geological and other ecological conditions, by implementing adequate protective measures.</td>
</tr>
<tr>
<td><strong>Part II: Construction of Automobile Roads</strong></td>
<td>Requires the consideration of appropriate protection measures, which shall contribute to the maintenance of stable ecological and geological conditions as well as the natural balance.</td>
</tr>
<tr>
<td><strong>Part III: Protection of the Environment</strong></td>
<td>Provides general overview on the requirements for environmental protection.</td>
</tr>
<tr>
<td><strong>BCH 8-89</strong></td>
<td>Comprehensive provisions on environmental protection measures in road construction such as use of soils, protection of surface and groundwater resources, protection of flora and fauna, use, preparation and storage of road construction machinery and materials, servicing of construction machinery, provisional structures, provisional roads, fire protection, borrow pits and material transport, avoidance of dust, protection of soils from pollution, prevention of soil erosion etc. The appendices to this document also state standard for: maximum permitted concentrations of toxic substances; noise control measures; soil pollution through losses of oil and fuel from construction equipment; quality of surface water.</td>
</tr>
<tr>
<td><strong>Sanitary Norms CH 2.2.4/2.1.8.562-96; 1997</strong></td>
<td>Ambient noise quality standards for residential, commercial and industrial areas, hospitals and schools (day/night standards);</td>
</tr>
<tr>
<td><strong>Reg. 514-1Q-98</strong></td>
<td>This law includes requirements for industry and enterprises on the implementation of identified standards, norms and environmental protection for waste when designing, constructing or reconstructing.</td>
</tr>
<tr>
<td><strong>GOST 13508-74</strong></td>
<td>Describes the requirements and standards for white lining for the various road categories.</td>
</tr>
</tbody>
</table>

Source: Finnroad (2005) Tovuz Bypass Project
3.3 International Conventions

Azerbaijan is a signatory to most international agreements and conventions relating to the environment.

Table 3.3 International Agreements and Conventions

<table>
<thead>
<tr>
<th>International Convention</th>
<th>Year ratified</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNESCO Convention on Protection of World Cultural and Natural Heritage</td>
<td>1994</td>
</tr>
<tr>
<td>UN Framework on Climate Change</td>
<td>1995</td>
</tr>
<tr>
<td>UN Convention for the Protection of the Ozone Layer (Vienna Convention)</td>
<td>1996</td>
</tr>
<tr>
<td>Agreement on Mutual Cooperation of the Commonwealth of Independent States in the area of Hydrometeorology</td>
<td>1998</td>
</tr>
<tr>
<td>Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and Agreement on Protection of Sturgeons</td>
<td>1998</td>
</tr>
<tr>
<td>UN Convention to Combat Desertification</td>
<td>1998</td>
</tr>
<tr>
<td>UN Convention on Environmental Impact Assessment in the Trans-boundary Context (Espoo Convention)</td>
<td>1999</td>
</tr>
<tr>
<td>Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)</td>
<td>1999</td>
</tr>
<tr>
<td>UNESCO Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)</td>
<td>2000</td>
</tr>
<tr>
<td>UNECE Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes (Helsinki Convention)</td>
<td>2000</td>
</tr>
<tr>
<td>UN Convention on Biological Diversity</td>
<td>2000</td>
</tr>
<tr>
<td>Protocol on UN Framework Convention on Climate (Kyoto Protocol)</td>
<td>2000</td>
</tr>
<tr>
<td>Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol)</td>
<td>2000</td>
</tr>
<tr>
<td>European Agreement about Transportation of Dangerous Goods on International Routes</td>
<td>2000</td>
</tr>
<tr>
<td>UN Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)</td>
<td>2001</td>
</tr>
<tr>
<td>UNECE Convention on Long-Range Trans-boundary Air Pollution</td>
<td>2002</td>
</tr>
</tbody>
</table>

Source: www.biodiv.org

Based on article 151 of the Azerbaijan Constitution, international Conventions over-ride national laws if there is any conflict. With regard to the context of the present 'Motorway Improvement and Development Project', the Law on EP specifically states that SEE is guided, inter alia, by international legal obligations.

Azerbaijan is a party to the UN Economic Commission for Europe (UNECE) Convention on EIA in a Trans-boundary Context (or Espoo Convention\(^\text{34}\)), which stipulates the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. The Convention also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries.

The present Project will be physically restricted to the territory of Azerbaijan, so that issues of serious trans-boundary concern may not be expected. Physical access to the border areas, including access to maps, is restricted so no details of areas south of the border are available. However, the feasibility study for the Alyat-Astara road is being undertaken by Iranian consultants and the Government of Iran is proposing to part-fund the construction costs, so it can reasonably be assumed that the Government of Iran is aware of the proposed programme of works to upgrade the Alyat-Astara road and has taken the potential environmental and socio-economic impacts into account in its planning process.

\(^\text{34}\) ratification 01.02.1999
The fact, however, that Azerbaijan ratified this Convention suggests that the general and internationally accepted principles that apply to the EIA process and that are laid down in this Convention, are accepted. This becomes relevant with regard to the provisions of Appendix I, which contains a list of activities to which the Convention applies\(^\text{35}\), to Appendix II, which describes the minimum information to be provided in the EIA documentation and finally regarding the provisions of Annex III, which determines criteria to assist in the determination of the environmental significance of activities not listed in Appendix I of the Convention.

The objectives of the *Convention on Wetlands of International Importance as Waterfowl Habitat* ("Ramsar Convention") are to stem the progressive encroachment on and loss of wetlands now and in the future, recognising the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational value; and to coordinate international efforts for this purpose. Signatories are obliged to: (i) specify at least one wetland on a List of Wetlands of International Importance; (ii) encourage the wise use of wetlands; (iii) establish wetland reserves, cooperate in the exchange of information and shared wetlands species.

Ramsar Convention is Convention on Wetlands of International Importance especially as Waterfowl Habitats. This is first international agreement for protection and rational using of natural resources. This convention was signed in Ramsar city (Iran) at 2 February of 1971.

There are more than 100 countries jointed to the Ramsar Convention at the present moment and list of convention is include more than 900 sites.

There are 4 more criteria to including site in Ramsar Convention:

1. Criteria of originality or representativeness (typicalness for the present landscape or the territory)
2. General criteria based on plants and animals
3. Special criteria based on waterfowl (like regular holding of no more than 20 000 waterfowl at least in one main season of the year – wintering, breeding, migration or molting)
4. Criteria based on fishes

Information of sites which were identified as Ramsar site, but were not include in Ramsar convention yet holds in Wetland International data base and updates regularly. These sites called Potential Ramsar Sites. Sea/shore, inlands and anthropogenic wetlands can be include in Ramsar Sites list.

The *Convention on Biological Diversity* seeks to ensure conservation of biological diversity and sustainable use of its components. WB is one of the Implementing Agencies for channelling resources available from the Global Environment Facility (GEF) to viable biodiversity projects in developing countries and is engaged in project lending for environmentally sustainable development. The first national report on Azerbaijan’s biodiversity was issued in April 2004\(^\text{36}\).

The UNECE *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters* (also ‘Aarhus Convention’\(^\text{37}\)) establishes a number of rights of the public (citizens and their associations) with regard to the environment. Public authorities

\(^{35}\) point 7 of the List of Activities reads: (a) Construction of motorways, express roads 2/ and lines for long-distance railway traffic and of airports 3/ with a basic runway length of 2,100 metres or more; (b) Construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road, or realigned and/or widened section of road, would be 10 km or more in a continuous length.


\(^{37}\) ratification 09.11.1999
(at national, regional or local level) are to contribute to allowing these rights to become effective. The Convention provides for:

- the right of everyone to receive environmental information that is held by public authorities (‘access to environmental information’). This can include information on the state of the environment, but also on policies or measures taken, or on the state of human health and safety where this can be affected by the state of the environment. Citizens are entitled to obtain this information within one month of the request and without having to say why they require it. In addition, public authorities are obliged, under the Convention, to actively disseminate environmental information in their possession;

- the right to participate from an early stage in environmental decision-making. Arrangements are to be made by public authorities to enable citizens and environmental organisations to comment on, for example, proposals for projects affecting the environment, or plans and programmes relating to the environment, these comments to be taken into due account in decision-making, and information to be provided on the final decisions and the reasons for it (‘public participation in environmental decision-making’);

- the right to challenge, in a court of law, public decisions that have been made without respecting the two aforementioned rights or environmental law in general (‘access to justice’).

3.4 World Bank Safeguard Policies

WB environmental and social safeguard policies are regarded as a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for the WB and borrowers in the identification, preparation and implementation of programmes and projects.

Environmental Impact Assessment (EIA) is one of 10 environmental, social and legal safeguard policies of the WB. EIA is used in the WB to identify, avoid and/or mitigate the potential negative environmental impacts associated with lending operations. The purpose of EIA is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been adequately consulted. The WB’s environmental assessment policy and recommended processing are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment. This policy is considered to be the ‘umbrella’ policy for WB environmental ‘safeguard policies’. For the present Motorway Improvement and Development Project, the relevant safeguard policies to be considered at all stages of preparation and planning are:

- Involuntary Resettlement (World Bank OP/BP 4.12);
- Natural Habitats (World Bank OP/BP 4.04: Natural Habitats 2001);
- Forestry (World Bank OB/BP 4.36);
- Management of Cultural Property (World Bank OP 11.03).


The WB OB/BP on Involuntary Resettlement requires WB-assisted projects to avoid or minimize involuntary land taking. If such cannot be avoided, displaced persons need to be meaningfully consulted, compensated for lost/damaged assets and assisted in restoring or improving their living standards and livelihood. The policy requires that if involuntary land taking and resettlement become necessary, a clear plan for compensating and assisting displaced persons be prepared by the borrower by appraisal for WB review. Such a plan must be substantially completed prior to the commencement of civil works.

The WB OP/BP on Natural Habitats seeks to ensure that WB-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products which natural habitats can provide to human society. The policy
strictly limits the circumstances under which any WB-supported project can damage natural habitats, i.e. such land and water areas where most of the native plant and animal species are still present. Specifically, the policy prohibits WB support for projects which would lead to significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats which are either:

- legally protected;
- officially proposed for protection;
- unprotected, but known of high conservation value.

In other (non-critical) natural habitats, WB-supported projects can cause significant loss or degradation only when:

- there are no feasible alternatives to achieve the project’s substantial overall net benefits; and
- acceptable mitigation measures, such as compensatory protected areas, are included within the project.

As mentioned earlier, Azerbaijan is a signatory to the Convention on Biological Diversity, which seeks to ensure conservation of biological diversity and sustainable use of its components. WB is one of the Implementing Agencies for channelling resources available from the Global Environment Facility (GEF) to viable biodiversity projects in developing countries and is engaged in project lending for environmentally sustainable development. WB may assist parties to meet their obligations under the convention, including the following:

- development and implementation of national strategies, plans or programmes for the conservation and sustainable use of natural resources;
- integration of conservation and sustainable use of natural resources into relevant sectoral and cross-sectoral plans, programmes and policies.

At the Project level, WB seeks to ensure that its lending operations comply with international obligations to protect biodiversity. EIAs for WB should take into account the impacts of proposed projects on a country’s biodiversity.

The WB OP/BP on Forestry aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty and encourage economic development. The policy defines a forest as an area of land of not less than 1.0 ha with a tree crown cover (or equivalent stocking level) of more than 10% that has trees with the potential to meet a minimum height of 2 m in situ (in its original position). The WB does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical natural habitats. Critical forest areas are natural forest lands which are:

- existing protected areas and areas officially proposed by governments as protected areas, areas initially recognized as protected by traditional local communities, and sites that maintain conditions vital for the viability of these protected areas;
- sites identified by WB or an authoritative source, such as areas with known high suitability for biodiversity conservation and areas that are critical for rare, vulnerable, migratory or endangered species.

The WB OP on Cultural Property is based on the acknowledgement of cultural resources as sources of valuable historical and scientific information, as assets for economic and social development, and as integral parts of a people’s cultural identity and practices. WB policy as stated in Operational Directive (OD) 4.50 is to: (a) assist in protecting and enhancing cultural property through specific project components and (b) decline to finance projects which significantly damage cultural property, and assist only those that are designed to prevent or minimize such damage.
WB policy on **Public Consultation and Disclosure** follows specific procedures: EIA reports will be presented to both the Government of Azerbaijan and WB Management and serve as a background document for approval by the competent authority. In accordance with OP/BP 4.01, the Borrower (i.e. the Government of Azerbaijan) will have to make the draft EIA Report and Land Acquisition Plan (LAP) available in Azerbaijan at a public place accessible to project-affected groups and local NGOs. The Borrower must also officially transmit the EIA report and LAP to WB. Once the EIA report and LAP have been locally disclosed and officially received by WB, the WB will also make them available to the public through its Infoshop.38

As regards WB’s internal EIA procedure, **Environmental Screening** is an important step at the stage of project preparation through which proposed projects are attributed to the appropriate extent and type of EIA. In practice, the significance of impacts, and the selection of screening category accordingly, depends on the type and scale of the project, the location and sensitivity of environmental issues, and the nature and magnitude of the potential impacts.

Projects are classified into **Category A** if they are ‘likely to have significant adverse impacts that are sensitive, diverse, or unprecedented, or that affect an area broader than the sites or facilities subject to physical works.’ Hence, the EIA for a Category A project examines a project’s potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the ‘without project’ situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance. The EIA of a Category A project considers both the social and the physical environmental impacts. Socioeconomic environment includes themes such as land acquisition and resettlement; indigenous or traditional populations, cultural heritage, aesthetics and landscapes, noise and human health and safety. For Category A projects, the borrower should consult with project affected groups at least twice: firstly shortly after screening and before the TOR for the EIA are finalized; and secondly, once a draft EIA is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EIA related issues that affect them.

The impacts of **Category B** projects are ‘site-specific in nature and do not significantly affect human populations or alter environmentally important areas, including wetlands, native forests, grasslands, and other major natural habitats. Few if any of the impacts are irreversible, and in most cases mitigation measures can be designed more readily than for Category A projects.’

For both the Category A and B projects, an Environmental Management Plan (EMP) needs to be established in accordance with the Bank’s OP 4.0, which identifies EMPs as an essential feature of category A projects; for category B projects, the EIA may result in development of an EMP only, with no separate EIA report. The specific requirements relating to EMPs are set out in Annex C to WB’s procedure 4.01 (BP 4.01) - which are mandatory.

### 3.4 Protected Areas

Table 3.4 shows the number of protected areas established in Azerbaijan.

<table>
<thead>
<tr>
<th>Type of Reserve</th>
<th>Number of Reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Parks</td>
<td>4</td>
</tr>
<tr>
<td>Strict Nature Reserves</td>
<td>16</td>
</tr>
<tr>
<td>Wildlife Sanctuaries</td>
<td>22</td>
</tr>
<tr>
<td>Natural Monuments – Protected trees (over 100 years old)</td>
<td>2,083</td>
</tr>
<tr>
<td>Natural Monuments – Protected geological and paleontological sites</td>
<td>37</td>
</tr>
</tbody>
</table>

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Regional Environmental Review, Environmental Assessment & Management Framework and Resettlement Policy Framework

| Coastal national park (Baku) | 1 |
| Historical natural state reserve (Gobustan) | 1 |

Source: www.biodiv.org

National Parks are areas with ecological, historical and aesthetic values, designated for nature protection, environmental awareness, scientific, cultural and other purposes. All land and natural resources belong to the Park management authority, and some economic activities (including ecological tourism) are allowed.

Strict Nature Reserves are state-owned, strictly protected areas designated for nature protection and scientific research. No economic activity is allowed. All have management plans and both enforcement and scientific staff.

Wildlife Sanctuaries are designated for nature protection, but limited human activities - e.g. agriculture - are permitted according to certain regulations, provided that they do not adversely affect nature conservation. Land title is retained by the original owners. All are managed, often by staff attached to a nearby Strict Nature Reserve.

Natural Monuments are protected objects that have ecological, cultural or aesthetic value. They range from individual trees to patches of ancient forest, and also include caves, paleontological sites and landscapes. Their destruction or damage is strictly forbidden.

There are also special buffer zones around these areas, and other natural areas such as rivers and water sources. The level of protection given to different protected areas depends on their significance – international, national, regional or local.

As described in Chapter 6, three of these officially protected areas lie in the study corridor for the Alyat-Astara road. These are:

- Gizilagach Bay State Reserve and designated Ramsar Wetland of International Importance
- Hirkan Forest National Park and candidate UNESCO World Heritage Site
- Shirvan National Park and potential Ramsar site

Three other wetland areas which are potential Ramsar sites – Kura River Delta, Mahmudchala Wetlands and Akchala Wetlands – are also located within the Alyat-Astara study corridor. Eight sites including the six mentioned here have been identified as Important Bird Areas (IBA, for further explanation see Chapter 5.9). Potential Ramsar sites are IBAs which are regarded as internationally important for threatened bird species, congregatory bird species, assemblages of restricted-range bird species and/or assemblages of biome-restricted bird species.

3.5 Access to Information

It is important to note that maps are currently regarded as classified information within Azerbaijan and it is not possible to obtain or use them without specific official permission. It is also forbidden to photocopy or otherwise reproduce maps at reprographics shops. New maps to a variety of scales have been produced since 2001 by the State Cartographic Committee which have been updated to reflect alphabet and place-name changes.

3.6 Role of RER, EA&MF and RPF in ensuring Compliance

Heath, M.F et al (undated) Important Bird Areas and potential Ramsar Sites in Europe – English w, w.biodiv.org

Scott Wilson Central Asia
D110123RER

November 2005
As indicated in Chapter 1, preparation of the RER, EA&MF and RPF is required in order to ensure the compliance of the proposed Project with the provisions of Azerbaijan's legislation, procedures and policies, international Conventions as well as WB safeguard policies, in particular in terms of environment, resettlement and land acquisition, during the project planning and implementation phases.

The RER identifies and provides a broad overview of the policy, environmental and socio-economic implications of the entire Project scope. The EA&MF and RPF outline the procedures for the management and monitoring of environmental and social issues of sub-projects in relation to Azerbaijan’s legislation, procedures and policies, international Conventions as well as WB safeguard policies, in particular in terms of environment, land acquisition and resettlement. Reporting requirements including recommended monitoring report formats are also specified.
4 ENVIRONMENTAL AND SOCIAL BASELINE – BAKU-SHAMAKHI

“The road is very narrow and there are many accidents.”

Discussions in Maraza, 22nd August 2005

4.1 Introduction

The existing Baku to Shamakhi road is located in the south-eastern part of the Greater Caucasus where it runs through the Gobustan, Absheron and Shamakhi administrative districts. The total length of this 2 lane road is about 120 km length and it runs in a predominantly east-west direction.

The road forms an integral part of one of the main tourist routes of the country. It links the capital Baku to the mountain area of Sheiki-Zagatala, which is a popular tourist and recreational destination and considered to be among the most beautiful regions of the country.

Official accident figures for the Baku-Shamakhi covering the period 2000 to June 2005 presented as absolute figures and as a percent of all accidents reported in Azerbaijan during the same period are given in Table 4.1.

Table 4.1: Accident figures from the Baku–Shamakhi road (Jan. 2000 – June 2005)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Fatalities</th>
<th>Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>37</td>
<td>18</td>
<td>58</td>
</tr>
<tr>
<td>2001</td>
<td>27</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>2002</td>
<td>33 (4.8%*)</td>
<td>17 (6.6%)</td>
<td>56 (6.2%)</td>
</tr>
<tr>
<td>2003</td>
<td>33 (4.6%)</td>
<td>1 (0.3%)</td>
<td>53 (5.5%)</td>
</tr>
<tr>
<td>2004</td>
<td>33 (4.3%)</td>
<td>29 (8.5%)</td>
<td>43 (4.1%)</td>
</tr>
<tr>
<td>2005 (6 months)</td>
<td>15 (4.9%)</td>
<td>7 (4.9%)</td>
<td>20 (5.0%)</td>
</tr>
</tbody>
</table>

Source: RTSD * % of national reported road accidents

The future rehabilitation and upgrading of the Baku to Shamakhi road will mainly take place within the existing ROW. For the purpose of the present RER, the ‘study corridor’ has been defined as a strip of up to 1 km width either side of the road.
PHYSICAL ENVIRONMENT

4.2 Geology, Topography and Soils

The main geomorphological type of relief in the surroundings of the study corridor is arid-denudative mountains: low to medium intensity and medium block-faulting. Badland and loamy karst are typical for this type of landscape which prevails in the first 100 km of the study corridor to the west of Baku. The only exception to this is a small zone of accumulative-alluvial plain in the valley of the river Jeyrankechmez near Narimankend village. This area is characterized by a network of smaller streams which are also used for drinking water purposes. The annual surface water runoff is limited to 1 l/km². The area further to the west, around Shamakhi, is erosive-denudative mountains. On its way to Shamakhi the road corridor crosses a series of wide river terraces and ancient river canyons which all represent erosion types of landscape.

A characteristic geo-morphological feature of this region of Azerbaijan is the so-called ‘mud volcanoes’. The best known mud volcanoes in this area are the Perekishqul group to south of the road corridor at about km 38 and Buraniz Jylgya at about km 41 to the north of it.

The topography along this road is characterized by undulating arid hills and mountains. The relief gradually transforms from plains in the east over to foothills and mountainous areas of the Greater Caucasus in the western part of the study corridor. Altitudes vary between 0 m asl at the starting point of the road in the east to about 1,000 m around Shamakhi in the west.

The main soil types of the study corridor are grey-brown and chestnut soils. The valley of the Sumgayit Chay (river) is formed by meadow type of soil, while the sierozem (meadow gray soil) is typical of smaller river valleys like Jeyrankechmez and Pirsaat. Locally, areas of rocky outcrops with interbedding of saliferous and loamy strata occur.

Gray-fulvous (reddish-yellow) soils prevail in the environs of the first 75 km in the east of study corridor. These soils are normally restricted to maximum altitudes of about 100 m, but come up to 300 m asl in the study corridor. These soils are typical for dry climate with maximum precipitation of 350 mm. This soil is dry steppe, alkali, loamy soil, which is generally suitable for arable land and vegetables and long-living plants such as vine, pomegranate and olive trees. In this area, however, it is solely used as winter pasture. In Azerbaijan, the distribution of this type of soil is restricted to a radius of 70 km on the Absheron peninsula.

Chestnut soils occur between altitudes of 300 to 500 m asl with average precipitations of 300-450 mm. The figures given in Table 4.2 indicate that this type of soil is plain dry steppe, which has loamy structure, medium degree of salinity, low coefficient of erodibility and low bio-climate potential. Chestnut soils are mostly suitable for winter pastures, arable land and long-living plants such as vines.

Meadow soils occur along valley of Sumgayit Chay and are generally typical for altitudes of about 100 m and average precipitation volumes of 250 mm; this type of soil is thus lowland semi-dry arid steppe with a light loamy structure and a medium degree of salinity. It is not susceptible to erosion and has a low bio-climate potential. Meadow soils are mainly suitable for winter pastures and arable land (cotton).

References:

41 Aliyev U.A. senior editor (1979), Atlas of Azerbaijan SSR; Main administration of Geodesy and Cartography of Council of Ministers USSR, Moscow, 1979
46 see 23 above
Sierozem soils (meadow gray soils) occur as a narrow strip along the smaller rivers like Pirsaat Chay, Jeyrankechmez, Ajideresu and Shorderesu. This plain type of soil is typical for altitudes of up to 150 m and mainly dry climate with a maximum precipitation of 200 mm. Generally, this soil is semi-dry, dry steppe, light loamy type. Meadow gray soils have agricultural potential for winter pastures and arable land (cereals, cotton).

The following table summarizes some characteristic properties of the soil types that occur in the study corridor.

### Table 4.2: Comparative Overview of Soil Properties

<table>
<thead>
<tr>
<th>Soil type / properties</th>
<th>Gray fulvous soils</th>
<th>Chestnut</th>
<th>Meadow</th>
<th>Sierozem/Meadow-gray</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture content</td>
<td>0.20-0.25</td>
<td>0.10-0.15</td>
<td>0.10-0.15</td>
<td></td>
</tr>
<tr>
<td>Bio-climatic potential coefficient</td>
<td>0.8*</td>
<td>1.80-2.20</td>
<td>0.8-2.0</td>
<td>0.8-1.8</td>
</tr>
<tr>
<td>Water stability of structure**</td>
<td>22</td>
<td>48</td>
<td>40</td>
<td>26</td>
</tr>
<tr>
<td>Granulometric composition</td>
<td>loamy 0.78</td>
<td>heavy-loam 0.60</td>
<td>loamy 0.80</td>
<td>Loamy 0.36</td>
</tr>
<tr>
<td></td>
<td>medium-loamy 1.0</td>
<td>medium-loamy 1.0</td>
<td>light-loamy 0.89</td>
<td>Heavy-loam 0.91</td>
</tr>
<tr>
<td></td>
<td>light-loamy 0.73</td>
<td>light-loamy 0.89</td>
<td>light-loamy 0.89</td>
<td>medium-loamy 1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loamy sand 0.60</td>
<td>loamy sand 0.60</td>
<td>light-loamy 0.73</td>
</tr>
<tr>
<td>Humus coefficient</td>
<td>1.0</td>
<td>3.0 - 4.0</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>Erodibility***</td>
<td>0.3 - 1.0 km/km²</td>
<td>0.2 - 0.4 km/km²</td>
<td>0.2-1.0 km/km²</td>
<td></td>
</tr>
<tr>
<td>Salinity</td>
<td>0.42 - 1.0 g/m³</td>
<td>0.56 - 1.0 g/m³</td>
<td>0.55 - 1.0 g/m³</td>
<td>0.42 - 1.0 g/m³</td>
</tr>
<tr>
<td>PH</td>
<td>8.7-9.0</td>
<td>7.5-8.2</td>
<td>7.4-8.6</td>
<td>8.4-8.9</td>
</tr>
</tbody>
</table>

* Source: Map of Ecological Assessment of Azerbaijan Soils. State Committee of Land and Cartography, Baku, 2004

** lowest index for soils in Azerbaijan; ** content of water-stable aggregates in %; *** indicates the length of the ravine extension on an area of 1 km².

### 4.3 Climate And Air

Regarding the climatic conditions, the study corridor may be divided into two parts: the eastern part (about between the starting point of the road in the east and the village of Jangi in the west), is semi-desert and dry steppe with average annual precipitation of up to 200 mm. Summers are very hot and dry and the winters rather mild. Average annual temperature is about +14°C and the main directions of wind are west and north-west throughout the year.

The western part of the study corridor is characterized by steppe landscape, with average annual precipitation of 300-450 mm. Climate is moderately warm with dry summers. The average annual isotherm is +10°C with absolute maxima at +38°C and minima at -19°C. The main direction of wind is west.

Regarding ambient air quality in the region, base line data on background levels of air pollution do not exist. Outside inhabited areas, MENR's National Monitoring Department is responsible for regular monitoring of industrial and background emissions. In the area under study, however, there are no stationary sources which would be seriously impact ambient air quality. Vehicular traffic can thus be...
assumed as being the major source of emissions and ambient air pollution. Although the total number of motor vehicles in the country is constantly growing since 1997, traffic figures still are relatively low on the road corridor under study.\(^{50}\)

Against this background, emissions and potential air pollution along the study corridor are more related to low quality of fuel used and to the obsolete car fleet, in which the average age is about 15 years and about 90% of all vehicles are more than 5 years old. In addition, poor vehicle inspection-maintenance systems have lead to an increase in 'gross-polluter' cars.\(^{51}\)

4.4 Surface and Groundwater

Surface water resources of the study corridor are made up of a few rivers, springs and small lakes which in the area of the first 20 km of the roadway generally carry little water and a water reservoir near Shamakhi town.

The easternmost river of the study corridor is Sungayit Chay, which flows eastward, entering the Caspian Sea at Sungayit city. To the east of Jangi, the river meanders for about 12 km at a distance of 1.5-3 km in parallel to the north of the road.

Travelling westwards, the next river is Jeyrankechmez, which is crossed by the road in three places east of Narimankend village. This river directly drains to the Caspian Sea at Sangachal settlement. It has total length of 88 km and drains a surface area of 896 km\(^2\).

Pirsaat Chay is the biggest river in the study corridor and crosses the road about 4 km east of Shamakhi from where it flows to a south-eastern direction. An estimated 15% of the flow comes from snow surface runoff, 48% from rain surface runoff and 37% from groundwater surface run-off.\(^{52,53}\)

Other small rivers, e.g. Shorderesu, Ajideresu, Zagavala Chay and Ruslar Chay (from east to west) are tributaries of Pirsaat Chay. The Shorderesu and Ajideresu flow in a south-west direction and Zagavala Chay, Ruslar Chay and Jeyrankechmez to the south-east.

Several springs, e.g. Marzandiya, Garamalbulag, Shorbulag and Ajibulag, are also found in this area.

The mineral water sources of the study corridor contain hydrogen-sulphide. Hydrocarbonate and hydrocarbonate-sulphate composition is typical here. These waters contain significant quantities of sodium bicarbonate, calcium and magnesium. Mineralization of water is not very high due to strong dilution by rainwater\(^{54}\).

According to information from a representative from the local Executive Power of the district, 70% of the drinking water of Shamakhi district is spring water. The Pirsaat Chay is also used as a source for drinking water. Village people usually have artesian wells. In Shamaki, town the water is pumped from the local springs and the river, filtered and then distributed to the households. The rivers Ruslar Chay and Zagavala Chay flow to the Zagavala Chay water reservoir which is located close to the Shamaki town.

Wastewater collection and treatment facilities are provided at the Shahriyar settlement and Shamaki town only. Wastewater is piped to a wastewater treatment works located some 7-8 km away from town. At this plant, the water is processed and the sludge is used as fertilizer.

\(^{52}\)Constructive Geography of Azerbaijan Republic. B.A. Budagov, Baku, “ELM”, 1999, vol. 2
\(^{54}\)Kashkay M.A., Aliyev G. eds (1945), Physical Geography of Azerbaijan SSR; Azerbaijan Academy of Science, Baku, 1945

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4.5 Noise

Given the current low level of road traffic and industrial activity along the Baku-Shamakhi road, noise is not considered to be a key environmental issue in the area.

4.6 Natural Hazards

Drought is characteristic of the Absheron-Gobustan zone, in which the easternmost parts of the project corridor are located. In the light of global warming, evaporation rates that clearly exceed the water flow and increasing tendencies for extremely dry summers (like in 1998 and 2000), the risk of desertification has become very acute in this region.

Natural disasters, frequently of catastrophic character, are widespread in Azerbaijan. Common phenomena, inter alia, are landslides which in most cases, however, are characteristic of the mountainous territories of the Caucasus, where the relief, geological structure, and specific climatic features (e.g. steep slopes, fragile rocks, long droughts followed by long downpours) form favourable conditions. According to local officials, landslides are a real hazard on the road between km 100 and km 132.

The western part of the study corridor is characterized by very high seismic activity. This area is called Shamaki nidus where seismic centres extend in stripes of 50-60km length from north-west to south-east. Shamaki nidus is the strongest seismic centre in Azerbaijan with earthquakes reaching magnitudes of 10 on the Richter scale. Shamakhi town has been destroyed many times by earthquakes. In the valley of Pirsaat River, both erosive and seismic processes create serious damage for both the local roads and villages.

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4.7 Flora

The area to the west of Baku is characterized by saltwort ephemeral desert vegetation. Travelling westwards along the Baku to Shamakhi road, the saltwort-ephemeral desert landscape is gradually replaced by wormwood-saltwort semi desert. Spring vegetation is dominant over autumn vegetation. Saltwort vegetation is more widely distributed here than wormwood. Saltwort is edificatory for this area. Between km 30 and 70 wormuth-saltwort semi-deserts can be found. In this section, wormwood formations are generally developed on the basis of ephemeral grass vegetation. Artemisia hanseniania is main edificatory for this area. Beyond km 70, the natural vegetation is mountain-steppe landscape with mixed-grass vegetation.

According to the Red Book of Azerbaijan, up to 19 species of plants can be found in the Baku-Shamakhi area. Nine species (Ferula persica, Anabasis brachiata, Astragalus bakuensis, Iris acutiloba, I. reticulata, Avena ventricosa, Stipa pellita, Calligonum bakuense and Pyracanta coccinea), occur at the eastern part of the corridor in the desert and semi-desert landscape, which are all listed in the Azerbaijan Red Data Book of 1989. A further ten plant species, which originally occurred in this area have disappeared following to the strong anthropogenic influence and the altering of the natural habitats for agricultural purposes (mostly for arable land).

As can be seen from the picture below, RTSD has planted narrow strips of trees in various sections alongside the road, mainly in the area to the west of Narimankend. In accordance with the provisions of former Soviet Technical Norms and Rules SNIP 2.05.02.85 (3.9 and 9.15), the main purpose of these plantations to reduce noise and air pollution and to protect the road from strong winds and snow.

Figure 4.1 RTSD Tree Plantations near Narimankend

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56 In the following section, a after a plant or animal species' scientific name indicates species listed in the Red Book of Azerbaijan, b indicates IUCN species (World Red Data Book) and c indicates species included in both the national and international Red Data Books


60 These are: Ferula persica, Anabasis brachiata, Astragalus bakuensis, Iris acutiloba, Iris reticulata, Avena ventricosa, Stipa pellita, Calligonum bakuense and Pyracanta coccinea
Much of the land next to the road and even including the normal ROW (30 m to either side of the road) is under the ownership of the Jangi office of the State Forest Fund. Plantations were carried out under the Presidential Decree no. 1152 of February 18th 2003, which stipulates that the area of forest lands in Azerbaijan should be increased (this is also a MDG). According to local officials at Maraza, the land for these plantations was given to MENR, however, excluding the RoW. The plantations were extended within the ROW by MENR. If any of these plantations are likely to be affected by road construction or widening activities, an official plan has to be submitted by MoT to MENR.

Figure 4.2 MENR Tree Plantations between km 62-km 65

The eastern part of the study corridor is mainly used for winter pasture. Vine-growing, animal husbandry, grain cultivation and fruit growing dominate in the western zone where 35% of the land is used for pasture; 25% is arable lands and vineyards; 5% is forest and 35% is urban or unused lands.

Figure 4.3 Grain Fields near Maraza
4.8 Fauna

Fauna biodiversity is not particularly high in the area of the Baku to Shamakhi corridor, especially in the eastern dry semi-desert areas. However, some threatened species (of both national and international importance) as well as common plants and animals have their natural habitat in this area. The following comments on the fauna of the study corridor are mainly based on the Red Data Book of Azerbaijan, IUCN Red Data List and publications of BirdLife International.

According to these sources, the common mammals of the area are the Jackal (Canis aureus) and the Wolf (Canis lupus) which follow the sheep flocks to the winter pastures in the lowlands and the Red Fox (Vulpes vulpes) which is a resident species of this area. Further characteristic mammals are the bat Western Barbastelle (Barbastella barbastella), the hare (Lepus europaeus), the Red-tailed Sanderling (Meriones lybicus) and the Social Vole (Microtus socialis).

The avifauna is characterized by Short-toed Eagle (Circaetus gallicus, nesting species), Imperial Eagle (Aquila heliaca), Pallid Harrier (Circus macrourus, migratory), Saker (Falco cherrug, wintering), Common Kestrel (Falco tinnunculus, resident), Lesser Kestrel (Falco naumanni, breeding), which is especially important, as this globally threatened species has a small nesting colony under some bridges over Jeyrankechmez river, Little Bustard (Tetrax tetra, wintering), and the resident species Chukar (Alectoris chukar), Black-bellied Sandgrouse (Pterocles orientalis), Rock Dove (Columba livia), Crested Lark (Galerida cristata) and Isabelline Wheatear (Oenanthe isabellina).

Fig 4.4 Location of small Lesser Kestrel (Falco naumanni) breeding colony on bridge piles over Jeyrankechmez River

Characteristic amphibian species are Spade-footed Toad (Pelobates syriacus), Common Toad (Bufo bufo), Green Toad (Bufo viridis) and the Common Frog (Rana ridibunda), which are found in the vicinity of rivers and ponds.

The reptile fauna of the area is made up of Viper Lebetina (Vipera lebetina), the Caucasian Agama (Agama caucasica), the Greek Tortoise (Testudo graeca), and the Caspian Turtle (Mauremys caspica).

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Common fish species that occur in the area are Caucasian Chub (*Leuciscus cephalus orientalis*), Kura's Barbel (*Barbus curi*), Caucasian Bleak (*Alburnus charusini*), Bitterling (*Rhodeus ricous*), Sazan (*Cyprinus carpa*), Kura's Loach (*Nemachilus brandti*). No threatened fish species are found in the rivers and streams of this region.

Characteristic and rare insects that may be encountered are the beetles — *Carabus scabrosus* and *Calosoma sycophanta*; and the butterflies Apollo (*Parnassius apollo*), *Colias aurorina* and *Manduca atropos*.

4.9 Protected Areas and Other Significant Natural Sites

There are no areas designated under National Legislation within the Baku-Shamakhi study corridor, nor do areas of specifically high botanical or zoological value exist.

In the wider surroundings of the study corridor there are two sites of international conservation importance. These are so called 'Important Bird Areas' and are located around Gargabazar and Gushgaya mountains some 8-10 km directly south of Jangi village. These areas are important habitats for the globally threatened Lesser Kestrel (*Falco naumanni*) as well as for the Lanner (*Falco biarmicus*) and the Alpine Swift (*Apus melba*).

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63 As above
Regional Environmental Review, Environmental Assessment & Management
Framework and Resettlement Policy Framework

SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

4.10 Population

The Baku-Shamakhi road passes through four administrative districts namely, from east to west, Garadag (which is under the jurisdiction of Baku municipality), Gobustan, Absheron and Shamakhi. There are three main centres of population along the Baku-Shamakhi road: Baku itself, Maraza and Shamakhi.

Table 4.3 Baku-Shamakhi - Population Statistics

<table>
<thead>
<tr>
<th>District</th>
<th>Area (km²)</th>
<th>Population (1.1.03)</th>
<th>Density (person per km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan Republic</td>
<td>86,600</td>
<td>8,202,500</td>
<td>95</td>
</tr>
<tr>
<td>Garadagh</td>
<td>10,800</td>
<td>97,700</td>
<td>90</td>
</tr>
<tr>
<td>Gobustan</td>
<td>13,700</td>
<td>36,200</td>
<td>26</td>
</tr>
<tr>
<td>Shamakhi</td>
<td>16,100</td>
<td>84,000</td>
<td>52</td>
</tr>
</tbody>
</table>

Source: Azerbaijani Republic State Statistical Committee

4.11 Community Structure

In the region there are four districts. Every district has own administrative centre where Local Executive Power is situated. The Head of Executive Power is appointed by the President. The Local Executive Power receives funding from Central Government. The Local Executive Power has a land department that has relevant detailed information and maps about land use and land ownership. The appropriate Local Executive Power prepares documents about land use and land ownership and gives it to the municipalities (groups of villages). Each village has its own municipality and large villages with the small villages around them form administrative units. Municipal representatives are elected for 5 years by the local people. Municipal income is mainly formed by local taxes (e.g. extraction tax, property tax). Although municipalities are independent bodies, according to the Law on Administrative Control on Municipality Activity (LACMA), the Local Executive Power has authority to control their activity. The purpose of this control is to coordinate municipality activity with legislation, but it mustn’t limit their activation (LACMA Article 4). Usually, administrative units and local municipalities work together to solve local problems.

4.12 Land Use and Sources of Income

Qobustan: The economic basis of the Qobustan district is agriculture: mainly grain production, cattle breeding and vine growing.

Absheron: The Absheron district’s economy is based on food processing, irrigated agriculture (vegetable production, vine growing) and livestock breeding for milk and meat production. In the south, pistachio nuts, almonds and olives are grown as well as very valuable saffron (Crocus sativus), a natural food flavouring and colouring agent with pharmaceutical properties. In addition, there are deposits of oil and natural gas. Along the roadside, butchers slaughter and sell meat.

Shamakhi: The basis of the economy of the district is agriculture: grain production, cattle breeding and vine growing. For centuries, it was famed for its carpet production. There is no oil in the district.

According to the Head of Executive Power, current industrial facilities include a television factory exporting to five countries and a factory producing air conditioners, refrigerators and washing machines. A Peugeot vehicle factory is currently being constructed, which is planned to open in 2005.
Tourism is viewed as a potential growth industry in Shamakhi, with a focus on nature and winter sports. The city is already a popular destination at weekends. A guidebook in English and Russian is being produced.

The villages along the proposed routes have small shops for every day goods and services which, in addition to serving the local population, also serve passing traffic on the existing road. Along the roadside, there are a variety of transport-related small industries as well as casual vendors of fruit – particularly melons, vegetables and nuts.

Table 4.4 identifies the location of selected industrial processing, manufacture and waste reprocessing sites in relation to the proposed route; all are located outside of the ROW.

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Location along Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory (Xirdalan beer plant)</td>
<td>km 12</td>
</tr>
<tr>
<td>Caspian fish processing factory</td>
<td>km 18</td>
</tr>
<tr>
<td>Centre of radioactive waste materials</td>
<td>km 29</td>
</tr>
<tr>
<td>Shamakhi wine-mill</td>
<td>km 112</td>
</tr>
</tbody>
</table>

4.13 Cultural Heritage

Table 4.5 identifies common property resources located near the proposed route:

<table>
<thead>
<tr>
<th>Common Property Resource</th>
<th>Number / location</th>
<th>Distance from proposed route (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School, Munganli</td>
<td>1</td>
<td>&gt;1km</td>
</tr>
<tr>
<td>School, Sabir</td>
<td>1</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td>School and mosque, Maraza</td>
<td>1</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td>Graveyards and monuments</td>
<td>Graveyard, 2 monuments, Shamakhi</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td></td>
<td>Graveyard, monuments, Sabir</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td></td>
<td>Monument, Ceyrankecmez</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td></td>
<td>2 Graveyards, Hokmoli (Absheron)</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td>Olympic Centre, Shamakhi</td>
<td>1</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td>Tree plantation areas</td>
<td>63 km</td>
<td>Adjacent to existing road</td>
</tr>
<tr>
<td>Gas pipeline, Shamakhi</td>
<td>2 adjacent to road</td>
<td>Adjacent to existing road</td>
</tr>
</tbody>
</table>

There are a number of memorials to accident victims located along the roadside.

**Maraza:** The Diri Baba Mausoleum, dating from the 15th century, is built into a cliff 1.1 km from the main road. At Pirsaat Pir, east of the bridge over the major Pirsaat river at Sabir, there is a place where local people come to drink the reputedly holy water and leave a donation.

**Shamakhi:** Shamakhi is an ancient city which may be the Khamkhia described in Ptolemy’s Geography (written 2nd century AD). The city was established on a major regional trading route.

For most of its history, Shamakhi was the capital of Shirvan/southern Azerbaijan, until the centre of power was moved to Baku in the 15th-16th centuries. The city contains several mosques, including the Juma (Friday) Mosque with two minarets (established 743) and the Grand Mosque (built 1902).

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54 The Shirvanshahs ruled from the 7th to the 16th century over parts of the Shamakha-Derbent-Baku region (Elliot, 2004)
Other historical buildings within the area include the Gulustan Fortress dating from 1043 west of the city and the Yeddi Gumbaz tombs of the khans of Shamakhi which date from the 18th-early 19th century. There is also a caravanserai complex dating back to the 14th century. There is a large graveyard between the road and the water supply reservoir, west of the road between Shamakhi and Moganli.
5 ENVIRONMENTAL AND SOCIAL BASELINE – ALYAT-ASTARA

"After independence, we became the most important grain-producing area in Azerbaijan."

Discussions in Jalilabad, 10th August 2005

5.1 Introduction

The existing Alyat-Astara highway (M3) is 243 km long and passes through 7 administrative districts of Azerbaijan: Garadag, Salyan, Bilasuvar, Jalilabad, Masally, Lenkeran and Astara. The road forms an integral part of Azerbaijan’s main north-south transit-corridor between Russia and Iran. Official accident figures covering the period 2000 to 2005 presented as absolute figures and as a percent of all accidents reported in Azerbaijan during the same period are given in the table below. These accidents, as is the case for the Baku to Shamakhi road, are likely to have been attributed to the factors described in Table 2.4.

Table 5.1: Accident figures from the Alyat - Astara road. Jan. 2000 – June 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Fatalities</th>
<th>Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>65</td>
<td>21</td>
<td>77</td>
</tr>
<tr>
<td>2001</td>
<td>96</td>
<td>28</td>
<td>141</td>
</tr>
<tr>
<td>2002</td>
<td>92 (13.4%*)</td>
<td>27 (10.5%)</td>
<td>126 (14.0%)</td>
</tr>
<tr>
<td>2003</td>
<td>96 (13.5%)</td>
<td>52 (16.9%)</td>
<td>122 (12.6%)</td>
</tr>
<tr>
<td>2004</td>
<td>94 (12.5%)</td>
<td>42 (12.3%)</td>
<td>139 (13.2%)</td>
</tr>
<tr>
<td>2005 (6 months)</td>
<td>50 (16.2%)</td>
<td>25 (17.6%)</td>
<td>60 (14.9%)</td>
</tr>
</tbody>
</table>

Source: RTSD (2005) * percent of national reported road accidents

A number of alternative options for improving the Alyat–Astara highway are discussed in this report, as described in Chapter 2. Upgrading may be the construction of new bypasses or totally new road sections off the existing road. In one short section (22 km) at the beginning of the existing road, between Alyat and Yenikand, road widening within the existing ROW is proposed.

For the purpose of the present RER, the ‘study corridor’ has been defined to cover all relevant issues relating to the physical and natural environment and socio-cultural context. The study corridor comprises an area with a minimum width of 5 km to the north and west of the existing road, and all territory to south and east of it.

Figure 5.1 Alyat-Astara Road Study Corridor
PHYSICAL ENVIRONMENT

5.2 Geology, Topography and Soils

The first few kilometres of the road are located in the south-eastern part of the Greater Caucasus (Gobustan-Absheron geographical district). Further to the south, the study corridor can be split into two distinct zones, namely the Kura Intermontane Depression (Kura-Araz geographical district) and the Lenkeran Province (Lenkeran and Talysh geographical district). The major part of the study corridor is coastal plain with altitudes ranging between -28 m (mainly wetland areas) to 0 m asl. It should be noted that the level of the Caspian Sea fluctuates and has risen some 2 m over the past 30 years.

The only natural features that stand out of the plain are numerous mud-volcanoes of 40-60 m height (and some to 300-400 m), which occur on the first 30-40 km of the road. Due to frequent eruptions, the appearance and height of these mud volcanoes is subject to constant change. They lie at distances of some 200-500 m away from the road and are popular tourist attractions. In the area around Bilasuvar and Jalilabad, the road runs at an altitude of about 150 m asl, with the local topography rising to about 1,000 m some 20 km distance to the west. To the south of Shorsulu and to east of the existing road the land, is effectively flat with altitudes ranging between 28 m and 100 m asl.

Geomorphologically, the predominant type of relief is accumulative-denudation plateaus and plains: abrasive-accumulative and abrasive-deflationary flat sea plains. These plains extend along the Caspian Sea in a coastal strip of between 10-40 km wide. There is only one exception: the alluvial plain at the area of the Kura River delta. Between Masally and Astara, the coastal plain narrows to a strip of 2-4 km width between the sea and the foothills of Talysh Mountains. These mountains are intensively-faulted folded mountains with peaks at heights ranging from 396 m to 2,493 m which run southwards of a point some 20 km to the south-west of Bilasuvar.

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66 Aliyev U.A. senior editor (1979), Atlas of Azerbaijan SSR; Main administration of Geodesy and Cartography of Council of Ministers USSR, Moscow, 1979
67 As 44 above
Between Bilusavar and Asara, along rivers such as the Vilash Chay, Lenkeran Chay and Tangeru Chay, canyons with wide river terraces and associated debris cones have developed.

Other geomorphological features include some shallow depressions in the salt-marshes to the west and east of Salyan town. In some places around Salyan and between Salyan and Bilasuvar, ancient deltas are found.

One of most important geomorphological features in the study corridor is wetlands. The wetland system Mahmudchala extends from the Shorsulu-Bilasuvar area in a south and south-eastern direction, continuing as the Abchala wetland system and ending up in the lagoons and water ponds on the coast of the Caspian Sea inside the Gizilagach State Reserve. These wetland systems were formed through the accumulation of alluvial deposits in the river deltas, which created mounds with the depressions between these mounds filling with water during floods on the rivers.

Regarding the soils, most of the study corridor is formed by sierozem (meadow gray soil), which occur to the south of Alyat over a 120 km zone. Meadow gray soil dominates in the Kura-Araz lowlands. It is typical for altitudes of up to 150 m and dry climates with maximum rainfall of 200 mm. Meadow gray soil is generally semi-dry, dry steppe, light loamy kind, which is suitable for winter pastures and arable land (cereals, cotton). The agricultural potential is classified as low to medium.

Table 5.2 provides an overview on further soil characteristics.

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**Picture 5.2 Forest line in 237th km**

The second important type of soil in the study corridor is zheltozem (yellow soil), which in Azerbaijan is restricted to the area south from Masally down to Astara at altitudes up to 1,000m. This area has an average rainfall ranging between 1,400 and 1,700 mm - the highest in Azerbaijan. Yellow soil is piedmont wet-subtropical, with loamy-sand and medium loamy structure, is not naturally prone to salinization and has, compared to the other soil types of the study corridor, the highest bio-climate potential. Yellow soils are most suitable for growing vegetable crops and the cultivation of long-living plants (subtropical cultures).

Chestnut soils occur in the section between Bilasuvar and Masally in strips of 12 to 24 km width at altitudes between 300-500 m and landscapes with average volumes of precipitation between 300 and 450 mm. Chestnut soils is plain dry steppe, which are heavy loamy in structure, have a low degree of

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Most of the information on soils is derived from: Map of Ecological Assessment of Azerbaijan Soils. State Committee of Land and Cartography, Baku, 2004
salinity, low erodibility coefficient and low bio-climate potential. This type of soil is mainly suitable for winter pastures, arable land (grains) and long-living plants such as vines.\footnote{Physical Geography of Azerbaijan SSR. Kashkay M.A., Aliev G., Az. Academy of Science, Baku, 1945}

**Picture 5.3** between 1153\textsuperscript{rd} - 156\textsuperscript{th} km.

Meadow type of soils dominate in the valleys of numerous rivers, such as Bolgar Chay, Vilash Chay, Lenkeran Chay, Tangarud Chay and Astara Chay. Meadow soils typically occur in the fringes of such wetland systems as Mahmudchala and Ahchala, at average altitudes of around 100 m with average rainfall levels of 250 mm. Meadow soils are lowland semi-dry arid steppe, with light loamy structure, medium degree of salinity, are not susceptible to erosion and have low bio-climate potential. This type of soil is mainly suitable for winter pastures and arable land (cotton).

Numerous patches of salt marshes occurs in Bilasuvar and especially in Salyan district. They are especially frequent on the territory of Shirvan National Park and its fringes. Salt marshes are restricted to the lowlands with altitudes <100 m. Annual precipitation is 250 mm; salt marches are not productive in agricultural terms – only some species of saltwort may grow here, so that they are suitable for pastures only.

**Picture 5.4** Near Mahmudchala lake (162\textsuperscript{nd} km)
A narrow strip of sea-borne sands occur from Alyat to Masally. Generally this is not a biologically productive zone, but some kind of grasses and reeds may grow here. These sands are unsuitable for agriculture, but may be used for industrial purposes in some places.

Table 5.2: Comparative Overview of Soil Properties

<table>
<thead>
<tr>
<th>Soil type / properties</th>
<th>Sieregzem/ Meadow-grey</th>
<th>Zheltozem/ Yellow</th>
<th>Chestnut</th>
<th>Meadow</th>
<th>Salt Marshes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture content</td>
<td>0.10 - 0.15</td>
<td>0.60</td>
<td>0.20 - 0.25</td>
<td>0.10 - 0.15</td>
<td>0.10-0.15</td>
</tr>
<tr>
<td>Bio-climatic potential coefficient</td>
<td>0.80 - 1.80</td>
<td>3.0 - 4.4</td>
<td>1.8 - 2.2</td>
<td>0.8 - 2.0</td>
<td>0.8-2.0</td>
</tr>
<tr>
<td>Water stability of values</td>
<td>26</td>
<td>62</td>
<td>48</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td>Granulometric composition</td>
<td>loamy 0.78</td>
<td>loamy 0.33</td>
<td>loamy 0.80</td>
<td>loamy 0.36</td>
<td>loamy 0.89</td>
</tr>
<tr>
<td></td>
<td>heavy-loam 0.60</td>
<td>heavy-loam 0.96</td>
<td>heavy-loam 0.90</td>
<td>heavy-loam 0.91</td>
<td>medium-loamy 1.0</td>
</tr>
<tr>
<td></td>
<td>medium-loamy 1.0</td>
<td>light-loamy 0.89</td>
<td>medium-loamy 1.0</td>
<td>medium-loamy 1.0</td>
<td>light-loamy 0.89</td>
</tr>
<tr>
<td></td>
<td>light-loamy 0.73</td>
<td></td>
<td></td>
<td>light-loamy 0.89</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humus coefficient</td>
<td>1 - 2</td>
<td>3.0 - 4.0</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erodibility</td>
<td>0.2 - 1.0 km²</td>
<td>0.3 - 1.0 km²</td>
<td>0.2 - 1.0 km²</td>
<td>0.2 - 1.0 km²</td>
<td></td>
</tr>
<tr>
<td>Salinity</td>
<td>0.42 - 1.0 g/m³</td>
<td>0.56 - 1.0 g/m³</td>
<td>0.55 - 1.0 g/m³</td>
<td>0.30 - 1.0 %</td>
<td></td>
</tr>
<tr>
<td>PH</td>
<td>8.4 - 8.9</td>
<td>4.3 - 6.0</td>
<td>7.5 - 8.2</td>
<td>7.4 - 8.6</td>
<td>&gt; 8.6</td>
</tr>
</tbody>
</table>

5.3 Climate And Air

The study corridor can be divided into a number of distinct climatic zones. An overview of average annual temperature, average annual rainfall and prevailing wind direction in July and January is shown in Figure 5.2.

The northern part of the territory is characterized by dry sub-tropical and semi-desert – steppe climate with very hot summers and moderately warm winters. The average annual rainfall is 200-300 mm with rainy seasons in spring and autumn. Average annual temperature is 14.5°C with 24-26°C in summer and 4-6°C in winter. Absolute maximum is +41°C and minimum -22°C. In the area around Alyat, the prevailing direction of wind during both summer and winter is north. Strong winds are frequent here, sometimes reaching speeds of 30 m/s. In the area between Salyan and Bilasuvar, western winds dominate in winter and eastern winds during the summer period. Wind speeds vary between 0-12.5 m/s in average with strongest winds in summer and winter. Average annual evaporation is 800-1,000 mm, humidity is 31-50%.

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73 Physical Geography of Azerbaijan SSR; Kashkay M.A., Aliyev G., Azerbaijan Academy of Science, Baku, 1945
Precipitation levels gradually increase to the southern direction between Goytapa to Astara district, where they reach the highest levels of Azerbaijan with 1,000-1,600 mm. Average annual isotherm is 14-14.5°C on the lowlands and foothills to decrease to 6-10°C with rising altitudes in the south-western parts of the area (Talysh Mountains). Absolute maximum in the Lenkeran lowland is 38°C, minimum is −16°C. Average January temperature is +1 to +4°C and +16°C in July. Rainfall maxima are in autumn. Dense fogs and strong winds are very characteristic in the area. The main direction of wind is south-east in summer and north-west in winter. In the mountain region the main direction of wind is north-east during both winter and summer.

**Figure 5.2 Azerbaijan Climate Map**

*Source: World Bank Map Design Unit*
5.4 Surface and Groundwater

Surface water resources of this area are the numerous rivers, water-canals, wetland systems, some lakes and mineral water springs.

The main river in the area is the Kura River, which accounts for approximately 90% of the surface water resources in Azerbaijan, draining 68,900 km² or 80% of its territory. The Kura is one of two rivers which are traditionally considered to separate Europe and Asia. It rises in Turkey and passes through Georgia before entering Azerbaijan on its 1,500 km journey to the sea (900 km in Azerbaijan) where it drains into the Caspian Sea about 50 km south-east of Salyan town. The Kura floods regularly during both spring and autumn. The Kura river system is organically and bacteriologically polluted by the discharge of inadequately treated or untreated wastewater from the 11 million people living in the catchment area. This is a major problem, with Azerbaijan being dependent on the Kura river for more than 70% of its drinking water supply. It also plays a key role for irrigation and other agricultural and industrial purposes and is important as a source for fish.

Irrigation and drainage systems are essential for agriculture in Azerbaijan. Irrigation is the largest water user in the country: the total area with installed irrigation is 1.45 million ha, nearly 85% of the cultivated area. Cotton and grain are grown on irrigated land. Unsustainable irrigation practices in the region with inefficient use of water have led to rising water tables, secondary bogging and salinisation of soils, and loss of soil fertility.

All other rivers within the study corridor (except Pirsaat Chay) originate from the Talysh Mountains. These are, from north to south: Bolgar Chay, Inja Chay, Hamrava Chay, Hamshira Chay, Goyotapa-Chay, Vilash Chay, Boradygar Chay, Bolady Chay, Viravul Chay, Girdany Chay, Lenkeran Chay, Tangarud Chay, and Astara Chay. The water regime of these rivers mainly depends on precipitation (70% 96%), while groundwater accounts for 5-20% and melted snow for 2-10% of the rivers' water. All these rivers are used for irrigation purposes with some of them drying up during times of maximum irrigation in July and August, e.g. Bolgar Chay, Gara Chay, Inja Chay, Goyotapa Chay and Hamshira Chay. Most rivers cause floods during spring season when snow melts in the Talysh mountains, except Bolady Chay, which regularly floods during both autumn and winter.

Main water-canals of the study corridor are Azizbeyov Channel (total length 123 km, irrigation area 69,000 ha) and Mungan Main Channel (total length 37 km, irrigation area 68,000 ha). The Shirvan Main Collector, which forms the northern boundary of Shirvan National Park, directly drains to the Caspian Sea.

Mineral water sources occur in Masally, Lenkeran and Astara. They are different in temperature and chemical composition: Masally - 50-64°C, Lenkeran - 41-43°C and Astara - 40-50°C. Lenkeran mineral water is used for medical purposes and in connection with some holiday houses that are located in this area.

Groundwater originates from the sea and continental quaternary sediments. In the area of the Mungan and Salyan lowlands, groundwater levels occur at around 3 m, very rarely at 3-5 m. Over the years, the groundwater table in the area has generally decreased following to the influence of collector- and drainage systems. In some places, the degree of mineralization here is 2.7 g/l or 0.7-1 g/l. In the Lenkeran lowland, the groundwater table is at 2.5-5 m and ranges between 0.2-0.5 m the coastal zone. In the area around Kizilagach bay, groundwater levels come up to 0.1-1.2 m. The mineral content of groundwater in the Lenkeran lowlands does not exceed 0.2-0.5 g/l, but on some depressions it may reach 3-5 g/l. The groundwater is of the hydrocarbonate and nitride-calcium type.

For the majority of the towns and villages in southern Azerbaijan, water supply is not currently a problem. The exceptions are Salyan and Bilasuvar. In both cases, measures are currently being undertaken to address this: building a reservoir/channel to extract water from the Kura River for distribution to the local population.
According to unconfirmed information from the potential project areas\textsuperscript{74}, many households in rural areas are without a piped water supply although most have a well in the yard. Piped water supply is available to around 11\% of the rural population\textsuperscript{75}, although this may vary from area to area. In many areas, water points for travellers have been constructed by the roadside.

The Caspian Sea is the largest saltwater lake in the world, with an area of some 373,000 sq. km. The level of the Caspian Sea fluctuates over time. The Caspian Sea-KaraBogaz Gol Bay ecosystem in Turkmenistan is a closed basin with a sea level regime of its own, unrelated to that of the oceans. The Volga river accounts for about 80\% of inflow into the sea, the remainder being from seven other smaller rivers and inflow from groundwater. The outflow is mainly by evaporation at the sea surface and to the KaraBogaz Gol. The last short-term sea-level cycle started with a sea-level fall of 3 m from 1929 to 1977, and a sea-level rise of 3 m between 1997 and 1995, 100 times faster than the eustatic rise. Whilst the sea level is currently at around \(-27\) m, there is much evidence both of much higher levels up to \(+50\) m and much lower levels down to \(-80\) m. The causes of sea level changes are complex, ranging from tectonic and climatic changes to anthropogenic changes. The most plausible explanation (Rodionov, 1994) is that Caspian sea level changes are related to changes in the discharge of the Volga river, which are in turn related to variations in precipitation over the drainage basin of the Volga, and to variations on the amount of Atlantic depression weather systems reaching the Russian mainland\textsuperscript{76}.

5.5 Noise

Given the current low-moderate level of road traffic and industrial activity along the Alat-Astara road, noise is not considered to be a key environmental issue in the area.

5.6 Potential Natural Hazards

Seismic activity in the study corridor is of concern to Talysh-Kura area\textsuperscript{77}. Earthquakes of the following magnitudes have been recorded in the area: Bilasuvar: 6.5 magnitude on the Richter-scale, Masally: 7, Lenkeran: 7, Salyan: 6.

A further type of natural hazard for the study corridor is flooding, especially on Kura River, which causes serious problems mainly for Salyan and Neftchala districts. In May 2003, snowmelt from the Caucasus mountains led to flooding in Azerbaijan in 11 districts along the Kura and Araz rivers. In some areas, landslides were triggered. More than 6,000 families were affected, around 2,000 houses damaged and more than 3,000 ha of agricultural land submerged and crops destroyed. Salyan and Neftchala were amongst the worst affected districts. Estimated losses for the country were estimated to be US$50-60 million.

As indicated above, the level of the Caspian Sea also fluctuates over time. This has impacts on the coastal zones of all five surrounding countries: Azerbaijan, Iran, Kazakhstan, Russia and Turkmenistan. According to UNESCO (undated)\textsuperscript{78}, flooding in the coastal zone has damaged buildings and other engineering structures, roads, beaches and farmland. The flooding has been aggravated by storm surges. In addition to the danger to oil fields in Azerbaijan and Kazakhstan, the fluctuating sea level has resulted in changes in: water regime, hydrochemical regime of river mouths, dynamics and composition of groundwater, structure and productivity of littoral and river mouth biological communities, sediment deposition patterns, pollution by heavy metals, petroleum products, synthetic organic substances, radioactive isotopes and other substances.

\textsuperscript{74} Informal discussions held with local communities by the Scott Wilson team on various site visits during July-August 2005
\textsuperscript{75} UNECE (2003) \textit{Azerbaijan: Environmental Performance Review}, Switzerland, 2003
\textsuperscript{76} Caspian Sea Level Project Site \url{www.caspase.tudelft.nl}
\textsuperscript{77} Physical Geography of Azerbaijan SSR; Kashkay M.A., Aliyev G., Azerbaijan Academy of Science, Baku, 1945
\textsuperscript{78} UNESCO (undated) \textit{Caspian Sea-Level Rise: An Environmental Emergency}
In the study corridor, numerous different types of vegetation occur.

The northern part is characterized by dry saltwort and ephemeral deserts and wormwood-saltwort semi-desert vegetation. Biodiversity of the flora is high with up to 600-729 plant species in this area. *Artemisia hanseniana* is main edificatory for wormwood semi-desert and *Salsola dendroides* is edificatory for saltwort desert. The grouping of two edificatory (*Artemisieto-Salsoletum nodulosae*) also plays a very important role and is widely distributed in this zone. Main seasons of ephemeral vegetation are spring and autumn and spring vegetation dominates over autumn while their quiescent period coincides with the driest season of the year. The woody-shrubby vegetation is made up of solitary fig trees, tamarisk, pomegranate, junipers etc. It forms only about 7% of all flora of this region, while 93% are annual and perennial grasses. In the small area to the north-west from Salyan caper-wormwood semi-desert occurs.

Natural meadow type of vegetation occurs in the swampy areas between Bilasuvar and Gizilagach Bay (Caspian Sea) where cane, sedge-cane and reed-cane form extensive swampy meadows and grassy marshes. Wetland vegetation dominates the extensive flat lands of Shorgyol Lake (Shirvan National Park), the wetland systems of Mahmudchala and Aghchala and around Gizilagach Bay. These areas are mainly covered with reed (*Phragmites australis, P. communis*), cane (*Scirpus lacustris*) and cattails (*Typha angustifolia*).

In the lowland and foothills between Jalilabad and Astara, the natural steppe and forest vegetation has been gradually replaced by agricultural land. Tea plantations are abundant in this area. Vegetable-growing is common here, as well as subtropical cultures and viticulture. Some plantations of laurel occur at the area between Lenkeran and Astara.

Hirkan mixed forests with relict species of trees (like *Quercus castaneifolia*, *Parrotia persica* and *Zelkova carpinifolia*) and mountain oak and hornbeam forests are typical natural vegetation on the foothills and mountains of the Talysh Mountains, which lie in the south-west of the study corridor.

Out of the plant species of the study corridor, thirty-two are listed in the Azerbaijan Red Data Book of 1989. Only persimmon (*Diospyros lotus*) has a wide distribution and occurs in Bilasuvar, Jalilabad, Masally, Lenkeran and Astara districts. *Marsilea strigosa, Nymphaea alba, N. candida and Trapa hyrcana* are mainly distributed in Masally district. All other species are restricted to the lowlands and foothills of Masally, Lenkeran, Astara and Lerik districts.
The proposed road corridor crosses several forested areas in the vicinity of Goytapa, Masally and Lenkeran. The configuration of the three forested strips southeast of Ahmadli, Goytapa and the two forested strips south of Ancaqala, Masally appears to indicate that they may have been planted to act as windbreaks.

5.8 Fauna

As the study corridor has numerous different types of landscapes and ecosystems, from dry semi-desert to wet sub-tropics, it provides large numbers of different habitat types for specialized animal species, which is the main reason for the high biodiversity of animals.

The rivers, water canals, marshes and the sea bay of the study corridor generally provide for very abundant fish resources. This includes many endemic species of Azerbaijan, Caspian and Caucasus, as well as a big number of rare fish species from both National and International Red Data Books which are listed in Appendix D. Many sea species that have their feeding habitats in the Caspian regularly swim up the rivers where they have their spawning habitats. Many other species are typical river fish.

The terrestrial animal habitats of the study corridor may be divided into the northern dry semi-desert area, the southern lowlands (including swampy areas) and the foothills of the Talysh Mountains. In the following a brief overview is given on the fauna of both these zones in the study corridor. Detailed lists of species are given in Appendix D.

Northern Part of the Study Corridor

Given the very dry climatic conditions the dry semi-deserts of the northern part of the study corridor, only two species of amphibians occur in the area, the toad Bufo viridis and, in all water ponds, the frog Rana ridibunda. The area is a most suitable habitat for reptiles such as two tortoise species as well as numerous lizards and snakes. Red Data species among the reptiles are: Testudo graeca, Emys orbicularis and Phrynocephalus helioscopus.

The avifauna in this zone is very diverse and includes about 200 species. This can be explained by an important migration route that passes over this territory as well as by very large winter populations. About half of the species are migratory birds, which gather alongside the sea coast of the Caspian during the winter season. During summer, high density of birds can be observed around the ponds (e.g. Shorgoy Lake in the Shirvan National Park and on the lagoons alongside the coast), as well as on the islands. The most typical bird species for this part of the study corridor are listed in the Appendix D, the most important Red Data species are Phalacrocorax pygmeus, Phoenicopterus ruber, Cignus columbianus, Aythya nyroca, Aquila heliaca, Heliaeetus albicilla, P. naumannii, Francolinus frankolius, Porphyrio porphyrio, Pterocles orientalis and Tetrax tetrax.

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Paeonia mlokosewitschii, Frangula grandifolia, Laucerasus officinalis, Pyrus hyrcana, Taxus baccata, Vitis sylvestris and Woodsia alpina.

90 as 62 above
91 as 63 above
93 as 66 above
94 as 62 above
95 as 66 above
96 The IUCN Red List of Threatened Species (www.iucn.org)
Typical mammals of the area include common species as well as IUCN and Azerbaijani Red Data book species (hedgehog, hare, various species of bats, rodents, predators, Caspian Seal and the Sand (Persian) Gazelle that is listed in both the national and international Red Data Book). A list of species is provided in the Appendix D.

**Southern Part of the Study Corridor**

Due to a high variety of habitat types the southern part of the study corridor is specifically rich in terms of biodiversity. The important animal habitat types include dry and wet lowlands, rivers, extensive swamps, lakes, the sea bay, and foothills and mountain habitats in the southwest of the corridor. Almost all of Azerbaijan’s amphibian species and reptiles, including rare and endangered species, can be found within this area.

With regard to avifauna, the Gizilagach Nature Reserve is a specifically rich habitat, which also holds the highest numbers of birds throughout the year, as well as such important areas as Mahmudchala and Ahchala, the delta of Kura River and Hirkan Reserve. Almost all of Azerbaijan’s water bird species occur on this area, including locally and internationally threatened species (grebes, cormorants, pelicans, herons, flamingo, swans, ducks, rails, waders, gulls and terns) as well as many raptors, francolins, pheasant, doves and many passerines.

The study area, including Gizilagach Nature Reserve, is also an important habitat for numerous species of mammals, many of which are rare or endangered species (see Chapter 5.9).

### 5.9 Species of Commercial Importance

The most important commercial species are different species of fish, especially sturgeon, which plays a significant role in both national and international trade.

### 5.10 Protected Areas and Other Significant Natural Sites

There are numerous protected areas and other significant natural sites of both national and international importance along the study corridor. Some of these sites have strict governmental protection and international conservation status. Some of sites are nominated as potential sites under the Ramsar Convention, or included in the official list of Important Bird Areas (IBA) of BirdLife International IBA programs. Some times these IBAs overlap with state protected areas.

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99 Important Bird Areas (IBAs) are a particularly effective tool to identify conservation priorities. IBAs are key sites for conservation – small enough to be conserved in their entirety and often already part of a protected-area network. At a minimum, IBAs meet one of the following three criteria:
- hold significant numbers of one or more globally threatened bird species;
- are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species
- hold exceptionally large numbers of migratory or congregatory species.
Table 5.3 List of protected areas and other significant natural sites

<table>
<thead>
<tr>
<th>Name of the Site</th>
<th>State protection</th>
<th>Ramsar</th>
<th>IBA</th>
<th>World Natural Heritage Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Shirvan National Park</td>
<td>National Park</td>
<td>Potential</td>
<td>(No 43)</td>
<td></td>
</tr>
<tr>
<td>2 Mahmudchala Wetlands</td>
<td>No</td>
<td>Potential</td>
<td>(No 45)</td>
<td></td>
</tr>
<tr>
<td>3 Delta of Kura River</td>
<td>No</td>
<td>Potential</td>
<td>(No 46)</td>
<td></td>
</tr>
<tr>
<td>4 Akchala Wetlands</td>
<td>No</td>
<td>Potential</td>
<td>(No 47)</td>
<td></td>
</tr>
<tr>
<td>5 Gizilagach Bay</td>
<td>State Reserve</td>
<td>Official</td>
<td>(No 48)</td>
<td></td>
</tr>
<tr>
<td>6 Vilash Chay Valley</td>
<td>No</td>
<td>-</td>
<td>(No 49)</td>
<td></td>
</tr>
<tr>
<td>7 Hirkan Forest</td>
<td>National Park</td>
<td>-</td>
<td>(No 51) Nominated</td>
<td></td>
</tr>
<tr>
<td>8 Astara Chay Valley</td>
<td>No</td>
<td>-</td>
<td>(No 52)</td>
<td></td>
</tr>
</tbody>
</table>

Azerbaijan is a signatory to the *Convention on Biological Diversity* which seeks to ensure conservation of biological diversity and sustainable use of its components. The first national report on Azerbaijan’s biodiversity *Country Study and First National Report on Biodiversity* was issued in April 2004. The report identifies a number of issues relating to the current protected areas system in Azerbaijan. Among these are:

- Management of nature reserves$^{100}$ is constrained by lack of land legislation and poorly defined borders;
- During the development of some of the reserves, their relationship within the wider landscape was not adequately considered.

These issues may be relevant to the sensitive wetlands of the Alyat – Astara study corridor – regardless of whether or not they have official protection status.

Figure 5.3 Protected Areas in Alyat-Astara Road Study Corridor

Key:

1 Shirvan National Park 2 Mahmudchala Wetlands
3 Kura River Delta 4 Akchala Wetlands
5 Gizilagach Bay 6 Vilash Chay Valley
7 Hirkan Valley 8 Astara Chay Valley

$^{100}$ See Chapter 4 for definitions of different types of protected areas in Azerbaijan
The following information on the various protected areas is mainly based on the sources indicated below.

1. **Shirvan National Park** was founded in 1969 as Shirvan State Reserve. At a later point of time the territory of the Bandovan Sanctuary was added to the reserve area and enlarged for the development of the National Park. The present territory of the park is about 54,000 ha, located on the territory of Salyan district. In the north the border of the park is determined by the Shirvan Main Collector, in the east by the Caspian Sea, in the west and south by smaller water canals. The western border of the Park runs very close to the existing road corridor. The landscape of the Park is formed by semi-desert, wetland (brackish lake) and sandy coastal zones. Lake Shorgyol originates from overflows from the Shirvan Collector. It is mainly covered by overgrowth of reed. The main purpose for the establishment of the National Park was the protection of the local Sand Gazelle population as well as the protection of wintering, breeding and migratory birds: Flamingo, Ferruginous Duck, Purple Gallinule, Little Bustard, etc. The main threats to this habitat are unstable water levels and drying of the lake. In recent years, the population of the Sand Gazelle has significantly increased, by this reason individuals and herds are also now found outside of the park border. At times gazelles may be encountered to the west of the existing road. This area has was classified as an IBA and been proposed as a potential Ramsar site. Potential Ramsar sites are IBAs which are regarded as internationally important for threatened bird species, congregatory bird species, assemblages of restricted-range bird species and/or assemblages of biome-restricted bird species.

2. **Mahmudchala Wetlands**: Mahmudchala wetlands are located south of the Shorsulu-Bilasuvar sector of the existing road and stretches over the territory of 4 administrative districts: Salyan, Bilasuvar, Neftchala and Jalilabad. The surface of this area is about 8,000 ha. The Mahmudchala wetland system with lakes was formed in 1896 as a result of a flood on Araz River. Today, the main water sources for the wetland are the river Bolgar Chay and some irrigation canals. The site is one of the important wetland IBAs in Azerbaijan. It meets the criteria of the Ramsar convention and will be nominated for this status. Currently the site does not have any national protection status; on the contrary, the wetland is a popular hunting area. The Local Executive Power is planning to promote Hunting Tourism in the area where the road crosses the Mahmudchala ‘Reserve’ and the idea is currently being evaluated by the Ministry of Youth, Culture and Tourism.

The dominant type of habitat is wetland with open water bodies as well as vast reed-covered areas, which provides optimal habitat conditions for water birds and different other animals, like Marbled Teal, Ferruginous Duck, Reed Cat, Wild Boar and many others. In wintertime, this site suffers from strong hunting pressure. For this reason, birds regularly move to the area alongside the existing road between Shorsulu-Bilasuvar, where poaching and hunting does not take place.

3. **Kura River Delta**: The delta of Kura River in Neftchala district, around 10 km east of Neftchala town. Similar to the Mahmudchala wetland system, this site meets the criteria of the Ramsar Convention and will be nominated for this status. Although it is one of the important wetland IBAs in Azerbaijan, the Kura river delta currently has no national protection status. This site covers about 15,000 ha and includes 2 main and some smaller tributaries of the Kura and some islands. Sandy beaches with big lagoons and sandbanks are located in the northern part of the site. Many fish ponds of Banka fish economy are located around the northern parts of the river. An important fish trading site is located in the northern part of the site, close to Mushfig village. Different types of wetlands are

101 Aliyev U.A. senior editor (1979), Atlas of Azerbaijan SSR; Main administration of Geodesy and Cartography of Council of Ministers USSR, Moscow, 1979


103 Heath, M.F et al (undated) Important Bird Areas and potential Ramsar Sites in Europe – English www.birdlife.org.uk

104 Communication from local official received 29th August 2005
distributed over the territory of the delta including streams, open sea, lagoons, marshes, ponds and grassland on the islands. The site is a very important habitat for water birds throughout the year. Almost all water birds species occur in this area (see Appendix D). The Kura River delta is also a most important spawning habitat for fish. The main threat for this area is poaching and potentially some pollution through pesticides and oil.

4. Akhchala Wetlands: Akhchala wetlands is a continuation of Mahmudchala wetland system. It is located in Neftchala and Lenkeran districts to the south-east of Mahmudchala. It reaches up to Gizilagach State Reserve and covers an area of about 15,000 ha. The Akhchala wetlands meet the criteria of the Ramsar Convention and will be nominated for this status as a part of the Mahmudchala wetland system. The area is also an important wetland IBA but so far has no local protection status. As it is a very shallow wetland (0.5-1 m), it may occasionally dry out in especially hot summers, due in part to extraction of irrigation water. The site is important for such bird species as birds as Pygmy Cormorant, Spoonbill, Glossy Ibis, Marbled Teal, White-headed Duck, Ferruginous Duck and others. Main threat is unsustainable exploitation like water extraction, poaching, grazing and drying up.

5. Gizilagach State Reserve: Gizilagagh State Reserve, officially listed as a Ramsar site in 2001, is one of most important wetland IBAs in Azerbaijan and one of the most important sites for wintering birds in the Western Palaearctic. This State Reserve, in Lenkeran district, was founded in 1929 and is one of the oldest in Azerbaijan. It covers more than 88,000 ha, including about 51,500 ha of water surfaces (Big and Small Gizilagach Bays).

Gizilagach Bay is a freshwater reservoir separated from the sea by an artificial dam and is greatly silted up and overgrown. The relief is characterized by alternating low ridges, open hollows and ancient, silted up channels. The area also includes two large islands in the Caspian Sea. The Reserve has diverse habitat types, such as semi-desert, grassland, scrub, and different types of wetlands like coastal lagoon, standing fresh, brackish and salt water and water-fringe vegetation. In previous years, special management measures were taken for wintering geese. Many species of water birds occur on this area (see Appendix D), including such rare species as Dalmatian Pelican, Pygmy Cormorant, Lesser White-fronted Goose, Red Breasted Goose, Marbled Teal, Ferruginous Duck, White-headed Duck, White-tailed Eagle, Peregrine Falcon, Black Francolin, Siberian White Crane, Little Bustard and Sociable Plover. Big Gizilagach Bay also plays a most important role in the Southern Caspian as a place of concentration and growth for many species of fish. Many mammals also occur in the Reserve, such as Wild Boar, Wolf, Jackal, Reed Cat, Badger, Otter, Nutria and others. Unsustainable water management (for irrigation and outflows of water via many channels to the Caspian Sea) are the main threats for the site as well as poaching, which is difficult to manage due to size of the Reserve. Additionally, the southern part of Small Gizilagach Bay is not strictly protected as it has the status of Sanctuary only and is intensively used for fishing, which creates a critical disturbance for the bird populations.

6. Vilash Chay Valley: Vilash Chay Valley is located in the Yardymly, Masally and Lenkeran districts and covers an area of about 1,000 ha. The dominant habitat type is broadleaved deciduous forest and scrub along the river valley. From the Talysh Mountains, the Vilash Chay flows to an eastern direction. It has been classified as IBA with the main objective of protecting endemic sub-species of Pheasant (Phasianus colchicus Talyshensis), as well as some other rare species of birds, like Black Stock, Black Kite, Lesser Spotted Eagle, Booted Eagle, Saker and Kingfisher. The main current threats for the site are intensive grazing, poaching and illegal tree-felling. The site has no national protection status.

7. Hirkan National Park: This National Park was founded as Hirkan State Reserve in 1936 to protect the unique Hirkan flora and fauna. The current area of the park is about 21,500 ha. It is located in Lenkeran, Astara and Lerik districts and has been nominated as a UNESCO World Natural
Heritage Site. Hirkan National Park is a most important site for the conservation of rare endemic species of plants and insects as well as for rare and endemic species of birds and animals. The dominant habitat type is mountain relict broadleaved forest of the Talysh Mountains, but some lowlands as well as wetland (Hanbulan water reservoir) are also present here. There are 1,167 species of plants of the Hirkan-type, including 162 endemic, 95 rare and 38 critically endangered species (Zapovedn Az-na). For the most important plant species see in Chapter 5.6: Hirkan forest. The Park has been classified as IBA because it represents an important site for relict sub-species of birds. The avifauna of the area is characterized by Hirkan sub-species of common Caucasian species of birds, like Talysh Pheasant, Talysh Spotted Woodpecker, Hirkan Jay and Hirkan Sombre Tit. Protected animals of this area are: Hedgehog, Hyena, Leopard, Lynx, Bear, Roe, Deer and Wild Boar. The main current threat for the Park results from the high density of the local population and the resulting pressure on its natural resources. Generally the territory of Park is strictly protected, but some grazing, tree-cutting, firewood collections takes place, especially on the borderlands.

8. **Astara Chay Valley:** Astara Chay covers an area of about 2,000 ha in Astara district. The dominant type of landscape is foothills and lowland broadleaved deciduous forest. It has been classified as an IBA for such species as Lesser Spotted Eagle, Middle Spotted Woodpecker, Talysh Pheasant, Shikra, Roller and some others. Officially, it has no local conservation status, but its location on the border zone of a special restricted area to some extent provides protection for the habitat and the avifauna of the area.

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105 Representatives from UNESCO were in Lenkeran in August 2005
SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

5.11 Population

The existing Alyat-Astara highway (M3) is 243 km long and passes through 7 administrative districts of Azerbaijan: Garagag, Salyan, Bilasuvar, Jalilabad, Masally, Lenkeran and Astara. The main centres of population are: Alyat, Salyan, Bilasuvar, Sabirabad/Qarazancir, Jalilabad, Goytapa, Masally, Liman, Lenkeran and Astara. The road forms an integral part of Azerbaijan’s main north-south transit-corridor between Russia and Iran.

Table 5.4 Alyat-Astara - Population Statistics

<table>
<thead>
<tr>
<th>District</th>
<th>Area (km²)</th>
<th>Population (1.1.03)</th>
<th>Density (person per km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan Republic</td>
<td>86,600</td>
<td>8,202,500</td>
<td>95</td>
</tr>
<tr>
<td>Salyan</td>
<td>1,790</td>
<td>112,000</td>
<td>65</td>
</tr>
<tr>
<td>Bilasuvar</td>
<td>1,400</td>
<td>74,900</td>
<td>56</td>
</tr>
<tr>
<td>Jalilabad</td>
<td>1,440</td>
<td>170,000</td>
<td>123</td>
</tr>
<tr>
<td>Masally</td>
<td>720</td>
<td>174,000</td>
<td>250</td>
</tr>
<tr>
<td>Lenkeran</td>
<td>1,540</td>
<td>189,900</td>
<td>126</td>
</tr>
<tr>
<td>Astara</td>
<td>620</td>
<td>84,300</td>
<td>143</td>
</tr>
</tbody>
</table>

Source: Azerbaijan Republic State Statistical Committee

5.12 Community Structure

In the region there are 6 districts. Every district has own administrative enter where Local Executive Power is situated. The Head of Executive Power is appointed by the President. The Local Executive Power receives funding from Central Government. The Local Executive Power has a land department that has relevant detailed information and maps about land use and land ownership. The appropriate Local Executive Power prepares documents about land use and land ownership and gives it to the municipalities (groups of villages). Each village has its own municipality and large villages with the small villages around them form administrative units. Municipal representatives are elected for 5 years by the local people. Municipal income is mainly formed by local taxes (e.g. extraction tax, property tax). Although municipalities are independent bodies, according to the Law on Administrative Control on Municipality Activity (LACMA), the Local Executive Power has authority to control their activity. The purpose of this control is to coordinate municipality activity with legislation, but it mustn’t limit their activation (LACMA Article 4). Usually, administrative units and local municipalities work together to solve local problems.

5.13 Land Use and Sources of Income

In all centres of population, a variety of businesses have been established along the roadside ranging from temporary sales points for fruit, vegetables, fish and ‘ayran’ (a yogurt-based drink), through open-air restaurants and shacks selling vehicle lubricants to more ‘permanent’ bakeries, tea shops and restaurants, general stores and supermarkets, petrol stations, vehicle repair yards and construction materials yards.

Salyan: The basis of the economy of the district is agriculture specialized on cotton growing, grain growing, subtropical growing fruit and cattle breeding. There is oil and gas production department in the district. The ginning and plastic plants function in Salyan.

The socio-economic development plan for Salyan identifies a number of activities for 2004–2008. Key areas for activities are cotton-growing, grain-growing, vine-growing and fruit and vegetables; cattle-breeding and poultry; agrarian scientific research; mixed forage production; oil and gas production; electricity network; water supply and drainage system; houses for invalids and families of martyrs; capital repairs to schools and construction of additional classrooms.
Current and planned economic activities in Salyan include the drilling of new oil and gas wells; the construction of the Salyan substation with a transformer and its existing 110kva power line. The land area has already been allocated. In Shorsulu village, an electric exchange has been put into operation and connected to the region’s optic cable. Additionally, the plastic mass in Salyan has been restored and there has been a major reconstruction of Salyan’s water supply and drainage system during 2004 and 2005.

**Bilasuvar:** Agriculture is the main economic activity in the area, particularly wheat, alfalfa and cotton.

The main economic activities for 2004-2007 include the construction of a furniture workshop; construction of a customs and terminal and examination point. Infrastructure work includes improvement of drinking water and the repaving of 19 km of road from Bilasuvar to the nearby frontier point with Iran. Land has been allocated for the construction of a large sports complex. According to meetings with local people, the Ministry of Youth, Sport & Tourism has been approached to develop hunting tourism in the area in the section that crosses the Mahmaudchala Reserve. Decisions have not been finalised but there appears to be local interest and support for this economic initiative.

**Jalilabad:** The basis of the economy of the district is agriculture, specialized in grain growing, wine growing, cattle breeding fruit farming.

Development plans include upgrading local roads, improving the water supply in rural areas, upgrading existing schools and building new schools, repairing old hospitals and building new hospitals.

**Masally:** The basis of the economy is agriculture including tea growing, vegetable growing, fruit-farming, wine making and cotton growing. Dairy processing plant, fruit and vegetable cannery, clothing factory and wine making plant are developed on the territory of the district.

**Lenkeran:** The natural and climate conditions of Lenkeran favour the development of agriculture, especially tea and vegetable growing. Tea growing is one of the most developed and profitable branches of agriculture. The industry suffered a slump in recent years, however recent joint venture investments in a tea-processing factory are intended to contribute to the recovery and future development of the industry. Agricultural activities include market gardening, citrus and subtropical fruit-growing and viticulture. Cattle breeding and silkworm breeding are also developed in the region. Cattle breeding serves both domestic and export markets. Citrus fruits, including lemon, orange and mandarin are also exported.

Lenkeran is a developing industrial region. There are 27 industrial enterprises, some branches of the republic’s biggest enterprises, dominated by the food processing industry including fruit and vegetable tinning, fish processing and cannery, the tea factory and a beer factory. The Lenkeran Cannery for Fruits and Vegetable Production can produce 85 million cans per year, processing vegetables and fruits from Lenkeran as well as from neighbouring and other regions of Azerbaijan. There are plans to build a new wine factory, dairy products factory and vegetable processing factory. Other industrial activities include construction materials production, electrical technology, timber processing and industrial enterprises. Industry in Lenkeran is in the process of being privatized.

Lenkeran is also the cultural centre of the Lenkeran Astara region. There is a university, 4 secondary professional schools, 2 children’s music schools, 56 kindergartens, 2 lyceums, 88 secondary schools, 2 palaces of culture, more than 200 cultural and 80 medical institutions. A large new hospital is currently under construction.
There are plans to build an international football stadium (there is an existing Olympic stadium), to develop the seaport and develop an international airport on the old airport site, which is located close to the existing bypass around Lenkeran city and proposed new road alignment.

Today, one of the most difficult problems for the inhabitants of Lenkeran is the shortage of electrical energy. The villages of the region receive energy for just 4-5 hours, the city 5-6 hours a day in the autumn-winter season. The energy supply of the region gets little better in spring-summer seasons.

Astara: The basis of the economy of the district is food industry, agriculture (tea-growing, grain growing, citrus growing, vegetable growing)

Economic activities include a vegetable processing factory. A second factory is under construction (using private investment). In 2004, a border terminal was opened where transit lorries take goods for distribution. New 4 star hotel has been constructed and opened in April 2004.

New electricity station and new gas compressor station for Iran are currently under construction. Azerbaijani gas is supplied to Iran, which in turn supplies Nakhchivan Autonomous Region. New railway branch line linking Astara (Azerbaijan) to Astara (Iran), parallel to the new road at a distance of 500 m. It is then hoped that the railway will link Baku-Tehran and Baku-Tabriz.

5.14 Public Health

Malaria occurs in the wetland areas of southern Azerbaijan. In 2001, around 1,000 cases of malaria were reported nationally.

Azerbaijan is currently facing a ‘concentrated’ HIV epidemic with a very low overall prevalence among the general population but a high prevalence among key population that are particularly vulnerable to HIV infection. This would include injecting drug users and commercial sex workers.

The dramatic socio-economic changes associated with the transition period have had a negative impact on employment, people’s social well being and the social safety net. All these factors have contributed to a growth in drug use, commercial sex work and migration. Current data and behavioural social trends indicate a high potential for further growth of the HIV epidemic.

5.15 Cultural Heritage

Archways and monuments have been constructed at entrances to major settlements and at the district borders. Drinking water points are provided at many locations along the route.

There are a number of memorials to accident victims along the roadside. There is a graveyard between Alyat and Salyan and several others along the route (e.g. Salyan and between Lenkeran and Astara).

Salyan: The oldest surviving building in Salyan is the Juma (Friday) Mosque, dating from 1865. Other architectural monuments in the district include Gumlavar bridge (17th century), a set of Khanagah structures in Gubali-Baloglan villages (19th century) and the Tendirkan caravanserai. There is also a graveyard in the centre of the city.

Bilasuvar: There are several cultural monuments in the district, including the Shariyar fortress and Agdam tower.

Jalilabad: Archaeological finds in the nearby hills have been dated back to the Neolithic period.

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Masilli: There is a mosque and religious school and a bathhouse, all dating back to the 19th century. In the villages of Bordigah and Digar there are mosques dating back to the 16th century. There are many sulphurous springs in the area: the mineral spring of Istisu is used as a spa.

Lenkeran: Settlement of the Lenkeran district is thought to date back to the late Stone Age. Lenkeran city itself dates back to the 18th century. Cultural monuments in the city include Kichik Gala mosque, Guldasta minaret, Haji Mirza bathhouse and Khan Evi palace. Abirlar tower is located in Yukari Nevedi village and Sheikh Zahid’s tower is located in Shikharkaran village. The ruins of Balabur fortress lie to the west of the city. There is a new Olympic sports complex at Lenkeran.

Astara: In Astara district there are more than 400 cultural monuments, most of them in mountain villages. These include Babek tower in Shindan village, a tower in Nidus village, a 12th century mausoleum in Shahagaj village, the Haji Teymour mosque and Meshadi Abatalib hamam in Pensar village and the Karbalai Hamid Abdulla bathhouse in Archivan village. Gapichimahalla village contains a caravanserai dating back to the 7th century, a necropolis, ruins of an ancient fortress, mausoleum and statues dating back to the Bronze and Stone Ages.
6 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND MITIGATION MEASURES – BAKU-SHAMAKHI

"Where fields are next to the road, we recommend to execute construction after the 1st of July, i.e. after harvesting."

Discussions in Maraza, 22nd August 2005

6.1 Introduction

At the time of preparation of the present RER, the planned rehabilitation of the Baku–Shamakhi road had already been classified a Category B project under the provisions of WB’s OP 4.01, meaning that no significant and irreversible impacts are expected as a result of the proposed interventions. This initial classification coincides with the results of the regional Assessment, which confirms that the relevant environmental issues will mainly relate to the construction period and as such may be considered at the feasibility stage and individually for each future sub-project. At this point of time and in accordance with WB safeguard policies, an Environmental Management Plan (EMP) will have to be elaborated as a mandatory integral part of the feasibility documentation.

The EMP consists of a set of mitigation, monitoring and institutional measures to be taken into account during detailed design, implementation and operation to eliminate environmental and social impacts, or, where unavoidable, at least reduce them to acceptable levels. Issues covered in the EMP typically cover the following:

- worker health and safety: living conditions, water supply and sanitation, provision and training in use of personal protective clothing and equipment, HIV/AIDS awareness;
- traffic safety measures for workers and traffic, measures for maintenance of safe access for pedestrians and vehicles to schools and other properties;
- general work safety: accident, fire and chemical spill/emergency procedures;
- contractor’s yard pollution control and waste management;
- equipment servicing and fuelling facilities;
- topsoil and tree preservation;
- asphalt plant siting and operations;
- sand and gravel borrow pit siting and operations;
- materials handling, transport (e.g. road, rail) and storage;
- dust, air pollution and noise control measures;
- surface water protection measures;
- procedures to be followed if chance archaeological finds are made;
- complaints handling procedures.

A sample EMP developed for road construction works in Azerbaijan is presented in the EA&MF.

6.2 Physical and Biological Environment

6.2.1 ‘Without Project’ scenario

The description of the ‘without-project scenario’ for the Baku to Shamakhi road is provided in Chapter 2.3.1 of this report. Regarding the physical and biological environment, no significant positive or negative permanent and direct impacts would be expected from this scenario.
However, as a result of improved road safety and lower numbers of accidents, the overall hazard of surface and ground water pollution resulting from the spillage of diesel, fuel, oil etc. is expected to reduce.

6.2.2 Upgrading scenario

The ‘upgrading scenario’ is described in Chapter 2.3.2. In the context of the existing environmental setting (see Chapter 4) the following potential impacts could be relevant:

- Destabilisation of slopes in sensitive areas;
- Loss of tree plantations and shrubs planted by RTSD and MENR in various sections alongside the existing road;
- Disturbance to drainage systems;
- Loss/disturbance of some breeding sites of the globally threatened Lesser Kestrel under the bridges over the river Jeyrankechmez;
- Extraction of road construction materials;
- Waste management/disposal;
- Contaminated land;
- Worker health and safety.

6.2.3 Impact Mitigation

In the following paragraphs, a few strategic recommendations are provided that should be considered at the stage of project preparation to enhance environmental performance of each individual sub-project.

**Slope destabilisation:** As was mentioned during a meeting held with officials at Maraza, some studies have been conducted in the mid 1970s on possible technical solutions for road improvement in sections with unstable ground and landslide hazards. It is thus recommended that the preparation of the subsequent feasibility studies should review the scope and contents of these earlier documents and verify if they contain useful information on the geo-technical conditions of the sections in question. Appropriate engineered slope protection and stabilisation measures may be required.

**Roadside plantations:** To minimize any loss of plantations alongside the road, it is recommended that the regional branch of the State Topography and Lands Committee is contacted. This organisation should have records of all plantations and their exact location. Based on this information, the potential impact of the road upgrading works in the relevant sections can be assessed and ways by which the impact may be minimized will be identified. Owing to the fact that significant portions of the land immediately adjacent to the road are under the ownership of the State Forest Fund (Jangi office), any potential vegetation losses resulting from the individual sub-projects may require approval from that department. Where the loss of such plantations cannot be avoided, their replacement should be envisaged in the design and budget. The use of wood cut from live trees whether from roadside plantations or other sources by the workforce for fuelwood or construction purposes should be prohibited.

**Drainage:** To eliminate the flooding that is reported to regularly affect Maraza town it is recommended to envisage the improvement of drainage in the sections in question (between km 90 and 93). According to the local specialists the 2 existing culverts would need to be replaced and 2
additional ones required. When preparing the TORs for the feasibility study, this issue should be recommended for detailed analysis.

**Protected species:** The impairment of the local breeding colony of the globally threatened Lesser Kestrel (*Falco naumanni*) on the bridges over the Jeyrankechmez may be avoided through the definition of seasonal restrictions for the execution of any construction works in this area. Hunting and/or trading in any protected species by the workforce should be prohibited.

**Acquisition of construction materials:** Materials acquisition could be a problem for the project as the strata identified in the study area may not have the required structural properties for providing aggregates for concrete or road building materials. Regarding the identification of sources for construction materials, it shall be assured in the further process that the IBAs that are located 8–10 km to the south of Jangi, will not be impaired directly nor indirectly by material extraction or transportation.

**Disposal of materials/waste:** This issue will be dealt with at project level with the development of project-specific EMPs. Only approved disposal sites should be used.

**Contaminated land:** If contaminated land is found to be an issue in any area likely to be directly affected by a project, the issue will be dealt with in the project-specific EMP.

**Worker health and safety:** This issue will be dealt with at EMP level.

### 6.3 Socio-Economic and Cultural Environment

#### 6.3.1 ‘Without Project’ scenario

Without the some form of intervention and investment in addition to the current routine road maintenance programme, the condition of some sections of the Alyat-Astara road is likely to deteriorate further.

#### 6.3.2 Upgrading scenario

Upgrading of the existing road will take place within the existing right-of-way (ROW), so impacts on the local population – apart from temporary construction noise and disruption to traffic – are likely to be minimal and relatively short term. Measures will be included in the EMP for construction works to ensure that access to schools and properties is maintained. No impacts on cultural property, e.g. graveyards and cultural monuments, adjacent to the ROW are anticipated. The EMP will specify actions to be taken should any archaeological or cultural artefacts be discovered during construction works.

The RTSD believes that there maybe one or two roadside businesses within the ROW that will be directly affected and require compensation. If this is the case, appropriate measures will be implemented in line with Azeri Government and WB requirements relating to land acquisition and resettlement as detailed in the Resettlement Policy Framework.

### 6.4 Recommendation

It is recommended that the Baku-Shamakhi road is upgraded in accordance with the proposed Project.

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107 Personal interview with RTSD official in Baku on 22.09.05
7 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND MITIGATION MEASURES – ALYAT-ASTARA

“"If the existing road is widened, it will be very difficult to resettle. There are historical places and cemeteries.""

Meeting in Astara, 9th August 2005

“The main thing is that the road should have the lowest ecological impact.”

Meeting at Masally, 10th August 2005

“The existing road should be repaired. Why? Because it is close to the settlements and businesses are located close to the road.... If the new road is located far from the settlement it will be (i) inconvenient and (ii) there will be not enough maintenance of the existing road. I have seen in other countries (e.g. in Germany) that highways get narrower through settlements, so why should that not happen here?”

Meeting in Jalilabad, 10th August 2005

“What will your project do about the compensation process? If you pay compensation, you pay once but private persons will lose both their land and the potential productivity.”

Meeting in Salyan, 11th August 2005

“Whom should we apply to for (road construction) job?”

Meeting in Alyat, 22 September 2005

7.1 Introduction

According the objective of the present RER, the following section is meant to address such potential impacts on the natural and physical environment, that may be significant, permanent and irreversible and specifically associated with the selection of individual alternative corridors or routes. This is meant to prepare the ground for making strategic decisions at a possibly early stage of the further planning process.

Potential construction-related impacts will only be addressed in such cases where specific sensitive areas or issues may be affected. All other such issues relating to construction will be addressed in the EMPs, which, according to WB policy, are mandatory for both Category A and Category B projects and will thus be prepared for each single sub-project - irrespective of the selected route alternative.

As mentioned in Chapter 6 and repeated here for easy reference, the EMP consists of a set of mitigation, monitoring and institutional measures to be taken into account during detailed design, implementation and operation to eliminate environmental and social impacts, or, where unavoidable, at least reduce them to acceptable levels. Issues covered in the EMP typically cover the following:

- worker health and safety: living conditions, water supply and sanitation, provision and training in use of personal protective clothing and equipment, HIV/AIDS awareness;
- traffic safety measures for workers and traffic, measures for maintenance of safe access for pedestrians and vehicles to schools and other properties;
- general work safety: accident, fire and chemical spill/emergency procedures;
- contractor’s yard pollution control and waste management;
- equipment servicing and fuelling facilities;
- topsoil and tree preservation;
• asphalt plant siting and operations;
• sand and gravel borrow pit siting and operations;
• materials handling, transport (e.g. road, rail) and storage;
• dust, air pollution and noise control measures;
• surface water protection measures;
• procedures to be followed if chance archaeological finds are made;
• complaints handling procedures.

7.2 Physical and Biological Environment

7.2.1 ‘Without Project’ scenario

The ‘without-project’ scenario is described in more detail under section 2.4.1. A continued deterioration of sections of the existing road outside of the centres of population is likely to occur, the overall consequence of this scenario being an increase of road accidents, the main environmental impacts resulting from this option would be increased spillage of diesel, fuel and lubricants or other harmful substances in the case that vehicles transporting hazardous goods would be involved.

7.2.2 Upgrading of existing road with selected bypasses

The upgrading scenario for the Alyat to Astara road is described under section 2.4.2. Since most of this would take place within the existing ROW, there are no issues of relevance that would have to be considered at this point from a strategic perspective. The impacts of bypasses would be considered on an individual basis during development of the sub-projects.

7.2.3 New road

Engineering and logistical issues

In the frame of the present Project for the corridor Alyat–Astara, some of the corridors with new road sections that are being considered run through areas with saline soils and natural wetlands. The following comments relate to the engineering and logistical problems associated with construction of roads under these conditions.

Soils with a high salt content may be prone to collapse when they are wetted, when load is added or due to vibration. Soils with a high salt content (especially sulphates) require use of appropriate concrete mixes, commonly with sulphate resisting (or high alumina) cement. Additionally, the buried concrete should be protected by a bitumen coating. Chlorides are also a problem for reinforced concrete structures as they lead to corrosion of the steel reinforcement.

Road construction across wetlands requires detailed ground investigation and appropriate engineering design. Without this, unexpected conditions may arise leading to additional cost, time delays and adverse impacts. Typical engineering solutions may entail granular drainage blankets, geotextiles to facilitate drainage/consolidation, staged construction or surcharging.

At present, the geotechnical conditions in the area are unknown, including the soil consistency and depth of the water table. The volumes of construction materials required are likely to be extremely high as embankment side slopes will need to be low angle to avoid instability, allowance needs to be made for ground consolidation, and embankment heights need to be sufficient to incorporate drainage structures and to maintain the pavement sub-grade above wetting zones.
The ground conditions and materials available will influence the construction method. Phased construction of the embankment (load and allow to consolidate) is likely to be required, with sufficient time allowed for stabilisation and consolidation between adding layers of material. Geotextile reinforcement may be appropriate and cost-effective in providing a clean interface between foundation soils and imported fill materials. The embankment will need to be at least 3 m high to allow for construction of culverts, crossings of irrigation channels, and animal underpasses should they be required. Careful attention to design of drainage structures will be required in order to minimise the inevitable impacts on local hydrology resulting from construction of a new barrier across the wetlands.

In similar saline soft ground environments, the bituminous surfacing can be affected by salt weathering. This is the process by which saline groundwater gets drawn up under capillary action and evaporates, resulting in salt crystals which damage the upper layers of the road. The effects may be seen as a crazed cracking pattern on the road surface. This process can also affect buildings and other structures built on saline soils. White salt lines will become visible on the walls at the level the salt has reached, and the concrete or mortar may be soft and powdery. The solution is usually to incorporate a coarse granular layer which capillary action cannot breach, or an impermeable membrane. As far as road pavements are concerned, no problems are normally experienced provided that the following criteria are met:

- Construction of an embankment height such that the pavement sub-grade is at least one metre above wetted soil level;
- Provision of a granular sub-base to international specification standards;
- Provision of a Marshall mix design bituminous pavement accompanied by strict quality control testing.

Sourcing of materials of suitable quality could be a problem: the strata identified in the locality do not look ideal for providing aggregates for concrete or road building materials. Quarries and borrow pits for winning construction materials would have to be identified and the materials imported into the construction area. No materials must be taken from areas within any National Parks (e.g. Shirvan or Hirkan, the latter being a candidate UNESCO World Heritage Site) or any other areas of known ecological value (e.g. proposed Ramsar sites and IBAs).

Haulage of materials will be a key issue. The obvious choice is to use the railway in order to avoid the inevitable problems of traffic congestion, safety issues, noise and dust, and damage to the existing road pavements. Transportation by rail is normally adopted, where possible, for higher value construction materials such as aggregates, especially where material quality can be assured by importing from distant sources of known quality. The cost implications of transporting lower cost materials such as fill material requires very careful evaluation. Tenderers should be instructed to nominate materials sources, state methods of transportation and provide rate breakdowns. Tender Assessment needs to be comprehensive enough to ensure that untenable or unacceptable methodologies are excluded. The latter should be covered in advance by inserting appropriate clauses in the Specification.

**Construction phase impacts**

During the construction period, activities such as site preparation, construction of bridges and culverts, and borrow pits/quarry operations will cause direct and indirect impacts on the environment.

To accommodate the workforce, work camps will be established. The contractor's work camp will include living and eating areas for the non-local workforce, equipment storage and servicing sites, as well as material stockpiles. If improperly designed and operated, work camps can create pollution and environmental hazards through sewage, garbage and vermin; be a source for spills from the operation and servicing of construction equipment; and induce pressure on scarce local limited resources (e.g. drinking water). A waste management plan for each site should be developed and implemented.
Workers should be provided with, and trained in the use of, appropriate personal protective clothing and equipment. Basic health and sanitation education, including HIV/AIDS awareness, should be provided.

The storage, transportation and use of large quantities of diesel, fuel and other petroleum products may cause chronic oil product pollution, leading to the impairment of groundwater and surface water quality, including wetlands. This is specifically relevant where construction takes place in and over rivers and streams. Establishment and implementation of proper accident, fire and chemical spill/containment emergency procedures is essential.

Safety of construction workers and the public, both pedestrians and traffic, particularly during works on live roadways is of utmost importance. Traffic impact mitigation measures include: informing the public about the scope and schedule of construction activities, and expected traffic disruptions and access restrictions; implementing measures to allow for adequate traffic flow around construction area at all times; provision of adequate signalisation, traffic safety signs, barriers and flag persons for traffic control; and maintenance of appropriate lighting at night.

Site preparation will entail the stripping and temporary storage of topsoil. Depending on the individual location, this may bring about the risk of erosion of exposed ground or topsoil and can also cause increased water runoff and siltation of watercourses and wetlands. Without proper management, excess material may also lead to the loss of agricultural land, impairment of the biological environment and/or disfigurement of the landscape. Heavy machinery moving around the construction corridor can create soil compaction, which may harm the soil's further potential as farmland and impair drainage. The area cleared for construction operations should be minimised.

Borrow pit operations, if poorly managed, can lead to chronic erosion and siltation of adjoining land, and thus have substantial environmental impacts on soil, water and the natural environment. Material transport from these sites may cause nuisance to settlements in the vicinity of haulage routes through dust, noise and material spillage. The use of borrow pits should be minimised and the handling, transport and storage of materials carefully controlled.

During the construction of bridges and culverts, the runoff pattern of surface waters including agricultural irrigation and drainage systems could be impaired and water quality affected due to an increase in the silt load. A further source of surface water pollution could be the cleaning of construction vehicles and equipment in rivers and wetlands or leakages from machinery or engines that are not properly maintained or controlled. Embankments and construction materials (fill, gravel and sand) could be washed out by rainwater and contribute to the siltation of drainage channels or the river. Bridge construction works should be confined, as far as possible, to the dry season.

Degradation of air quality is likely to result from various sources like exhaust emissions from the operation of construction machinery, and fugitive emissions from aggregates, concrete, and asphalt plants. Dust will be generated by traffic movements on unpaved haul roads, exposed soils, and material stockpiles. Mitigation measures include strict technical control of construction machinery on emission standards, avoiding traffic congestions, and watering of unpaved haul roads.

Road construction will require the use of heavy machinery and thus entail high and sustained noise during equipment operation. Where construction takes place in the neighborhood of human settlements, the temporary adverse impact on human welfare cannot be totally avoided. It will, however, be reduced through (i) the restriction of working hours to between 0600 to 2100 hours within a 500 m distance of the adjoining settlements; (ii) strict enforcement of a maximum noise level of 70 dBA in the vicinity of the construction site; and (iii) ban of improper functioning machinery that causes excessive noise pollution from the construction sites.
**Operation phase impacts**

The environmental impact of road during its operation period is lower than during construction. Impacts include increased levels of air, noise and water pollution, traffic accidents and injuries, and roadside litter along the new route with decreases in levels of the same impacts on the towns bypassed.

**Yenikand-Shorsulu**

In the corridor between Yeninkend and Shorsulu and to the north-west of the existing M3, the land is flat and reported to be very productive for agriculture. Throughout this section, the land is criss-crossed by a dense network of drainage and irrigation channels and collectors. Seasonal floods occur in the plain of the Kura River, which is crossed by a major bridge in the north west of Salyan.

Land in this section has been heavily influenced by agriculture and there is no evidence of any specifically valuable or sensitive natural habitats of fauna or flora that may be directly or indirectly impaired by construction and operation of a new road.

**Shorsulu-Masally (Direct Alignment)**

This corridor is about 55 km long and may, based on the present land-uses, be divided into three subsections. While the northern and southern parts of this corridor would not require any specific strategic considerations, the middle section has the greatest potential for significant direct and indirect environmental impact and conflict. This critical sub-section, which is about 12 km long, runs through the Mahmudchala and Akhchala wetlands. These do not have official governmental protection status at the present time, but are proposed Ramsar sites and official IBAs. The water balance of these wetlands is reported to be unstable and under constant threat of drying out during especially hot summers, or as a consequence of irrigation activities related to agriculture.

Irrespective of their official current official or unofficial protection status, the wetlands in the potential direct and indirect area of influence of this corridor all represent natural habitats for numerous rare and endangered wildlife species. Moreover, these wetlands may have significance as a buffer zone for the wetlands adjoining to the south-east which form Gizilagach State Reserve, an official Ramsar site (see under Chapter 5.6). The average distance to the present western borderline of this State Reserve is about 3 to 5 km.

The impact that a new road may cause in this context is difficult to substantiate at the present time, since there are no reliable baseline-data on the complex hydrological setting of this area, or its potential interrelation with the adjacent sensitive wetlands located east of the corridor. Geotechnical issues would also require specific consideration in terms of design or construction methods, which may also have different effects on the local hydrology.

Generally speaking, the construction of new transport infrastructure through these wetlands may entail habitat fragmentation and create barriers to the movement of wildlife. In addition to this, there will be the risk of pollution from vehicle emission sources and accidents involving cargoes of hazardous materials. Another significant risk, which can hardly be properly assessed at the present point of time, is the potential direct or indirect impact on the hydrology in a wider area of influence, both during construction and operation. This issue becomes even more important, as the wetlands in question already face pressure from other anthropogenic sources, namely irrigation, poaching and hunting. All together, there is the risk that the potential cumulative impacts from various sources may damage the protected and unprotected wetlands of the area and biodiversity as a whole.

**Shorsulu-Masally (Railway Alignment)**

Alignment A as identified by the Iranian consultants runs to the north/west of the existing railway and more-or-less parallel to the tracks. A question posed by the alignment of the existing railway is 'why
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did the railway engineers choose that route?’ Railway engineers are famously practical and conservative in their designs, so there must be sound engineering reasons why the route does not cross directly across the wetlands. It is also likely that details of the geotechnical conditions along the route selected for railway construction exist somewhere in the archives.

This section of the corridor of roughly 94 km length is flat land that may be divided into the following three sub-sections:

Shorsulu – Mugan Channel: The land use for the first 23 km between Shorsulu and Mugan channel is mainly irrigated land, which in terms of physical and natural environment does not bear the potential for outstanding environmental conflicts. Hydrological issues related to construction or siting of a road should, however, be carefully considered since they may have direct or indirect impact on the hydrology and thus on the biodiversity of the valuable and sensitive wetlands that lie in the west, beyond Mugan channel.

Mugan Channel–Uzuntapa: This second sub-section is about 11 km long and runs in parallel and at approximately 2 to 3 km distance to the north-west of the existing railway. Most of this sub-section passes over the Akhchala wetland, which forms part of the larger Mahmudchala wetland system. Both these wetlands have been proposed as Ramsar sites and are official IBAs. The whole area is a ‘hunting economy’, which means that controlled hunting is officially permitted. Some small parts of the area are also used as grazing grounds for water buffalo and other domestic animals. The surroundings of the proposed corridor hold large numbers of globally threatened bird species the year round and is specifically vulnerable to anthropogenic disturbance during the breeding season. As these wetlands are difficult to access, poaching and fishing are reported to be serious issues of concern for wildlife conservation in the area.

The construction and operation of the railway line for the past 100 years or so will inevitably have had some negative impacts on the ecosystem as a whole, however no information exists on this issue. Although road construction and operation within this corridor is likely to have adverse effects on the surrounding wetlands, these are assessed as less significant generally than in the case of any direct new alignment forming an additional new barrier through the swamps.

Uzuntapa–Masally: In these approximately 30 km, the study corridor runs through mainly agricultural land, which becomes gradually more densely populated to the south. In the northern parts of this sub-section the map shows some smaller area of salty marsh to the north east of Mashlyg, which might represent unfavourable ground for road construction. Regarding the physical and natural environment, there are no issues of particular concern.

To the southeast of Ahmadli three parallel strips of planted forest are shown in the map. To the south of Anjagala another such plantation of 2 parallel strips is shown. These plantations probably have the purpose to protect the fields from the south-eastern and north-western winds in this area. Depending on the selected alignment, there would be the loss or partial loss of these trees and possible secondary effects through habitat fragmentation.

Masally – Astara

The southernmost section of corridor Alyat-Astara is about 60 km long and characterized by partly densely populated areas (northern section) and agricultural land. Sensitive natural areas are mainly found in the south-western parts of the corridor, where natural forests cover the hills of the Talysh mountains and several rivers flow to the Caspian Sea in an eastern direction. The lower reaches of these rivers all represent important migration routes and spawning grounds for fish, some of them endangered species. Further to the south, to the western side of the corridor, the Hirkan National Park has been established to protect the natural forests that represent habitats of large numbers of rare endemic species of flora and fauna. This National Park is being actively considered by UNESCO for designation as a World Heritage Site.
7.2.4 **Impact Mitigation**

**Yenikand-Shorsulu**

If a new road is constructed to bypass Yenikand, Salyan and Shorsulu and nearby villages with a major new crossing of the Kura River east of Salyan, there will inevitably be landtake of agricultural land. This section of approximately 45 km bears little potential for substantial conflict regarding the physical or natural environment, provided that appropriate measures are being elaborated in an EMP and duly implemented during construction. Regarding the design there should be emphasis on generously dimensioned and appropriately sited culverts and bridges, so as not to interfere with the existing water regime. In particular, the proposed major new bridge over the Kura River will require careful design and construction in order to avoid interference with the flow, which could have consequences for channel destabilisation, erosion and sedimentation patterns and impact on other bridge structures – and Salyan City itself – which are located downstream.

**Shorsulu-Masally (Direct Alignment)**

As was demonstrated above, both scenarios running through the wetlands (direct alignment/railway alignment) represent options with significant potential for adverse environmental impacts. This is assessed as a critical starting point for the further planning process and decisions on this issue will set the context for any future decisions regarding the preparation of sub-projects.

Given the specifically sensitive environmental setting and the many open questions regarding the hydrology and the geo-technical baseline, it is recommended that the direct alignment through the wetlands be eliminated from the further considerations of route alignment. Sub-projects involving the construction of a new road section in the vicinity of sensitive wetland systems may cause indirect and irreversible effects on biodiversity over an area that far exceeds that directly affected by construction works.

Should this view not be shared by the decision-makers, the hydrology of the area should be studied in detail – possibly over a 12 month period - so as to fully understand the complex interrelationship and dependencies with the irrigation system and the minimum requirements for maintaining the ecological balance in the various wetlands. The results of such studies could then be used and taken into account during design and construction. Detailed geotechnical studies will also be required. The critical aspect here is that it is not evident that such costly and lengthy studies would produce viable solutions.

**Shorsulu-Masally (Railway Alignment)**

Regarding the railway alignment, several feasible alignment alternatives should be studied to minimize the effects of habitat fragmentation in the wetlands. This could be achieved by selecting alignment options that run as close as possible to the existing railway. Moreover, it must be assured that the biotic and abiotic factors that determine the stability and the dynamics of these wetlands are fully understood in their relation with the wider landscape in which road construction may take place. It is understood that appropriate and up to date information to this regard is not yet available. It is therefore recommended that comprehensive background studies be conducted so as to allow for defining viable alternative alignments and the definition of appropriate design solutions.

Another issue to be considered to mitigate potential adverse impacts on this sensitive area would be to request consultants to specifically plan for comprehensive safeguard measures during construction (e.g. avoid wildlife breeding season between April and July, implement strictly hunting controls on the workforce, develop specifically strict measures for pollution control).

Careful design should aim at minimising the potential impact on the strips of forest near Ahmadli and Anjali.
Regarding impact avoidance and mitigation in this section, the strategy should be to carefully select alignments with a minimum direct and indirect impact on the natural forest vegetation to the west of Lenkeran (Hirkan Forest) and the Talysh Relict Forest in Hirkan National Park and specifically not to permit any material extraction from these areas.

As to the fish habitats impact can be minimized through the design of generously dimensioned bridges and culverts and the determination of appropriate restrictions regarding the construction period. The risk of earthquakes should also be taken into consideration when designing these bridges.

7.3 Socio-Economic and Cultural Environment

7.3.1 ‘Without Project’ scenario

The benefits of upgrading the existing road seem to affect a relatively few number of people locally, who already have businesses along the road.

The adverse impacts of the upgrading of the road seem to be more widely felt and to affect the social and economic cohesion of local communities. The ramifications of large resettlement on the resettled community and the host community receiving them would need to be considered if not avoided altogether.

7.3.2 Upgrading scenario

As in other parts of rural Azerbaijan, the main source of employment on the Alyat-Astara route is agricultural production. Therefore, land take could have an impact on people’s livelihoods as well as providing restrictions on physical access (severance) to agricultural and pastureland, services and markets. The following information provides an overview of the specific settlements along the proposed routes.

Yenikand-Shorsulu

If a new road is constructed to bypass Yenikand, Salyan and Shorsulu and nearby villages with a major new crossing of the Kura River east of Salyan, there will inevitably be landtake of agricultural land. Some property requisition and associated resettlement will also be required. The extent of both resettlement and land take will obviously depend on the exact alignment of the road.

Settlements where residential and other properties are likely to be affected include: Yenikand, Xalac, Goytapa, Cuxanli, Asagi Kurkandli, Boranikand and Shorsulu. Settlements where acquisition of agricultural land is likely to be required include: Yenikand, Yolustu, Xalac, Goytapa, Cuxanli, Asagi Kurkandli, Salyan, Marisli, Qizalagac, Sarvan, Dayikand, Borikand and Shorsulu.

The land here is largely privately owned, with fallow and wasteland owned by the state and municipal authorities. Land is used for agriculture and as a pasture area for sheep and cattle. Along the alignment land are used for cotton growing, grain growing, vine growing, fruit farming and vegetable growing.
Shorsulu-Masally (Direct Alignment)

Settlements where residential and other properties are likely to be affected include: Shorsulu, Qargaliq, Kurdabayli, Huseynbacili, Birinci Yeddimoaq, Ikinci Yeddiamoq and Sarcuvar. Settlements where acquisition of agricultural land is likely to be required include: Shorsulu, Qacaqkand, Qirimikand, Xirmandali, Kocakli, Qargaliq, Kurdabayli, Birinci Samadxanli, Husaynabicili, Encaqali, Birinci Yeddiamoq, Ikinci Yeddiamoq, Goyacol and Sarcuvar.

This section can be divided into 3 sub-sections. The first section is Shorsulu–Mugan channel. The land use between Shorsulu and Mugan channel is mainly irrigated land. This section mainly is used for cotton growing. The second section is Mugan channel-Uzuntapa. From Mugan channel to Uzuntapa, the area is wetland and useless for cultivated agriculture (Akchala and Mahmudchala wetlands). Small parts of the area used as pasture for domestic animals. The third section of this road is Uzuntapa-Sarcuvar, near Masally. This area runs through mainly agricultural land, which becomes gradually more densely populated to the south.

Shorsulu-Masally (Railway Alignment)

Settlements where residential and other properties are likely to be affected include: Shorsulu, Uzuntapa, Kazimabad, Langan, Sarafa, Seybalin, Ancaqala and Sarcuvar. Settlements where acquisition of agricultural land is likely to be required include: Shorsulu, Qacaqkand, Qirimikand, Uzuntapa, Masliq, Soyudlu, Kazimabad, Ahmadli, Langan, Caxirli, Bala Takla, Sarafa, Seybalin, Ancaqala, Goyacol and Sarcuvar.

Mostly there are wetlands (Mahmudchala, Akchala), which useless for cultivated agriculture (state lands). Around Masally, there are agricultural lands (private lands), which are being used for fruit farming and grain growing. Near Goytapa city, there are potato-growing areas.

Masally-Astara

The southern section of the Alyat-Astara road crosses a densely populated area with useful agricultural land. Settlements where residential and other properties are likely to be affected include: Sarcuvar, Boladi, Kargalan, Darquba, Asaki Nuvadi, Garmaduk, Bala Suruk, Viyan, Seyidakaram, Kanarimesa, Tutapesta, Xolmili, Vel, Bala Sanagac, Siyakaran and Sahahagac. Settlements where acquisition of agricultural land is likely to be required include: Sarcuvar, Qumbasi, Boladi, Viravul, Girdini, Laji, Kargalan, Darquba, Asaki Nuvadi, Garmaduk, Bala Suruk, Viyan, Seyidakaram, Kanarimesa, Tutapesta, Xolmili, Vel, Mamusta, Bala Sanagac, Kokolos, Gulyata, Siyakaran, Sahahagac, Archivan and Astara.

The agricultural land is very productive for citrus fruits and tea plantation in the northern part. In the southern part, the land is used for mainly for paddy, vegetable, fruit farming and tea plantation. This corridor mainly passes through private lands.

The positive benefits identified for the new road are considerable but should be more fully examined in the next phase of the project. The relatively wealthy population who has business skills and large farms may only feel the positive impacts. The issue of traffic and pedestrian safety, however, is a positive one for members of the community.

The adverse impacts appear to affect a wide range of people with business interests along the existing road, including the poorer and more marginalized members of the community who are concerned with the impact on informal trade. People involved in the informal economy are less likely to have the requisite skills to find work elsewhere or adapt to different sectors. Any decision that is made on the final route needs to make sure that those on a lower income, without formal jobs or land ownership are not disproportionately affected by the project.
HIV/AIDS

With large scale construction and the influx of migratory workers into relatively poor areas can often pose a risk of HIV transmission. The proposed project will be under construction for a considerable time, which may increase the potential risk to both local communities and contractors.

Azerbaijan is currently facing a 'concentrated' HIV epidemic with a very low overall prevalence among the general population but a high prevalence among key population that are particularly vulnerable to HIV infection. This would include injecting drug users and commercial sex workers.

Measures to minimize the impact of HIV/AIDS in the project should include:

- Preferential employment policies for local people
- HIV/AIDS and other infectious diseases awareness programmes for contractors and local people
- Government-level action together with the transit industry to educate truckers about the issues of HIV/AIDS
- Conduct of preventive and periodic medical inspections for protecting workers' health
- Conduct of complex preventive and epidemic actions for prevention of malaria disease

7.4 MENR Requirements for Environmental and Social Impact Assessment

MENR's State Expertise Department provides the following guidance on their requirements for the EIAs to be prepared for the sub-projects:

In accordance with the Law about Environmental Protection of Azerbaijan Republic and requirements of the Regulations for the Environmental Impact Assessment Process in Azerbaijan, in order to assess complex environmental impact (social-ecological-economical) during the road construction works while implementing the projects, Environmental and Social Impacts Assessment Report should be completely prepared and submitted to the Ministry of Ecology and Natural Resources for approval.

The Environmental and Social Impacts Assessment Report should cover the undermentioned essential requirements and be submitted in 3 copies for approval:

- Existing ecological condition of the construction site;
- Description of infrastructure objects with potential impact on the environment through conduct of construction works;
- Volume of materials (sand, gravel, soil and etc.) required for the road construction, proposed sources and agreements with the appropriate bodies on this issue;
- Arrangements to be taken for advance compensation of the potential damages caused to the property of the population along the road alignment;
- Taking the local communities' views into consideration and information on the conducted meetings;
- Assessment of the damage to be caused to the greenery along the road through road construction with the participation of the appropriate bodies of the Ministry of Ecology and Natural Resources;

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108 Letter of 20th September 2005 from Head of MENR State Expertise Dept to Chief of Road Transport Service Dept
• *Special measures to be taken during the construction-mounting works of river crossings;*

• *Reserving the fertile top soil during the earth works to be used for future rehabilitation works (land reclamation);*

• *Appropriate waste management;*

• *Planting of strips of greenery (landscaping) along the highway using appropriate tree sorts;*

• *Final results of the engineering geological investigations conducted in the probable landslide zones;*

• *Mitigation measures for potential environmental impacts through the project implementation.*

These comments will be taken into account in the preparation of the Draft TOR for the sub-project EIAs.

7.5 **Comparison of Alternatives**

Table 7.1 summarises engineering features of/impacts from the various alternative alignments.
## Table 7.1 Comparison of Alternatives

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<td>New Bridges/Culverts</td>
<td>N/A</td>
<td>Yes&lt;sup&gt;110&lt;/sup&gt;, replacement of 3 existing bridges with box culverts; reconstruction of bridge at Shirvan Main Collector; two new animal underpasses&lt;sup&gt;111&lt;/sup&gt; at km 93.5 and km 97</td>
</tr>
<tr>
<td>New Intersections</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td><strong>Physical and Biological Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swampy/saline ground conditions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Destruction/disturbance of protected areas</td>
<td>N/A</td>
<td>No – 2 new animal underpasses installed/roadside fence improved near Shirvan National Park</td>
</tr>
<tr>
<td>Destruction/impairment of sensitive natural habitat of rare or endangered species</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>Impact on hydrology</td>
<td>N/A</td>
<td>Replacement of existing bridges with new box culverts</td>
</tr>
<tr>
<td>Loss of planted woodland</td>
<td>N/A</td>
<td>No new planting of local shrubs e.g. <em>Tamarix</em> in median proposed, also tree planting at bus stops</td>
</tr>
</tbody>
</table>

<sup>109</sup> N/A = not applicable  
<sup>110</sup> RRI International (2005) *Environmental Assessment & Preliminary Design for a 22 km section of the Alyat-Astara Road – Draft Environmental Assessment*  
<sup>111</sup> An animal underpass requires a minimum span of 4 m
### Section of Alyat-Astara Road

| Availability of road construction materials | N/A | Licence, site and work plan required for asphalt plant, sand and gravel borrow pits |

### Socio-Economic and Cultural Environment

| Loss of houses, other properties and businesses | N/A | No |
| Reduced accessibility to land and local services | N/A | No |
| Permanent land take of productive agricultural land | N/A | No |
| Impact on irrigation systems | N/A | No; existing structures replaced |
| Impact from materials transport | N/A | Use rail/road |
| Damage to cultural objects | N/A | No |
| Impact on common property resources<sup>112</sup> | N/A | No |

<sup>112</sup> Common property resources include wells, hand pumps, schools, community buildings, graveyards
### Section of Alyat-Astara Road

<table>
<thead>
<tr>
<th>Yenikand-Shorsulu</th>
<th>‘Without Project’</th>
<th>Upgrade Existing Road</th>
<th>Build New Road</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering Features</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Bridges</td>
<td>N/A</td>
<td>Bridge/culvert widening/ replacement required</td>
<td>7 bridges including major new bridge over Kur River</td>
<td></td>
</tr>
<tr>
<td>New Intersections</td>
<td>N/A</td>
<td>No</td>
<td>new intersection south of Yenikand and at M3 near Shorsulu</td>
<td></td>
</tr>
<tr>
<td><strong>Physical and Biological Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Swampy/saline ground conditions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>• Destruction/disturbance of protected areas</td>
<td>N/A</td>
<td>No</td>
<td>Need to take Shirvan NP into account</td>
<td></td>
</tr>
<tr>
<td>• Destruction/impairment of sensitive natural habitat of rare or endangered species</td>
<td>N/A</td>
<td>No</td>
<td>Need to take Shirvan NP and movement of Sand Gazelles into account</td>
<td></td>
</tr>
<tr>
<td>• Impact on hydrology</td>
<td>N/A</td>
<td>Bridge/culvert widening/replacement required</td>
<td>New bridges/culverts required</td>
<td></td>
</tr>
<tr>
<td>• Loss of planted woodland</td>
<td>N/A</td>
<td>Possible minor impacts near Yenikand</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>• Availability of road construction materials</td>
<td>N/A</td>
<td>Licence, site and work plan required for asphalt plant, sand and gravel borrow pits</td>
<td>Licence, site and work plan required for asphalt plant, sand and gravel borrow pits</td>
<td></td>
</tr>
</tbody>
</table>
## Regional Environment Review, Environmental Assessment & Management
### Framework and Resettlement Policy Framework

**Section of Alyat-Astara Road Alternative Scenarios**

<table>
<thead>
<tr>
<th>Socio-Economic and Cultural Environment</th>
<th>Alternative Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Loss of houses, other properties and businesses</td>
<td>N/A</td>
</tr>
<tr>
<td>• Reduced accessibility to land and local services</td>
<td>N/A</td>
</tr>
<tr>
<td>• Permanent land take of productive agricultural land</td>
<td>N/A</td>
</tr>
<tr>
<td>• Impact on irrigation systems</td>
<td>N/A</td>
</tr>
<tr>
<td>• Damage to cultural objects</td>
<td>N/A</td>
</tr>
<tr>
<td>• Impact on common property resources</td>
<td>N/A</td>
</tr>
</tbody>
</table>

- Road reserve already cleared in some areas? Some resettlement may be required
- Yes
- Reduced accessibility to land and local services
- No
- Yes
- Permanent land take of productive agricultural land
- No
- Yes
- Impact on irrigation systems
- No
- Possible; bridges/culverts required
- Damage to cultural objects
- No
- No
- Impact on common property resources
- Minimal, if any (graveyard in Salyan? (location unclear))
- No

<table>
<thead>
<tr>
<th>Sorsulu-Masally</th>
<th>‘Without Project’</th>
<th>Upgrade Existing Road with Selected Bypasses</th>
<th>New Road: Direct alignment</th>
<th>New Road: ‘Railway’ alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering Features</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Bridges</td>
<td>N/A</td>
<td>Bridge/culvert widening required; new bridge for Bilasuvar bypass</td>
<td>Number of bridges/culverts unknown – one?</td>
<td>14 new bridges/culverts</td>
</tr>
<tr>
<td>New Intersections</td>
<td>N/A</td>
<td>No</td>
<td>Intersections only at Shorsulu and Sarcuvar, near Masally</td>
<td>Intersections with existing roads at Shorsulu, Jalilabad and Sarcuvar, near Masally; potential for additional links to existing roads near Goytapa and Hasanli, near Masally</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical and Biological Environment</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Swampy/saline ground conditions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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### Section of Alyat-Astara Road

<table>
<thead>
<tr>
<th><strong>Section of Alyat-Astara Road</strong></th>
<th><strong>Alternative Scenarios</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Destruction/disturbance of protected areas</td>
<td>N/A</td>
</tr>
<tr>
<td>• Destruction/impairment of sensitive natural habitat of rare or endangered species</td>
<td>N/A</td>
</tr>
<tr>
<td>• Impact on hydrology</td>
<td>N/A</td>
</tr>
<tr>
<td>• Loss of planted woodland</td>
<td>N/A</td>
</tr>
<tr>
<td>• Availability of road construction materials</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Socio-Economic and Cultural Environment</strong></td>
<td></td>
</tr>
<tr>
<td>• Loss of houses, other properties and businesses</td>
<td>N/A</td>
</tr>
<tr>
<td>• Reduced accessibility to land and local services</td>
<td>N/A</td>
</tr>
<tr>
<td>• Permanent land take of productive agricultural land</td>
<td>N/A</td>
</tr>
<tr>
<td>• Impact on irrigation systems</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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### Regional Environmental Review, Environmental Assessment & Management

Framework and Resettlement Policy Framework

#### Section of Alyat-Astara Road

<table>
<thead>
<tr>
<th>Impact from materials transport</th>
<th>Damage to cultural objects</th>
<th>Impact on common property resources</th>
<th>Use existing road</th>
<th>Potential major disruption from road transport of materials</th>
<th>Use railway for transport of material</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Minimal, if any</td>
<td>Minimal, if any</td>
<td>Minimal, if any</td>
</tr>
</tbody>
</table>

#### Masally-Astara

<table>
<thead>
<tr>
<th>‘Without Project’</th>
<th>Upgrade Existing Road</th>
<th>Build New Road</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bridge/culvert widening/replacement required</td>
<td>Intersections at Lenkeran and Astara</td>
<td></td>
</tr>
</tbody>
</table>

#### Engineering Features

<table>
<thead>
<tr>
<th>New Bridges</th>
<th>N/A</th>
<th>22 bridges/curverts required</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Intersections</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Physical and Biological Environment

<table>
<thead>
<tr>
<th>Swampy/saline ground conditions</th>
<th>Destruction/disturbance of protected areas</th>
<th>Destruction/impairment of sensitive natural habitat of rare or endangered species</th>
<th>Impact on hydrology</th>
<th>Loss of planted woodland</th>
<th>Availability of road construction materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>N/A</td>
<td>Depends on source of materials</td>
<td>Depends on source of materials</td>
<td></td>
<td>Minimal, if any</td>
<td>Licence, site and work plan required for asphalt plant, sand and gravel borrow pits</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Section of Alyat-Astara Road</th>
<th>Alternative Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-Economic and Cultural Environment</td>
<td></td>
</tr>
<tr>
<td>• Loss of houses, other properties and businesses</td>
<td>N/A</td>
</tr>
<tr>
<td>• Reduced accessibility to land and local services</td>
<td>N/A</td>
</tr>
<tr>
<td>• Permanent land take of productive agricultural land</td>
<td>N/A</td>
</tr>
<tr>
<td>• Impact on irrigation systems</td>
<td>N/A</td>
</tr>
<tr>
<td>• Damage to cultural objects</td>
<td>N/A</td>
</tr>
<tr>
<td>• Impact on common property resources</td>
<td>N/A</td>
</tr>
</tbody>
</table>
7.6 Impact Management

The Local Executive Powers in southern Azerbaijan are actively implementing plans to improve local transport, education, health care and tourism infrastructure and to stimulate investment and economic development in their areas on the basis of the ‘no project’ scenario. Transit traffic will continue to cross the Iran-Azerbaijan border in both directions irrespective of whether the Project proceeds. However, improvements to the Alyat-Astara road, regardless of the financing arrangements, could be an important factor in the future economic development of the region.

The scale and nature of potential cumulative environmental and socio-economic impacts associated with the Project will depend on the following strategic decisions, the responsibility for which lies ultimately with the Government of Azerbaijan and its implementing agency RTSD:

- Whether or not the decision is taken to proceed with the Project;
- Phasing of the study and construction programme (e.g. start in the north working southwards, start in the south working northwards);
- Selection of sections of the road to progressed for detailed study and implementation;
- Selection of the general alignment between Shorsulu and Sarcuvar, Masally;
- Determination of exact alignment of road and associated ROW;
- Determination of exact number and location of intersections with existing roads;
- Implementation of the recommended land acquisition and resettlement procedures.

Whatever route is chosen for whatever section should be designed to minimise land acquisition and resettlement requirements; avoid any socio-cultural impacts on common property resources, e.g. mosques, graveyards, cultural monuments and water points; minimise severance by maintaining safe access to agricultural and pastureland and services; and minimise impacts on the natural environment particularly hydrology and areas protected for their flora and fauna. All project affected people should be compensated appropriately in accordance with the recommendations of the RPF.

During the engineering feasibility and EIA studies, detailed environmental and social impact assessment studies will be undertaken for sub-projects. At this stage, more precise details of the alignment and engineering features (e.g. interchange configuration and bridge location, embankment height) will be known. The EIA consultant will, together with the engineering consultant, develop a practical programme of monitorable mitigation measures to ensure that any adverse environmental impacts are minimised during the detailed design, construction and operation phases.

The strategic decision on the variants to be investigated further within the individual EIA studies will be key to successful Project implementation. This decision should be based on an independent and balanced view taking the findings and recommendations of the present RER into account.
7.7 **Recommendation**

On the basis of available information, if the decision is taken to implement the Project, the Railway Alignment with intermediate links into existing roads at Calilabad and Goytapa is the preferred option for the section between Shorsulu and Sarcuvar, Masally.
<table>
<thead>
<tr>
<th>PROJECT</th>
<th>DECISIONS</th>
<th>MINIMUM SCOPE</th>
<th>TIME REQUIREMENT</th>
<th>COST ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of Environmental Management Plan following environmental assessments (EMP) for Baku-Shamakhi road and Alyat Astara road</td>
<td>Environmental issues will mainly relate to the construction period.</td>
<td>The EMP consists of a set of mitigation, monitoring and institutional measures to be taken into account during detailed design, implementation and operation to eliminate environmental and social impacts, or, where unavoidable, at least reduce them to acceptable levels.</td>
<td>4 month for 2 sections—could be split into several sub-projects</td>
<td>USD 200,000 Will be part of the overall FS project budget</td>
</tr>
<tr>
<td>Land Acquisition plan and Resettlement Action Plan if land and buildings' take is considerable.</td>
<td>Should be considered at the feasibility stage and individually for each sub-project. EMP is a mandatory part of the feasibility documentation</td>
<td>Minimum issues to be covered as part of EMP are:</td>
<td>January-April 2006</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• worker health and safety: living conditions, water supply and sanitation, provision and training in use of personal protective clothing and equipment, HIV/AIDS awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• traffic safety measures for workers and traffic, measures for maintenance of safe access for pedestrians and vehicles to schools and other properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• general work safety: accident, fire and chemical spill/emergency procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• contractor's yard pollution control and waste management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• equipment servicing and fuelling facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• topsoil and tree preservation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• asphalt plant siting and operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• sand and gravel borrow pit siting and operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• materials handling, transport (e.g. road, rail) and storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• dust, air pollution and noise control measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• surface water protection measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• procedures to be followed if chance archaeological finds are made</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• complaints handling procedures develop waste management/disposal plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• develop measures to deal with contaminated land</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• measures to ensure access to schools and properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• impact on cultural property, monuments, graveyards, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• specify actions to be taken should any archaeological or cultural artefacts be discovered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Monitoring of potential impact on physical and biological environment and of socio-economic and cultural environment for 'upgrading scenario' during construction.

### A socio-economic baseline will need to be provided for the monitoring of socio-economic and cultural impacts.

### Monitoring should include the following:

- Destabilisation of slopes in sensitive areas: review of previous studies on possible solutions for road improvement in sections with unstable ground and landslide hazards; verify information on geo-technical conditions of the sections in question; develop appropriate engineering solutions for slope protection and stabilisation.
- To minimize any loss of tree plantations and shrubs planted by RTSD and MENR in various sections alongside the existing road, it is necessary to work with State Topography and Lands Committee who have records of all plantations and their locations, and with State Forest Fund (Jangi office) for approval of any potential losses of vegetation; replacement of plantation loss should be envisaged in the design and budget.
- Improvement of drainage systems in the sections in question (90km and 93km) to eliminate the flooding that regularly affects Maraza town.
- To develop measures to minimise loss/disturbance of some breeding sites of the globally threatened Lessor Kestrel under the bridges over the river Jeyrankechmez, including seasonal restrictions for construction works in this area and hunting prohibition.
- Planning of extraction and acquisition of road construction materials, protecting the IBAs that are located 8-10km to the south of Jangi.
- Develop waste management/disposal plan as part of EMP.
- Develop measures to deal with contaminated land as part of EMP.
- Develop worker health and safety plan as part of EMP.
- Monitoring of surface and ground water pollution overall hazard, resulting from the spillage of diesel, fuel and oil.
- Measures to ensure access to schools and properties.
- Impact on cultural property, monuments, graveyards, etc.
- Specify actions to be taken should any archaeological or cultural artefacts be discovered.
- Planning of extraction and acquisition of road construction materials, protecting the IBAs that are located 8-10km to the south of Jangi.
- Ground investigation.
- Design of road pavement should take into consideration saline soft ground.
- Sourcing of materials.
- Haulage of materials.
- Monitor construction phase impacts:
  - Impact on environment of site preparation, construction and borrow quarry operations (incl. spills, etc).
  - Impact on environment of work camps (sewage, garbage, vermin, use of resources like drinking water, etc).
  - Waste management plan.
  - Health and sanitation plan implementation (incl. HIV/AIDS).
  - Transportation, storage and use of large quantities of diesel, fuel and other petroleum products.
  - Implementation of accident, fire and chemical spill/containment emergency procedures.

### Duration of construction contracts

| Can form part of the Supervision Contract for various sub-projects or be let as a separate contract to cover the whole route |
| Duration of construction contracts |
| June 2006-xxxxx |

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- Implementation of safety procedures of construction workers and public
- Traffic impact mitigation measures
- Management aimed at minimising loss of agricultural land, impairment of biological environment and/or disfigurement of landscape or harm to the soil's further potential as farmland, or impairment of drainage
- Monitoring of borrow pit operations to eliminate chronic erosion, siltation of adjoining land and minimise impact on settlements in the vicinity
  - Monitoring impact on water quality that could be affected by increase of silt load, surface water pollution through cleaning of construction vehicles and equipment
  - Monitoring of impact on air quality (impact from exhaust emissions of construction machinery, fugitive emissions from aggregates, concrete, asphalt plants; dust from traffic movements on unpaved roads, exposed soils and material stockpiles) and implementing mitigation measures (incl. technical control of machinery on emission standards, avoiding congestions, watering of unpaved haul roads)
- Monitoring and implementing mitigation measures aimed at reducing noise (incl. restriction of working hours in vicinity to settlements, strict enforcement of max noise level, ban on improper functioning machinery that causes excessive noise pollution)
**SPECIFIC ISSUES TO BE ADDRESSED ON SPECIFIC ROAD SECTIONS AT THE STAGE OF FEASIBILITY STUDY AND DETAILED DESIGN:**

<table>
<thead>
<tr>
<th>Section</th>
<th>Issues and Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yenikand-Shorsulu section</strong></td>
<td>Regarding the design there should be emphasis on generously dimensioned and appropriately sited culverts and bridges, so as not to interfere with the existing water regime. Particularly the proposed major new bridge over the Kura River will require careful design and construction to avoid interference with the flow, which could have consequences for channel destabilisation, erosion and sedimentation patterns, etc. It is necessary to develop a plan for property requisition and associated resettlement that will depend on the exact alignment of the road.</td>
</tr>
</tbody>
</table>
| **Shorsulu-Masally section (Direct alignment)** | This option running through the wetlands represents significant potential for adverse environmental impacts. It is recommended to eliminate this option from further consideration. Should the decision-makers insist on further consideration of this option, it is necessary to undertake:  
- detailed Hydrology Study of the area, to fully understand the complex interrelationship and dependencies with the irrigation system and the minimum requirements for maintaining the ecological balance in the various wetlands.  
- detailed geotechnical study  
- assessment of impact on biodiversity  
It is necessary to assess affect on residential and other properties as well as acquisition of agricultural land that seem to be significant. |
| **Shorsulu-Masally section (alignment along existing railway)** | This option running through the wetlands represents significant potential for adverse environmental impacts. Several feasible alignment alternatives should be studied. It is recommended to undertake Feasibility Study of several alternative alignments, including their effect on habitat fragmentation in the wetlands. Feasibility Study should also include assessment of biotic and abiotic factors that determine the stability, assessment of the wetlands dynamics and their relation with the wider landscape. During design, it is important to aim at minimising the potential impact on the strips of forest near Ahmadli and Anjali, as well as to develop specific plan for comprehensive safeguard measures during construction. |

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It is necessary to assess the affect on residential and other properties as well as the acquisition of agricultural land that seem to be significant.

| Masally-Astara section | Select alignment | Make assessment of impact particularly on the natural forest vegetation to the west of Lenkeran (Hirkan Forest) and the Talysh Relict Forest in Hirkan National Park; fish habitats, etc.

It is necessary to assess affect on residential and other properties as well as acquisition of agricultural land that seem to be very significant. The positive benefits identifies for the new road are considerable, but require full examination.

Any decision made on the final route selection needs to make sure that those on a lower income, without formal jobs or land ownership are not disproportionately affected by the project.

Assess impact on HIV/AIDS situation and develop mitigation measures.
ENVIRONMENTAL ASSESSMENT & RESETTLEMENT POLICY FRAMEWORKS

8.1 Environmental Assessment and Management Framework

The purpose of the RER is to provide information about key environmental and socio-economic issues in the Project-affected area to decision-makers within the Government and funding institutions to help them make informed decisions about:

- the selection of road improvement scenario and, if/where a new road is the preferred option,
- the optimal location for the alignment

Once the scenario/alignment have been selected for a specific section of road, the EA&MF and RPF will be used by the Government and WB to guide and manage environmental studies, land acquisition, any required resettlement of people and properties, and to guide the compulsory public consultation process.

RTSD's Environment and Safety Sector (ESS) will be responsible for management of the environmental assessment and environmental monitoring and reporting process for sub-projects, ensuring that the requirements of Azerbaijan's legislation, procedures and policies, international Conventions and WB safeguard policies, in particular in terms of environment, are met.

Further details of the procedures for preparation and approval of environmental studies, including requirements for public consultation and disclosure, are presented in the EA&MF. In addition, practical guidance on the monitoring and reporting of environmental mitigation measures during the construction and operation phases is provided.

8.2 Land Acquisition and Resettlement Policy Framework

Once the scenario/alignment have been selected for a specific section of road, the RPF will be used by the Government and WB to manage land acquisition, any required resettlement of people and properties, and to guide the compulsory public consultation process.

The RPF describes the existing compensation valuation methods in Azerbaijan as well as WB requirements under OP4.12, provides a sample entitlements matrix, and outlines the principles and procedures for preparation of a Resettlement Action Plan (RAP). The roles and responsibilities of RTSD's Land Acquisition Department as well as other organisations, including WB, in land acquisition and the preparation and implementation of RAPs for sub-projects are set out. WB requirements for internal performance monitoring and post-compensation evaluation monitoring are also listed.
9 PUBLIC CONSULTATION

"You need to know the exact alignment of the road and exactly when the road will be constructed before you speak to the people. If you do not have this information, it will panic them."

Head, Local Executive Power, Lenkeran on 10th August 2005

"What will we do about compensation? If people hear about demolition and resettlement they do not want to plant crops."

Meeting at Salyan on 11th August

"Will our opinions be useful to you?"

Meeting at Lenkeran on 10th August 2005

9.1 First Phase of Consultation

The RER is a broad overview of the policy, environmental and socio-economic implications of the entire Project scope at a strategic level, intended to provide information about key environmental and socio-economic issues to decision-makers within the Government and funding institutions to help them make informed decisions about:

- the selection of road improvement scenario and, if/where a new road is the preferred option,
- the optimal location for the alignment

At this stage, given the degree of uncertainty on route selection, the timing of project implementation and thus the communities which might be affected by the Project, consultation took the form of an initial round of discussions with local officials and village representatives at key district centres along the Baku-Shamakhi and Alyat-Astara roads in August-September 2005.

Baku-Shamakhi road: In Maraza and Shamakhi, the purpose of the discussions was to:

- introduce and disseminate basic information about the project;
- promote discussion about the potential positive and negative impacts of the two alternative road development scenarios:
  - Scenario 1: no change
  - Scenario 2: upgrade the existing roads with climbing lanes
- to collect statistical and anecdotal information about the environment, social and economic characteristics of each of the concerned districts.

Alyat-Astara road: In Salyan, Bilusavar, Jalilabad, Masally, Lenkeran and Astara, the purpose of the meetings was similar - although inevitably the range of issues under discussion was more wide-ranging - that is, to:

- introduce and disseminate information about the project;
- promote discussion about the potential impacts of four alternative road development scenarios:
  - Scenario 1: no change
  - Scenario 2: upgrade the existing roads with bypasses around major centres of population
  - Scenario 3: new road - including direct route across marshland between Shorsulu and Masally
  - Scenario 4: new road - including ‘railway’ option between Shorsulu and Masally
- to collect information about the environment, social and economic characteristics of the districts.

The proposed alignment(s) for the new road identified by the Iranian consultants only exist currently as lines on a 1:100,000 map dating back to the period 1974-1991, so it not possible to accurately identify...
where the proposed alignment will lie. Given this situation, the alignments were indicated on the old 1:500,000 road map (which itself is no longer obtainable) and described in general terms.

In all cases a high level of interest in the project was indicated by the participants, who on the whole had only heard rumours of the proposal to build a new road between Alyat and Astara. They seemed surprised and appreciative of being given an opportunity to express their views about the project. They were also concerned in a variety of ways about the potential social/economic impacts of the proposal to construct a new road, which in many cases would be distant from their settlements and businesses.

The meeting held at Alyat in September 2005 had a slightly different content in that, at WB's request, it was held jointly with consultants working on the WB-funded Environmental Assessment and Preliminary Design for a 22 km section of the Alyat-Astara Road Project (see Chapter 2) and therefore focussed more on specific issues relating to works proposed for that part of the road.

### Table 9.1 Meetings in Key Locations

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Location</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd August 2005</td>
<td>Shamakhi</td>
<td>Local Executive Power</td>
<td>Head, Deputy, Statistical Department</td>
</tr>
<tr>
<td>9th August 2005</td>
<td>Lenkeran</td>
<td>Local Executive Power</td>
<td>Head, Statistics Dept, Lenkeran city; Representatives from Asagi Nugadi, Bureyla village, Garmatuk village, Goyshaban village, Hirkan village, Leman city, Nuradi village, Paravand village, Shilavar village, Sutamurdov village, Xanbulan village</td>
</tr>
<tr>
<td></td>
<td>Astara</td>
<td>Local Executive Power</td>
<td>Head, Socio-Economic Department; Representative from RTSD; Representatives from Astara municipality, Archivan village, Artupa village, Samardi village, Sancardi village, Tangarud village, Telman village, Astara city</td>
</tr>
<tr>
<td>10th August 2005</td>
<td>Masally</td>
<td>Local Executive Power</td>
<td>Representatives from Dept of Culture; Dept. of Economic Development; Dept of Law; Dept. of Socio-Economics; Dept of Youth, Sport &amp; Tourism; Police Office; Construction Engineer; Representative from RTSD; also Representatives of Executive Power from Astara city, Deputy Representative of Hirkan village</td>
</tr>
<tr>
<td></td>
<td>Jalilabad</td>
<td>Local Executive Power</td>
<td>Head, Statistical Dept.; Representatives from State Fund of Social Defence; Apartment Exploitation Office; Jalilabad District State Land Office; Head Engineer of Azerbaijan Water Construction; Head Engineer in Executive Power; Engineer; Engineer/Hydro-geologist</td>
</tr>
<tr>
<td>11th August 2005</td>
<td>Bilausvar</td>
<td>Local Executive Power</td>
<td>Head and First Deputy, Representatives of Bilausvar municipality, Baghanlar and various other (unnamed) villages; Dept. of Culture; Electricity Office; Water Office; Head Engineer and Engineer; Economist; Architect; Consultant Psychologist; Judge; Bank Director</td>
</tr>
<tr>
<td></td>
<td>Salyan</td>
<td>Local Executive Power</td>
<td>Head and First Deputy, Representative from RTSD; Representatives from Ashagl Kurkand village Baranikand village, Cukhanli village, Gizilagac village, Marashi village, Sarvan village, Shorsulu village, Yenikand village</td>
</tr>
<tr>
<td>22nd August 2005</td>
<td>Maraza</td>
<td>Local Executive Power</td>
<td>Head, Representatives of RTSD (Road Exploitation No. 8); Badali, Maraza, Narimankand, Takla; Road engineer; sub-office of State Cartography and Land Committee</td>
</tr>
</tbody>
</table>
The TOR for the RER require that the report contains ‘a list of issues raised in each consultation meeting’ and ‘a statement describing how accepted recommendations were incorporated into the final draft and the reason for not accepting other recommendations.’ A record of all comments recorded during meetings in the Project-affected areas is given in Appendix C, in order to bring them to the attention of decision-makers within RTSD, WB and other organisations interested in the planning and implementation of the proposed road improvement programme. Lists of the dates, times and locations of meetings, names of attendees and their affiliation are summarised above in Table 9.1 and provided in detail in Appendix C.113

The comments made by officials and village representatives have been recorded directly as translated during the meetings. The comments have been taken into account during the development of RER Chapters 6 & 7 Environmental and Social Impact and Mitigation Measures. Socio-economic data collected during the meetings with the Local Executive Powers has been included both in RER Chapters 4 & 5 Environmental and Social Baseline and in the Resettlement Policy Framework.

Views expressed in the meetings along the Baku-Shamakhi road related mainly to technical issues and traffic safety improvements. The wide-range of views expressed in the meetings between Salyan and Astara along the Alyat-Astara road have been categorised below. Participants at the meeting at Alyat focussed on access, crossings/underpasses for cattle and Sand Gazelles (from the National Park) and employment opportunities for local people in the proposed road construction works.

**Important factors in views in favour of upgrading existing road with bypasses around major centres of population**

- Existing houses & businesses have already been demolished 30 m either side of existing road
- ‘Road is life’ – importance of road to current social and economic life of settlements along route
- Existing investments along road and desire to retain them
- Settlements very near existing roads would benefit from bypasses

**Important factors in views against upgrading existing road with bypasses around major centres of population**

- Graveyards, historical and cultural sites near to existing route making widening of route difficult

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113 Contact details have been recorded but will not be divulged to WB or any other party without the permission of the persons involved
Regional Environmental Review, Environmental Assessment & Management
Framework and Resettlement Policy Framework

- Economic and social costs associated with resettlement of large existing population
- Impact of resettlement on community cohesion, where it is felt there is not enough space for people to relocate locally, so that they will be pushed out of existing settlement as a result of road widening
- Schools and other social infrastructure that is near road
- Current zig-zag route between Lenkeran city and Astara is bad for lorries and difficult to widen
- Current poor condition of existing road
- Risk that new bypasses will not be used by trucks wanting to use services in the city

Important factors in views in favour of new road

- Shorten the distance and travel time to Baku
- Expected benefits to planned economic and social development in different sectors
- Expected improvement for delivery of agricultural goods to markets
- Expected benefits for job creation
- Expected opportunity for creation of new businesses
- Expected reduction in current level of accidents
- Expectations of associated improvements, such as new public services and infrastructure
- Reduce road accidents in settlements
- Improve road links for cities along the route
- Opportunity to use land not useful for agriculture
- Little or no resettlement required
- Opportunity to create new infrastructure near new alignment to compensate for loss of existing infrastructure

Important factors in views against new road

- Expected negative impact of new road on economic life of existing settlements, including informal trade resulting from current users of route
- Expected negative impact of the road on existing economic and social development plans for settlements along existing route
- Previous clearance alongside existing route, raising expectations of improvements to existing road
- Expected higher costs of for new road/constructing on wetlands compared with existing road upgrade/resettlement
- Preference for spending money on resettlement rather than on new road, in order to preserve benefits of road improvements for existing settlements
- Doubts about likelihood of ministerial approval for construction on wetlands
- Loss of existing businesses against
- Fear that new road will result in existing road not being maintained

Other generic issues of anxiety/concern expressed during the consultation

Basic facts about the proposed route

- How wide the road will be
- The exact alignment
- Relationship to ADB alignment
- Environmental impact of new routes
- Feasibility of new route especially over wetlands
- Anxiety about informing public too early when information is not clear

114 It is too difficult to try and separate views into those relating to alternative alignments
Compensation

A range of issues concerning compensation were raised during the consultation. These include:

- Categories of compensation, including for land, private land and state land, rented state land, investment in houses and shops, potential productivity of land
- Reaction of people to planned resettlement and demolition may be to not plant crops
- Fear of economic loss where illegal structures not compensated – treatment of illegal businesses – cases where businesses demolished in past, even though owner claimed to have official permission
- Past demolition of illegal structures, without compensation
- How compensation will be used for personal or for collective use, including for development and employment creation programmes
- Ease/difficulty of compensating different types of land e.g. state land versus private land; valuation of land with oil extraction points.
- Differing willingness to accept compensation between those who cultivate land and those who don’t use land

Detailed information about the land acquisition and resettlement procedures and management to be followed to ensure Project compliance with Azerbaijan’s legislation, procedures and policies, international Conventions and WB safeguard policies is presented in the Resettlement Policy Framework.

9.2 Second Phase of Consultation

The TOR for the RER indicates that groups potentially affected by the Project should be consulted twice on the environmental and social aspects of the development.

Comments were also sought on the draft RER, EA&MF and RPF. In light of the upcoming elections, and at the request of the Cabinet of Ministers, comments were sought in the following manner: (i) the cabinet of ministers distributed all draft reports (in Azeri) to key ministries and agencies including the local executive powers; (ii) on October 20, 2005 an advert was placed in local papers to inform the public that these reports were available in the offices of the local executive powers and that comments could be submitted during a 3 week comment period that closed on November 10, 2005.

<table>
<thead>
<tr>
<th>Relevant Organization</th>
<th>Comments</th>
<th>Response to Comments</th>
</tr>
</thead>
</table>
| Ministry of Health    | - Despite of the current stabilized epidemiologic situation for acute intestinal diseases in Azerbaijan, existing problems with water supply and drainage systems increase disease incidence.  
- Despite Azerbaijan has a very low HIV epidemic, current data and behavioral social trends indicate a high potential for further growth of the HIV/AIDS  
- The proposed project will be under construction for a considerable time, which may increase the potential risk of diseases such as infectious diseases, tuberculosis, malaria venereal diseases and HIV/AIDS. Followings should be included to minimize the impact of diseases.  
- Propose to expand item 3.6 “HIV/AIDS” of ... | In general no comments to the draft documents. But propose to expand item 3.6 “HIV/AIDS” of the project and provide it in a new edition. The revised text proposed by the Ministry of Health is included in the final version of the report |
<table>
<thead>
<tr>
<th>Ministry of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Letter</strong>: 12/10/2005</td>
</tr>
<tr>
<td><strong>Reference</strong>: 24/10/2005</td>
</tr>
<tr>
<td>- Preferential employment policies for local people</td>
</tr>
<tr>
<td>- HIV/AIDS and other infectious diseases awareness programmes for contractors and local people</td>
</tr>
<tr>
<td>- Government–level action together with the transit industry to educate truckers about the issues of HIV/AIDS</td>
</tr>
<tr>
<td>- Conduct of preventive and periodic medical inspections for protecting workers’ health</td>
</tr>
<tr>
<td>- Conduct of complex preventive and epidemic actions for prevention of malaria disease</td>
</tr>
</tbody>
</table>

> In the abbreviation list AIDS should be explained as Acquired Immune Deficiency Syndrome.

- We have no comments or proposals to the final draft of the project

<table>
<thead>
<tr>
<th>Ministry of Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Letter</strong>: 12/10/2005</td>
</tr>
<tr>
<td><strong>Reference</strong>: 19/10/2005</td>
</tr>
<tr>
<td>- The road project area is not indicated in the submitted document, so the existence of historical and cultural monuments on the road alignment is not clear</td>
</tr>
<tr>
<td>- Items 13 and 14 of the “Law on the Protection of Historical and Cultural Monuments of Azerbaijan Republic” state that “if a monument is found during any construction or other works, the works should be immediately stopped and relevant authorities (Ministry of Culture) and Azerbaijan Science Academy taking into consideration expert evaluation</td>
</tr>
<tr>
<td>- If construction or other works are conducted in the area of historical or archeological importance, this area is initially examined by experts and initial inspection of monuments is provided. Relevant authorities (Ministry of Culture) provide participation of their representative or expert in the construction site</td>
</tr>
<tr>
<td>- During construction of main engineering lines (oil, gas, pipelines etc.) if construction works cover an area more than a hectare, a request should be sent to relevant authorities (Ministry of Culture) and Azerbaijan Science Academy about the works to be done at the feasibility study phase by the construction company and funds should be allocated for conducting preliminary survey works</td>
</tr>
</tbody>
</table>

Because of the non existence of the exact areas on the report for proposed alignments there is no comment, but there are some remarkable laws on the protection of Historical and Cultural monuments.

During preparation of the Environmental & Social Impact Assessment Reports for specific sections of the proposed Project road, a more detailed review of potential historical and archaeological impacts will be undertaken in discussion with the Ministry of Culture.

<table>
<thead>
<tr>
<th>Ministry of Industry and Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Letter</strong>: 12/10/2005</td>
</tr>
<tr>
<td><strong>Reference</strong>:</td>
</tr>
<tr>
<td>- We would like you to consider that we have no comments or proposals to the document</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Ministry</th>
<th>Date of Document</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Finance</td>
<td>12/10/2005</td>
<td>We kindly ask you to give proper instructions to the Ministry of Transport to submit reference documents and information used for detailed calculation and assessment of land areas and houses (calculation methods, documents of consent of landowners and house-owners and local authorities, pricing criteria for houses, individual prices for every house and courtyard and etc.) to appropriate bodies including the Ministry of Finance for review and comments.</td>
</tr>
<tr>
<td>Ministry of Ecology and Natural Resources</td>
<td>29/09/2005</td>
<td>In accordance with the “Law on Environmental Protection of Azerbaijan Republic” and requirements of the “Regulations for the Environmental Impact Assessment Process” in Azerbaijan, an Environmental and Social Impact Assessment Report covering the under-mentioned essential environmental requirements should be prepared and submitted to the Ministry of Ecology and Natural Resources for approval: Existing ecological condition of the construction site; Description of infrastructure objects with potential impact on the environment through conduct of construction works; Volume of materials (sand, gravel, soil, and etc.) required for the road construction, proposed sources and agreements with the appropriate bodies on this issue; Assessment of the damage to be caused to the greenery along the road through road construction with the participation of the appropriate bodies of the Ministry of Ecology and Natural Resources; Special measures to be taken during the construction – mounting works of river crossings; Reserving the fertile top soil during the earth works to be used for future rehabilitation works (land reclamation); Appropriate waste management; Planting of strips of greenery (landscaping) along the highway using appropriate tree sorts; Final results of the engineering geological investigations conducted in the probable landslide zones; Mitigation measures for potential environmental impact through the project implementation. According to the comments there is no specific objection against draft report and accepts the documents as a preliminary plan for works to be done and assessment of the existence conditions. Beside this, some essential requirements should be prepared and submitted to the Ministry of Ecology and Natural Resources for approval. The Ministry of Ecology's requirements will be taken into account during preparation of the Environmental &amp; Social Impact Assessment Reports for specific sections of the proposed Project road.</td>
</tr>
<tr>
<td>Ministry of Economic Development (MED)</td>
<td>➢ We advise to assess physical and juridical persons eligible for compensation during resettlement and extent of damages, and to arrange settlement of these issues within the existing legislation, taking into consideration the World Bank recommendations.</td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td></td>
</tr>
<tr>
<td>Letter : 12/10/2005</td>
<td>The requirements of existing legislation and the World Bank will be taken into account during preparation of the Land Acquisition and Resettlement Plans.</td>
<td></td>
</tr>
<tr>
<td>Reference : 27/10/2005</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Land and Cartography Committee</th>
<th>➢ Some necessary amendments should be introduced to the document according to the requirements of the land legislation of Azerbaijan Republic. Item 4.1.6 should be amended in the following way:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference : 13/10/2005</td>
<td>In Table 5 State Land and Cartography Committee must be indicated without alternatives.</td>
</tr>
</tbody>
</table>

Last two paragraphs of 4.1.6 item shall be provided with the following edition:

- Regulations on filing and processing of petitions for acquisition of land areas for state and public needs approved by the Resolution №42 issued by the Cabinet of Ministers of 15 March 2000. These regulations outline procedures for expropriation or compulsory acquisition of land areas for state or public needs.

- The second paragraph of 4.2.1 item shall be provided with the following edition:

  "Regulations on assessment of agricultural losses and damages due to the acquisition of"
the land areas for state or public needs” are regulated by the Land Code of Azerbaijan Republic and “Regulations on assessment and compensation of agricultural and forest industry losses and damages” approved by the resolution №42 issued by the Cabinet of Ministers of 15 March 2000.

- Item 4.2.4 shall be provided with the following edition:
  - In case of need to acquire land areas for a project, lump sum compensation is paid to land owners, users and lessees. Compensation price is established by adjusting normative price established by the Cabinet of Ministers Resolution №158 of 23 July 1998 to market price and mutual agreement as specified in Land Code item 96.
  - During land privatization, land titles allocated to families are officially registered on the household head, with indication of names of all members of the family. The household heads can act as a party for signing compensation documentation. However, official consent of other (adult) members to the compensation paid for acquired lands should be obtained. For under age children the household head is to sign.

- Inventory of lands in the corridor and right-of-way, establishment of rights on land (state, municipality and private) and collecting and classification of land title documents for individual land owners, users and lessees, assessment of lands, census of project affected physical and juridical persons is in the competence of the State Land and Cartography Committee in accordance with legislative land acts of Azerbaijan Republic, and all the above-mentioned activities can be realized only by this state body with its state land cadastral information, materials, experts and technical facilities.

- Therefore in Table 5 “Example of Land Acquisition and Resettlement Roles and Responsibilities” the State Land and Cartography Committee must be indicated without alternatives.

<table>
<thead>
<tr>
<th>Item</th>
<th>Agency of State Melioration and Water Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Designed roads cross with a number of natural and artificial water resources, we advise to consider special measures to avoid flow of surface waters appeared on the roads to these water resources</td>
</tr>
</tbody>
</table>

The State Agency approves upgrade of main republican highways up to international standards and will provide its assistance for the execution process. The requirements of the Agency of State Melioration and Water Industry will be taken
<table>
<thead>
<tr>
<th>Executing Power</th>
<th>Date</th>
<th>Comment or Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absheron</td>
<td>17/10/2005</td>
<td>We would like to be informed after the exact alignment for rehabilitation of Baku-Shamakhi road is defined. To take appropriate measures regarding compensation of potential affected land areas to land owners, physical and juridical persons, as well inventory to be conducted in the area. Supports rehabilitation of the Baku-Shamakhy road. Detailed information will be given in EAI report.</td>
</tr>
<tr>
<td>Gobustan</td>
<td>12/10/2005</td>
<td>We propose to consider construction of two-sided sidewalks in the road section running through the region centre, Maraza settlement within the project. Agree with the rehabilitation of the Baku-Shamakhy road and propose to make sidewalks in the centre. We indicated this comment on the draft report (Public Consultation Notes).</td>
</tr>
<tr>
<td>Shamakhy</td>
<td>12/10/2005</td>
<td>We have no comments or proposals to the document.</td>
</tr>
<tr>
<td>Salyan</td>
<td>12/10/2005</td>
<td>We would like to submit the following suggestions to the prepared reports: 1.4.2. Improvement of living and income levels of the project-affected population. 2.4.3. Arrangement of public consultation meetings. 3.4.4. To make the people aware of their rights in this matter, to inform all the land users. 4.4.5. Supporting of the land users without property rights on it. 5.4.6. Rendering of assistance to the people during resettlement and transition period. 6.7.2.3. High-level arrangement of collector-drainage system and upgrade of irrigation channels in order to avoid salinization of agricultural lands in the corridor between Yenikend-Shorsulu. 7.7.2.4. Thorough examination and consideration of social condition, future employment and other important factors of the people during agricultural land acquisition. 8.7.3.2. Maintenance of social justice principle during the acquisition and assessment process of agricultural lands of Yenikend-Shorsulu and Supports to make a new road (Yenikand-Shorsulu) with the execution of the following suggestions. The comments of the Salyan Executive Power will be taken into account during the preparation of the relevant Environmental &amp; Social Impact Assessment Reports for specific sections of the proposed Project road.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>No.</th>
<th>Executive Power</th>
<th>Letter Date</th>
<th>Reference Date</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Bilasuvar</td>
<td>12/10/2005</td>
<td>24/10/2005</td>
<td>According to 3.3.4 item of the project, the widening of the existing road to four lanes between settlements and completion of a 11.8 length bypass in Bilasuvar region was decided to be more advisable for the region. Bilasuvar Executive Power doesn’t agree with the new road. The reasons of that idea are shown in the report (Public Consultation notes).</td>
</tr>
<tr>
<td>15</td>
<td>Jalilabad</td>
<td>12/10/2005</td>
<td>24/10/2005</td>
<td>Widening of the existing road will cause large scale resettlement in Jalilabad, Goytapa cities, Qarazangir and Alar villages. In these settlements there are structures situated 15-25m distances from the road alignment. Volume of resettlement in this region will be 250 structures. As the people have businesses, petrol stations and etc. along the road and the perspective areas are limited people don’t agree with the widening of the existing road. We agree with the railway option because of less demolishing and resettlement. Direct and Railway alignments are both acceptable for Jalilabad, but railway is the best one. All of this comments are shown in the report (Public Consultation Notes).</td>
</tr>
<tr>
<td>16</td>
<td>Masally</td>
<td>12/10/2005</td>
<td>21/10/2005</td>
<td>A schematic overview of alternative development options for Alat-Astara highway is not provided in the prepared report but we have information from Iranian company (upgrading of M3 Alat-Astara road, widening of the existing 2 lane road to 4 lane and bypasses near major cities are considered). Widening of the existing road will cause large scale adverse impacts on socio-economic unity of the local population due to resettlement. Direct (D variant) and railway alignments are the most favorable. For direct alignment we propose to construct links to the existing settlements between Masally-Sarcuvar and Masally city. Direct alignment (Shorsulu-Sarcuvar) does not cross settlements and covers less agricultural lands and pastures. We consider this alignment to be the most acceptable for the region according to the resettlement program of the report. All of these proposals and comments are reflected in the Public Consultation notes. Masally Executive Power supports variant D and their comments are the reasons of their choice.</td>
</tr>
<tr>
<td>17</td>
<td>Lankaran</td>
<td></td>
<td></td>
<td>We propose to pay attention reconstruction of the Airport in Lankaran close to the project road. Comprehensive statistics of local conditions. Executive Power has no objection and supports the new road and proposes to pay attention to the Airport in</td>
</tr>
<tr>
<td>Letter :12/10/2005</td>
<td>Reference :24/10/2005</td>
<td>and administrative units, acquisition procedures, as well provision of equal rights within the resettlement strategy must be provided. Lankaran which will be reconstructed.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>18 Astara Executive Power</td>
<td>Letter :12/10/2005</td>
<td>It is not advisable to expand the existing Alat-Astara highway due to adjacent 6 big graveyards, historical monuments, 3 secondary schools, lots of residential houses and winding road in Astara section of this road. Their opinion supports the new road. Comments confirm those already indicated in Public Consultation section of report.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference :26/10/2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 State Committee Of Construction And Architecture (SCCA)</td>
<td>Letter :12/10/2005</td>
<td>It is hard to make an exact assessment of it without other reports (Only Resettlement Policy Framework has been reviewed). However the document can be used as a valuable source and material for this kind of matters as it mainly covers not concrete information and recommendations, but procedures.</td>
<td>SCCA don’t support establishment and participating of Land Acquired Department. According to comments needed detailed information needed but it will be prepared in the next stage. Comment about State</td>
<td></td>
</tr>
<tr>
<td>Reference :08/11/2005</td>
<td></td>
<td>Item 5.2 of the report discusses establishment of Land Acquisition Department (LAD) within RTSD, but this matter is in the authority of RTSD as an Employee, and activity of the LAD as an independent structure is unlikely.</td>
<td>According to comment appropriate amendment made in 5.1.2</td>
<td></td>
</tr>
<tr>
<td>19 State Committee Of Construction And Architecture (SCCA)</td>
<td>Reference :08/11/2005</td>
<td>Item 5.4 Project Management Department is indicated as a structure directly related to the Cabinet of Ministers, but it is not acceptable with the existent RTSD.</td>
<td>Some comments is included in the final version of the report. Other comments are impossible to be included because these tables are just example of previous projects.</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>In item 6 Table 6.1 Project Resettlement Budget, 40% of the costs are allocated to the management, supervision, consultation and additional costs and this figure seem to be high.</td>
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<td></td>
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<td>Cabinet of Ministers of 28.02.2004, seems to be 90,5ha more than the allocated area land suitable for sowing. But anyway it is difficult to judge the base of these figures due to the lack of exact calculations.</td>
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<td>Item 8.4 states that final external evaluation will be done by a third party. To our mind, there are similar organizations both on governmental and non-governmental sector, and use of their services could at least reduce the service charge itself, and provide new places of employment, consequently increasing qualifications of the local specialists.</td>
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<td></td>
<td></td>
<td>As a reference source, appropriate requirements of the World Bank are not indicated and this complicates assessment of the conclusion, final opinion</td>
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<td></td>
<td></td>
<td>Some amendments must be done on Table 4.1</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- In accordance with the Regulations on Movables State Register Agency under the</td>
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</tbody>
</table>

- We advise to add the sentence “Preparation of inventories and registrations of the properties and surface and subsurface utility lines within the road reserve is carried out by the Movables State Register Agency under the Cabinet of Ministers of Azerbaijan Republic at the project cost” to item 5, subitem 5.1.1;
- To add ”“ after “State Committee of Construction and Architecture” and “State Land and Cartography Committee” in items 5.1.2 and 5.3.1 appropriately.

<table>
<thead>
<tr>
<th>20</th>
<th>State Committee For Management Of State Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter :12/10/2005</td>
<td>During the inventory it is advisable to involve the representatives of the State Committee for Management of State Property as a responsible body for clarifying property rights on inventories and land areas</td>
</tr>
</tbody>
</table>

The advice of the State Committee for Management of State Property will be taken into account in the detailed design.
CONCLUSIONS

The results of the RER indicate that the road upgrading works for the Baku-Shamakhi road should go ahead as planned.

The results of the RER indicate that all construction of new road sections will have adverse impacts including permanent landtake of agricultural land, impacts on hydrology, resumption of residential and other properties and businesses, reduced access to agricultural land and services, as well as temporary construction phase nuisance. Improved infrastructure links may also reduce traffic accidents within built up areas and help stimulate economic development in the region.

Whatever route is chosen for whatever section should be designed to minimise land acquisition and resettlement requirements, and avoid any socio-cultural impacts on common property resources, e.g. mosques, graveyards, cultural monuments and water points, and to minimise impacts on the natural environment.

Between Yenikand and Shorsulu, building a new road including a major new bridge over the Kura River will have greater environmental and socio-cultural impacts than upgrading the existing road.

It is recommended that the direct alignment between Shorsulu and Masally should be dropped from any further consideration under the Project by RTSD and WB. There is a lack of detailed knowledge of hydrological and geotechnical conditions in the area, and the potential direct and indirect impacts on wetland systems linked to the Giziligach State Reserve and Ramsar site. In addition, this option provides few links into the existing transport network.

If the decision is made to build a new road between Shorsulu and Masally, the railway option linked into existing roads is recommended. On the basis of currently available information, this option combines the least environmental impacts with, on balance, the greatest potential for stimulating economic development in the region.

Between Masally and Astara, a new alignment linked to the Lenkeran bypass appears to be the only feasible option given the state of the current road and proximity of settlements and cultural monuments. The alignment should be chosen to minimise land take and resettlement, minimising impact on cultural monuments and common property resources.

The strategic decision on the variants to be investigated further within the individual EIA studies will be key to successful Project implementation. This decision should be based on an independent and balanced view taking the findings and recommendations of the present RER into account.

All future sub-project development studies and implementation should also take into account the findings and recommendations of the EA&MF and RPF, which are presented as separate documents.
APPENDIX A – TERMS OF REFERENCE

Terms of Reference
Regional Environmental Review,
Environmental Assessment and Management Framework and Resettlement Policy Framework

Azerbaijan Motorway Improvement and Development

Background

The Government of Azerbaijan has requested the Bank's support for improving several road segments to the west and south of Baku over a several year period. The proposed rehabilitation programs include:

- Upgrade of M3 Motorway between Alyat and Astara, including expansion of the existing 2 lane roadway to a 4 lane roadway; construction of new 4 lane road; and the construction of bypasses around key towns;
- Rehabilitation of existing road Baku – Shamakhi, a 120 km section of the east-west transport corridor between Baku and Tbilisi.

The first year's program will rehabilitate part of the existing roads along the M3 Motorway (roughly between km 6 and km 30) that do not require land acquisition. Other road segments requiring land acquisition or resettlement will be rehabilitated in the outer years.

Although the design is not yet available, preliminary alignment options for the upgrade of the M3 Motorway have been proposed in an inception report that has been prepared by an Iranian consulting firm.

The Government proposes to start the first phase of rehabilitation works by March 2006.

In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 Environmental Assessment and OP/BP 4.12 Involuntary Resettlement, this proposed development has been classified as a Financial Intermediary (Fl) project, with Category A and B sub-projects. This will require the preparation of the following: (i) a Regional Environmental Review encompassing the entire project scope; (ii) an Environmental Assessment and Management Framework to screen sub-projects and guide lower risk Category B rehabilitation efforts; and (iii) a Resettlement Policy Framework.

It should be noted that specific sub-projects identified as requiring Category A Environmental Assessments (these will be advanced in year 2 or later) or relatively higher risk Category B sub-projects would be teased out through screening, and site specific EA/EMPs would be prepared following typical Bank safeguard procedures. Similarly, each sub-project that will involve land acquisition or resettlement will require the preparation of a specific Land Acquisition Plan (LDP) or Resettlement Action Plan (RAP), following guidance in OP/BP 4.12, and the Resettlement Policy Framework.

The preparation of the Regional Environmental Assessment, the Environmental Assessment and Management Framework, the Resettlement Policy Framework and subsequent documents required during implementation, is the responsibility of the Borrower who is also responsible for their disclosure in country.

Objectives and General Scope of Work for the Assignment

The objective of this assignment is to prepare the Regional Environmental Review (RER), Environmental Assessment and Management Framework and Resettlement Policy Framework for the proposed development of the above mentioned roads. Relevant sections of the Operational Manual (OM) for the project will also be developed. The RER and frameworks for environmental assessment and resettlement shall address the needs of the applicable laws and regulations of the Government of Azerbaijan; and the World Bank's safeguard policies and disclosure requirements.

Specific Tasks

The assignment consists of four tasks, outlined in turn below.
(i) Preparation of a Regional Environment Review (RER)

The RER shall cover the entire scope of the project, i.e. all the above mentioned roads in “Background” section. It shall address the needs of applicable laws and regulations in Azerbaijan, as well as the Bank’s safeguard and disclosure requirements.

The RER shall provide an outline of the project; describe existing environmental and social issues; discuss and compare project alternatives (as far as they are known at the time of preparation) in terms of environmental and social safeguards; and identify risks and issues to be addressed during project implementation.

Specifically, the RER shall:\n
- provide a description of the proposed development, including its main objectives, and links with other development plans or proposals
- discuss the policy, legal and administrative framework and requirements. Identify international, national or other objectives that are relevant to the proposed development. Describe how these objectives have and will be taken into account
- outline the relevant aspects of the current state of the environment and their likely evolution without the proposed development. This should include a description of the environment and social characteristics of areas likely to be significantly affected, including areas of high botanical value, areas designated under national legislation or areas that are densely populated
- identify and describe any existing environmental problems that are relevant to the proposed development
- carry out social screening (for details, see (iii) below “Development of Resettlement Policy Framework”), and assess socioeconomic characteristics of the project areas, describe expected social issues that may take appeared during implementation and propose measures to mitigate significant adverse effects with the participation of affected persons.
- identify, describe and evaluate the likely environmental and social effects of the proposed development, “including any effect on the environment, including human health, flora, fauna, biodiversity, soil, climate, air, water, landscape, natural sites, material assets, cultural heritage and the interaction among these factors”. Identify those that are unavoidable or irreversible. Characterize the extent and quality of available data.
- propose measures to prevent, reduce and as fully as possible offset any significant adverse effects on the environment that may result from the implementation of the proposed development
- identify, describe and assess the reasonable alternatives to the development (as far as they are known). Propose preferred alternatives together with the reasons for their selection. The ‘without project scenario’ should also be assessed.
- describe the measures envisaged for management and monitoring of environmental and social effects. Appropriate reference should be made to the Environmental Assessment and Management Framework and the Resettlement Policy Framework.

References: OP/BP 4.01 Environmental Assessment (World Bank); Protocol on Strategic Environmental Assessment (UNECE); Implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Commission).

This should include secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects, including non significant effects that in combination with existing problems could create significant effects.

UNECE Protocol on Strategic Environmental Assessment

This could include alternative development plans that meet the same or alternative objectives; alternative elements within the development proposal: alternative locations, land uses, technologies, timing or development options. Constraints should be recognized in identifying alternatives.
- a non technical summary including the conclusions of the RER should also be provided.

(ii) Development of an Environmental Assessment and Management Framework

An Environmental Assessment and Management Framework shall be prepared by the Consultant(s) that outlines the procedures for the management of environmental issues related to Category A and B sub-projects during implementation of the development proposal. These procedures should comply with the Bank’s requirements for Financial Intermediary (FI) projects with Category A and B sub-projects.

The Environmental Assessment and Management Framework will comprise the major input on environmental management in the Operational Manual (OM) for the project (see (iv) below). The Consultant(s) will provide other inputs on environmental matters as requested by RTSD to support the development of the OM.

As a minimum, the Environmental Assessment and Management Framework should include:

- The identification of policies (including national and World Bank requirements) applicable to the proposed development and a review of the adequacy of the proposed EA arrangements for sub-projects. An overview should be provided of these policies and the responsibilities for their supervision and enforcement. Measures to strengthen such EA arrangements should be identified (as necessary).

- An assessment of the institutional arrangements for conducting an EA of sub-projects, including the mechanisms and responsibilities for environmental screening and the review of EA results. This should include a review of institutional capacity for the supervision and enforcement of Environmental Management Plans (EMPs) during construction and operation. Measures to strengthen capacity should be identified (as necessary).

- The development of procedures to be applied by RTSD for the screening, approval and management of environmental and social issues of sub-projects proposed during implementation. Environmental classification and screening criteria should be outlined that meet national and World Bank requirements. Approval procedures should be detailed to ensure that sub-projects meet the environmental requirements of appropriate national and local authorities and that they are consistent with OP/BP 4.01 Environmental Assessment (World Bank) and other applicable safeguard policies of the World Bank. Procedures for the environmental assessment of sub-projects and the development of management plans should also be included.

- A description of the process to be followed for public consultation and disclosure of environmental assessments and management plans for sub-projects. This process should reflect national and World Bank requirements and outline differences (if any) related to the assigned environmental category.

- Reporting requirements should also be outlined.

(iii) Development of a Resettlement Policy Framework

Resettlement Policy Framework should be developed, according to OP/BP 4.12, Involuntary Resettlement, which will set out the policies, principles, institutional arrangements, schedules and funding mechanisms for any land acquisition and resettlement that may occur as the result of the Project. In addition, social screening should be carried out for the Regional EA.

Specifically, the Consultant in charge of social assessment and resettlement issues should carry out tasks laid out below.

a. Desk Study
  o Review the existing legal framework and institutional procedure regarding the expropriation of private land, physical relocation of households and land valuation methods.
  o Compare the Azeri legal framework and procedures with Bank safeguard requirements and identify gaps.

119 References: OP/BP 4.01 (World Bank); World Bank Policy on Disclosure of Information.
Regional Environmental Review, Environmental Assessment & Management Framework and Resettlement Policy Framework

- Review existing surveys, especially the feasibility study of the proposed project and “Guide to Land Acquisition and Compensation Programme” issued by the BTC project.
- Review examples of land acquisition and resettlement in Azerbaijan.
- Review available data regarding the population, land ownership and usage, and socioeconomic characteristics in the project area.

b. Field Investigation
- Determine the approximate number of properties, houses, businesses and roadside activities that are likely to be affected.
- Determine approximate scale of physical relocation of households required.

c. Social screening
The regional EA will include an assessment of social impacts of alternative alignments, with the aim of designing roads with minimum negative impact. The Consultant will determine, for each alternative alignment, the scale of physical relocation of households and approximate number of properties, houses, businesses and roadside activities that are likely to be affected. Common property resources that will be lost (e.g. wells, hand pump, schools, community buildings, graveyards etc.) should also be identified.

d. Resettlement Policy Framework (RPF)
An RPF should be prepared since specific subprojects will not be determined prior to the project appraisal. The RPF will govern the development of a site-specific Resettlement Action Plan or Land Acquisition Plan as found necessary in the course of sub-project implementation. The RPF should include, at a minimum:

- Description of types and scale of impact on the livelihood on local communities. The type of impact will include, as laid out in the OP/BP 4.12, acquisition of private land, physical relocation of households, and anticipated impacts in terms of loss of access and income.
- Assessment of the current laws and procedures regarding land acquisition and resettlement (expropriation). Consultants must also investigate into prevailing practice on the ground that may not be codified in formal laws and procedures, including the support actually provided to the project affected population. Identify gaps with Bank safeguard policies and propose measures to fill the gap. In particular, assess current valuation methods and compensation principles for expropriation and resettlement as implemented on the ground, identify gaps and propose measures to fill them.
- Assessment of current institutional arrangements and the chain of responsibility for executing expropriation regarding land acquisition and resettlement. Assess the capacity of implementing agencies to complete the expropriation process according to OP/BP 4.12.
- Rough estimate of the budget necessary for the resettlement and land acquisition. Consultants must inquire regional offices of the Land Committees and Local Executive Bodies regarding land price and costs that typically entail when a household is physically relocated, and estimate the scale of budget needed to execute resettlement and land acquisition.
- Basic principles and procedures for the acquisition of private land and physical relocation of households. This should include preparation, review and approval of site-specific Resettlement Action Plans and Land Acquisition Plans for each sub-project that entails expropriation.
- Identify potential categories of impact and describe the policy entitlements for each category of impact in ways consistent with OP/BP 4.12.
- Assessment of existing notification, consultation, disclosure and grievance mechanisms to inform affected persons and inform them of the expropriation process, their rights, and redress mechanisms available to them. Propose measures to ensure that notification, consultation, disclosure and grievance mechanisms are consistent with the requirements of OP/BP 4.12.

(iv) Operational Manual
The Operational Manual (OM) defines the policies and procedures to be followed during project implementation by RTSD and/ or the entity that is responsible for ensuring project implementation. Typically, an Operational Manual will outline the project organization and management arrangements, including procedures for personnel and financial management, reporting, monitoring and evaluation. In addition the OM will include procedures for sub-project preparation, implementation and supervision; including the management of environment, social and resettlement issues for sub-projects. Specifically, the OM provides detailed guidance on implementing the Resettlement Policy Framework and Environmental Assessment and Management Framework.
The Consultant(s) will work closely with RTSD and will provide inputs to the OM on environment, social and resettlement-related issues. The Consultant(s) will help RTSD to develop these sections of the Operational Manual for the project.

Coordination and Consultation

The Consultant(s) will work under the instruction of the Road Transport Service Department (RTSD) in Azerbaijan. RTSD will be responsible for the overall preparation of the RER, Environmental Assessment and Management Framework and the Resettlement Policy Framework. The Consultant(s) will assist RTSD in coordinating the preparation of these documents with the Ministry of Environment and Natural Resources, the RTSD and the World Bank. The Consultant(s) will work in close cooperation with the consultant engaged to prepare the preliminary design and provide sufficient support to the RTSD in their consultations with project affected groups and local executive powers.

RTSD will consult with groups potentially affected by the proposed project, and with local NGOs, on the environmental and social aspects of the development proposal. The Consultant(s) will support RTSD with these consultations. These groups will be consulted locally at least twice:

(i) Scoping—at the scoping meeting held in each critical location at the start of the assignment before the Terms of Reference for the RER are finalized. Relevant and priority environmental and social issues will be identified at this meeting.

(ii) Discussion of Draft—once the draft RER, Environmental Assessment and Management Framework and Resettlement Policy Framework have been prepared. The draft will be discussed in sufficient detail to enable stakeholders to offer their comments and recommendations for the final draft of each document.

A record should be kept of public consultation activities, indicating (a) any means other than consultations (e.g. surveys) that have been used to seek the views of affected stakeholders; (b) the date and location of consultation meetings; (c) a list of attendees, their affiliation and contact details; (d) summary minutes of each meeting; (e) a list of issues raised in each consultations meeting; and (f) a statement describing how accepted recommendations were incorporated in the final draft and the reason for not accepting other recommendations.

Reporting Requirements

In addition to the deliverables listed below, the Consultant(s) will provide RTSD with:

(i) A draft activity schedule, prepared for the client’s review and approval prior to starting the work program; and

(ii) Brief status reports on a biweekly basis, including any major issues related to the timely implementation of the assignment.

Copies of all reports and deliverables shall be submitted in hard copy (4 copies) and electronically (4 copies) in English and Azeri.

Deliverables

(i) Final draft Regional Environmental Review
(ii) Environmental Assessment and Management Framework
(iii) Resettlement Policy Framework
(iv) Records of public consultation activities

Draft and final copies of the above documents should be provided to RTSD and the World Bank (by email) for review.

Schedule and Resources

The time available for the assignment is 3 months.
### APPENDIX B – MEETINGS/VISITS

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Person</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 July 2005</td>
<td>RTSD HT Highway II Project Implementation Unit (PIU)</td>
<td>GOYADEV Adil</td>
<td>Director</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MUTALLMOV Sadiq</td>
<td>Consultant, VMV</td>
</tr>
<tr>
<td>12 July 2005</td>
<td>RTSD</td>
<td>VALEHOV Hijran</td>
<td>Head, Investment Division</td>
</tr>
<tr>
<td></td>
<td>World Bank</td>
<td>EBINGER Jane</td>
<td>Environmental Specialist (Europe &amp; Central Asia)</td>
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<td></td>
<td></td>
<td>ISHIHARA Satoshi</td>
<td>Social Development Specialist (Europe &amp; Central Asia)</td>
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<td>HAJIYEVA Gulana</td>
<td>Operations Officer (Environment)</td>
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<td></td>
<td>KARIMOV Bakhtiyar</td>
<td>Consultant</td>
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<td></td>
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<td>GRIESE Karlsson</td>
<td>Consultant, RRE</td>
</tr>
<tr>
<td>13 July 2005</td>
<td>Baku-Shamaki Road</td>
<td>RVC, EI-S, MP, VG, NA, ER</td>
<td>Consultant Team</td>
</tr>
<tr>
<td>14 July 2005</td>
<td>Alyat-Astara Road</td>
<td>EBINGER Jane</td>
<td>-as above-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISHIHARA Satoshi</td>
<td>-as above-</td>
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<tr>
<td>15 July 2005</td>
<td>RTSD - ESS</td>
<td>ALLAZOV Kamran</td>
<td>Head, Ecology &amp; Safety Sector</td>
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<td></td>
<td>RTSD</td>
<td>HAJIYEVA Vagif</td>
<td>Head, Road Maintenance Department</td>
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<td>MENR</td>
<td>ALLAHVERDI Oglu</td>
<td>Director, Ecological</td>
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<td>RAFIYEV Ramiz Mamed</td>
<td>Deputy Director, Ecocentre</td>
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<td></td>
<td>Iranian consultant’s office</td>
<td>ESMAEIL Noori</td>
<td>Official Representative, Passillo Consulting Engineers</td>
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<td>ALIYEV Elxan</td>
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<td>State Committee for Land &amp; Cartography</td>
<td>MAMMADOV Garib Sabir</td>
<td>Head, Cartography &amp; Land Committee</td>
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<td>MENR – SEE</td>
<td>KHALILOV Gahraman Mammad</td>
<td>Director, State Expertise Department</td>
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<tr>
<td></td>
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<td>RZAYEV Ramiz</td>
<td>Deputy Director, State Expertise Department</td>
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<td>ASSLANOV Azer</td>
<td>Head, State Expertise Unit</td>
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<tr>
<td>22 July 2005</td>
<td>Land Committee</td>
<td>QULIYEV Mirrafiq</td>
<td>Head, Department of Land Conservation</td>
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<td>ABBASOV Faruq</td>
<td>Leading Advisor on Management of Land Marketing</td>
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<tr>
<td>28 July 2005</td>
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<td>29 July 2005</td>
<td></td>
<td>KARIMOV Bakhtiyar</td>
<td>Consultant</td>
</tr>
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</table>

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120 Key: RTSD=Road Transport Service Department, MENR=Ministry of Environment & Natural Resources

RVC=Ros Coverley, EI-S=Edda Ivan-Smith, MP=Melanie Poerschmann, VG=Vusala Gambarova; NA=Nigar Aghayeva, NAs=Nargiz Assadova, ER=Elshan Rustamov, CC=Colin Chant

NB Field visits in italics
<table>
<thead>
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<tr>
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<td>Baku-Shamakhi Road</td>
<td>RVC, NA, NA, ER</td>
<td>Consultant Team</td>
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<tr>
<td></td>
<td>Local Executive Power, Shamakhi</td>
<td>MAMMEDOV, Natig</td>
<td>Head of Local Executive Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nasir</td>
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<td>RTSD – Highway II PIU</td>
<td>GOYADEV Adil</td>
<td>Director</td>
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<td>RTSD Alyat-Qazimammad PIU</td>
<td>IBRAHIMOV Valch</td>
<td>Director</td>
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<td>RTSD</td>
<td>VOROHNOV Hijran</td>
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<tr>
<td>5 August 2005</td>
<td>Abbat-Astara Road</td>
<td>RVC, CC</td>
<td>Consultant Team</td>
</tr>
<tr>
<td>8 August 2005</td>
<td>Jalilabad teashop</td>
<td></td>
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</tr>
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<td>Jalilabad private timber yard</td>
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<tr>
<td>9 August 2005</td>
<td>Local Executive Power, Lenker City</td>
<td>NAGDAILYEV Zeynal S</td>
<td>Head of Local Executive Power</td>
</tr>
<tr>
<td></td>
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<td>DASHADOV Ilgar</td>
<td>First Deputy of Local Executive Power</td>
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<td>Local Executive Power, Astara</td>
<td>ABBASOV Oktay</td>
<td>Head of Local Executive Power</td>
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<td>SIRINOV Xanverdi</td>
<td>Head, Socio-Economic Department</td>
</tr>
<tr>
<td>10 August 2005</td>
<td>Local Executive Power, Masally</td>
<td>NURIYEV Isa</td>
<td>Deputy Head of Socio-Economic Department</td>
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<td>Head of Local Executive Power</td>
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<td>Deputy Head of Social Department</td>
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<td>Local Executive Power, Salyan</td>
<td>BASHIROV Rasim</td>
<td>Head of Local Executive Power</td>
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<td>First Deputy of Local Executive Power</td>
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<td>Cabinet of Ministers</td>
<td>FATALIYEV Nail S (with World Bank &amp; RTSD ESS)</td>
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APPENDIX C – COMMENTS FROM DISTRICT MEETINGS

Meeting at Astara – 9th August 2005

Head of Local Executive Power

It will be good to make a new road because the settlements are very close to the existing road, which is very narrow. It will be good to have a new straight road: the shortest distance between two points is a straight line. It takes 4 hours to drive from Astara to Baku: it would be very good to shorten the route. With a new good new alignment we will build new infrastructure. I know that the Iranians are working on the road to the border. If we know the alignment of the road, we can ask people’s opinion. It is too early to talk now.

We plan to build a new railway branch line from Astara station running parallel to the new road at a distance of 50m.

Economic developments in the area include tourism development, a vegetable processing factory (making jam?) and the border terminal where transit lorries take goods for distribution (opened last year). There are two vegetable processing factories, one is working and the second is being constructed (using private investment): fruit and vegetables are collected from local producers. We want to build a factory producing dairy products.

We also have a newly opened 4 star hotel (Shindan Hotel) which we would like you to see. We have a unique opportunity to develop tourism: green hills, rivers, springs, mountains, sea and direct transport from Iran. The sea is very clean here.

Other developments in the area are the new electricity station and the new gas compressor station for Iran. Azerbaijani gas is supplied to Iran which in turn supplies the Nakhchivan Autonomous Republic. No oil has been discovered yet. A new source of oil was discovered under the sea but it is not used now.

Head of Socio-economic Department

We have many plans to create new jobs. With our current economic development plans we hope to generate 2,401 jobs: 1,900 permanent jobs and the rest temporary. Tea plantations (used to?) involve 9,000 people.

After making the new railway, we hope to link Baku-Tehran and Baku-Tabriz. Two trains leave Astara (every day?), one passenger and one freight train.

Conversation on Azerbaijani population in Iran.

Meeting (12 participants)

What is the alignment of the new road?

What villages will be affected? The Iranian team already knows (Explained approximate alignment in Astara district)

You will need to value existing property. In one village many households are located very close to the road and the road is very narrow.

(RTSD) The new road will pass through private lands. It would be very difficult to make the existing road to international standards.

The new road will be very good. There are graveyards close to the existing road and cultural heritage including a mosque under the supervision of UNESCO, so we cannot widen the road.

How wide will the new road be? Will it go through the centre of the city? (Explained again approximate alignment)
Regional Environmental Review, Environmental Assessment & Management
Framework and Resettlement Policy Framework

The new road will be very beneficial from the economic, social and environmental points of view.

It will be good not to demolish the cemeteries.

Widening of the existing road will require a great number of resettlements and we do not agree to widen this road.

There are no disadvantages for the new road because there are many accidents in the centre of settlements so we are interested to ‘throw away’ the road.

In Astara the road is a zig-zag that you cannot widen. If a new road is built, it will not be far from the settlements because the flat area (coastal plain between the sea and the hills) here is only 8 km wide.

All parameters are good to create a new road. There are two schools very close to the existing road.

If we do not have a straight road in Astara it will be very bad for lorries.

If the existing road is widened it will be very difficult to resettle. There are historical places and cemeteries. People disagree with the proposal to widen the existing road.

If there is a new road, there will be new opportunities to provide economic services.

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**Meeting at Lenkeran – 9th August 2005**

**Head of Local Executive Power**

You need to know the exact alignment of the road and exactly when the road will be constructed before you speak to the people. If you do not have this information, it will panic them.

We have a beer factory and plan to open a wine factory. We have plans to develop the seaport and an international airport on the old airport site. We plan to construct a dairy products factory and a vegetable processing factory. We also plan to build an international football stadium (we already have an Olympic stadium). SIEMENS are currently building a big modern hospital here. There has been a lot of investment in tourism (over US$ 5 million) and we plan to further develop Lenkeran as a centre of tourism. The problem is one of financial resources.

We have many natural resources in the area – flora, fauna, national parks, nature, waterfalls, etc. This district is famous for biodiversity – we even have 9 kinds of wild cats! We also have special trees in the forest. UNESCO representatives from Germany are here today to discuss making Hirkan National Park a UNESCO World Heritage Site. The park is 21,000 ha. – 14,000 in the Lenkeran district and 7,000 ha. in the Astara district.

It is very important to build this road.

**First Deputy**

This road development is important to us as then we will have good road, airport and sea links. We currently have a problem with vehicles exceeding 20 tons going through Lenkeran. In addition to the developments mentioned before, there are two private fish processing factories – Caspian Fish Processing and Capital Ltd.

**Meeting (13 participants)**

Will our opinions be useful to you? (Yes, of course!)

Do not put the road through Leman, there are too many houses.
RTSD has already demolished existing houses and businesses within 30m of the existing road and they did not give us any compensation.

(Deputy) This is the law on transit roads: all development must be 30m away from either side of the centre-line. If the business is illegal it will be demolished. Legal does not matter.

I have conversed with the villagers and the people all agree with this road if there is enough compensation as it will serve development programmes and the employment creation programme. We agree to the new road because the existing road is in a very bad condition and it is not very comfortable. The new road will be to an international standard and we all agree to it. It will be good if the new road does not pass through Leman city.

(Deputy) It will be good if the road is a long, straight link.

The road connects the economy of the people. Many investments have been made along the existing road. It would be better to rehabilitate the existing road through existing villages. The proposed new road will be far from the settlement. The road is life. The road makes friendship. But some settlements are very near to the existing road so we should make bypasses between towns.

(Deputy) We will improve the airport which is located around 3.3 km from the existing road.

Near the existing road the Ministry of Transport is already (currently) demolishing all things for the widening of the road. If the settlement or shop was built up to 1989, it has not been demolished. But if it was built after 1989, it is demolished with no compensation.

(Deputy) With this new alignment we will value the land and shops when Ministry of Transport gives the order. If we know the exact alignment, we will do that.

I had a shop (illegal) near the road (which was demolished without compensation) although I had a document giving permission from the Local Executive Power.

Additional comments:

Man who has just set up eco-tourism business: I am here in Lenkeran to discuss the UNESCO project with the German team. I see a lot of potential for developing eco-tourism related to the Hirkan National Park. It is proposed that 40% of the revenue from the park is invested locally.

Meeting at Masally – 10th August 2005

First Deputy of Local Executive Power

Asian Development Bank (ADB) came here last month. They had one alignment and we agreed with that.

Meeting (19 participants)

(RTSD) We met with ADB. It was their alignment D between Shorsulu and Leman. We talked about positive impacts and profitability of the straight alignment. It is better to make a new road because it is far from settlements and areas. There are few villages on the link Baku-Astara. Almost no resettlement will be required although there will be land acquisition.

There is only private land under the new alignment. We can plant trees which will be useful and we can create new infrastructure near the new alignment.

It is better to shorten the distance and time taken to travel to Baku.

It would be very good if World Bank financed the new road.
There is no density of people to create an ecological problem. If the road is near villages it will be good for economic development and to go to Baku.

Most land in the area near Hasanli village is useless for agriculture.

The population density in Masally is very high. We have two kinds of landscape: mountains and sandy land. We can produce crops three times per year near the border with Lenkeran district but near the border with Jalilabad district the land is useless: we can only produce one crop per year. Widening of the existing road would not be beneficial: it would be very difficult as there are settlements all along the road. There are four villages (Hasanli, Xirmandalv, Shahrivar and Aparly) 20-25 km from Masally which have to bring crops to Masally before they can transport them to Baku. It is expensive to transport crops to the city. The route I saw goes parallel to the railway from Leman. It goes through useless land near villages and straight to Shorsuli. It will shorten distance between Masally and Baku by 78 km. If the new road is of international standard, heavy trucks and lorries will not go through the centre of the city. In Masally there are 11,000 cars which is about 18 cars/100 families. This creates a high density of lorries and cars. We want to throw the lorries and trucks to the other road. The new road will also be useful for cars: they will use less petrol if the road is shorter. If the trucks go the other way, it will be better for cars. Most of the land on the alignment is state land which is easier to compensate.

The main thing is that the road should have the lowest ecological impact. The new route is ideal because it is across empty land with no trees or settlements. The ground is not good for agriculture (crop production) apart from growing vegetables (watermelons, cucumbers, potatoes) because it is very close to the sea and "sour" (saline). The land is used as pasture for grazing. The route is also good because there will be no need for resettlement.

The new road will be good for future economic development.

60-70% of the land in the area is private land. There is also some state lands. Some people rent land from the municipality. The state gives some families land depending on the number of persons.

(Deputy or RTSO?) There may be some wetlands there. Water is close to the surface, you can see water at a depth of about 2 m. We could use the railway to bring in materials. The new road would need to have a lot of drainage structures.

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**Meeting at Jalilabad – 10th August 2005**

**Head of Local Executive Power**

It will be useful if there is a new road of international standard linking Baku to Astara. All alignments have both positive and negative effects. Widening the existing road will lead to many people being resettled. There are also many social services and infrastructure installed along the existing road. The new road will be safer and be more beneficial ecologically.

There are many villages and settlements along the existing road which have developed over many years. It would be very difficult to make this road to an international standard. Goytapa city has many houses to the right and left of the road. It is the same situation at Qarazancar and Allar. Widening the road here would involve a lot of resettlement.

I do not know much about the wetlands, whether it would be good or not, but in my opinion all conditions must be considered in the decision-making process.

If a new road is built there is an opportunity to develop new infrastructure. We may lose some existing businesses, but we would gain new public services and infrastructure which would be good for the villages.

For example, in Qarazancar village, widening the existing road would lead to the resettlement of 40-50 families. We could compensate them but in the perspective (spatial) plan of the village there just is no space for these people. It is the same in the city. The plan for prospective uses is limited. People cannot be
relocated to areas. Many people do not agree to the widening of the road because they have lived there for many years.

I do not think that throwing away the existing road will have many negative impacts because new infrastructure will be built there.

In the Soviet time, this was the biggest wine-growing area. After independence, we became the most important grain producing area in Azerbaijan. Our population is currently 180,000 and we produce enough grain to feed 300,000 people. We are now planting new vineyards: last year we planted 1,000 ha. Last year our revenue from agriculture was US$ 65 million. Cattle and sheep breeding is also very important: we have the highest number of cattle and sheep in Azerbaijan. We also have a good potential to further develop agricultural production in this area. The area proposed for the new road alignment is mainly pastureland although some areas are used for grain production. things on people’s land.

There is no tourism in the area and tourism development is not included in the economic plan. The cultural monuments are located far from the road.

Our economic development plan includes upgrading local roads, improving the water supply in many areas, upgrading existing schools/building new schools, repairing old hospitals and building new hospitals.

The value of land is around US$ 1,000 per ha., but obviously we would need to compensate for the actual things on site.

Deputy Head of Social Department

It would be better for our economic development to repair the existing road where there are settlements. The new road is far from settlements. The road is life. If there is no road close to you, you are without life in the villages. Is it very important that there will be a 60 m road reserve? (There could be bypasses)

The existing road should be repaired. Why? Because it is close to the settlements and businesses are located near to the road. Maybe five families will lose some things but it would be very convenient to have the road nearby. If the new road is located far from the settlement it will be (i) inconvenient and (ii) the there will be not enough maintenance of the existing road and the condition will deteriorate even further. I have seen in other countries (e.g. Germany) that highways get narrower through settlements so why should that not happen here?

Why do you allow 80 tonne vehicles on the road when in Iran they are forbidden?

Head Representative of Municipalities

I am an old man and I represent the people. If you see the place parallel to the railway you will know that there are wetlands at Uzuntapa: it would be very difficult to make a road there. You should see the place. Of course we would like a new road, but when the road is far from the settlements it is not reasonable to build a new road. It would be better to spend lots of money on resettlement than to build a new road. A new 1st category road would attract businesses. The road is life. A new road would have an adverse impact on the city. Anyway government and RTSD will have to do resettlement for all options. RTSD have been clearing the road reserve (of the existing road) already, so why not put the road there?

Meeting (21 participants)

In the 1980s, Ibrahim Gorbanov had the idea that there should be a road directly from Masally to Neficala and straight to Alyat which would shorten the road to Baku by around 100 km.

The new road intersects the existing road at Masally near Qadirli and Hasanli.

I used to work in roads and I know that it will be very difficult and take a long time to build a road across the wetlands.

It will be difficult to widen the existing road at Goytapa and Leman.
Regional Environmental Review, Environmental Assessment & Management
Framework and Resettlement Policy Framework

(Deputy) Widening the existing road will involve the resettlement of many people's houses and shops. People have invested a lot in these. Resettlement and relocation will be very difficult.

Goytapa city and Allar village are very close to the road: there will be disagreements.

It is very important to improve the existing road. Building a new road will have a very big negative impact on Jalilabad. The city will lose everything as the new road will draw away business from the area. It is possible to have a road narrower than 60 m wide within settlements and outside settlements to have a wider road.

I agree with the new road because if we just build a bypass around settlements the trucks will not use them but continue to pass through the centre because they want to use the services. Transit trucks do not benefit the city.

If we widen the existing road and also build a bypass, based on my experience compensation will be very difficult. There are many illegal structures and they (RTSD) do not pay compensation. There are 240 houses close to the road in Goytapa: it is impossible to throw them away.

I agree with constructing a bypass. (Heated discussion on merits of various options)

The existing road should be rehabilitated and bypasses constructed around settlements.

The existing road should be rehabilitated and a new bypass made to improve safety and reduce traffic accidents.

It would be impossible to do resettlement in Goytapa: there are too many houses and it would cost too much. It would be good to bypass this place. It would be better to build bypasses than to make a road in the wetlands.

It is better to build the new road between Shorsulu and Jalilabad (railway' option).

It would be very useful and profitable to rehabilitate the existing road for the economy here.

The new road would take transit traffic out of Jalilabad and it would take less time for companies to carry things to the city.

(Engineer/Hydrogeologist) The existing road was built in 1941, during the war. It was very difficult to build a normal road. It was planned to build a road near to the railway (which is an ancient north-south route) but there was not enough money. If the new road is built it would shorten the existing route between Shorsulu and Masally by up to 50 km. With modern technology it is very easy to build a road across wetlands (!). When people say it is necessary to repair the existing road it is psychology. The new highway can be to international standards and vehicles can travel at a good speed. On the existing road, where there are settlements it is very crowded with people. The new route is mainly on government land so we will not have to move people. It is possible to have a straight road but it would be better to make the new road meet with existing roads (Jalilabad, Masally). The railway would be very good for bringing in construction materials.

Additional comments:

Local businessman in teashop: We would like a good wide road like in Europe. Many people are afraid of the widening of the road because their businesses are located along the road.

Worker in timber yard: All the places along the road are private enterprises. The government will decide on the road alignment.
Head of Local Executive Power

I have some information about the project and know that there are basically two ideas. It will be very expensive to build a road across the wetlands and very difficult to carry materials to there. There is a reserve park where the birds come to in winter. Upgrading an existing road costs one third of building a new road. Along the existing road there are many shops where drivers stop and require services. The new road will have no shops and services for around 100 km. I do not agree with that idea. Our objective is to benefit everyone. It will cost very much and take much time to build a new road.

In our district there are few villages near the road. Up to 1990, we were in the process of building a bypass around Bilasuvar city. We can show you the route. There was no need for resettlement as it was all state land. Widening of the existing road and constructing the bypass around the city is the best option.

Economic activities in the area are mainly associated with agriculture: cotton and grain production, cattle breeding. There is also trade and some industry.

There is no need to build a new road.

Meeting (27 participants)

Construction of the Alyat-Astara transit road will affect some villages and settlements directly but it will have many negative effects on our city. We are interested to move the existing main road outside our city for safety reasons. Some years ago it was proposed that there should be a bypass constructed and we would be interested in building that. The road is life. We are not interested in having a new road parallel to the railway. Having a new road far from the city will have many negative impacts on our economic development.

My view is the same as the previous one. We have already undertaken 60% of the work associated with constructing a bypass around Bilasuvar.

Our opinions are the opinion of all citizens because if there is a new road near the railway it will be very negative to us.

(Road engineer). I have 27 years experience of road projects. The bypass around Bilasuvar will have many positive impacts on the economy. The bypass is 11.8 km long and just requires asphalting and construction of a bridge. Many works have already been undertaken.

A new road near the railway will have very negative impacts on our economy.

It will be very expensive in terms of time and money to build a new road. The main works for our bypass have already been done and no land acquisition is required.

We are close to the Iran border and we would like our own link to Iran so that we can increase our revenue (by collecting customs fees). There are many transit vehicles.

Construction of a new road is not useful for Bilasuvar.

Construction of the new road will have negative ecological impacts. It would be best to construct a bypass.

The Ministry of Ecology will never agree with the direct route through the wetlands.

The RTSD man is a new guy: we know the area better than him.

If the new road is built, all our investment in economic development in Bilasuvar will be thrown away.

A road is for the people. What is your objective here? Is it to link Alyat-Astara or is it to serve the people? If it is to serve the people, then we should build a bypass.
Regional Environmental Review, Environmental Assessment & Management Final RER Framework and Resettlement Policy Framework

As a young person, I think that where they want to put the new road is for Azerbaijan as a whole. A bypass is best for Bilasuvar. We are an agricultural district and can produce very high volumes of products. The railway is very far from the centre. Crops are taken to Salyan and then to the city. If a new road is constructed far from Bilasuvar it will be very bad for us. It is useless to try and widen the existing road through Bilasuvar because it will require resettlement. The optimal plan is to build the bypass around the city as it will benefit both Bilasuvar and other people.

(Followed by site visit to both ends of bypass located at km 174 and km 186. A new ornamental park is being constructed at the northern intersection between the bypass and the existing road).

Meeting at Salyan – 11th August 2005

Head of Local Executive Power

All land around Salyan is privately owned and is very highly productive. What will your project do about the compensation process? If you pay compensation, you pay once but private persons will lose both their land and the potential productivity.

There is no ecological department here.

It is best to widen the existing road: there is no need to build a new one.

I heard that one version includes a bypass starting from the Kur river and then starting at Shorsulu. There is a graveyard in the centre of the city which would be impossible to relocate. We also have a 19th century Juma (Friday) mosque: there are only three of them – one is in Egypt, one in Iran and one here in Salyan. We now need to rehabilitate it.

All the private lands around here are very productive for growing cotton.

From Alyat to Salyan the road is very good and straight. The (rest of the) existing road is in a very bad condition. There are at least two accidents every day, mainly in Yenikand village. When you make the road, you must take a lot of information from the villages and municipalities of Salyan city.

If you move the road far from the city, it will have a negative impact on the city. We have infrastructure and shops in the city: you can buy things there. After Salyan, we agree with the new road. Up to Salyan, there is no need for a new road.

We want to improve safety and have economic development. We also want more information about the project. If we can carry crops more easily to Baku, it will help our economic development.

We have found out from previous experience with the Salyan Oil Company that if a person grows crops on their land, they do not want to give it but if they do not use it, they want compensation.

We do not want to throw the new road far from the city. Salyan is the entrance to the southern part of Azerbaijan. Two factories are being constructed near the police station on the existing road. One is for sugar processing and one is for pottery. It would be better if the road is near the factory. There is also an army place there. I also have a plan for a development with restaurants and other facilities.

Meeting (15 participants)

RTSD has already demolished some properties near the existing road. A new road far from the village will have many negative impacts. I agree with widening the existing road even though there will be some resettlement. The new road will be very expensive: it will cost less to upgrade the existing road. A new road will involve building bridges, acquisition of private land and compensation.

RTSD has already demolished all the shops in Shorsulu to 30 m left and right of the road so we have the opportunity to widen the road.

Scott Wilson Central Asia
D110123RER
C-8
November 2005
I am upset that my people only see one version of the project. A new road will reduce accidents and provide good transport. There are not many people living along the new alignment.

We should widen the existing road.

If a new road is constructed, people will go to the new road and build new businesses there.

Everyone has their own opinion. In our experience, when the road passes everyone goes to the edge of the road. I agree with widening the existing road.

The new road will be very good for us to serve the development of Azerbaijan.

I agree with the construction of the new road. It (constructing the road) will create many jobs and serve the economic development of the villages.

There are many electricity lines and a gas pipeline along the existing road. There is also a graveyard in the centre of the city. I agree with constructing a new road.

What will we do about compensation? If people hear about demolition and resettlement they do not want to plant crops.

How wide will the new road be?

Land prices: what will they be? There are some oil extraction points on municipality and private lands.

I agree with the alignment if there is no resettlement, but in some areas resettlement will be required. Who paid for the Iranian team?

---

Meeting at Maraza – 22nd August 2005

If during construction you demolish the concrete slabs that presently underlie the road works it will be impossible to find the same because they are not produced anymore. I propose to make the road 11 m wide.

Earlier this road was category 3 and was upgraded to category 2 in stages 1974 and 1986. But not all procedures were executed for a 2nd category road. In result we have many accidents on this road, e.g. between km 61 and 62, 76, 79 and km 89. The problem is mainly the small radius. Visibility is also bad, e.g. around km 99 and between km 105 and 106. Another reason for accidents is unstable underground where the road subsides, e.g. km 61, 62, 76, 81 – 82, 105 and 110.

Between km 105 and 110 there had been 2 alternatives for the road, one of these was to build a tunnel because the hazard of landslide. The other alternative was to build this part of the road on columns. This study lasted 2 years, but no feasible alternative could be found. If a tunnel cannot be built, we recommend to excavate the unsuitable material, i.e. the upper 18 m. We will provide you some written information as soon as possible.

It would be good to provide a bypass for Maraza to improve safety inside the town because we have accidents here almost every day. The length of this bypass would be 2 km maximum. It is better to loose some business opportunities and to improve safety. Anyway there probably would not be such big losses because a new road would be very close to the old one. The land in this corridor is all State Forest Land and currently not used. The proposed distance from the existing road is about 80m.

At 2 points serious drainage problems exist in Maraza, namely at km 90 at the entrance and at km 93 at the exit of the town. Additional 2 culverts will be needed here and the 2 old ones must be replaced. After rain there is flooding of about 1 m height and the city transforms into a lake.
The land near the road is privately owned, even within the ROW. This land was officially given to the people between 1982 and 1988 to grow grain. They have documents that they became legal owners after 1997 when the State privatised it. Widening the road in this section would affect more than 100 families and they should be given compensation. The plots are perpendicular to the road, this is why it would affect so many.

Between km 99 and 100 (Badirli) the road is very narrow and there are many accidents. In this area there would also be the need for compensation if the road is widened, because the land next to it was officially privatised. This would affect 7 families.

Where fields are next to the road, we recommend to execute construction after the 1st of July, i.e. after harvesting. This would be important to minimize the social impact due to the loss of crops. Early information on the date when construction will begin is also important and would help to minimize the social impact.

The land where plantations are alongside the road was given to the MENR by the Cabinet of Ministers, excluding the ROW. In practice however, there are plantations also in the strip directly next to the road. These plantations within the ROW belong to the RTSD.

All together about 30 km to either sides of the road were planted since 2002.

### Meeting at Shamakhi – 22nd August 2005

Our district has become a main destination for tourism. A 2 lane road is not enough, in future we will need a 4 lane road.

There will be no impact on agriculture in our district because the ROW is free of development.

The intersection with the road to Maraza will need upgrading.

In Muganli some shops were recently demolished by RTSD but these were unofficial ones. This happened during the last year.

Between Shamakhi and Muganli the existing bridge is very narrow – it would need to be widened.

The visibility on the road is locally very poor.

Around km 110 and 132 the land is very unstable.

All plantations alongside the road are under the ownership of RTSD.

Suggestions to be considered during design and construction will be submitted in written form as soon as possible.

Around 1972 there has been the construction of a low standard bypass around Shamakhi. But today houses have been built there. It will not be useful to consider this further.
Aliyev Murvat Alyat representative of Garadag Executive Power: Greetings. We are starting to construct very important Alyat-Astara road, we will be eye-witnesses of economy development, opening of new job places and this fits to the policy of our president. Alyat is very important strategical point on Silk Way. Draw your attention: Alyat- Astara, Alyat-Georgia... Creation of new job places is expected not only for constructors but let’s say for truck drivers. The well-being of the families will be improved. Thank you for the job.

The part of the Baku-Alyat road that is entry to the town (5 km) should be rehabilitated.

Short-cut from minor way to principal road should be taken into consideration in highway construction.

(Consultant for sub-Project) But one can go another kilometer to get the necessary road.

Will there be constructed any passages for cattle over the railway?

(Consultant) It is impossible to have passages at every step.

Are there expected any assigned means for the construction of minor roads?

(Consultant) Not in the frame of this project.

It would be good to supply us with construction materials and we would construct it ourselves.

According to Consultants, while constructing a road local specialists will have the advantage. Whom should we apply to for job?

(Consultant) Explained the procedure.

As the road will pass close to Shirvan Park there should be constructed a fence and underpasses for gazelles and other rare animals.

Aren’t you afraid that the underpasses will be constructed, means will be spend but gazelles will not enter those passages?

(Consultant) We should create very attractive conditions to make them use the underpasses and in this case the next generation can be expected to use it for sure.

From the km 99 to 102 it is impossible to construct the road on the existing area, as the ground is of a very bad quality.

(Consultant) We have tested the embankment at every 4 km, but during the detailed design we are going to test it at every kilometre.
### PUBLIC CONSULTATION NOTES

**Location:** Lankaran  
**Date:** 9 August 2005  
**Time:** 12:00

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<td>1. Rzayev Rza</td>
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**REGIONAL ENVIRONMENTAL STUDY**  
**PUBLIC CONSULTATION NOTES**

**Location:** Astara  
**Date:** 9 August 2005  
**Time:** 16:00

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<td>11. Ahkundov M.</td>
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## Regional Environmental Study
### Public Consultation Notes

**Location:** Bilasuvar  
**Date:** 11 August 2005  
**Time:** 11:00

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<td>27. Kazimov Akif</td>
<td>1st Deputy of The Head</td>
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**REGIONAL ENVIRONMENTAL STUDY**

**PUBLIC CONSULTATION NOTES**

**Location:** Salyan  **Date:** 11 August 2005  **Time:** 15:00

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**Public Consultation Notes**

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**Date:** 22 August 2005  
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### Regional Environmental Study

**Public Consultation Notes**

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**Date:** 22 August 2005  
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<tr>
<td>1. Omarov Adalat</td>
<td>RTSD Road Exploitation Unit No 9</td>
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<td>2. Vahidov Agaysif</td>
<td>Representative of Executive Power in Sabir</td>
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<td>3. Alqamayev Rauf</td>
<td>Head of municipality in Meysaru</td>
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<td>4. Musayev Musa</td>
<td>Head of municipality in Shahriyar settlement</td>
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<td>5. Khalilov Rahim</td>
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<td>6. Nacafov Agali</td>
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<td>7. Amrahov Zohrab</td>
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<td>8. Samandarov Kamil</td>
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<td>9. Hashimov Tahir</td>
<td>Representative of Executive Power in Marzandiya village</td>
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<td>10. Azizov Natiq</td>
<td>Head of municipality in Moganli village</td>
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<td>11. Mammadov Sabir</td>
<td>Head of Regional Department of Ecology and Natural Resources</td>
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<td>12. Quliyev Malikmammad.</td>
<td>Head of municipality in Boyuk Xinisli village</td>
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<td>13. Macdunov Samad</td>
<td>Head of municipality in Marzandiya village</td>
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<td>14. Gasimov Babak</td>
<td>Head of municipality in Cabani 2 village</td>
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<tr>
<td>15. Valiyev Seyidrza</td>
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<td>16. Omarov Sardar</td>
<td>Representative of Executive Power in Hamyali</td>
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<td>17. Mammadov Mohubbat</td>
<td>Representative of Executive Power in Mirikand village</td>
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<tr>
<td>18. Mikayilov Zaur</td>
<td>Engineer of Department of Architect in Shamakhy</td>
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<tr>
<td>19. Gasimov Shahnazar</td>
<td>Representative of Executive Power in Shamakhy town</td>
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<td>20. Mammadov Azamabud</td>
<td>Head of Statistical Department</td>
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<td>21. Vahidov Agamustafa</td>
<td>Deputy of The Head</td>
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<tr>
<td>22. Huseynov Shahmar</td>
<td>Head of Department of Youth, Sport and Tourism</td>
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## REGIONAL ENVIRONMENTAL STUDY
### PUBLIC CONSULTATION NOTES

**Location:** Alyat  
**Date:** 22 September 2005  
**Time:** 12:00

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<thead>
<tr>
<th>Name</th>
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<tr>
<td>1. Sujeddin Quliyev</td>
<td>Chief of Department, Zoology Institute</td>
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<td>2. Seymur Qahramanov</td>
<td>Procurement expert of PIU</td>
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<td>3. Aybeniz Qasimova</td>
<td>Representative of Alyat Municipality</td>
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<td>4. Habiha Mansurova</td>
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<td>5. Azad Musayev</td>
<td>Chairman of Alyat Municipality</td>
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<td>6. Yusif Mammadov</td>
<td>Respectable of Alyat settlement</td>
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<td>7. Hidayet Ibrahimov</td>
<td>Engineer of RMU No.2 of Qobustan village</td>
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<td>8. Bayali Bahidov</td>
<td>Representative of Alyat settlement</td>
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<td>9. Azer Ibrahimov</td>
<td>Representative of Alyat settlement, teacher</td>
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<td>10. Taryel Qapharov</td>
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<td>11. Nail Bayramov</td>
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<td>12. Vuqar Huseynov</td>
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<td>13. Feyzulla Bedirov</td>
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<td>14. Akif Aliyev</td>
<td>Director of School No.302 of Alyat settlement</td>
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<td>15. Samir Salimov</td>
<td>Deputy chairman of Alyat Municipality</td>
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<td>16. Murvet Aliyev</td>
<td>Representative of Alyat settlement</td>
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<td>17. Yashar Aliyev</td>
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<td>18. Aladdin Sadiqov</td>
<td>RMI No.38 of Salyan</td>
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<td>19. Fakhraddin Akhundov</td>
<td>Director of Shirvan National Park</td>
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<td>20. Ahmad Karimov</td>
<td>Teacher of the school No.302 of Alyat settlement</td>
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<td>21. Boyukaga Abdullayev</td>
<td>Respectable of Alyat settlement</td>
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<td>22. Miraga Qayibov</td>
<td>Teacher of Alyat settlement</td>
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<tr>
<td>23. Tahir Gulaliyev</td>
<td>School No.127 of Alyat settlement</td>
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<td>24. Mahamad Mammadov</td>
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<td>25. Seyfali Abdullayev</td>
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<td>26. Qadir Mikayilov</td>
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<td>27. Kamil Jalabi</td>
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<td>28. Agacan Babayev</td>
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<tr>
<td>29. Vakil Ismayilov</td>
<td>Resident of Alyat settlement</td>
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APPENDIX D SPECIES LISTS – ALYAT-ASTARA STUDY CORRIDOR

Animal species occurring in both Northern and Southern part of the Study Corridor

Rare species of insects

Hymenoptera (bumblebees) – Bombus daghestanicus, B. mlokosevitschi; coleopterous – Purpuricenus talyshensis, Parandra caspia, Calosoma sycophanta, Megacephalus euphraticus;

Butterflies – Dnais ehrysippus, Pararge adrastoides, Argynnis alexandra, Manduca atropos and Brahmala christophi.

Sea fish (which have their spawning habitats in the rivers of the study corridor)

Lamprey Carpimyzon wagneri

Sturgeons Huso huso, Acipiter nudiventris, A. guldenstadi, A. stellatus

Salmon Salmo trutta

and many others like Chalkalburnus chalcodies, Aspini aspius, Abramis brama, A. sapa, Stizostedion marina, Cyprinus carpio, Barbus capito, B. brachycephalus, Sillurus glanis, Rutilus rutilus, R. frisii etc.

River fish

Salmo fario, Scardinius erythrophthalmus, Tinca tinca, Varicorhinus capoeta etc.

Rare species of fish

Acipenser gueldenstaedti, Acipenser nudiventri, Acipenser stellatus, Huso huso, Rutilus frisii, Carpimyzon wagneri, Salmo fario, Abramis sapa, Pelecus cultratus and Lucioperca marina.

Northern Part of the Study Corridor

Reptiles

Tortoise – Testudo graeca, Mauremys caspica;

Lizards – Agama caucasia, Phrynocephalus helioscopus, Eumececs schneideri, Ophisops elegans, Eremias arguata, Eremias velox;

Snakes – Natrix tessellata, Typhlops vermicularis, Erys jaculus, Columber jugularis, Columber ravergieri, Eirenis collaris, Malpolon monspessulanuso and Vipera lebetina.

Rare species of reptiles

Testudo graeca, Emys orbicularis and Phrynocephalus helioscopus.

121 In this Appendix, A after a plant or animal species' scientific name indicates species listed in the Red Book of Azerbaijan; B indicates IUCN species (World Red Data Book) and C indicates species included in both the national and international Red Data Books.
Avifauna

Greebs – Podiceps cristatus, P. nigricollis;

Cormorants - Phalacrocorax pygmaeus, Ph. Carbo;

Heron and ibises - Egretta garzetta, E. alba, Ardea cinerea, A. purpurea, Plegadis falcinellus Flamingo - Phoenicopterus ruber;

Ducks - Tadorna tacorna, Anas platyrhynchos, A. crecca, A. clypeata, Netta rufina, Aythya fuligula, A. ferina;

Raptors - Haliaeetus albicolor, Circus aeruginosus, C. cyaneus, Falco tinnunculus, F. naumanni;

Gallinaceae - Francolinus frankolinus;

Rails - Porphyrio porphyrio, Fulica atra, Rallus aquaticus;

Little Bustard - Tetrax tetrax;

Waders - Charadrius leschenaultii, Ch. Dubius, Ch. Alexandria, Calidris alpina, C. alba, Gallinago gallinago, Glareola pratincola, Tringa tetanus;

Gulls and terns - Larus cachinans, L. ridibundus, L. genei, Sterna hirundo, S. albigrons, S. sandvicensis, Chlidonias leucopeta, Ch. Hybrida;

Coraciiformes - Merops apiaster, M. superciliosus, Corvus garrulous, Alcedo atthis;

Doves - Pterocles orientalis, Columba livia, Streptopelia senegalensis, S. turtur;

Passerines - Galerida cristata, Oenanthe isabelina, O. finchii, Cercotrichas galactotes and many others.

Red Data Book bird species: Phalacrocorax pygmaeus\(^a\), Phoenicopterus ruber\(^a\), Cignus columbianus\(^b\), Aythya nyroca\(^a\), Haliaeetus albicolor\(^c\), Aquila heliaca\(^b\), Falco naumanni\(^b\), Francolinus frankolinus\(^b\), Porphyrio porphyrio\(^b\), Pterocles orientalis\(^a\) and Tetrax tetrax\(^c\).

Mammals

Hedgehog – Hemiechinus auritus,

Bats – Rhinolophus ferrumequinum\(^b\), R. mehely\(^b\), Pipistrellus kuhli,

Hare – Lepus europaeus,

Rodents – Rattus norvegicus, Mus musculus, Meriones erythorourus, Microtus socialis,

Beast of prey – Canis lupus, C. aureus, Vulpes vulpes, Felis libyca\(^a\), F. chaus,

Caspian Seal – Phoca caspia\(^b\),

Wild boar – Sus scrofa and

Sand Gazelle – Gazella subgutturosa\(^c\).
Amphibians

Tritons - *Triturus vulgaris*, *T. cristatus*,
Spade-Footed Toad - *Pelobates syriacus*,
Toads - *Bufo bufo*, *B. viridis*,
Tree-frog - *Hyla arborea*, *H. savignyi*,
Frogs - *Rana ridibunda*, *R. macrocnemis*.

Reptiles

Tortoises - *Testudo graeca*, *Mauremys caspica*, *Emys orbicularis*.
Lizards - *Cyrtopodion caspium*, *Trapelus ruderatus*, *Phrynocephalus helioscopus*, *Ablepharus bivittatus*,
*Ophisops elegans*, *Eremias arguata*, *Lacerta stirigata*, *L. praticola*, *L. chlorogaster*;
Snakes - *Typhlops vermicularis*, *Eryx jaculus*, *Natrix natrix*, *N. tessellata*, *Columber jugularis*, *C. ravernieri*, *Elaphe longissima*, *Eirenis punctato*, *Vipera lebetina* and *Agkistrodon halys*.

Rare Birds

Pelecans - *Pelecanus crispus*, *P. onocrotalus*.
Pygmy Cormorant - *Phalacrocorax pygmaeus*.
Spoonbill - *Platalea leucorodia*.
Black Stock - *Ciconia nigra*.
Flamingo - *Phoenicopterus ruber*.
Swans - *Cygnus olor*, *C. columbianus*.
Geese - *Anser erythropus*, *Branta ruficollis*.
Ducks - *Marmaronetta angustirostris*, *Aythya nyroca*, *Oxyura leucocephala*.
*Black Francolin - Francolinus francolinus*.
*Pheasant - Phasianus colchicus talischensis*.
*Purple Swamp Hen - Porphyrio porphyrio*.
*Crane - Grus leucogeranus*.
*Bustards - Otis tarda*, *Tetrao tetrix*.
*Waders - Chetusia gregaria*, *Glareola nordmanni*, *Numenius tenuirostris*.
*Black-bellied Sandgrouse - Pterocles orientalis* and
Hirkan Sombre Tit - *Parus lugubris hyrcanus*.

**Mammals**

Hedgehog – *Erinaceus concolor*.

Mole – *Talpa levantis*.


Hare – *Lepus europaeus*, porcupine – *Hystrix indica*.


Caspian Seal – *Phoca caspia* and

Wild boar – *Sus scrofa*.

Nutria – *Myocastor coypus*
APPENDIX E – REFERENCE MATERIALS

Reports


Caspian Sea Level Project www.caspage.citg.tudelft.nl


- Guidance on EIA – Screening
- Guidance on EIA – Scoping
- Guidance on EIA – EIA Review

Finnroad (2005) *Tovus Bypass Project* – English
- Environmental & Socioeconomic Assessment, Baku, May 2005
- Environmental & Socioeconomic Management Plan
- Public Consultation Meetings
- Land Acquisition Plan, Baku, May 2005


Grossgeim A.A., Sahokina M.F., (1931) *Studies of Kabistan Vegetation*, Transactions of Geo-botanical Investigation of Pasture of Az SSR, Baku, 1931 - Russian


Heath, M.F et al. (undated) *Important Bird Areas and potential Ramsar Sites in Europe* – English [www.birdlife.org.uk](http://www.birdlife.org.uk)


IUCN (undated) *The IUCN Red List of Threatened Species* - English [www.iucn.org](http://www.iucn.org)


Kroonenberg Salomon (2005) *Rapid Caspian Sea Level Change, and How to Prepare for Natures Trend Breaks* Conference held in Como, Italy 6-10 September 2005


MENR (2005) *Comments on Alyat-Astara Environmental Assessment* – Azeri


Panin Gennady (undated) *The Caspian Sea Level Fluctuations as an Example of Local/Global Climatic Change*, Institute of Water Problems, Moscow - English


Regional Environmental Review, Environmental Assessment & Management Framework and Resettlement Policy Framework


- Legislative Gap Analysis Report, August 2004
- Institutional Analysis, September 2004
- Implementation Analysis, September 2004


UNESCO (undated) *Caspian Sea Level Rise: An Environmental Emergency*, Paris [www.nbi.ac.uk](http://www.nbi.ac.uk) - English


USAID (undated) *Azerbaijan (country strategy)* – English

- Integrated Safeguards Data Sheet, January 2005
- Access Restriction Process Framework, January 2005
- Environmental Assessment & Management Plan, Baku, February 2005

World Bank (2005) *Database on Accessibility Standards* – English

World Bank (2005) *Highway II Project* - English
- Integrated Safeguards Data Sheet
- Project Information Sheet
- Regional Environmental Review, Environmental Assessment & Management Framework and Regional Policy Framework – Terms of Reference
- 22 km section of Alyat-Astara Highway – Terms of Reference for the Environmental Assessment and Preliminary Design
- Terms of Reference for the Preparation of Detailed Design and Environmental Assessment of Baku-Shamakhi-Muganli section of Baku-Shamakhi-Yevlakh Road

- Project Information Document – Appraisal Stage (February 2005)
World Bank (2005) *Tovus Bypass Project* – English
  - Independent Review of Environmental Assessment Report and Environmental Management Plan of Tovus Bypass Project


World Bank (2002) *Trade & Transport Facilitation in the Caucasus* - English
  - Survey Report, May 2002
  - Identifying Information Mechanisms: Final Report, May 2002


World Bank (various) *Operational Policies* - English

World Bank (1999 and updates) *Environmental Assessment Sourcebook* - English

World Bank (undated) *Transport Strategy for Improve Accessibility in Developing Countries* - English

World Bank (undated) *Turkey Municipal Services Project Environmental Framework* - English

World Bank (undated) *What is SEA? The Terminology* – English

**Maps**

Passillo Consultants (2005) Maps at 100,000 scale showing alignment(s) of the proposed Alyat-Astara road improvements

UN (2004) Map No. 3761 Rev. 5 Map of Azerbaijan, UN Department of Peacekeeping Operations Cartographic Section, June 2001

1:50,000 series maps (without gridlines), 2001

**Other material**

RTSD (2005) RTSD Overall Organisation Chart - English

RTSD (2005) RTSD Ecology & Safety Department Organisation Chart - Azeri

RTSD Road Maintenance Department – Accident Statistics for the Baku-Shamakhi and Alyat-Astara roads for January-December 2004 and January-May 2005 - Azeri