NON-TECHNICAL SUMMARY

Cairo Metro Line 1 Upgrade

Project Ref: 201803002

On behalf of:

European Bank
for Reconstruction and Development

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June 2018

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VERSION CONTROL

Issue	Revision No.	Date Issued	Prepared by:	Technical review by:	Authorised by:
01 Draft	01	26/03/2018	Guy Reed	Rob Evans	Liz Crosbie

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List of Acronyms that may be used in this report:

EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
SEC	Strategic Environmental Consulting Ltd.
BWC	Before Works Commence
CAA	Competent Administrative Authority
CBTC	Communications-Based Train Control
CCP	Operational Control System
CoMP	Contractor Management Plan
E&S	Environmental and Social
ECM	Egyptian Company for Metro Management & Operation
EEAA	Egyptian Environmental Affairs Agency
EHS	Environmental, Health and Safety
EHSS	Environmental, Health, Safety and Social
EIA	Environmental Impact Assessment
ENR	Egyptian National Railway
EPRP	Emergency Preparedness and Response Plan
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESHS MS	Environmental, Social, Health and Safety Management System
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental & Social Management System
GHG	Greenhouse Gas
GIP	Good International Practice
H&S	Health and Safety
HSSE	Health, Safety, Social and Environmental
IA	Integrated Approach
ILO	International Labour Organization
LACF	Land Acquisition and Compensation Framework
LTA	Lender Technical Advisor
MMP	Management and Monitoring Plan
MMS	Management Maintenance System
MOT	Ministry of Transport
NAT	National Authority for Tunnels
NMP	Noise Management Plan
OHS	Occupational, Health and Safety
PID	Prior to Initial Disbursement
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
PR	Performance Requirements
SEP	Stakeholder Engagement Plan

1 PROJECT DESCRIPTION

1.1 What Is The Project About?

The European Bank for Reconstruction and Development (EBRD), together with the European Investment Bank (EIB) and other Lenders, is considering the provision of a sovereign loan of up to EUR 200 million (or USD equivalent) to the Arab Republic of Egypt to finance the rehabilitation of the existing infrastructure of Cairo Metro Line 1, which will cover urgent infrastructure investments in signalling, telecoms, controls and track works.

The EBRD has developed an Integrated Approach (IA) to Cairo's urban transport sector which comprises a series of investments across all modes of urban transportation in Greater Cairo focusing on improving functionality, quality and efficiency of public transport services – particularly in response to current overcrowding and significant expected future growth in demand. The objective of the IA is to achieve greater commercialisation of services, enhanced private sector participation, improved regulation, and increased opportunities for on-the-job training as well as the use of carbon monetisation mechanisms.

The proposed Line 1 upgrade project is the second of a series of investments presented under the IA. It is designed to provide the needed rehabilitation of Cairo Metro Line 1's existing infrastructure with the aim to restore it to its original design capabilities and reduce traffic headway (minimum possible time between two trains) to increase capacity, through system upgrades and the introduction of new signalling technology. The key technical target is to reduce the headway from current typical 3.5 – 5 minutes to its original specification of 2.5 minutes, with the potential for additional improvement to 2 minutes.

Accordingly, the project will enable the provision of safe, reliable and environmentally friendly transportation for up to 2 million passengers per day and provide energy efficiency and emissions savings.

The proposed loan is intended to support the procurement of specific upgrade works to the Cairo Metro Line 1 infrastructure, in particular:

- Electromechanical elements
- Telecommunications
- Signalling (using communications-based train control (CBTC) track-side equipment)
- Centralised control
- Track and civil works.

The project will be implemented by the National Authority for Tunnels (NAT), a government agency under the jurisdiction of the Ministry of Transport (MOT) and will be carefully co-ordinated with the Egyptian Company for Metro (ECM), which is part of the Egyptian National Railway (ENR) and the day-to-day operator of the Cairo Metro, as the rehabilitation will take place whilst the line is in operation.

A Main Contractor will be commissioned by NAT to deliver the upgrade works.

Replacement and upgrade of rolling stock associated with Metro Line 1 is not included within the current financing proposals and is not considered within this project.

1.2 Who Are The Project Beneficiaries?

The Metro network in Cairo was constructed by the National Authority for Tunnels (NAT) and is operated by the Egyptian Company for Metro Management and Operations (ECM). Both are part of the Egyptian **Ministry of Transport** (MOT) which is the Governmental Authority for all transport projects in Egypt.

The **National Authority for Tunnels** (NAT), which reports to the Ministry, is responsible for the planning and construction of metro lines in Egypt. In 1983, NAT was established by a special law 113 which authorised this newly created government agency to plan and execute tunnels and metro infrastructure projects in Egypt, including management of the full process of tendering and procurement of rolling stock under the jurisdiction of the Ministry of Transport. Since its establishment, NAT has successfully executed project investments totalling over €1 billion to implement more than 83 kilometres of Metro Lines, in addition to other relevant establishments and utilities. Accordingly it is considered the Competent Administrative Authority (CAA) for this project and is responsible for appointing the Main Contractor, and ensuring that all mitigation measures and environmental requirements in the construction phase are clearly referred to in the contractors contracts, and have been implemented and complied with.

The **Egyptian Company for Metro Management & Operation** (ECM), is part of the Egyptian National Railway (ENR). It is a joint stock company established in 1997 with the purpose of management and operation, and maintenance of Metro lines including its buildings, rolling stock assets, and associated equipment and machines or related workshops, central controlling stations as well as power stations. ECM will be responsible for the project's environmental performance, once the Line becomes operational.

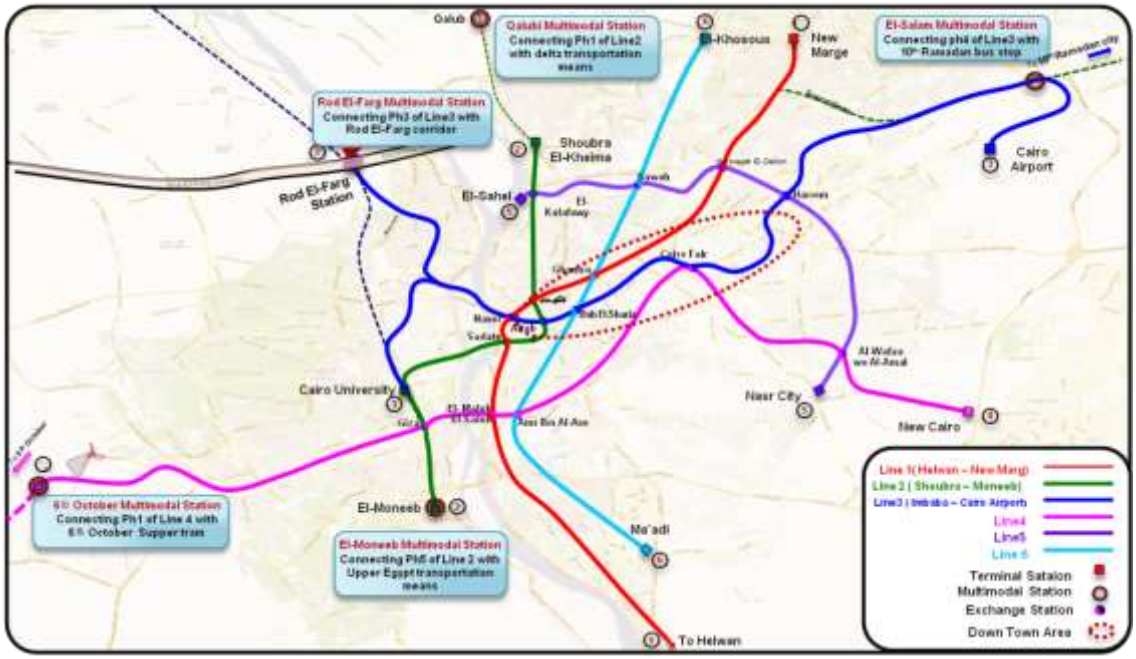
The **Main Contractor**, to be appointed and supervised by NAT, will implement the upgrade works and will be required to abide by the necessary and relevant Environmental, Health, Safety and Social governance systems and operational procedures during the project.

1.3 Why Is The Investment Needed?

Great Cairo is home to over one-fifth of Egypt's population, and provides a critical contribution to national economy in terms of both GDP and jobs. With over 20 million inhabitants, 2 million cars and 27,000 miles of road; traffic congestion is a serious problem in the city, adversely affecting both the quality of life and the economy. Metros, buses and microbuses are overcrowded reflecting this lack of capacity and the Cairo Metro, especially Line 1, is a considered a major part of the solution.

Line 1 itself runs 44 km from North to South across the heart of Cairo and connects into both the existing Lines 2 and 3 and other future lines (Lines 4, 5 & 6).

Figure 1: Cairo metro existing Lines 1 – 3 and future Lines 4 – 6 (Source: NAT website)



Most of Line 1 runs on the surface, but the central 5 km is in a tunnel serving five central area stations. Capacity on the Line is constrained by the trains running at 3.5-minute headway, compounded by excessive passenger loads in both the trains and the central area stations which lead to extended platform dwell times of well over a minute. Overall:

> ***whilst Line 1 is considered critical for Cairo to function, the asset base is in poor condition or nearing life expiry and it requires a programme of significant renewal and renovation to upgrade it to modern performance expectations and capacity needs.***

Line 1 was implemented in three phases:

- Phase 1 (Helwan-Ramses). 28km, 22 stations – inaugurated 1987
- Phase 2 (Ramses – El Marg), 14.5km, 12 stations – inaugurated 1989
- Phase 3 (El Marg– New El Marg), 1.3km, 1 station – inaugurated 1999

Figure 2: Cairo Metro routes currently in service - Line 1 in red (Source: cairometro.gov.eg)

The original design capacity of Line 1 was 2 million passengers per day with current ridership reaching 2.5 million passengers per day at peak hours. Line 1 faces four key challenges:

- Much of the fixed infrastructure and moving equipment is now at or near the end of its design life, after 30 years' service. Reliability, capacity and safety issues are a significant concern.
- The Line is operating at a degraded 3.5 – 5 minutes between trains rather than the original design of 2.5 minute headway. Modern metros aim to operate at an interval in the range 1.5 - 2 minutes.
- The Line is chronically overcrowded at peak time, with train densities of up to 12 people per m^2 .
- Passenger demand, currently suppressed by no available space on the trains, is forecast to continue to grow at a rate of between 30% to 50% over the next 20 years.

The key objective of the Line 1 upgrade is restoring its original design efficiency of a 2.5 minute headway, and studying the possibility of headway reduction to 2 minutes in order to meet the expected growth in ridership. The main project components are upgrading the system infrastructure and migrating to CBTC technology to deliver a more efficient and safer train movement system. Critically, the upgrade and modifications must not interrupt on-going Metro train operations.

A number of specific upgrades are now proposed which will affect the following systems:

1. **Trains:** the oldest batch from the 1980s is approaching life expiry, with antiquated equipment and a new fleet of some 75 trains is proposed, comprised of 32 new trains, 23 refurbished trains and 20 new Hyundai trains (with information systems and air conditioning). *These are not, however, part of the current financing.*
2. **Track:** the ballast, sleepers and drainage (especially in tunnels) now need replacement. The overall quality of the track and its supporting track formation may need addressing.

3. **Signalling & Control**: the existing signalling is a hybrid of classic fixed block signalling and a limited computer overlay that provides a relatively poor level of safety and control. The signalling system will be upgraded to a communications-based train control (CBTC) signalling system providing automatic train control, protection and regulation.
4. **Power:** the power supplies will require upgrade with the proposed increase in train services and additional air-conditioning needs. The exact upgrade works will be identified once the HV and LV power systems are assessed. This is expected to include doubling the capacity of the overhead line equipment.
5. **Electromechanical:** pumps, fans and air-conditioning units are nearing the end of their economic life and will need upgrading to meet the heat loads from more intense services.
6. **Telecommunications:** most of the telecommunication equipment of Line 1 is obsolete; some systems are no longer working and other elements are limited to single stations. An overall unified system architecture is required with the modern combined and integrated communications system vital for a modern high capacity Metro. NAT / ECM have already started the upgrading process for several parts of the system (e.g. the radio network, station intercom and fire detection system).
7. **Depots:** ECM is planning to upgrade the Turra el Balad depot and NAT is now establishing the new Kozzika depot. Together with the siding in Helwan and El Marg stations this should provide the capacity to stable the proposed 75 train fleet. *However this task is not part of the current financing*

The proposed works will be delivered over a planned six year programme post-procurement, including an initial year of design. Completion of track renewal works will commence as soon as possible to free up track access for installation of signalling, power and other lineside equipment along with the testing and commissioning. Track access will be vital for project success and whilst ECM are currently offering 5 hours of track access per night this may need to be increased to cut service/programme risk and programme costs.

2 WHAT ARE THE ENVIRONMENTAL, HEALTH, SAFETY AND SOCIAL ASPECTS OF THE PROJECT?

2.1 Overview of the EHSS Review Process

An assessment of environmental, health and safety and social (EHSS) performance of NAT has been undertaken by in-country consultant EcoConServ Environmental Solutions and by UK-based Strategic Environmental Consulting (SEC) beginning in September 2017 in order to determine the current levels of EHSS performance of NAT ahead of the potential loan from the EBRD. The following main activities were undertaken in order to review the current EHSS management and performance.

- Review of documentation provided by NAT and ECM
- Interviews held with relevant personnel in NAT and ECM
- Site walk-overs were conducted by the consultant teams in September 2017 and March 2018, including visits and/or interviews at the Tora Workshop, the metro line from Alshohadaa Station to Tora, Alshohadaa underground station, the Operational Control System, the Power Control Point and the transformer unit

An evaluation of both the impacts and the benefits of the project has been undertaken and where the results of the assessment have identified areas for improvement, actions and management techniques have been proposed. The proposed actions have been compiled into an Environmental and Social Action Plan (ESAP) to ensure compliance with relevant national, EU and EBRD requirements.

2.2 What Are the Key Benefits of the Project?

This investment in Cairo Metro Line 1 involves upgrading the system infrastructure and migrating to CBTC technology to deliver a more efficient and safer train movement system. This will bring key benefits in:

- Quicker commute times and less overcrowding by reducing operational delays
- Increased line capacity through more frequent and reliable train running
- Improved Metro operational safety
- Attracting more commuters to the Metro rather than other modes of transportation, which will contribute to reducing car traffic congestion and air pollution from vehicular emission
- Energy saving and improved air quality and air temperature in underground stations due to upgrades in the station's electromechanical systems.

2.3 What Are the Key Impacts?

The upgrade will involve a range of activities that may affect the local communities and environmental conditions in and around the metro area and may also directly or indirectly affect the surrounding areas. The rehabilitation works will also result in temporary impacts that will affect users of the lines or those directly or indirectly dependent on the services rendered by these lines. The key impact areas include the following:

- Potential nuisance from the construction works, including noise, dust, air emissions and vibrations
- Traffic disruption and community disturbance from road movements associated with the upgrade works, especially connected to the project laydown areas and the removal and replacement of large quantities of track ballast
- Worker, neighbour and receptor hazards from storage, recycle, disposal of waste and scrap materials from the construction and replacement activities

- Normal operational services of the Metro being disrupted by overrunning night-time works
- In the longer-term, increased passenger numbers leading to over-crowding in stations and the surrounding areas.

2.4 What Are the Key Action Areas?

As part of the audit process, an Environmental and Social Action Plan (ESAP) has been developed to help align the activities of NAT with European equivalent standards and the EBRD's performance requirements regarding health, safety, social and environmental (HSSE) performance and risk management. A summary of the key themes which are incorporated into the ESAP are below:

- Development of corporate systems and processes and reporting for the management of HSSE practices, to be communicated to all employees and contractors working for and on behalf of NAT
- Develop and implement a project interface management plan that describes the roles / responsibilities / interfaces of NAT, ECM and Main Contractor and how they will operate with regard to HSSE issues
- Development of additional HSSE resources to deliver on its commitments; especially the assessment and compliance monitoring of the HSSE systems and performance of ECM and the Main Contractor
- Develop management /monitoring / mitigation plans for key concerns including air quality; noise and vibration; transport management; hazardous materials; occupational health and safety; security; project emergency preparedness and response
- Implementation of incident investigation procedures
- Implementation of a stakeholder engagement plan and formal grievance mechanism for internal and external stakeholders.

3 HOW WILL STAKEHOLDERS BE ENGAGED?

A Stakeholder Engagement Plan (SEP) has been developed on behalf of NAT with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of NAT projects. The plan also outlines the guiding principles of a formal grievance mechanism to be used by stakeholders for dealing with complaints, concerns, queries etc. It will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, the SEP will be brought up to date. The SEP will also be reviewed periodically during project implementation and updated as necessary.

The SEP includes the following:

- Project description, location of the site and key environmental and social issues;
- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous NAT stakeholder engagement activities
- Stakeholder engagement programme and methods of engagement and resources; and
- Grievance mechanism.

Stakeholders could be individuals and organisations that may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views. The definition applied to identify key stakeholders is:

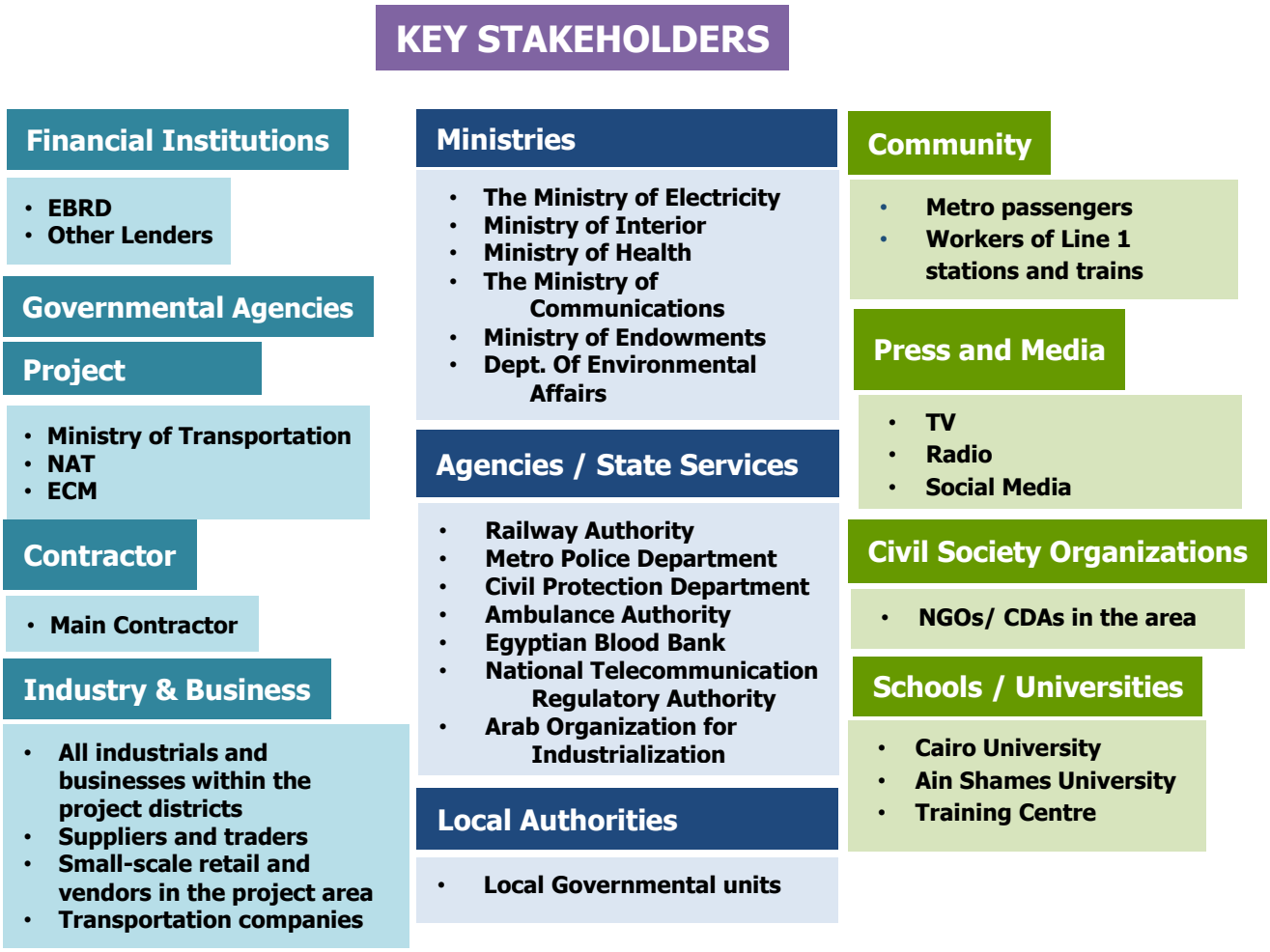
> ***'any stakeholders with significant influence on or significantly impacted by, the work and where these interests and influence must be recognised if the work is to be successful'.***

Key stakeholders associated with the project are given in overview in Figure 3, below.

The SEP outlines the methods that NAT will adopt to ensure effective stakeholder engagement is undertaken, providing details of the programme of future public consultation and information disclosure that will be recorded for major projects. NAT will record the following information on an ongoing basis:

- Type of information disclosed, in what forms (e.g. oral, brochure, reports, posters, radio, etc.), and how it was released or distributed.
- The locations and dates of any meetings undertaken to date.
- Individuals, groups, and / or organisations that have been consulted.
- Key issues discussed and key concerns raised.
- Company response to issues raised, including any commitments or follow-up actions.
- Process undertaken for documenting these activities and reporting back to stakeholders.

Figure 3: Overview of Key Stakeholders



If there are questions, queries, complaints or grievances regarding future projects, a grievance mechanism has been developed to address these issues and a grievance form will be used to record this information. The grievance form is included in Appendix A and the outline on how to use the grievance form is provided below.

3.1 What Will Be The Procedure For Grievances?

A grievance mechanism will be adopted in which the grievance form presented in Appendix A will be used as required to handle grievances from non-employees. The mechanism will be as follows:

- Grievance received
- Grievance recorded in a register
- For an immediate action to satisfy the complaint, the complainant will be informed of corrective action
- Implement corrective action, record the date and close case
- For a long corrective action, the complainant will be informed of proposed action
- Implement corrective action, record the date and close case

A grievance should be recorded by the complainant using the grievance form in Appendix A, ensuring that contact details are provided with the preferred method and language of communication. A clear description should be provided of the incident or grievance. NAT will respond to grievances within one month of receiving the form.

Grievances can be received by mail box and email at NAT's address and official website.

3.2 How Do I Find Out More Information?

Comments and concerns regarding the project can be submitted verbally or in writing to NAT and ECM through the following channels:

Hotline	16048
WhatsApp	01221116046 - 01021778887
Telephone	02-25742968 - 02-25742969 - 02-25743024
Facebook	www.facebook.com/cairometropage
Website	www.cairometro.gov.eg http://www.nat.org.eg/
Hand-Delivered	Grievance boxes at Metro Stations
Post	ECM, Ramses Square, Al Azbakeyah, Cairo Governorate

APPENDIX A

Public Grievance Form

Reference No:	
Full Name Note: *you can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent*	**My first name** _____ **My last name** _____ ☐ **I wish to raise my grievance anonymously** ☐ **I request not to disclose my identity without my consent**
Contact Information **Please mark how you wish to be contacted (mail, telephone, e-mail).**	☐ **By Post: Please provide mailing address:** _____ _____ _____ ☐ **By Telephone:** _____ ☐ **By E-mail** _____
Preferred Language for communication	☐ **Arabic** ☐ **English** ☐ **Other (please specify)**
Description of Incident or Grievance:	What happened? Where did it happen? Who did it happen to? What is the result of the problem?
Date of Incident/Grievance	
	☐ **One time incident/grievance (date _____)** ☐ **Happened more than once (how many times? _____)** ☐ **On-going (currently experiencing problem)**
What would you like to see happen to resolve the problem?	

Signature: _____ Date: _____

Please return this form to: [name], [role], [company name],

Address _____: Tel.: _____ or E-mail: _____