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RESTRUCTURING OF THE AZERBAIJAN RAILWAYS

ENVIRONMENTAL PLAN

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Restructuring of Azerbaijan Railways

Volume I

Environmental Management Plan

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Volume I Environmental Management Plan

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EXECUTIVE SUMMARY

This report constitutes Volume I of a two-volume report on the environmental management of Azerbaijan Railways. It sets out a proposed Environmental Management Plan for the railway. Volume II provides a more detailed account of the current environmental legislation in Azerbaijan relevant to the railway.

The European Bank for Reconstruction and Development (EBRD) is giving consideration to providing a loan of US\$30 million to Azerbaijan Railways (Azerbaijan Devlet Demir Yolu - ADDY). The project is designed to enhance the physical and economic viability of the strategically important trans-Caucasian transport corridor which links the central Asian republics of the former Soviet Union with the Black Sea ports and western Europe.

The loan to be provided to ADDY provides for a capital investment programme in track renewal, the purchase of a modern ballast tamper, rehabilitation of the Balajari Wagon Washing Plant, modernisation of the Baku Wagon Workshop and the installation of new fibre optic communication systems. The EU Tacis TRACECA Programme (Transport Corridor Europe Caucasus Asia) is working closely with the EBRD and providing US\$6.7 million for the fibre optic communications and technical co-operation. The technical co-operation programme includes the preparation of a 5-year business plan, restructuring proposals for the railway and an Environmental Management Plan.

This report sets out the current environmental status of the railway and identifies several priorities that will need to be addressed these include:

- the potential for major oil spills resulting from damaged track or poor rolling stock.
- pollution along the track at train stopping points and river crossings;
- widespread pollution and contamination issues at stations, depots and other facilities; and
- waste management.

The proposed investment programme will largely generate environmental benefits but by far the largest environmental challenges that will face the railway will arise through the restructuring of ADDY and its proposed division into separate business and service units. The railway is faced with an enormous stockpile of redundant equipment, wagons and locomotives, and by huge problems of land contamination and emissions, non-compliant with current legislation and best practice.

This report sets out a framework EMP for the railway and proposes:

- the creation of the post of Corporate Environmental and Health and Safety Manager reporting directly to the Director General of the railway;
- the creation of the post of an Assistant Corporate Environmental and Health and Safety Manager for each of the proposed operating units of the restructured ADDY;
- the establishment of a corporate environmental policy;
- a complete and thorough due diligence audit of all ADDY facilities and operations;
- a legislative review and the establishment of a register or database of environmental legislation;
- the establishment of a priority action list for those areas where ADDY is non-compliant with current legislation;
- separate EMP's for specific facilities;
- the preparation of corporate directives on *inter alia* emergency oil spill plans, materials handling and storage, waste management, energy efficiency and recycling; and
- an early and on-going training and 'train-the-trainers' programme for ADDY.

1 MISSION AND OBJECTIVES

1.1 Introduction

The European Bank for Reconstruction and Development (EBRD) is giving consideration to providing a loan of US\$30 million to Azerbaijan Railways (ADDY). The project is designed to enhance the physical and economic viability of the strategically important trans-Caucasian transport corridor which links the central Asian republics of the former Soviet Union with the Black Sea ports and western Europe.

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This report constitutes the Environmental Management Plan for the restructured railway.

The EBRD is directed by its founding agreement to 'promote in the full range of its activities environmentally sound and sustainable development'. In order to implement this directive the Bank ensures that all of its investment and technical co-operation activities undergo environmental appraisal as part of the overall financial, economic, legal and technical due diligence process.

The Bank categorise projects in three ways:

1. **A Level** projects are 'greenfield' or major extension projects. Projects listed in this category will normally require a full Environmental Impact Analysis (EIA) as part of the loan procedure.
2. **B Level** projects are those greenfield or major extension projects not included in the EBRD listing for category A. By virtue of their size and nature they will have a lesser impact on the environment and will require an Environmental Analysis (EA). The EA is similar in scope, but more limited than, a full EIA.
3. **C Level** projects are those considered not to have any potential impact on the environment and do not require either an EIA or EA.

Regardless of the above categorisation if, in the opinion of the Bank, a project requires an environmental audit it is screened in category 1. If no audit is required, it is screened in category 0.

This project has been screened as Category B/1 and the Bank require the preparation of an Environmental Management Plan and audit for their investment components although the audit is outside of the scope of works for this report.

1.2 Environmental Management Planning

1.2.1 Environmental Management and Monitoring Plans

The integration of environmental issues with all aspects of a business operation has become an accepted component of modern commercial good practice. Companies in all sectors now recognise that for public relations, risk management and financial prudence it makes sense to ensure that environment is a core business function.

Corporate Environmental Managers often form part of the senior management team of a business. They may well have overall responsibilities that extend through issues such as stack emissions, effluent discharge and waste management all the way to procurement and recycling in the office environment and the training of staff. In larger, more complex operations their functions will be delegated through the management structure to individual plant managers and administrators depending on the nature of the business. Very often, operational health and safety will be integrated into the environmental management function.

A key tool in the environmental management system of a business will be an Environmental Management Plan (EMP). The EMP will set out the environmental position of the business, review this against relevant national and international standards and practices, and examine those issues necessary to either achieve compliance and/or meet future expected regulatory requirements. In addition the EMP may address housekeeping issues which will impact on the overall profitability of the business such as waste management, recycling and procurement.

It is extremely important that the EMP is seen as working document and one which provides the basis for an operating environmental management on a day to day basis: one that regularly sets targets, monitors progress and re-evaluates performance. The EMP should be integrated as part of the overall planning strategy of an operation and should track the development of the corporate business plan.

1.2.2 Environmental Management Plan for ADDY

An EMP plan for ADDY will not only be a requirement of the EBRD loan but will make good business sense for the restructured railway and form part of the 5-year business plan.

Current responsibility for environmental matters within ADDY rests with the Head of Technical Services. Although ADDY recognise the need for environmentally sustainable procedures and operations and no environmentally policy or EMP for the railway has been prepared.

The objective of this report has been to prepare a draft EMP plan for ADDY which will provide a framework for the environmental management of the railway and a priority action plan.

The report will:

- set out the current environmental problems on the railway which are based on a series of interviews with key staff, site visits and background information;
- review the present environmental standards and guidance in Azerbaijan which ADDY will need to meet;
- describe the predicted impacts of both the capital investment programme to be funded by EBRD and the restructuring proposals for the railway;
- propose an Environmental Management Plan for ADDY together with priority actions; and
- set out roles and responsibilities and training needs within a new ADDY structure.

2 PROJECT DESCRIPTION

2.1 Current Operations

2.1.1 Operations, Infrastructure, Rolling Stock, Traffic

The Azerbaijan Railway system is a link of key strategic importance in the Caucasus. It connects the central Asian republics of Turkmenistan, Uzbekistan, Tadjikistan, Kyrgyzstan and Kazakhstan via the Caspian Sea and Tbilisi in Georgia to the Black Sea ports and western Europe. The trans-Caucasian section of the rail link consists of 488km of electrified double track connecting Balajari (near Baku) to the Georgian border at Beyuk-Kasik.

Azerbaijan Railways has a route length of 2125km of which approximately 815km are double track and 1310km are single track. The main section consists of the trans-Caucasian link to the Georgia.

The railway is laid to Russian standard gauge with a mix of concrete and wooden sleepers which support 65kg heavy section flat bottomed rail suitable for a maximum loading of 25 tonnes. The main lines are electrified at 3000v DC. The line and related structures are in very poor condition in many parts, forcing speed restrictions on several sections.

ADDY operates a fleet of over 500 locomotives of which approximately half are diesel and half electric. In addition a small number of electric multiple units (EMU's) are used for passenger services. The railway has some 24,700 wagons of which nearly 9000 are not available for use and have 844 loco-hauled passenger carriageways of which only 284 are currently used because of considerably reduced demand.

Traffic on the railway collapsed with the break-up of the Soviet Union and general civil unrest in the Caucasus. Freight traffic in 1990 was 90 million tonnes and declined to 9 million tonnes in 1995, similarly passenger traffic fell from 15 million (of which 11 million were suburban) in 1995 to 4.5 million in 1996 principally due to a sharp increase in fares. Since 1995 freight traffic has begun to recover based primarily on oil from Kazakhstan via the Caspian Sea.

Freight is the dominant source of traffic for ADDY accounting for greater than half of the total tonnage carried. Of the total freight traffic of 8.09million tonnes in 1997 over half was transit oil, the main growth coming from the Tengiz crude oil field operated by Chevron in Kazakhstan. Other oil products come from SOCAR (the State Oil Company of Azerbaijan) and from Turkmenistan. Most oil traffic is westward through Azerbaijan and, although a number of pipelines are currently being planned, oil traffic will dominate the freight rail market for the foreseeable future with substantial reserves in Azerbaijan, Kazakhstan and Turkmenistan yet to be developed.

2.1.2 Organisational Structure

Responsibility for environmental issues on the railway currently rests with Mr Agakerim Najafov, Head of Technical Services. He has two further specialists working for him the principal one of whom is Akif Agajanly the Senior Inspector for Environmental Matters.

The Head of Technical Services reports to Mr Musa S Panakhov, Deputy Chief of Railways.

There is no Environmental Management Plan in place for the railway and the work of the Division is principally to:

- receive, co-ordinate and act upon all environmental data related to railway operations that is issued by the Azerbaijan State Committee for Ecology; and
- analyse discharges and emissions to air from the various railway facilities and to prepare monthly reports for the State Committee on Ecology

The Division appear to have no dedicated laboratories or mobile laboratories although individual facilities do (for example the Balajari Wash Plant) and there is no emergency response team to deal with major environmental incidents.

2.2 Investment Components

The investment financed by the EBRD and the EU-Tacis programme can be broadly grouped into two elements:

- capital investment programme;
- technical assistance and restructuring.

The programmes are described in more detail below and the potential environmental impacts outlined in section 6.

2.2.1 Capital Investment Programme

This element of the programme includes the following components:

- track renewal over 50km of life-expired sections of the track between Balajari and Alyat. The programme will involve complete track replacement, including supply and installation of new ballast and the re-profiling of track formation to eliminate problems with track drainage;
- purchase of a modern ballast tamper;
- design and partial reconstruction of the Baku Wagon Repair Works;
- Rehabilitation and partial reconstruction of the Balajari Wagon Washing Plant including chemical separators for oil/water discharges and rehabilitation of the external cleaning plant; and
- the extension of the fibre optic communications line.

2.2.2 Technical Assistance and Restructuring

The principal components of this portion of the programme are:

- the separation of policy and operating responsibilities in the railway sector with ADDY being established as a government owned joint stock company;
- the need for ADDY to be managed according to commercial principles and the division of the freight and passenger businesses into separate profit centres;
- the drafting of a 5-year Business Plan.

3 LEGISLATIVE FRAMEWORK

This section provides a brief overview of the environmental administrative structures and requirements for Azerbaijan which relate to the operations of ADDY. Volume II of this report contains further details on all aspects of the requirements for environmental protection in Azerbaijan.

3.1 Environmental Administration and Agencies

The main body implementing state policy in the field of environmental protection is the State Committee for Environmental Protection, which subordinates directly to the president of the Azerbaijan Republic. The State Committee has a head office in Baku, two specialised departments, 29 territorial municipal, inter-district and district ecology committees.

The State Environmental Committee supervise the development of all standards and requirements concerning protection of the environment, and carry out state control over the status and utilisation of natural resources.

The national state monitoring of the environment is implemented by the State Hydrometeorology Committee and State Committee for Environmental Protection. Local monitoring is entrusted to companies utilising or having an impact on natural resources. They are obliged to include this provision in their documentation.

The responsibilities of the State Committee for Environmental Protection, in accordance with the existing legislation, include:

- development and implementation of the state environmental policy;
- development of recommendations concerning measures to protect nature;
- provision of state environmental expertise for new and existing projects and developments;
- suspension or closing down of enterprises which fail to meet the requirements of environmental legislation;
- inspection of operating enterprises;
- issuing of permits for the allowed discharge of pollutants; and
- suspension of financing any construction in case of violation of environmental laws.

The local (district and municipal) ecology committees subordinate directly to the State Committee for Ecology and perform the role of state control body, controlling the territory within their jurisdiction.

3.2 Permitting Authorities

The procedure for permitting industrial installations, including railways, is based on the law "On Environmental Protection", which includes the following aspects:

- maximum allowable (or permissible) concentrations of toxic pollutants (MAC or MPC) - these constitute the basis for developing standards of permissible environmental loading (MAC, known as "PDK" in Russian language, is normally calculated in mg/m³);
- maximum allowable level of noise, vibration, magnetic fields, and other harmful agents;
- maximum allowable level of radiation;
- maximum allowable waste output per specific time limit and per specific agent (known as "PDV/PDS" in Russian) - set according to the specific function and conditions of the site;

- maximum allowable use of pesticides in agriculture;
- standards for environmental loading;
- maximum allowable standards for toxic substance residues in food products;
- the obligation to respect protected zones around any industrial or other type of site; and
- the requirement for final products to meet environmental standards.

PDK standards are determined for the following:

- specific air pollutants;
- specific surface water pollutants; and
- specific soil pollutants.

PDV/PDS norms are calculated for each industrial site on a time and pollutant basis as a function of the local conditions of site operations.

The "Temporary Allowed Waste Output" (known in Russian as VCV) refers to the limits imposed by the permitting authorities for industrial sites which cannot meet the PDV/PDS norms without changing its main production technology.

All permissible standards for industrial environmental impacts are determined by state-empowered environmental protection agencies, state ecological examination committees and the state agencies for sanitary and epidemiological control. The Department of Sanitary and Epidemiological Control now work under the authority of the Ministry of Health.

These agencies are known as "SAS" and have a reputation for fierce resistance to whatever they consider as improperly prepared or poorly completed work in the field of industrial environmental impact assessments.

All industrial projects must be co-ordinated with both the State Committee for Ecology and with the Sanitary and Epidemiological Control officials at the local level in cases where the project is of local importance. If the project is likely to effect several regions it should be co-ordinated at both the state and local levels. Based on the predetermined standards, industrial sites are assigned allowances for waste output in all forms, including gaseous emissions, waste water/effluent discharges, and industrial, urban, or other solid waste.

Whilst there is a clearly defined legislative and permitting process in Azerbaijan there is, in practice, little synergy between the railway and State Committee for Ecology resulting in few railway facilities, if any, achieving compliance with government standards. However, it should be noted that emission and discharge limits in Azerbaijan can be as much as one order of magnitude more restrictive than most other countries. As a result, in certain cases, concentrations may not even be measurable with current technologies and are practically never enforced.

4 CURRENT ENVIRONMENTAL PROBLEMS

Discussions took place during the project with a number of individuals both in ADDY and the State Committee on Ecology and Natural Resources regarding the current environmental problems of the railway and how they might be addressed. These individuals were:

- Mrs Habiba Bagirova, State Committee for Ecology, Chief of Governing an Expert Ecological Observation.
- Mr Azer Aslanov, State Committee for Ecology, Deputy Chief of Governing an Expert Ecological Observation.
- Mrs Nadejhda Gelman, State Committee for Ecology, Senior Expert
- Dr Rauf Mouradov, State Committee for Ecology, Co-ordinator of the Azerbaijan National Environmental Action Plan.
- Mr Agakerim Najafov, Head of Technical Services, ADDY.
- Mr Kamal Ahmedzade, Director, Baku Railway Wagon Repair Works.

Site visits were also undertaken to the Baku Wagon Repair Works and Balajari Wash Plant. As mentioned in section 3.1.1, there has been an enormous decline in traffic on ADDY since the break-up of the Soviet Union. This has led to a corresponding fall in revenue and this lack of financial stability combined with a hostilities in some parts of the country has meant that there is a huge backlog of investment and maintenance on the railway. Virtually every aspect of ADDY has suffered, resulting in large scale environmental problems principally related to the carriage of oil and other hydrocarbons on the network and to land contamination and environmentally unacceptable discharge levels at many facilities.

There are 15 principal areas of concern for ADDY, where facilities and infrastructure have serious environmental problems of which the first three on the enclosed list pose the greatest environmental concern. These are:

1. Baku Locomotive Depot
2. Baku Wagon Depot
3. Balajari Washing station
4. Disinfection and Washing station at Alyati Main station
5. Shirvan station
6. Girdani-Lenkoran-Kamyshovka-Astara stations
7. Refrigerator Wagon Depot at Alyati Main station
8. Dwelling houses belonging to the Railway at Alyati station
9. Brick factory of the "Azjelstroy" Unit
10. Alyati Main station
11. Shirvan track district
12. Shirvan signalling and communication district
13. Wagon depot at Shirvan station
14. Turn-around locomotive depot at Shirvan station
15. Zyrya-Pirallachi station

(a) Baku Locomotive Depot

The Baku Locomotive Depot is located within Baku city, at Beyuk-Shor station. The total area of the Depot constitutes 123,147 m². The total number of employees is 671; the enterprise has operated around-the-clock since 1957.

Baku Locomotive Depot specialises in technical servicing and current maintenance/repair of electrical locomotives and EMU's, manufactures various parts and spare parts and services passenger trains operating on the main line and suburban electrical lines. The Depot consumes annually 65,000 m³ of water.

The source for the water supply is the water supply section of the Baku division of the Azerbaijan Railway and the water reserve wells available in the area.

The water is consumed mainly for the cleaning of the premises, for filling of EMUs, washing of the rolling stock and for the shower-room and laundry.

The washing solution for the rolling stock is of calcinated soda. Periodically contaminated water is discharged into the sewerage. Annual discharge of waste water is 48,000 m³.

From the time the depot was commissioned in 1957 the sewerage has never been connected to the city communications. Contaminated waste waters are discharged without purification with active substances to a pit, where an oil pool is being formed and floods the adjacent territory. A record of the quality of water being discharged is not kept, the water is not reused and cleaning machines do not function.

The depot does not have a boiler-house of its own and a nearby the oil-refinery will not supply hot water due to non-payment. According to the 1995 statistics, discharge/emissions of toxic substances into the atmosphere make up 8,990 tonnes, among them gaseous substances of 8,713 tonnes, including sulphurous anhydride at 2,710 tonnes, carbon monoxide at 3,595 tonnes, nitric oxide at 1,383 tonnes and other gases at 1,025 tonnes. In 1996 funds for environmental measures were not spent.

(b) Baku Wagon Works

Baku Wagon Depot is located within Baku city. It occupies 24,250 m². The total labour force is around 250 people.

It is a high capacity industrial enterprise designed for the servicing and repair of railway wagons. Its throughput is around 500 wagons per year for ADDY and a further 500 for private clients. Presently the Wagon Works repair only oil, petrol or kerosene wagons (Plate 1).

Typical repair activities include welding, wheel reprofiling, repair of bogies, checking the integrity of tanks by filling with water, cleaning and degreasing (Plates 2 and 3).

The major environmental issues at the Baku Wagon Works include emissions to air, the discharge of water and wastewater via life-expired industrial drainage and sewerage systems.

Part of the EBRD loan to ADDY is designed to assist in the partial restructuring of the Wagon Works.

(c) Balajari Wash Plant

The Balajari (or Baladshary) Wash Plant is situated at Balajari around 10km from Baku. It washes the interior of tanks between a change of product or before depot repairs or major overhauls at the Baku Wagons Works.

The plant consists of three tracks (Plate 4) holding 15 wagons each with two platforms at 175m running at tank top level (Plate 5). Tanks are cleaned out with steam lances and then rinsed with hot water. Steam for the process comes principally from a 1954 vintage steam locomotive (Plate 6) run on recovered oil (mazut): two new Canadian Volcano-Osveh boilers have been installed but are used rarely because of the cost of diesel fuel.

There are also two tracks for the interior cleaning of liquid bitumen tanks although this has not been operational since 1995. When it was, bitumen was heated and discharged into an adjacent pond (Plate 7). The pond currently contains around 2000 tonnes of bitumen.

There are a number of major environmental problems associated with the Balajari Wash Plant: principal amongst these is the discharge of wastewater. A mechanical oil separation plant is in operation (Plate 8) which leaves between 40 - 400 mg of oil/litre, well in excess of the 0.02mg permitted.

The bitumen pond is a major land contamination issue with chemical sludge also regularly dumped into it.

Partial reconstruction of the Balajari Wash Plant is one of the components of the EBRD loan which will provide for a new wastewater system and rehabilitate the long defunct exterior washing facility. However, even following these investments major problems will remain at Balajari which will need to be addressed.

(d) Other priority areas

Discussions with the State Committee for Ecology revealed a number of other areas of concern. Environmental problems were noted at Aliat Main Station including emissions to air and effluent discharges caused by the washing and maintenance of cargo wagons.

The problem of oil spills was also mentioned by the State Committee for Ecology although, unlike Georgia, no major spills have been reported. However, the railway crosses nearly all of the important rivers and water courses in Azerbaijan and a national park near the border with Georgia. Like Georgia, they would wish to see an emergency response programme in place.

The State Committee for Ecology would quite clearly wish to see more interaction with ADDY and the compliance with ADDY of state environmental limits. They are concerned by the current investment programme and would wish to see more funds provided for the improvement of infrastructure and rolling stock in order to reduce the risk of major incidents on the line.

Other areas of concern were pollution along the track particularly at river crossings and stopping points, and waste management.

5 PROJECT ENVIRONMENTAL IMPACTS

5.1 Capital Investment Programme

5.1.1 Introduction

The immediate impacts of the overall investment programme are likely to be those which will result from the capital elements and will relate principally to the track replacement programme. Environmental impacts will include potential problems arising from the removal of contaminated ballast and the disposal of waste.

5.1.2 Track renewal

Track renewal will take place over 50km of life-expired sections of the track between Balajari and Alyat. The programme will involve complete track replacement, including supply and installation of new ballast and the re-profiling of track formation to eliminate problems with track drainage. The proposed renewal will be with concrete sleepers fastened with elastic fasteners.

Overall the impact of track replacement is likely to have a beneficial effect on the environment by reducing the risk of derailments and hence major oil spills. If a major incident does occur, improved telecommunications should greatly enhance the response time of the emergency services and decrease the potential contamination effects.

The principal environmental problems which are likely to be encountered include:

- the disturbance of contaminated land and contaminated clinker during the track replacement programme and the necessity of ensuring the safe disposal of such material;
- the requirement to ensure that such contamination does not enter the groundwater system;
- noise and vibration impacts associated with track laying and tamping of ballast;

5.1.3 Baku Wagon Works

The investment in the Baku Wagon Works will involve the design and partial reconstruction of the facility. Again, the overall effect is likely to be beneficial but several short-term impacts may well arise from reconstruction of a major depot situated in the heart of Baku. These will include construction and demolition issues such as noise, vibration and increased site traffic.

A great deal of the land on which the Wagon Works is located will be heavily contaminated principally by hydrocarbons and it will be extremely important to ensure the proper investigation, clean-up and removal of this contamination prior to any new construction taking place.

It is regrettable that no moneys have been made available as part of the present investment programme to address the contamination on-site. This will need to be a key part of future Environmental Management Plan for the railway.

5.1.4 Balajari Wash Plant

The investment in the Balajari Wash Plant will involve the supply of equipment for the chemical separation of oil and water, the establishment of a new external cleaning plant and the general modernisation of the interior washing plant.

As with the Baku Wagon Works the overall effect is likely to be beneficial but it is again regrettable that moneys have not been made available for general contamination clean-up including the bitumen pool. This will also need to be a key part of the Environmental Management Plan for the railway.

5.1.5 Signalling and telecommunications

Similarly new signalling and telecommunication systems will significantly improve the environmental performance of the railway by increasing response times for incidents on the track.

Impacts that may occur include:

- noise arising from new signalling equipment during construction and operation; and
 - possible electromagnetic effects of new signalling equipment.
-

5.2 Restructuring

The 5-year Business Plan for the railway, developed as part of this project, recommends the division of ADDY into a number of strategic business and service units. It is proposed that ADDY has two main business units:

- a passenger business unit; and
- a freight business unit.

These will be served by two new service units, namely:

- rolling stock; and
- infrastructure

Two further units will provide the overall corporate functions for the restructured railway. These will be:

- corporate services (including, *inter alia*, finance, procurement, IT and legal services); and
- ancillary services.

The reorganisation of ADDY into these units will create a number of new environmental challenges which will cover the entire operations of ADDY from the disposal of waste, through the procurement of new rolling stock to good office working practices.

5.2.1 Passenger Business

The following key areas are considered to have a potential impact on the environment during the period of the first 5-year Business Plan.

Passenger stations improvements

- construction impact of new buildings or changes to existing buildings;
- noise and vibration arising from construction;
- chemical or fuel pollution of water courses arising from demolition and construction;
- alterations to services; and
- Increased road feeder traffic.

Closure of passenger stations

- disposal of waste materials;
- disconnection of services; and
- clean-up of site area

New Passenger Coaches

- Environmental benefits include:
 - controlled emission toilets and the non disposal of effluent to track;
 - reduction in noise and vibration due to better suspension although there will be a potential corresponding increase in noise and vibration due to the increased speed of trains.

5.2.2 Freight Business

Freight Business developments and key activities included in the 5- year Business Plan that may have an environmental affect include:

- closure and removal of equipment at several current freight stations - locations undefined at present;
- removal of tracks and cranes;
- removal of redundant buildings; and
- changes to services at various locations.
- concentration of freight activity at main centres - locations undefined at present;
- new handling equipment;
- increased road vehicle effect;
- possible new buildings and services including the creation of improved and new container terminals; and
- increased risk of incidents due to more trains although mitigated through better track and signalling control

5.2.3 Rolling Stock Service Unit

The Rolling Stock Service Unit will be responsible for the purchase and maintenance of all rolling stock including all locomotives, wagons and carriages. It will also be responsible for the disposal of old rolling stock.

Large volumes of industrial waste will be generated by the restructuring of the railway and the need to scrap redundant track and rolling stock. Well in excess of 0.5 million tonnes of industrial waste will need to be disposed of. Particular issues are likely to include:

- scrap metal;
- asbestos in coach linings;
- PCB's in diesel locomotive transformers;
- plastic seating;
- de-greasing agents;
- oils and heavy metals including lead, chromium, magnesium and zinc in coach wagon and locomotive components; and
- CFC's in refrigerated wagons.

A waste disposal strategy will need to be developed which will form part of the SR's Environmental Management Plan (see section 6). The Environmental Management Plan will need to include procedures for the safe stripping of contaminants and the occupational health and safety issues that will also arise. Most of the waste will need to go to dedicated industrial waste landfill sites. Although there may be some scope for reuse and recycling.

5.2.4 Infrastructure Service Unit

The Infrastructure Service Unit will be responsible for train control, signalling, communications, electrical and permanent way infrastructure.

Environmental issues will include:

- the safe disposal of surplus line side scrap after track work;
- disposal of old ballast;

- operation of stone quarries;
- visual impact of electrification masts;
- ballast dust whilst track renewal works are in progress; and
- noise whilst work is in progress.

5.2.5 Corporate Services and Health and Safety

The key issues related to the Corporate Services provided for the Azerbaijan Railways reflect the movement towards commercialisation over a 5 year period. The Business plan has specific targets to be achieved year on year during the period of the plan and these include:

- provision of high quality support services to meet business sector needs;
- Co-ordination of policy planning activities to present integrated plans;
- provide centralised accounting and administration for strategic purposes;
- provide a centralised legal function on a company-wide basis.

Items which will need addressing in respect to environmental impact include:

- recycling;
- office environment;
- IT;
- health and safety; and
- accommodation

The main requirements of each activity during the 5 years are as follows:

Corporate planning

This unit will provide policy support to the business units and DG. The environmental issues relate to:

IT and Computer systems

The section will employ around 120 people providing installation and support to the businesses throughout Azerbaijan. The main objectives will be to implement comprehensive modern computer systems and networks to assist business productivity and performance. This should include connections with neighbouring railways. The Information Computing Centre is well equipped with modern computers and there are also computers at other enterprises, stations and depots.

Finance and Control

This section provides accounting and audit support to the businesses through application of networked financial packages. The section will employ 80 personnel mostly HQ based but travelling to offices throughout the network. The plan envisages implementation of robust financial procedures and systems, linked to an IT strategy for development step by step over the 5 year period of the business plan. The key tasks of the function are to prepare and co-ordinate the corporate budget and forecasts and will be responsible for Treasury and Cash control, accounting procedures and debt management.

Procurement

This section will be responsible for the tendering and central purchasing of services and equipment for supply to the businesses. Where appropriate outsourcing procedures will be developed and implemented. Comprehensive capability will be achieved in the first year of the plan and enhanced during the next 4 years of the plan.

Real Estate

The management of property disposal, rent and development will be handled by this division. These will include valuation and presentation to the market working as a support to the businesses to identify and categorise land as operational and non-operational. An action plan

will be developed for implementation during the 5 year period of the plan to dispose of redundant land and exploit commercial opportunities.

Organisation

The organisation section will be responsible for the support to the businesses in implementing the new structures . This division will operate for 2 years then be absorbed within the Human Resources section The key responsibilities will be to establish organisation principles in the development of the corporate plan.

6 COPRPORATE ENVIRONMENTAL MANAGEMENT PLAN

6.1 Introduction

As mentioned previously, the adoption of an overall environmental management system (EMS) for ADDY, incorporating an Environmental Management Plan (EMP) will be both a fundamental requirement for the loan disbursement to the railway and make good business sense.

The fundamentals of the EMP are:

- the establishment of the correct corporate structure;
 - an audit of existing facilities and operations in order to fully understand the current environmental problems which ADDY are facing;
 - a thorough legislative review and a comparison with the current compliance status of ADDY;
 - development of a priority action plan;
 - setting of targets and timescales for meeting the priority action plan.
-

6.2 Corporate Structure

The 5-year Business Plan envisages the formation of two business units (freight and passengers), two service units (infrastructure and rolling stock) and two corporate units. Each of these units will have a Director who will report to the Director General. It is proposed that a new role of Corporate Environmental and Health and Safety Manager is also created reporting directly to the Director General and with Board level responsibility for environmental issues company wide.

It will be the function of the Corporate Environmental and Health and Safety Manager to set the overall corporate objectives for environmental management in ADDY, prepare the detailed EMP, and to agree overall company-wide directives or policies on issues such as waste management, recycling and energy conservation.

The Corporate Environmental and Health and Safety Manager will have an Assistant Manager located within each of the service, business and corporate units forming a team of seven senior individuals. The Assistant Managers will be responsible for the implementation at unit level of the Environmental Management Plan including setting targets for their business sector, monitoring progress and providing training to key individuals within the various sections of their unit.

6.2.1 Corporate Environmental Commitment

The first priority of the new EMP for the railway will be to develop a corporate environmental commitment which may be embodied in an overall Mission Statement and to set clear goals for environmental improvement over the life of the first 5-year Business Plan. An appropriate Mission Statement may be:

"To transport freight and passengers, quickly, efficiently and safely by offering a high-quality cost-effective service that has due regard for the environment of Azerbaijan. To meet its commitments to environmental protection, as embodied in the Environmental Protection Act and international treaties, ADDY will implement an Environmental Management Plan that will progressively reduce its consumption of resources, emissions of pollutants and seek to provide for the improvement of environmental management in its operations and facilities"

Such a statement should be agreed and signed by the Board of ADDY and disseminated to all employees.

6.3 Environmental Management Plan

It will be the principal responsibility of the Corporate Environmental and Health and Safety Manager to prepare and implement an Environmental Management Plan (EMP) for the railway. This section will outline the framework for the plan, the actions required, priorities that have been identified and potential monitoring requirements. Section 7 will identify implementation requirements including responsibilities, training and support.

6.3.1 Framework

The framework for an EMP for ADDY will need to be structured around the following elements:

1. a thorough environmental audit of all ADDY operations and facilities;
2. the compilation of a legislative database, with procedures for regular updating, that clearly defines the legal responsibilities of ADDY towards the environment;
3. a comparison between the audit findings and the legal responsibilities of ADDY;
4. a definition of the areas for improvement;
5. a prioritisation of these areas;
6. a set of clear, measurable and auditable targets for improvement; and
7. a timescale for measuring progress towards these targets.

6.3.2 Audit

ADDY will need to conduct as a first priority a complete audit of all its operations and facilities. These will include, *inter alia*, all freight depots, passenger stations and maintenance depots as well as office practices, heating, lighting and recycling.

Particular attention will need to be paid to those areas likely to give rise to the greatest environmental issues and these will include:

- emissions to air;
- water and waste water - use and disposal;
- materials handling, storage and transport;
- management of hazardous materials;
- waste arisings, management and disposal;
- noise, odour and vibration; and
- land contamination.

The audit will need to be undertaken by appropriate trained personnel (see section 7) familiar with the operations of the railway and be conducted according to current best practice in environmental auditing. A checklist system is recommended for the audit, covering *at a minimum*, those areas listed above but also where possible examining other issues such as general housekeeping and identifying potential improvement areas such as waste reduction, opportunities for the use of cleaner technology and energy use and conservation.

The audit should be based on:

- discussions with facility personnel;
- an examination of past records relating emissions and discharges; and
- on-site testing and monitoring where records do not exist or are incomplete.

6.3.3 Regulatory Compliance

Volume II of this report provides a review of the current legislation and guidance that ADDY will need to comply with. At present it is unlikely that ADDY hold any of the necessary certificates to show that it is in compliance with regulatory requirements in relation to emissions to air, water and solid waste management.

Based on the review undertaken for this report, ADDY should instigate the compilation of a database of all legislation that it needs to comply with. The database should be held centrally but accessible by each facility so that individual facility managers are fully aware of their commitments and compliance status.

A comparison will need to be made by ADDY of the audit findings and regulatory compliance status. Given the history of the railway and the current backlog of investment and maintenance there will be a need for railway to bring many of its facilities and operations into compliance. These areas will need to be prioritised and clear and auditable targets set for achieving compliance within a timescale appropriate to the scale of the problem and the measures required to deal with it.

6.3.4 Priorities for improvement

A number of priority areas and issues will arise from the environmental audit and assessment of compliance status of ADDY and appropriate environmental action plans and remediation plans established. A full audit of the railway is a lengthy process and one which was outside the scope of this report. However, discussions between ADDY and the State Committee for Ecology, revealed a number of immediate issues which ADDY will need to address. These are:

- Balajari Wash Plant and Baku Wagon Works;
- oil spills;
- emergency response planning;
- pollution along the track at train stopping points and river crossings; and
- waste management.

(a) Balajari Wash Plants and Baku Wagon Works

A limited environmental audit and action plan has been prepared for the Balajari Wash Plant and an action plan for the Baku Wagon Works. In the case of the Baku Works it is recommended that a thorough environmental audit is also carried out and the findings of the action plan reviewed in the light of this. In the case of both facilities the loan disbursement will bring about some environmental improvement.

Much however, will remain to be done and it should be a priority of the EMP to re-audit these facilities and review their current action plans. Priorities for improvement must include stricter discharge controls, the remediation of past contamination and controls on waste management.

(b) Oil Spills

The avoidance of oil spills, particularly in the sensitive national parks is a major area of concern for the State Committee for Ecology. This concern will increase as traffic grows with the opening of new oil fields such as the Tengiz crude oil field operated by Chevron in Kazakhstan and the passage of other oil products from SOCAR (the State Oil Company of Azerbaijan) and from Turkmenistan.

Derailments leading to oil spills will be a consequence of several factors either operating individually or in concert. These factors will include:

- the condition of the track;
- the configuration of the wagon bogies;
- speed of the train; and
- the radius of track curvature;

The track replacement programme which is underway in Azerbaijan and the investment in new track brought about by the EBRD loan, will greatly assist in improving track conditions and hence safety and environmental concerns.

The configuration of the wagon bogies, particularly those which pass through sensitive areas will need to be examined closely. Standard bogies consist of two axles, each with four wheels and the majority of oil transport wagons in use currently seem to conform to this pattern. However, recent developments have included the introduction of four axle bogies supporting a total of sixteen wheels. It is likely that this configuration, allowing a 160 tonne laden load to be transported, is more susceptible to derailment particularly on tight radius curves.

Statistics relating to derailments should be examined and any correlation between bogie configuration, speed and curvature determined. This analysis should result in actions items for the EMP which may:

- make recommendations not to run four axle bogies through sensitive zones and/or limit their speed through such areas;
- place speed restrictions on trains through sensitive zones; and
- recommend possible track re-configuration through sensitive zones to avoid tight radius curves.

In addition, the EMP should clearly state the importance of ensuring that wagons are securely sealed before departure.

(c) Emergency Response Planning and Clean-up

Allied to the risk of oil spills, ADDY will need to enhance its emergency response planning and clean-up procedures both of which the State Committee for Ecology have expressed concerns about.

New signalling and telecommunications will greatly assist in the response time of emergency services but, nonetheless, the EMP will need to address emergency response planning. It should be recommended that an Emergency Response Directive is drafted which will include the formation of an *ad hoc* Emergency Response Group (ERG) chaired by the Corporate Environmental Health and Safety Manager and formed from key members of ADDY in the other directorates and appropriate officials from the State Committee for Ecology.

The responsibility of the ERG would be to receive information on an emergency situation, assess the response required and mobilise the necessary resources to limit the potential.

Acting alongside the ERG, ADDY will need to recommend, as part of the EMP, the formation of an Emergency Response Unit, formed from railway personnel and trained in containment and clean-up procedures.

Clean-up procedures should be sanctioned by the ERG, which as it will also contain State Committee for Ecology officials, will be able to co-ordinate and agree actions.

(d) Stopping points and river crossings

The environmental audit will have identified stopping points for trains in potentially sensitive areas near to water abstraction zones, in national parks or in other ecologically sensitive areas.

The scale of any potential contamination problem will need to be assessed in these areas through ground investigations and potential remediation measures sought. Remediation measures which may be recommended in the EMP include:

- the avoidance of stopping locomotives in potential 'hot spots';
- oil trap mats in sensitive areas and on bridges to absorb spillage from tanks and locomotives.

(e) Waste management

Waste management will be a major issue for the restructured railway given the enormous surplus of rails, sleepers, locomotives and wagons that will need to be disposed of.

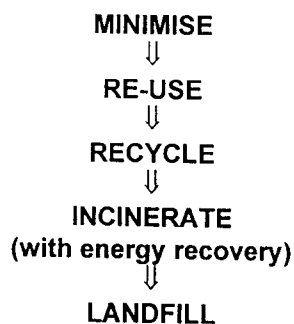
Much of this will contain toxic substances including:

- asbestos in coach linings;
- PCB's in diesel locomotive transformers;
- plastic seating;
- de-greasing agents;
- oils and heavy metals including lead, chromium, magnesium and zinc in coach wagon and locomotive components; and
- CFC's in refrigerated wagons.

A waste disposal strategy will need to be developed which will form part of the SR's Environmental Management Plan. The EMP will need to include procedures for the safe stripping of contaminants and the occupational health and safety issues that will also arise.

Procedures will need to be put in place to ensure that the waste goes to dedicated industrial and special waste landfill and/or incinerator sites and to ensure its safe transport to such sites. These sites will need to be identified as part of the EMP.

For the future the EMP will need to recommend current best practice in waste management based on the waste hierarchy of:



6.3.5 Targets and timescale

It is essential that ADDY sets a series of clear targets with respect to regulatory compliance and good environmental management practice and provides these targets with an appropriate timescale. Ambitious targets are unlikely to be met, no targets at all will mean that compliance will not be achieved and the timescale must similarly being realistic to the goal that has been set.

Specific targets for operational performance in relation to issues such as wastewater discharges and air emissions can only be set by reference to current performance which itself can only be measured through the environmental audit. A thorough detailed audit is, therefore a first priority.

A reasonable timescale in which to audit all facilities would be five years, coinciding with the rolling business planning round. For the emission and discharge of specific pollutants timescales are less easy to define as they will depend on the scale of the problem and the financial resources required to address it. Priority should be given to addressing the concerns voiced by the State Committee for Ecology and indeed some of these could be rapid and low cost. Critically examining the accident record, for example, and recommending lower speeds and/or bogie configurations does not require a significant investment.

7 RESOURCES, IMPLEMENTATION AND SCHEDULING

7.1 Institutional Issues

The principal roles of the Corporate Environmental and Health and Safety Manager and the Assistant Managers within the Directorates of the restructured ADDY are described previously. For the environmental performance of the railway to improve it will be critically important that:

- the new Board of ADDY take the environmental commitments of the railway to be a central part their overall corporate strategy;
- the roles and responsibilities of the Corporate Environmental and Health and Safety Manager and the Assistant Managers within the directorates are similarly recognised to be of central importance within the company;
- these individuals are given appropriate authority through the reporting structure of the organisation;
- where necessary the required funding, resources and/or support is made available to bring about environmental improvements to the operation of ADDY;
- environmental training is provided where necessary; and
- the Board of ADDY have a transparent reporting structure so that both employees and the general public are made aware of their environmental performance.

As well as the key environmental managers within the company it will be equally important for all facility managers and indeed all employees to have an increased awareness of their role within the overall environmental performance of the company. In particular there should be:

- an individual and collective duty of care towards the environment;
 - a roll-down of company environmental commitments to the site specific level; and
 - a requirement amongst all employees to review environmental performance specific to their activity within the company.
-

7.2 Training

7.2.1 Corporate Environmental Manager and Assistant Managers

Professional training will be required for those individuals who will fulfil the key environmental roles within ADDY. This will need to be undertaken as part of the implementation schedule for the EMP and involve formal courses in environmental management and auditing, probably through an overseas institution (for example, the UK Environmental Auditors Registration Association - EARA) as well as short periods of secondment in Europe to rail companies that have developed EMP's, for example Railtrack in the UK or any of the European railway companies.

It will also be important for these individuals to be given guidance and training in the further training of those individuals at specific facilities and operations in ADDY who will be instrumental in implementing the EMP. This 'train-the-trainers' approach will ensure that corporate environmental goals are linked to site-specific practices

7.2.2 Facility and operations managers

Operational level individuals with responsibility for site specific environmental performance will be trained by Assistant Corporate Environmental Managers attached to each of the six directorates.

Training needs will be governed by the needs of the specific facility but will need to include technical issues such as the:

- guidance in the preparation of environmental management plans and action plans for their specific facility;
- guidance on follow-up site audits; and
- guidance on specific monitoring requirements.

7.3 Communications

The success of the EMP will be dependent on effective communication between the corporate environmental managers and the facility and operations managers who will have day to day responsibility for its implementation.

At the corporate level information will need to be rolled down to operations and facilities: This information will include:

- changes in environmental legislation or guidance affecting the facility or operation; and
- corporate policy or directives on issues such as energy efficiency, waste management, waste minimisation and recycling.

Similarly upward channels of communication will need to be open from facility managers to directorate level. This will enable early problems in meeting targets to be recognised and addressed as well as potential opportunities for further improvement incorporated into the corporate strategy.

7.4 Implementation and scheduling

Implementation of the EMP will not be simple or rapid and this should be recognised at the outset in order to avoid unrealistic expectations. A suggested implementation schedule over the course of the first 5-year Business Plan may be as follows and in Table 1 overleaf.

ACTION ITEM	SCHEDULE (within 5 year plan)
Agree corporate policy	Month 1
Dissemination to staff	Month 1
Training of environmental managers	First 6 months and on-going
Training of operational managers	Months 6 - 9 and on-going
Begin audit of facilities	Begin month 9 - end of year 5
Register/database of legislation	Complete by end of year 1
Establish priority actions	Complete end of month 18 and on-going revision
Begin priority actions	Begin month 18 and on-going
Monitoring	On-going

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Institutional/Organisation Issues

EMP Issue	Action	Individual(s) Responsible for Action	Target Date	Budget/ Resource implications / Other comments
1. Setting up the EMP	Define job descriptions for and appoint staff to positions of: a) Corporate EHS manager b) Assistant EHS managers	DG/personnel		Salaries and overheads and support staff
	Draft and agree environmental policy	cEHS manager		as above
	Modify and expand draft framework management plan	a EHS managers		as above
	Develop reporting structure for EMP - which links EHS team into operational and administrative activities	cEHS manager and assistants		as above
	Undertake an environmental training needs assessment to identify key staff in terms of roles/influence and training needs	cEHS manager and assistants		as above
	Produce draft environment risk maps centrally with information available - these can form a basis for more detailed information generated by audits of specific areas/facilities.	EHS assistants		The Environmental Risk Maps should indicate the location of sensitive areas, receptors, rivers, aquifers protected areas, wetlands etc, the location of past spillages/incidents, locations of activities which could present a risk such as oil storage, handling facilities stopping places maintenance yards etc. This will need to be built up and added to over time as information is obtained from the audits. These maps will assist in determining priority areas for action and help plan responses to future incidents.
	Set up an audit programme covering all property and facilities and track	cEHS manager and assistants		An approximate budget can be assigned - likely to be most efficient to go to competitive tender, but require as part of Terms of Reference that railway staff are involved and trained as part of the audit process
	Set up database for legislation together with procedures for updating periodically - make this available to regions/facilities	cEHS manager and computer/IT department		Time to set up database and periodically to collect and input updates and make it available electronically or paper copy to all EHS managers
	Develop environmental objectives and targets which can be used to assess performance - referring to the corporate environmental policy, the audit results and analysis of compliance status	cEHS manager and assistants		Use legislative review in Volume II as a starting point These could include <ul style="list-style-type: none"> obtaining 'ecological passports' for a specified number of facilities by a certain date reducing the number of incidents each year cleaning up specified areas of contaminated ground
	Compile environmental action plan and prioritise actions based on work needed to meet objectives and targets	DG/cEHS manager		Refer to Environmental risk plan, consultations with authorities, compliance analysis and business plan in drawing up priorities

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Institutional/Organisation Issues

EMP Issue	Action	Individual(s) Responsible for Action	Target Date	Budget/ Resource implications / Other comments
2. Developing an EMS to implement the EMP on a day to day basis throughout the organisation	Develop corporate directives on key environmental management issues; oil spill prevention emergency response waste management energy efficiency	cEHS manager supported by consultants		Many of these issues are closely related to reducing costs and improving efficiency of the railway operation as a whole. They could provide significant savings in the long term. If consultants are commissioned to write these directives ensure that the EHS is closely involved and directs the output so that they address the particular management structure and operational activities of the railway.
	Develop simple operational procedures/guidance for staff undertaking or responsible for key tasks related to implementation of EMP. For instance these might be aimed at : <ul style="list-style-type: none"> • staff supervising loading and unloading activities • maintenance staff • construction staff 	EHS assistants/ technical staff		All staff should be aware of their specific responsibilities with respect to environmental protection and should be reminded of these responsibilities through signs and brief guidance documents.
	Develop an overall programme for audit , review and modification of EMP and the environmental management system as a whole for the business plan period - 5 years Set up liaison meetings with authorities <ul style="list-style-type: none"> • on emergency response -preparedness and co-ordination/communication • operational management issues relating to environment 	c EHS manager c EHS manager		
	Develop a training programme for operational and administrative staff to implement EMS	c EHS manager supported by outside consultants		Train key staff to train others and training material to be customised to particular needs of staff

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Issue	Site Location	Action	Individual(s) Responsible for Action	Target Date	Budget/resource implications/ Other comments
Contaminated Material	<p>Entire track Alignment</p> <p>Especially also</p> <p>Areas near spillage incidents</p> <p>Stopping points</p> <p>Maintenance and sidings facilities</p> <p>Chemical/oil and waste storage areas</p> <p>Asbestos or PCB containing material/equipment</p>	<p>Identifying Potential Contaminated Material Identify locations likely to be contaminated and types of contaminants likely to be present. This should be undertaken before sites works are undertaken. If an audit has been carried out for the area -this should provide the relevant information</p> <p>Handling Material Ensure that all on-site contractors handling contaminated material:</p> <ul style="list-style-type: none"> • receive appropriate health and safety training; • aware of potential hazards associated with the exposure to contaminated land; • maintain appropriate personal hygiene practices following handling (e.g. no eating, smoking or drinking on site; washing prior to leaving site); • employ appropriate Personal Protective Equipment (e.g. disposable nitrile gloves, safety boots and overalls); and • aware of first aid procedures. <p>Ensure that guidelines in the relevant method statement(s) are observed and that required risk assessments have been duly completed in accordance with statutory requirements. Documentation from these assessments should be available on site at all times.</p> <p>Disposal of material Material identified as contaminated should be stored and disposed of in such a way that it does not cause pollution to soil, surface or groundwaters. It should be disposed of in accordance with the regulations</p>	<p>Construction/track works - Safety Manager EHS manager responsible for the area/ facility</p>		<p>Refer to guidance on dealing with contaminated material. Additional resources may need to be made available to investigate extent and type of contamination present.</p>

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Issue	Site Location	Action	Individual(s) Responsible for Action	Target Date	Budget/resource implications/ Other comments
Storage of materials/wastes	<p>Entire Alignment for track works</p> <p>All areas used for storage of chemicals, oils and wastes</p>	<p>Store chemicals oils and wastes materials such that they do not escape and cause contamination of surrounding soil, groundwater and surface water courses via leaching or airborne transfer.</p> <p>It is recommended that excavated materials should be stockpiled on impermeable surfaces and covered to prevent spread of potential contamination prior to re-use or removal from site.</p> <p>Any wastewater discharged from spoil storage areas should be controlled to prevent contamination of groundwater and nearby surface water courses</p> <p>Any water that has come into contact with contaminated material shall not be discharged to public or private surface-water or foul sewers nor to watercourses. It shall be disposed of as directed by the local Water Authority, if necessary using temporary lagoons on site.</p> <p>Asbestos/Asbestos Waste If significant quantities of asbestos and/or asbestos waste is encountered, work should stop immediately and an assessment made of the asbestos/asbestos containing material. Large pieces of rigid material should not be broken or cut. Asbestos and asbestos-containing material should be wrapped intact in plastic sheeting or placed in a sealed container or covered skip awaiting disposal by a licensed contractor.</p>			
Oil Spillage prevention		<p>Derailment (example headings only) Fire hazards Unloading /loading Storage and handling of oils used in maintenance activities</p>			

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Issue	Site Location	Action	Individual(s) Responsible for Action	Target Date	Budget/resource implications/ Other comments
Emergency response Plan		Co-ordination with Authorities Internal Emergency Response Unit			
Waste management		Waste Management Directive Waste management plan for each facility			
Energy Efficiency		Lighting Heating Resource use			
Procurement		Procurement policy to meet objectives relating to energy efficiency, waste management, safety etc			
Public Liaison		Communication links			
Liaison with authorities on operational activities		Communication links/meetings			

8 CONCLUSIONS - CURRENT PROBLEMS FUTURE ISSUES

This report has examined the current environmental problems facing Azerbaijan Railways and the likely impacts that will arise through the proposed investment programme of the EBRD/EU-Tacis and through the restructuring of the railway.

The investment programme will largely generate environmental benefits through improved track, track maintenance, signalling and telecommunications. However, it is important that the environmental impacts that could arise through these activities are also understood and addressed.

By far the largest environmental challenges that will face the railway will arise through the restructuring of ADDY and its division into separate business and service units. The railway is faced with a large stockpile of redundant equipment, wagons and locomotives, and by significant problems of land contamination and emissions, non-compliant with current legislation and best practice.

An Environmental Management Plan for the railway is both an essential requirement of the loan disbursement and makes good business sense for the restructured railway. The EMP which has been outlined in this report, and discussed with relevant officials in the State Committee for Ecology and ADDY, sets out a framework for the future. It is essential that the overall corporate objectives outlined in the EMP are fully integrated into the planning of ADDY and that the new Board gives due consideration to the serious nature of the environmental issues it will face.

The reversal of years of neglect of environmental problems will not be without cost and it will be for the new Corporate Environmental Manager of ADDY to prioritise actions and seek Board approval for funding. It will be important for the future viability and profitability of the railway that these issues are dealt with as a matter of urgency.

9 FIGURES

AZERBAIJAN/GEORGIA RAILWAY

AZERBAIJAN MAIN RAILWAY LINES

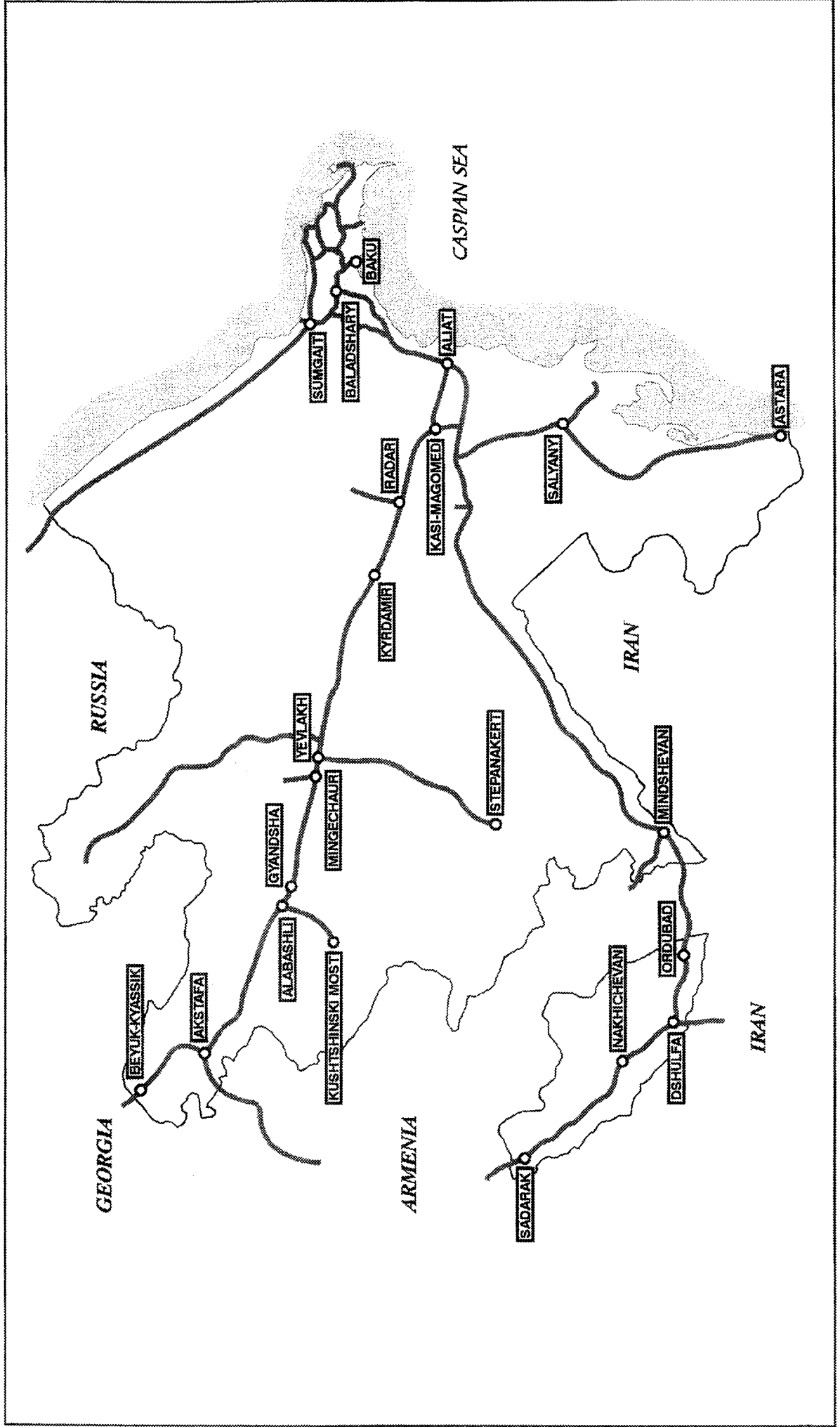


FIGURE: 1

10 PLATES



PLATE 1	
AZERBAIJAN RAILWAYS	
Baku Wagon Works. Oil tanker after repair and service.	
Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable
GIBB Environmental GIBB House, London Road Reading, Berkshire, RG6 1BL	



PLATE 2

AZERBAIJAN RAILWAYS

Internal view of the repair shed at the Baku
Wagon Works

Job Number: J98232

Approved by:

Date: October 1998

Scale: Not Applicable

GIBB Environmental

GIBB House, London Road
Reading, Berkshire, RG6 1BL

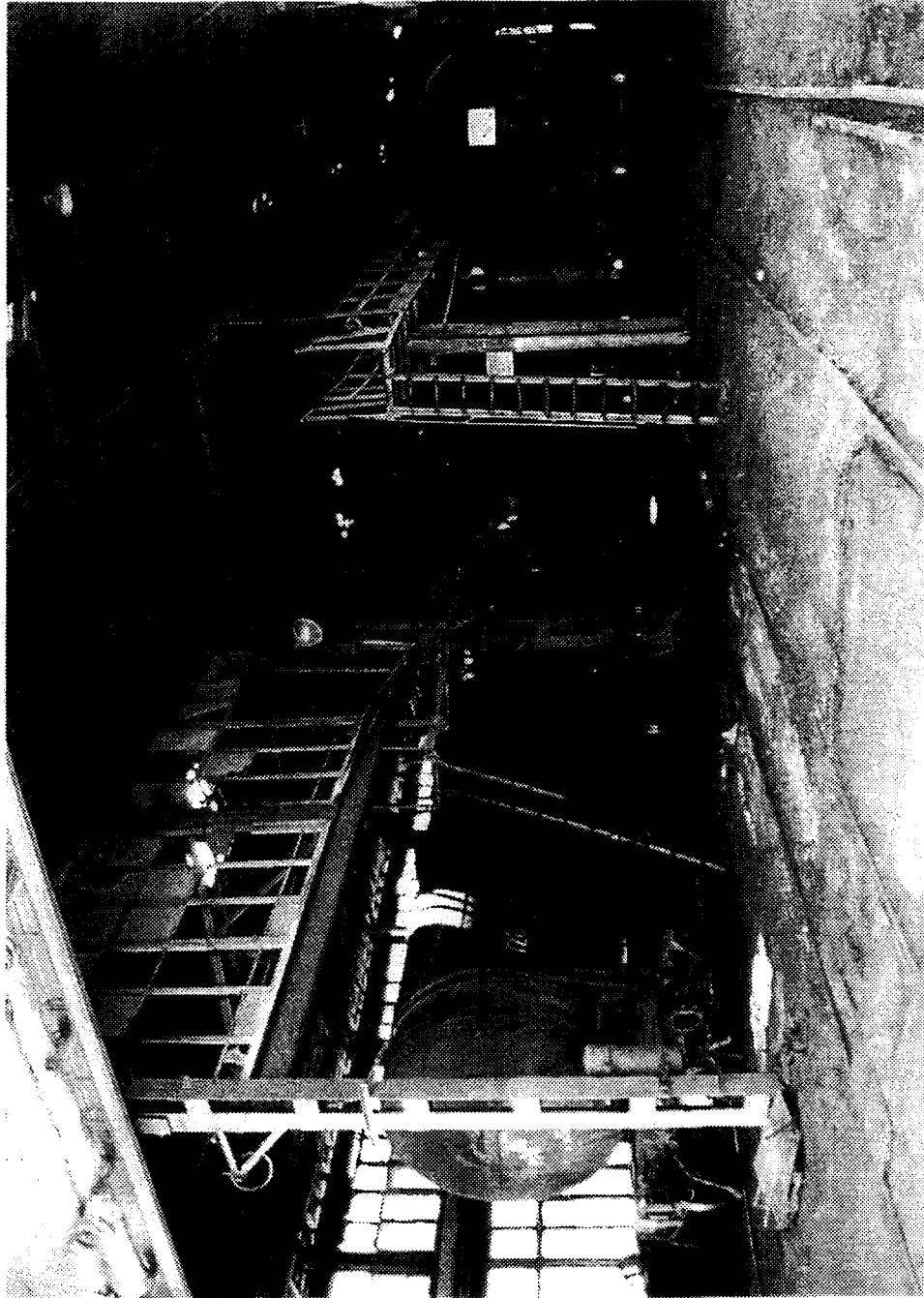


PLATE 3

AZERBAIJAN RAILWAYS

Baku Wagon Works. Shed used for checking
the integrity of oil wagons

Job Number: J98232

Approved by:

Date: October 1998

Scale: Not Applicable

GIBB Environmental

GIBB House, London Road
Reading, Berkshire, RG6 1BL

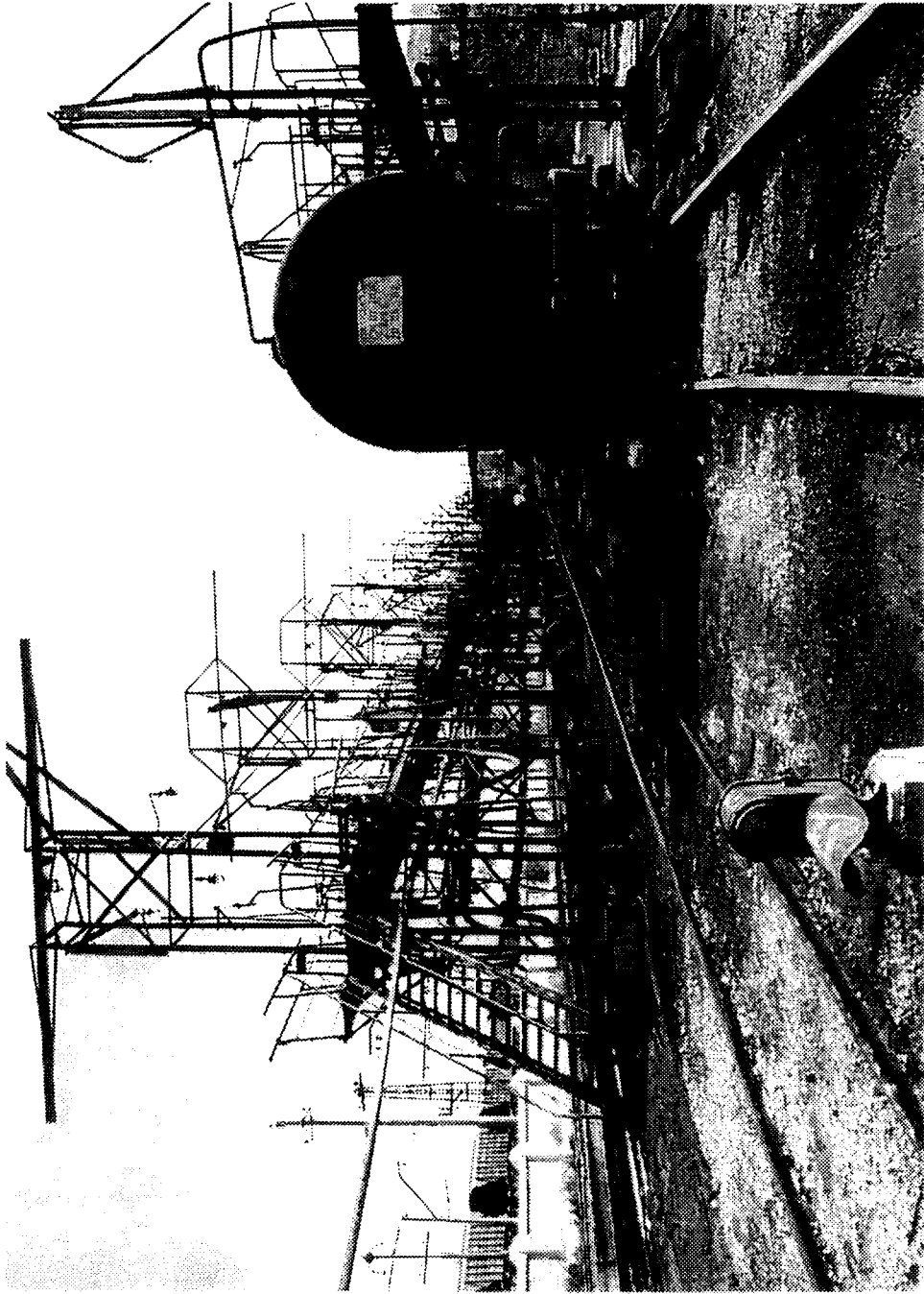


PLATE 4

AZERBAIJAN RAILWAYS

Balajari Wash Plant showing cleaning gantry

Job Number: J98232

Approved by:

Date: October 1988

Scale: Not Applicable

GIBB Environmental

GIBB House, London Road
Reading, Berkshire, RG6 1BL

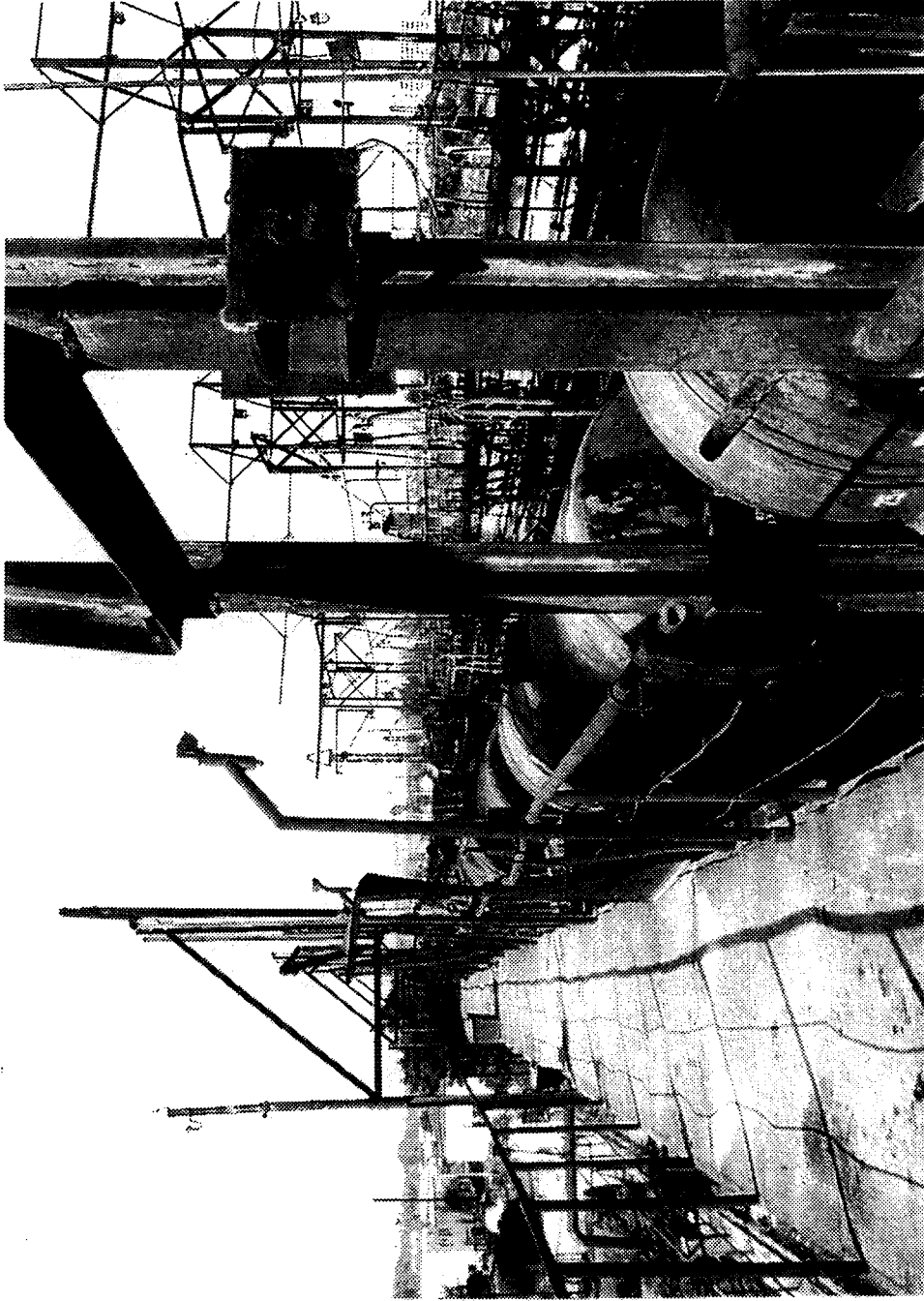


PLATE 5

AZERBAIJAN RAILWAYS

Balajari Wash Plant showing upper level
walkway of the cleaning gantry

Job Number: J98232

Approved by:

Date: October 1998

Scale: Not Applicable

GIBB Environmental

GIBB House, London Road
Reading, Berkshire, RG6 1BL



PLATE 6

AZERBAIJAN RAILWAYS

Balajari Wash Plant. 1954 locomotive used for steam generation.

Job Number: J98232

Approved by:

Date: October 1998

Scale: Not Applicable

GIBB Environmental

GIBB House, London Road
Reading, Berkshire, RG6 1BL



PLATE 7

AZERBAIJAN RAILWAYS

Balajari Wash Plant. The bitumen pool.

Job Number: J98232

Approved by:

Date: October 1998

Scale: Not Applicable

GIBB Environmental

GIBB House, London Road
Reading, Berkshire, RG6 1BL

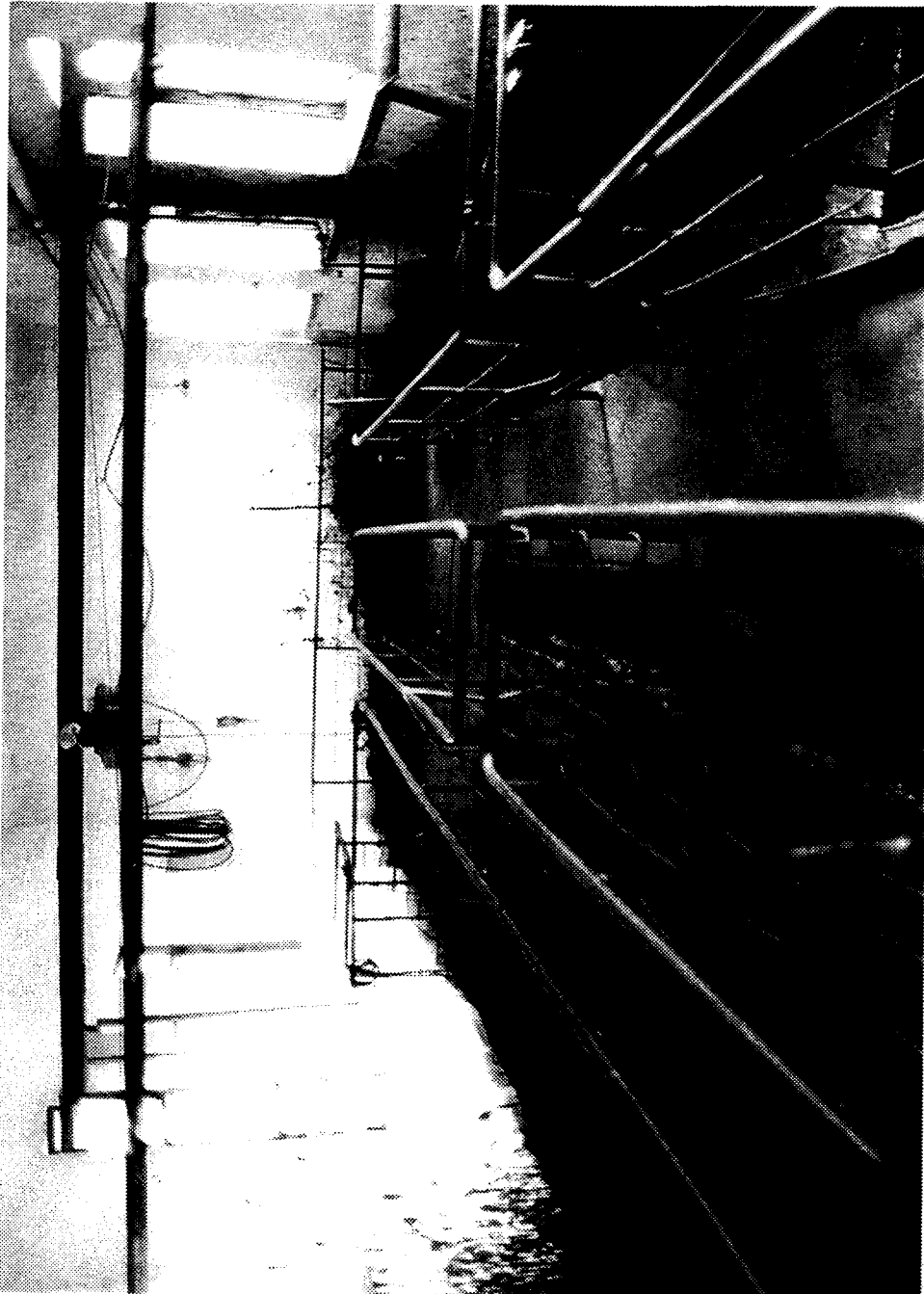


PLATE 8

AZERBAIJAN RAILWAYS

Balajari Wash Plant. Interior of the mechanical oil/water separation building.

Job Number: J98232

Approved by:

Date: October 1988

Scale: Not Applicable

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