National Traffic & Transport Sector Strategy for Kuwait 2009-2019

UNDP & General Directorate of Traffic Project 2009-2013

National Road Safety Information System & GIS
National Accident Blackspot System
National Traffic Training Center of Excellence
United Nations Development Programme  
State of Kuwait  
Project Document

Project Title:  

Expected CP Outcome(s):  
2.4 Enhancing the implementation of the National Strategy of Traffic

Expected Output(s):  
2. Establishment of a National Accident Black Spot System (NBSS).  
3. Capacity building and training of national cadres in the Ministry of Interior (MOI) and relevant Ministries, and assist in the establishment of a National Traffic Training Center of Excellence (NTTCE).

Implementing Partner:  
Supreme Council for Planning and Development (SCPD).

Executing Agency:  
General Directorate of Traffic (GDT), MOI.

Responsible Parties:  
Ministry of Public Works (MPW), Kuwait Municipality (KM), Ministry of Communications (MOC) and others.

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1 Black Spot is a term used in road safety management to denote a place where road accidents have historically been concentrated.
Brief Description

The Project aims to (1) build a national integrated road safety information system (NIRSIS) which will enable the gathering and analysis of road accidents data, traffic features, geographical information, and related issues, to provide decision makers and practitioners with reliable data for efficient policy development and implementation schemes; (2) establish national accident black spot system, to facilitate identification and treatment of frequent road accident locations to minimize the social and economic cost; and (3) develop capacity building and human resources development program which will provide training and better skills, to strengthen institutional performance, learning and transfer of modern techniques and improve ability to implement work plans efficiently. The Project will improve planning and design process; reduce the severity, frequency, and cost of road accidents to the community; alleviate congestion; optimize movement of people and goods; enhance public transport service; strengthen law enforcement; and contribute to the reduction of gases which contribute to climate change.

<table>
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<th>Program Period:</th>
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<td>Atlas Project Number:</td>
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<td>End Date:</td>
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<td>In-kind GDT Contributions:</td>
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Agreed by (Implementing Partner - SCPD):
Dr Adel Al Wugayan, General Secretary
Date: ________________

Agreed by UNDP:
Dr Salah Bourjini, Resident Representative
Date: 10/12/2009

Agreed by (Executing Partner – GDT-MOI):
General Mahmoud AlDosari, Assistant Undersecretary for Traffic Affairs
Date: 10/12/2009
Figure 1: Benefits of the National Integrated Road Safety Information System at Various Levels

System → Areas → Benefits → Effectiveness

NIRSIS

National Strategic Development Plan
Planning & Engineering
Enforcement & Law
Medical & Emergency Service
Research
Education
Promotion

Decision Makers / National Bodies
National Strategy / Action Plans
Budget Allocation / Annual Reports
Economic & Social Growth

Urban & Land Use Planning
Road Design / Traffic Management
Road Safety
Public Transport Operations
Integrated System

Driver & Vehicle Inspections
Legislation & Courts
Road User Behaviour
Traffic Operations

Ambulances / Fire / First Aid
Emergency
Hospital Facilities

Improve Understanding
Assess Effectiveness

Education - Schools / Community
Driver Training
Targeted Remedial Programmes

Community Awareness / Media
Figure 2: National Inputs and Outputs of the Project and Relationship Between the Components

National Information Inputs

1. National Integrated Road Safety Information System (NIRSIS) (General Directorate for Traffic)

2. National Traffic Training Center of Excellence

3. National Black Spot System

NIRSIS Outputs

- Police Management & Decision Makers
- On Line Service
- External Organizations
- Ad Hoc Requests
- General Road and Transport Authority
- Implementation of the National Traffic and Transport Strategy

Police Accident Investigation / Police Report
Police Traffic Offences
Police Road User and Vehicle Checks
Legal Investigations & Actions
Social & Economic Issues
Roads & Traffic
Awareness (Police) & Education
New Police Smart Accident Diagram Project
Land Use
Health, Fire & Emergency Service
Public Transport

Mainframe (Ministry of Interior)

GIS
The target is based on the June 2009 recommendations of the UN’s Economic and Social Commissions for Western Asia (ESCWA), which aim to reduce road traffic fatalities in the relevant countries of the region by 30% in 2015. The baseline is the average of road traffic fatalities in 2006 (460) and in 2007 (447) due to the absence of previous baseline and strategy targets.
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>CP</td>
<td>Country Programme</td>
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<td>CPAP</td>
<td>Country Programme Action Plan</td>
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<td>CPD</td>
<td>Country Programme Document</td>
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<td>GAF</td>
<td>General Authority of Fire</td>
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<td>GDI</td>
<td>General Directorate for Investigation</td>
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<td>GDIS</td>
<td>General Directorate of Information System</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GDTA</td>
<td>General Directorate of Traffic Affairs</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>General Road and Transport Authority</td>
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<td>Kuwait Municipality</td>
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<td>Local Project Appraisal Committee</td>
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<td>MOE</td>
<td>Ministry of Education</td>
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<td>NBSS</td>
<td>National Black Spot System</td>
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<td>National Integrated Road Safety Information System</td>
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<td>NSDP</td>
<td>National Strategic Development Plan (five-year)</td>
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<td>NTTCE</td>
<td>National Traffic Training Centre of Excellence</td>
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<td>NTTS</td>
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<tr>
<td>PA</td>
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<td>Road Accident Investigation Unit</td>
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<td>Supreme Council for Planning and Development</td>
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<td>UN</td>
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<td>United Nations Development Programme</td>
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I. SECTOR ANALYSIS, PROBLEMS, AND OPPORTUNITIES

A. Introduction

1. The State of Kuwait is a sovereign Arab emirate bordered by Saudi Arabia to the south and Iraq to the north and west. It has a population of over 3.5 million and an area of 17,818 km². The economy is predominantly urban and %99 of the population live in the major Governorates, and in %8 of the total area of the country. Kuwait currently ranks as number 7 in the world in connection with the most populated cities.

2. Kuwait now is in a state of reform and is aspiring to achieve its national vision. The country’s five-year National Strategic Development Plan (NSDP) 2009 to 2013, which is currently awaiting the National Assembly’s (i.e., parliament’s) endorsement, reflects a policy of renewal and continued growth. With its liberal market-based economic policy and openness to the world of international investment, Kuwait is striving to become a “hub for foreign and regional investments” by 2030. To ensure effective implementation of relevant plans and programs to fulfil this vision, industrial and commercial zones are being established with the necessary infrastructure needs and various policies are being established to address planning, population, industrial, commercial, health, housing, transport and pollution issues.

3. Current tremendous growth in motor vehicle’s use, heavy vehicle operations, the population and economy, along with more people attracted to urban areas for work or leisure, have led to a sharp increase in the demand for road space and transport services. All key roads and ports have reached, or will reach soon, the design capacity. Essential as the movements of people and goods are to the economic and social aspects of community life, they also present people and their surrounding with the problems of congestion, road accidents and environmental impacts, which impose a huge impact on the socioeconomic development (Figure 3).

Figure 3: Percentage Increase of Traffic Indicators during 2000-2008 in Kuwait
4. Given Kuwait’s rapid economic growth, low price of old vehicles, and easy access to loans to finance new vehicle purchases, the vehicle fleet is expected to continue to grow in the coming years, and this will not be matched by similar growth in the capacity of road networks and transport facilities. There is an increasing pressure therefore to find solutions for the escalating problems of the transport system.

B. Institutional Obstacles of Transport Sector in Kuwait

5. Issues and constraints that contribute to traffic and transport sector problems in Kuwait include the following:

- Supply of transport facilities has not matched the increased demand, due to inadequate infrastructure development.
- Limited skills and resources in various areas of traffic and transport sector, associated with absence of sustainable training program.
- Need for a reliable information system, in-depth research, and monitoring regime, to fully understand causes, create effective countermeasures and assess effectiveness of performance. Current information is not coordinated or exchanged.
- Lack of safety-conscious road design and black spot procedures and guidelines, and need for improved traffic signal, sign and marking systems.
- Transport planning is lacking through which roads, ports and airports, land use and urban features can be integrated with community needs.
- Transport sector’s management practices are characterized by unavailability of overall vision and integrated strategy.
- Different agencies are responsible for the transport sector, creating problems in planning, coordination and efficient project implementation.
- Expressways are built on the outskirts of key urban areas but connections to the city center and residential areas are insufficient. Financial resources are also being diverted from local roads to expressways.

C. Transport Sector Problems in Kuwait

6. The length of total roads in Kuwait is over 6000 km. The density is 584 people per kilometer. The number of vehicles has increased sharply since 2000, reaching around 1.5 million registered motor vehicles in 2008. Most of the people travel by private vehicles (%85). Public transport bus services are provided by a private company (City Bus) and state-owned Kuwait Public Transportation Corporation. The government plans to build around 700 km of new high standard roads during the next five years and to construct US$11 billion rail network which will include a city metro.

7. Kuwait International Airport serves as the principal hub for international air travel. Kuwait also has one of the largest shipping industries in the Gulf region. The Ports Public Authority manages and operates ports across Kuwait. Construction of another major port located in
Bubiyan island is under preparation. There is an increase in the heavy vehicle operations across the international borders. The key problems of the transport system entail the followings.

1. Road Safety

8. Road accidents are a human tragedy that result in health, environmental and social problems, and have significant impacts on national economic growth strategies. In recognition of this, the United Nations (UN) has integrated road safety into its policies of sustainable development in 2003, for the 1st time. In 2004 and 2008, the UN General Assembly plenary sessions also addressed road safety and called on member states to stimulate a new level of "non traditional and urgent" commitment to improve road safety. The World Health Organization (WHO) forecasts that road accident deaths will move from the ninth to the third most serious health problem facing the world, within the next 10 years. The problem of road safety is acute in the developing nations, which has only around %20 of the world's motorized vehicle fleet but accounts for around %60 of global road deaths. The estimated economic loss to the Gulf States from road traffic accidents is between %2.5-%4.5 of the Gross Domestic Product (GDP). Rapid development and increasing vehicular growth in Kuwait have resulted in a substantial increase in road accidents and loss of life. The extent of adverse impacts of road accidents on the economy in Kuwait is characterized as follows:

(i) In 2008, there were 58,578 accidents, 410 fatalities, and over 7,600 serious injuries.
(ii) Economic losses from road traffic accidents are between %3 - %4 of the Kuwait's GDP per annum.
(iii) Road accident costs have a significant adverse impact on the Government's investment plans, medical services, and scarce resources of relevant agencies.

The situation will likely deteriorate unless urgent and effective action is taken to make roads safer in Kuwait.

2. Traffic Congestion

9. Traffic congestion is a condition that occurs when a volume of traffic generates demand for space greater than the available road or intersection capacity. Congestion is associated with several causes such as limited road capacity, traffic incidents, work zones, weather conditions, traffic control devices, and special events.

10. The most serious congestion is that related to the limited road capacity. Traffic congestion has a number of negative impacts such as:

- Wasting time of motorists and passengers.
- Economic impact.
- Delays, which may result in late arrival for employment, meetings, and education, resulting in lost business, or other personal losses.
- Inability to forecast travel time accurately.

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3 Jiarw K. Guangxi Roads Development II Project Report Approved by the Government and International Development Organizations in 2004 for a total cost of $726 Million. China
5 Jiarw K. Urban Transport in Asia: Developing Countries Safety and Efficiency Strategy USA Transportation Research Board (TRB) 2002 Annual Meeting and TRB Journal No 1846 2003
Wasting fuel which increases air pollution and carbon dioxide emissions (which may contribute to global warming). Increased fuel use may also cause a rise in fuel costs.

- Wear and tear on vehicles as a result of frequent acceleration and braking which create increase in economic cost, e.g. spare parts and cost impact on balance of payment.
- Stressed and frustrated motorists, encouraging road rage and reduced health of motorists.
- Emergencies: blocked traffic may interfere with the passage of emergency vehicles.
- Spillover effect from congested main roads to secondary roads and side streets as alternative routes, which may affect neighborhood amenity and real estate prices.

11. In Kuwait, Traffic congestion is a major problem. The congestion cost is over %3 of the GDP per annum. At international congestion level, Kuwait currently ranks as number 4 in the world in connection with the number of registered vehicles per kilometer of road.

3. Data Collection

12. In Kuwait, like other countries, traffic police are the key source of all road safety, traffic enforcement and some traffic operation data.

13. Review of the existing road accident form used by police in Kuwait revealed that it fails to include provision for entering all relevant information which is found essential in the developed nations to analyze factors and develop effective programs for reducing the frequency, severity, and cost to the community of road accidents. One of the key deficiencies of the form is the lack of a uniform method for identifying the location on a particular roadway at which the accident occurred. Other information not currently called for include meaningful classification of the accidents, action of road users immediately before the accidents, and some road and intersection issues. Another critical deficiency is the failure to enter all relevant data on the current Ministry of Interior (MOI) mainframe system. There is also a need to improve practice of classification, definition and recording of traffic offences. There is no practical and uniform traffic data collection and forecasting system in Kuwait, and there is no system for data exchange and interface between the traffic police, road and transport agencies, hospitals, and fire and ambulance services. The official statistical figures are therefore not appropriate for in-depth analysis, comparison and efficient strategy development.

14. Research has also shown that under reporting is a common problem sometimes because of lack of resources and spreading of responsibility between various agencies and sometimes because road accidents and casualties are simply not reported to the police by those involved. Consequently the actual number of road accident deaths and injuries is often significantly higher than official statistics show, and this is common case in most developing countries where the underreporting situations exceed %42.

15. The definition of road accident fatality and classification of injuries in most developing countries are also not clear, unlike the developed countries where they define for example death as “dead on the spot” and “dead within 30 days” after the accident. There is also no clear health and hospital record and there is no protocol between the police and other agencies for data exchange.

16. Definition of causes of accidents is another limitation. According to discussion with the police and field observations, some of the common causes of accidents on the road networks

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are unsafe distance between vehicles, overtaking, incorrect turn, disobey traffic signal, speeding, poor road conditions, and mechanical problems. But, according to the official statistics, "driver error" stands out clearly as the dominant major cause of road accidents (over 90%). However, it should be appreciated that while driver error is identified as the main cause of accidents, and may be amenable to improved driver education and enforcement of safety related regulations, other factors such as poor road conditions, road side obstacles, weather conditions, road design and mechanical problems may contribute to the conditions in which driver error occurs, and so should also be addressed. This argument also can be supported by the fact of existence of a large number of black spots on the road networks.

17. In addition, there is no meaningful link between road accidents and offences data to assess causes and conditions scientifically. Data problem therefore should be addressed efficiently in order to tackle current accident and other traffic problems in Kuwait, in line with the recent UN resolutions and experience of the developed countries.  

4. Road Accident Investigation

18. The responsibility for investigation road accidents lies presently with the General Directorate of Investigation (GDI) of the MOI. The GDI has a primary responsibility for investigation and reporting of all activities which are legally defined as "crime-related" as well as road accidents. In addition, the GDI is responsible for reporting on road accident disputes which cannot be settled by the individual persons involved. The limitations of this practice include:

- GDI activities are not efficient due to high workload, staff shortage, and priority of other areas which results in little attention is paid to the traffic matters.
- Accident reports are being done so primarily to satisfy the legal requirements, with little data that can provide insight into road accident causes and traffic conditions, which aid in the development of efficient socioeconomic programs and reduce accident frequency and severity.
- GDI duties are more related to accidents involved personal injuries and fatalities as basis for legal procedures, court actions, and punitive measures. So that road safety and traffic management matters are receiving little attention, and not considered as a priority.

19. On the other hand, the General Directorate for Traffic (GDT) which is in charge of the day-to-day functions of traffic management, road safety, traffic enforcement and other tasks involved in maintaining an orderly flow of traffic in Kuwait, has no control on the road accident data and investigations.

This has a negative impact on road safety improvement, reliability of data, identification of accident black spots, and development of effective strategy. There is a need therefore for urgent actions to address this matter and reassign the duties of all data analysis and road accident investigations to the GDT, in order to help in eliminate the various traffic problems in Kuwait.

5. Staff shortage

20. There is a severe staff shortage at the Universities and in all Government agencies which deals with road and transport issues. The key research institutes have no mandatory role to deal with the traffic and transport issues. There is also no sustainable training or human
resources development program in the place. Shortage of road and transport projects during the past years has resulted in the lack of practical experience of the local staff. There is an urgent need to establish a national training center of excellence to fill the current gap and provide relevant agencies with the required skills and capacity, and to build efficient national work force.

II. NATIONAL TRAFFIC AND TRANSPORT SECTOR STRATEGY FOR KUWAIT

21. To remove major bottlenecks in Kuwait, a long-term, comprehensive National Traffic and Transport Strategy (NTTS) was developed in 2009, under the umbrella of the Government and United Nations Development Programme (UNDP) in Kuwait. The NTTS has identified major obstacles, characteristics, and role of each agency, and included various elements such as institutional reform, human resources development, environmental impacts, interagency coordination, engineering, enforcement, legislation, education, community awareness, driver licensing, and emergency service.

22. The NTTS aims to improve planning and design of the sector; reduce the severity, frequency, and cost of road accidents to the community, alleviate congestion, optimize movement of people and goods, enhance public transport service, assist in determining causes, developing suitable solutions and national policies, and strengthen traffic law enforcement in Kuwait (Figure 4).  

Figure 4: Key Components of the National Traffic and Transport Strategy 2009-2019 for Kuwait

![Figure 4: Key Components of the National Traffic and Transport Strategy 2009-2019 for Kuwait](image)

23. The strategy will benefit the community and improve economic development through implementation of (i) efficient components integrated with policy and institutional reforms, better infrastructure, and urban development; and (ii) a monitorable action plan to ensure quality and facilitate national implementation.

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24. The NTTS will complement the programs of the Government in strategically focused areas, help GDT in its leadership role, and enhance the capacity of road and transport agencies. Cross-disciplinary skills development, tools to enhance implementation, operation and management together with international expertise and best-practice exposure are crucial to the success of the Strategy, and the selected components of this Project are converted to practical projects to address these issues.

25. The Government is keen to implement the NTTS during 2009 through 2019. According to the Ministers Council's resolution number 532 on 6/7/2009, technical and legal teams have been established to monitor implementation of the Strategy and facilitate establishment of the General Road and Transport Authority (GRTA), to manage all activities of the transport sector in Kuwait, which are currently under responsibilities of the Ministry of Public Works, Ministry of Communications, Kuwait Municipality, Ministry of Interior and other organisations.

26. The UNDP financing for the NTTS and this Project represents a significant step forward as it is the first time that the UNDP has been involved in traffic and transport sector in Kuwait as part of the Country Programme Action Plan (CPAP) 2009-2013.

III. UNITED NATIONS DEVELOPMENT PROGRAMME IN KUWAIT

27. The State of Kuwait and the UNDP have a rich history of partnership and cooperation that dates back to 1968. The latest manifestation of this partnership is the adaptation of a CPAP aimed at implementing the Country Programme Document (CPD) for the period of 2009 - 2013.

28. The UNDP technical assistance programme for 2009 to 2013 is fully consistent with the Government Action Plan and the CPD, and aligned with the national agenda. The CPD identified four main priority outcomes covering:

1. Governance and Development Planning.
2. Gender and Social Development.
3. Economic and Private-sector Development.
4. Environment.

While the proposed programme will support substantially all four core outcomes, it will be concentrated on those areas that, because of its comparative advantages, experience, and capacities, UNDP can contribute significant value to the development process in Kuwait.

29. The CPAP has been signed on April 2009 and its first phase begins with the preparation of Project Documents to be used as roadmaps for each individual programme implementation.

30. The Government of Kuwait has requested continued support in implementing the NTTS 2009-2019 for Kuwait, and the UNDP included the Project under the Social Development Area (2 above) for the period of 2009-2013.

IV. RELEVANT MINISTRY OF INTERIOR PLAN FOR 2009-2013

A. NTTS 2009-2019 Implementation

31. The official MOI Action Plan, which is part of the Government Plan for the period of 2009-2013, has included the following relevant project regarding the implementation of the NTTS 2009-2019.
Project Name: Implementation of the NTTS 2009-2013 for Kuwait.
Implementation Body: GDT with the help of UNDP.

Relevant Issues to the UNDP-GDT Project *

- Enhancement of the information technology
- Improvement of the road accidents investigation system (The Investigator / Court issues)
- Training of traffic cadres

Performance Indicators


* Other issues include traffic signs and signals, awareness, enforcement, equipment, and technology use.

Consultation and coordination with various MOI Directorates is ongoing to optimize the use of resources, save time and money, avoid duplication of efforts, and maximize the benefit of the proposed UNDP-GDT Project.

B. General Directorate of Information System

32. The role of the General Directorate of Information System (GDIS) of the MOI is to run the mainframe of the Ministry, store the available data, and provide information technology service for various MOI Directorates.

The GDIS mainframe includes some information about road accidents filled by the accident investigators (GDI’s staff). But the information is incomplete and there is a need to enhance the data entry process and format of the accident form.

33. The GDIS is currently processing a contract to start Smart Accident Diagram Project (SADP). The Project is a computer software which:

- Allows the user to create accident diagram.
- Includes details such as radius corners, traffic island, crosswalk, and road lane dimensions.
- Assists the police officers and accident investigators who need to sketch / diagram accident scenes electronically.
- Assists in filling the formal data collection form and insert the diagram of the incident on it.
- Provides the capability to undertake a video film showing details of the incident.

34. The GDIS can provide the following facilities for the proposed UNDP-GDT Project:

- Utilization and modification of the current accident data form and the mainframe service.
- Utilization of the current Server for data storage.
- Linking the SADP with the NIRSIS
- Linking other information, e.g. driver license and traffic offences, with the NIRSIS.
- Utilization and modification of some GIS services, in coordination with Kuwait Municipality, Ambulance Service Authority, and Fire Authority.
• Internet services.

35. The benefit of consultation and coordination with the GDIS and other Government's agencies is to optimize the use of resources, save time and money, and avoid duplication of efforts. Meeting was held with the GDIS by the PM and Project Coordinator (PC) in September 2009, and further meetings will be held in the future.

V. THE PROPOSED UNDP - GDT PROJECT

36. The selected project is part of the comprehensive action plan of the NTTS which includes a variety of projects and capacity building. The project includes 3 components which are required nationally by the GDT and other organizations.

Output 1. Establishment of the National Integrated Road Safety Information system (NIRSIS), for gathering, analysis, reporting and dissemination of the relevant data, with Geographic Information System (GIS) function.

Output 2. Establishment of a National Black Spot System (NBSS).

Output 3. Capacity building and training of the national cadres of the GDT and other agencies and provide support for the establishment of a National Traffic Training Centre of Excellence (NTTC) in partnership with well-regarded international bodies.

A. Need for a National Integrated Road Safety Information System

37. As with other countries, an effective and integrated computer-based information system using standard police data collection forms is one of the most important prerequisites for Kuwait to improve its road safety and tackle transport drawbacks. The system should permit the characteristics of the problem to be defined and appropriate countermeasures to be devised, including accidents, traffic, roads, weather, people, vehicles and offences.

38. In Kuwait, the GDT and relevant organizations do not have an easy access to road accidents and transport information. The current practice does not provide the necessary information, to be of significant benefit in planning, analysis of contributing factors and in the formulation of effective plans and countermeasures. The data capturing forms and procedures are also cumbersome or unsatisfactory. Until an efficient recording, reporting, and retrieval system provides details on the various issues of road accidents and traffic operations, no firm conclusions can be drawn on the causes and contributory factors of accidents. It is precisely for this reason that this component was initiated, to design and implement a useful and practical system called NIRSIS. Since there are practical limitations on the amount of data that can be collected to meet all interested body needs, the content of the information system has to balance the data wanted against the burden of collecting and entering data, and should be as reliable and comprehensive as possible.
B. Objective of the NIRSIS

39. The objective of the NIRSIS is to establish an effective road accident, enforcement and transport data collection and analysis tool to serve the relevant agencies in planning, allocation of appropriate budget, and implementation of efficient strategy and projects. A common definition of accident, fatality and injury, road classifications, traffic issues, offence categories, and other transport standards are required to establish a uniform national system.

40. The NIRSIS will provide the practitioners with a computerized tool to fill current information gap; address various social, economic, engineering, transport, and area-specific issues; facilitate strategic planning, design, and preparation of feasibility studies; management of roads and transport operations; and help decision makers with the skills and ability to monitor programs effectiveness and deliver better transport policy and service (Figure 1). Brief daily information, quarterly and yearly reports, giving statistics and indicators on all aspects of traffic and road safety in the country and comparison with other countries will be published and widely circulated to all responsible agencies.

C. Process of Information Input and Output of the NIRSIS and Link Between the Project Components

41. The planning and design of the information system normally initiates with the understanding of the flow of information from the initial on-site police investigation of the accident and dealing with traffic offences to the type of data output or reporting needed to encompass the full range of intended use of the information.

42. There are various organisations and groups interested in the collection, analysis and use of various traffic and transport data such as:

- Transport and land use planners and national policy makers, e.g. Kuwait Municipality (KM), and Supreme Council for Planning and Development (SCPD).
- Traffic police, e.g. GDT and MOI.
- Road safety professionals.
- Road and transport engineers, e.g. the proposed National Road and Transport Authority (NRTA).
- Lawyers and courts.
- Research groups and statisticians.
- Politicians.
- Teachers, education and media, e.g. Ministry of Education (MOE).
- Motor companies.
- Vehicle fleet operators.
- Insurance companies.
- Hospital, ambulance and emergency services, e.g. Ministry of Health (MOH), and General Authority for Fire (GAF).
- Members of the public.

43. Figure 2 shows flow of the NIRSIS information as per the following steps:

1. Process of initial traffic police data regarding accident, offences, and other issues.
2. Input the coded data into the mainframe of the GDIS.
3. Collection of other data from external agencies, e.g. MOH by the NIRSIS team.
4. Analyse, validate, and maintain all information by the NIRSIS team.
5. Production of outputs and reports to meet interested body needs such as accident location, frequency and severity; relationship of various factors; description of the drivers behaviours, and road users, vehicles, road conditions, and traffic flow information; together with interface with other data such as transport operations, and emergency service.
6. Facilitate implementation of other Project components such as the NBSS and NTTCE.

D. Importance of the NIRSIS

44. All interested organisations and groups tend to have different needs and reasons for wanting the data. Some of the key reasons for building the NIRSIS are to assist in (Figure 1):

- Efficient development and implementation of the Government's plans and 2030 vision.
- Efficient implementation of the NTTS 2009-2030.
- Enable objective national planning and resource management.
- Provide basis for a comprehensive action to create sustainable transport system.
- Help decision-makers and organizations to allocate appropriate budget and implement measures designed to combat problems.
- Assess the actual size of the problem; compare conditions, and understand causes.
- Provide basis to assess the negative economic and social impacts and create efficient prevention measures.
- Monitor trends and effectiveness of filed programs and operations against targets.
- Identify high risk/problem groups, and design effective road signs and devices.
- Identify hazardous locations, and develop efficient police enforcement.
- Make international comparisons.
- Fulfill requirements of court procedures, prosecutions and insurance claims.
- Design and operation of efficient traffic management scheme.
- Fulfill requirements of legislations which govern vehicle registration, obligations on road users.
- Develop efficient traffic and accident prediction system.
- Promote safety education, community awareness, and training programs.
- Justification for road and transport planning and design.

E. Technical Functions of the NIRSIS

45. In general the system will deal with the following functions:

1. Comprehensive data collection function, by police and relevent bodies.
2. Data recording, by police and relevant bodies.
3. Data storage and retrieval.
4. Data analysis.
5. GIS.
7. Collision diagrams, standard software packages, stick diagrams or accident factor grid, data validation capability, under reporting checking, cross tabulation service, and presentation of graphics.
8. Interface or link with other databases.
10. Data reporting and dissemination to all interested bodies.

Descriptions of the NIRSIS components are presented in the following sections and Annex 1.
F. Reliability of the NIRSIS Data

46. To ensure quality, it is necessary to acknowledge the importance of the data by all relevant bodies, promote coordination between police, engineers and other relevant people, improve skills, and maintain and enhance quality and scope of the system regularly.

47. The police have limited time to spend on recording crash information. Therefore, they need to strike the right balance between the amount of detail required by all stakeholders and the ease with which they can collect the data according to their expertise and the tools and support available. Ideally, the police should not have to record the same information twice and therefore the data required for evidence and for the database should be made as compatible as possible. This can be done by making the form used for data entry acceptable as evidence in the courts.

48. The NRSIS will deal mainly with enforcement and traffic data, interface with data of the relevant agencies, and be able to answer the following road safety questions:

- Where did accident occur - location by map coordinates, road name and km post, and class?
- When did accident occur - by year, month, week, day, and time of day?
- Who was involved - people in relation to vehicles, animals, and road objects?
- What was result of the accident - death, severity of injury, and property damage?
- What were the environmental conditions of the accident - poor light, weather, road surface condition?
- How did the accident occur - accident type, driver fault type and reason?

G. Geographic Information System

49. Around the world, the demand for precise and reliable geospatial information continues to increase, as this is crucial intelligence for making decisions to manage the sustainable development.

The identification of location is often not an easy task. The Geographic Information System (GIS) is a computer-based service for capturing, storing, querying, analyzing and displaying geographic data. It represents a modern paradigm for monitoring through the use of concept of location as the basis for structuring of information systems.

50. GIS is a powerful tool for managing large amounts of heterogeneous data. For example, the GIS can be effectively used to identify accident black spots on roads in Kuwait. The capability of GIS to link attribute data with spatial data facilitates prioritization of accident occurrence on roads and the results can be displayed graphically which can be used for planning and decision making purposes.

51. GIS will enhance capacity of the traffic police and road agencies to pinpoint the locations of accidents and other events, adopt efficient enforcement strategy, and move away from manual practice. The NIRSIS will include a GIS function to identify locations of accidents and other interested factors which occur along the roadways or at the intersections (Figure 5).
Figure 5: Components of the GIS

GIS Components

Hardware
- Computer
- Windows System
- Internet
- Server
- Printer
- Ploter

Software
- GIS
- Data Base
- Network
- Others

People
- GIS Experts
- Data Analysts
- End Users

Data
- Image
- Attribute

Guidelines
- Procedures
- Specifications
- Standards
- Rules

H. Data Collection Form

52. It is necessary to design one road accident form for all purposes, e.g. court procedures and computer system, using a standard codes, to avoid unnecessary work load and duplication. The information required for each accident should be completed at the scene on an easy-to-complete booklet, while some follow up information will be completed in the office. Eventually, all data should be collated into the NIRSIS.

53. There is also a need to develop a standard definition for classifying accidents and this can be achieved by identifying each accident uniquely by a particular number such as:

- Police station incident number
- Year
- Police station name or code
- Location sketch and references (GIS facility).

I. Road Accident Investigation

54. Development of the NIRSIS requires that more complete reporting of road accidents and efficient road accident investigation system.

55. For maximum effectiveness, road accidents must be investigated immediately upon receipt of notification. In the developed countries, it is a common practice to allow any uniformed police officer to initiate the investigation, and this is required in Kuwait. The benefit of this includes reduction of the reaction time, and therefore minimizing the time during which accidents affect the surrounding traffic flow. It also assures that the injured
persons do not lie needlessly in wait for emergency service or the investigator, and that a minimum disturbance of evidence occurs at the scene of the accident. Every possible effort therefore should be made to assure that accidents are investigated at the scene and the accident form fully completed as quickly as possible.

56. Once the accident has been fully investigated and the necessary report form completed, the accident information should be forwarded directly to the GDIS mainframe, NIRSIS office, court and other relevant bodies.

57. It is necessary therefore to shift the responsibility of the accident investigation from the GDI to GDT, and this should be associated with:

1. Training for selected group of officers to deal with current needs and to act as future trainers. The training should include various traffic issues, and first aid treatment of accident victims.
2. Police station receiving a report of accident shall issue a call to any relevant police officer in the vicinity of the accident to go to the scene.
3. Establish a method for calling emergency assistance, and for tow trucks and other requirements.
4. Development of a human resources development plan to provide adequate service and coverage to all areas.

J. Offences Data

58. To maximize benefit, there is a need also for an efficient traffic offences regime. This requires all operational traffic police to complete a form at the end of each shift, including officer name, shift details, type of offences, and causes. The form should be designed for easy reading by computer scanners while the police can simply mark the appropriate fields on a two pages sheet. This will provide supervisors and managers with accurate information on the effectiveness of various police activities. This also will best position the various police units at all levels in responding to calls for providing a better service to the community. The information will be used for enforcement planning and budget issues. All station supervisors and managers will have access to information collected about their units through the computer terminals.

59. The benefit of this practice includes:

- Full understanding of the general road user behaviors such as speeding, and seat belt use.
- Assessment of traffic related matters, such as red light violations, and intersection locations.
- Establishment of a link between causes of traffic offences and road accidents, to optimize the use of resources.
- Formulation of an effective and feasible police enforcement strategy.
- Development of efficient training program to increase awareness and competence of traffic police.
- Adoption of efficient mechanism between the various actors (legislators, police, and prosecuting bodies) for the consequences that follow detection of offenders.
- Ongoing analysis to assess the incidence of various offences, nature of relevant accidents, and to establish a strong basis for efficient countermeasures and action plans.
• Monitoring system to assess effectiveness of police operations against strategic targets.
• Development of comprehensive NIRSIS.

K. Traffic Data

60. Traffic data is normally required to develop efficient traffic management scheme, promote sustainable development and achieve more reliable and smooth travel along the road networks. The required traffic data of the scheme should aim to promote:

• Better traffic flow and congestion alleviation.
• Efficient and safe road infrastructure design.
• Better signing and delineation system.
• Improved facilities for road users and Non Motorized Transport.
• Less travel cost.
• Better understanding and predictability of road traffic.
• Flow of people and goods rather than vehicles.
• Continuous monitoring of traffic operation and traffic management scheme effectiveness.
• Pro-active incident management to immediately detect incident, minimize delay of traffic, and strengthen coordination with emergency agencies.
• Public transport services for bus priority, and efficient taxi and high occupancy vehicle movements.
• Freight vehicle services for management of freight vehicle operations, selection of better routes, schedules, and monitoring of facilities and overloaded cases.
• Integrated operation system to create better monitoring capabilities across all modes of transport.
• Business efficiency to assess and allocate budget and staff requirements.
• Environmental and climate change mitigation through better traffic management which contributes to CO2 reduction.

L. Ambulance, Hospital and Fire Data

61. Other relevant data such as hospitals and ambulance services, fire authority and others can be summarized in various formats through emails or website downloading. Easy to use forms should be designed for this purpose and a protocol of data exchange should be established.

M. Software and Hardware Requirements

62. To operate NIRSIS there is a need for the following facilities:

• Windows environment.
• Storage, e.g. in Access or SQL Server.
• Customised data validation, range and consistency checks.
• Flexible and powerful data security.
• Tailored data imports and exports.
• Cut and paste analysis results into word and spreadsheets.

11 Jraw K. Integration of Area Wide Road Networks: A New Tool for Planning and Management. Visiting Professorship Program, Dalian University of Technology, China. 2007.
- Interrogate database using complex queries.
- Cross tabulations analysis of accidents, vehicles, people, roads and casualty.
- Graphical facilities.
- Diagram analysis.
- Trend analysis.
- Reports.
- Accidents displayed on map.
- Density analysis – e.g. identify areas with high accident count.
- Cluster analysis – search for cluster subsets.
- Site analysis – e.g. monitor conditions at different sites & make comparisons.
- Monitoring analysis.

Output 2. Establishment of a National Black Spot System (NBSS)

63. An accident blackspot is a term used in road safety management to denote a place where road accidents have historically been concentrated. It may have occurred for a variety of reasons, such as a sharp drop or corner in a straight road, so oncoming traffic is concealed, a hidden junction on a fast road, poor or concealed warning signs at cross-roads, etc.

64. During the last decade, there was a concentration on the treatment of accident black spots in the developed countries (e.g. by signage, speed restrictions, improving sightlines, straightening bends, speed cameras and infrastructure improvement). Black spot was seen as a low engineering treatment process with high economic and social benefit. 12

65. The modern black spot system in the developed countries usually use electronic GIS maps and powerful onscreen tools for identifying sites and areas and carrying out online analysis. The factors considered for evaluating accident black spot locations on road include:

- Road width, design, and number of lanes.
- Approximate number of vehicles per day.
- Type of road, maintenance issues, and drainage facilities.
- Pavement and roadside conditions.
- Frequent vehicle type.
- Presence of shoulders, edge obstructions, and median barriers.

66. In Kuwait there is a need for an efficient black spot system, guidelines, qualified staff and ongoing policy, and this will be developed following operation of the NIRSIS.

Regarding responsibility, the GDT will be in charge of the system and identification of the black spots, while the Ministry of Public Works or the future GRTA will be responsible for the treatments (Annex 2).

67. Guidelines will be developed to include (i) procedures to define and treat black spot locations based on consideration of the overall road network issues than just the traditional individual link; and (ii) technical specifications based on (a) various road class standards, (b)

12 According to the WHO and ADB publications, road safety improvements will save far more money than they cost. Low cost engineering improvements at dangerous road accident black spots can give economic rates of return in excess of 100-200%.

24
Interrogate database using complex queries.
Cross tabulations analysis of accidents, vehicles, people, roads and casualty.
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67. Guidelines will be developed to include (i) procedures to define and treat black spot locations based on consideration of the overall road network issues than just the traditional individual link, and (ii) technical specifications based on (a) various road class standards, (b)
means of transport, (c) integration with surrounding infrastructure and other urban elements, and (d) community-related factors such as community participation, location of roads, and services. The black spot regime and guidelines are anticipated to contribute significantly to creating of community-oriented road networks and to intensify socioeconomic benefits.

Output 3. Capacity building and training of the national cadres of the GDTA and other agencies, and provide support for the establishment of National Traffic Training Centre of Excellence (NTTCE) in partnership with well-regarded international bodies

68. The care and efforts expanded in defining the data elements to be collected and in developing NIRIS, together with the establishment of a BSS, would be futile if similar concern is not shown for the training of individuals who will be responsible for the data systems, accident investigation, and NTTS implementation.

Maintaining of a reliable data at reasonable cost is possible when the required data are collected and evaluated by qualified people and accident investigators. It is also most important for the people who are in charge of these tasks to be aware that the information they collected and produced will be the basis on which many future traffic and transport sector policy decisions will be made at national and local levels.

69. To insure that individuals involved directly in the collection and analysis of data follow proper and uniform procedures, efficient instruction guidelines will also be developed.

The first stage of the Project will involve training of cadres for running of the NIRIS and NBSS, and cadres for understanding the fundamentals of the accident investigation and modern enforcement. This will be then expanded for training of more people and establishment of the NTTSE subject to the availability of fund.

VI. RESULT AND RESOURCES FRAMEWORK AND ANNUAL WORK PLAN

70. The following tables shows goals, outputs, periods, targets, activities, results, assumptions, risk, responsible party, budget and other details of each component of the Project. Some details are also included in Annex 3 to Annex 5.
### Expected Outputs

**Output 1:**
- **National Integrated Road Safety Information System**
  - **Year:** 2009-2012
  - **Responsible Party:** General Directorate of Traffic (GDT), and coordination with the Ministry of Interior (MOI), Ministry of Public Works, Kuwait Municipality, and Ministry of Communications.

**2009**

<table>
<thead>
<tr>
<th>Expected Outputs</th>
<th>Planned Activities and Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output 1</strong></td>
<td>October – December 2009 (see also Annex 4 to Annex 5)</td>
</tr>
</tbody>
</table>

- Development of a National Integrated Road Safety Information System (NIRSIS), with Geographical Information System (GIS) function, that will permit the true scale, nature and characteristics of traffic problems to be properly defined and remedial measures devised by the relevant Government agencies.

**Impact**

Efficiency and safety of the road networks and transport operations improved, and traffic enforcement strengthened.

**Baseline**

- Need for a National Traffic and Transport Strategy (NTTS).
- Need for Institutional reform, including GDT and establishment of the General Road and Transport Authority (GRTA).
- National cadre’s shortage.
- Inadequate training regime.
- Inadequate information system.

**Targets**

- Hands on the system, and national cadres trained, by March 2012.

- Assignment of the national Project Manager (PM) and national Project Coordinator (PC).
- Hold LPAC meeting to review and finalize project document in November 2009.
- Develop Action plan for the NIRSIS in December 2009.
  - PM developed the action plan on time.
  - Staff and consultants office and furniture provided in November and December 2009 by GDT.
  - GDT provided all requirements prior to the project commencement.
- Stakeholders’ consultation completed.
  - PM conducted consultations.
  - GDT facilitated meetings with the relevant parties.
- Consultation and cooperation with the General Directorate of Information System commenced (GDIS), Kuwait Municipality (KM) and other bodies commenced.
  - PM and PC conducted meetings with the GDIS staff regarding development of the new accident diagram project and utilization of the current mainframe facilities.
  - PM and PC conducted meetings with the KM regarding the new GIS project.
- Project document finalized.
  - PM prepared all requirements, and approval of the UNDP and GDTA obtained in November 2009.
- Number of staff and consultants approved by the UNDP, GDT and SCPD for the period of the Project (2009-2013).
  - GDT nominated efficient local staff to be trained in November – December 2009.
  - PM prepared list of expertise needed and terms of reference for selection by the Steering Committee.
  - Consultants recruited according to UNDP rules and regulations.
- Relevant international conference or activity attended.
  - PT members attended important conference or events which will strengthen the project outputs and NTTS implementation.
- Monitoring report provided.
  - PM provided reports as specified in the Monitoring.
<table>
<thead>
<tr>
<th>Expected Outputs</th>
<th>Planned Activities and Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 30% decrease in road fatalities by 2015.</td>
<td></td>
</tr>
<tr>
<td>• Meeting objectives of the relevant performance indicators of the NTTS.</td>
<td>and Evaluation Section.</td>
</tr>
<tr>
<td><strong>Related CP outcome</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Risks**

- Delay of approval of the Project and allocation of budget.
- Delay of signing the consultant contracts for the period of the Project.
- Delay of payment of the consultant monthly salaries, within one week of the consultant’s report submission, and receipt of the GDT’s official letter, by the SCPD and UNDP.
- Inappropriate format of the foreign consultant contracts.
- Inability of providing project requirements by the GDT and Government.
- Lack of providing mainframe facilities by the GDIS.
- Restricted access to information and Government personal.
- Inability to adopt implementation of the Project findings by the Government.
## Expected Outputs

<table>
<thead>
<tr>
<th>Output 1</th>
<th>2010 (see also Annex 3 to Annex 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Develop rules and specifications (January – March 2010).</td>
</tr>
<tr>
<td></td>
<td>Assignment of GIS and IT consultants (January– March 2010).</td>
</tr>
<tr>
<td></td>
<td>Project staff training (as of January 2010).</td>
</tr>
<tr>
<td></td>
<td>Assignment of the GIS, IT and other consultants (as of March 2010).</td>
</tr>
<tr>
<td></td>
<td>System development and installation (from January 2010 – December 2010).</td>
</tr>
<tr>
<td></td>
<td>Data collection forms updated in 2010.</td>
</tr>
<tr>
<td></td>
<td>Local cadres training programs created and training conducted as of January 2010.</td>
</tr>
<tr>
<td></td>
<td>Uniform interagency policy and protocol created for data collection and requirements by December 2010.</td>
</tr>
<tr>
<td></td>
<td>Development of the NIRSIS commenced in January 2010.</td>
</tr>
<tr>
<td></td>
<td>Mapping and graphic facilities provided in 2010.</td>
</tr>
<tr>
<td></td>
<td>- Regular and timely analysis and monitoring reports submitted by the PM.</td>
</tr>
<tr>
<td></td>
<td>- PM, consultants, and PT members met targets.</td>
</tr>
</tbody>
</table>

### 2011

- System testing and modifications and operations (May 2011 – December 2011).
- Relevant documentations of the NIRSIS assessed by stakeholders and approved by December 2011.
  - Regular and timely analysis and monitoring reports submitted by the PM.
  - PM, consultants, and PT members met targets.

### 2012

- System modifications in line with the KM system (January 2012– February 2012).
- Development of NIRSIS that provide road, traffic, transport, people, vehicle, accidents, fatalities, injuries, emergency and area-specific data, and full delivery in March 2012.
- Monitoring model developed to evaluate data reliability, road network efficiency, road safety issues, and effectiveness of plans against defined targets in March 2012.
  - Regular and timely monitoring and evaluation reports submitted by the PM.
  - PM, consultants, and PT members met targets.
<table>
<thead>
<tr>
<th>Expected Outputs</th>
<th>Planned Activities and Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicators</strong></td>
<td></td>
</tr>
<tr>
<td>• Monthly progress reports and performance of the consultants were subject to the submission of an official letter from the GDT to the SCPD.</td>
<td>• Meetings for the stakeholders held in 2010/2012, highlighting the importance of the system, data sharing and information uses.</td>
</tr>
<tr>
<td>• NIRSIS delivered on time and adopted.</td>
<td>• GDT and PM coordinated the events.</td>
</tr>
<tr>
<td>• Training of national cadres provided.</td>
<td>• Participation at 2 international conferences or events.</td>
</tr>
<tr>
<td>• All stakeholders' comments assessed and included by December 2011.</td>
<td>• Selected project team members participated at the conferences or events.</td>
</tr>
<tr>
<td>• An action plan for national implementation and a protocol for data collection and dissemination and guidelines completed in March 2012.</td>
<td>• All stakeholders' comments assessed and included by December 2011.</td>
</tr>
<tr>
<td>• Hands on the NIRSIS to the GDT in March 2012.</td>
<td>• An action plan for national implementation and a protocol for data collection and dissemination and guidelines completed in March 2012.</td>
</tr>
<tr>
<td>• Operational support and monitoring provided during 2012-2013.</td>
<td>• Hands on the NIRSIS to the GDT in March 2012.</td>
</tr>
<tr>
<td>• Cadres trained by December 2011 and ongoing training program provided.</td>
<td>• Operational support and monitoring provided during 2012-2013.</td>
</tr>
<tr>
<td>• PM officially signed project completion documents with the GDT in March 2012.</td>
<td>• Cadres trained by December 2011 and ongoing training program provided.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Project approval</td>
<td>• Project approved by the UNDP in November 2009.</td>
</tr>
<tr>
<td>• Budget</td>
<td>• Budget allocated under the country program in November 2009.</td>
</tr>
<tr>
<td>• Consultants</td>
<td>• Recruitment of a qualified PM in 2009.</td>
</tr>
<tr>
<td>• Software and equipment</td>
<td>• Local cadres assigned, office provided, and other requirements of the Project fulfilled by the GDT in November and December 2009, prior to the Project commencement.</td>
</tr>
<tr>
<td>• Good-quality project management</td>
<td>• Consulting services recruitment commenced in March 2010.</td>
</tr>
<tr>
<td>• Link with national and international institutes, universities, UN agencies, and other relevant bodies commenced in January 2010.</td>
<td>• Procurement of software and equipments commenced in January 2010.</td>
</tr>
<tr>
<td>• Identification of useful library resources, periodicals, journals, and well-regarded knowledge institutes, to exchange information and expand knowledge, by the PM.</td>
<td>• Link with national and international institutes, universities, UN agencies, and other relevant bodies commenced in January 2010, by the PM.</td>
</tr>
<tr>
<td>• Development of human resources development and training plan, to continuously enhance skills and capacity, by the PM before February 2010.</td>
<td>• Development of human resources development and training plan, to continuously enhance skills and capacity, by the PM before February 2010.</td>
</tr>
</tbody>
</table>
Output 2:

National Black Spot System
2011-2013
GDTA & coordination with MOI, Ministerty of Public Works, Kuwait
Kuwait Municipality, and Ministry of Communications.

<table>
<thead>
<tr>
<th>Expected Outputs</th>
<th>Planned Activities and Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output 2</strong></td>
<td><strong>2011 - 2013 (see also Annex 3 to Annex 5)</strong></td>
</tr>
</tbody>
</table>
| Development of a national Black Spot System (NBSS) to introduce more efficient “safety-conscious” road design and traffic management procedures - on the basis that: “Prevention is better than cure”. | • Recruit road safety and black spot consultants in February 2011.  
• Methodology prepared to an acceptable standard and presented in a report.  
• Develop protocol for identification of black spot locations according their priority.  
• Apply low cost engineering method for treatment.  
• Assist agencies to ensure adoption of procedures for a more safety-conscious road design and traffic management scheme development.  
• Develop uniform interagency guidelines for new and current roads.  
• Develop procedures to compare before and after the project, and assess system effectiveness.  
• Identify all current black spots as of December 2010, and recruit survey team.  
• Commence black spot priority treatments in November 2011, with the help of the Ministry of Public Works.  
• Commence evaluation in April 2013.  
• Provide final report by October 2013.  
• Enter all data on the NIRSIS simultaneously. |
| **Impact**        | **Risks** |
| Reduction in the incidence, severity and cost to the community of accidents. | • Insufficient budget to fund Output 2.  
• Inability of providing project requirements by the GDT and Government.  
• Inability of providing mainframe facilities by the GDIS.  
• Delay of signing the consultant contracts.  
• Restricted access to information and Government personal.  
• Inability of the Government to adopt the project findings. |
| **Baseline**      | **N. B :** |
| • Need to develop and adopt national traffic and transport strategy by the Government.  
• Need for institutional reform of relevant organizations, including the GDT and establishment of the GRTA.  
• National cadres Shortage.  
• Absence of a black spot system.  
• Inadequate road design and traffic management procedures. | Training of some of the relevant police officers and engineers will be commenced, as part of Output 1 of the Project in 2010.  
Full plan of this Output will be developed in 2010, subject to the Project progress and availability of fund. |
| **Targets**       | |
### Expected Outputs

- December 2010 and treatment started in November 2011.
- The NIRSIS fully developed in 2011.
- Guidelines and procedures fully established in 2013.
- National cadres trained during 2010-2012.
- 30% decrease in road fatalities by 2015.
- Meeting objectives of other performance indicators of the NTTS.

### Related CP outcome

Enhancing implementation of the NTTS 2009-2019.

#### Indicators

- Methods, procedures and institutional capability to identify, analyze and treat black spot locations established.
- Building the NBSS supported.
- Training of national cadres provided.
- Awareness plan to promote road accident prevention and congestion alleviation established in 2010.
- Safety conscious road planning and design, and traffic operation schemes promoted.
- Road maintenance and construction zone regimes enhanced.
- Final guidelines for new and current roads developed and approved in 2013.
- Sustainable training program commenced in 2011.
- Treatment of the black spots commenced in late 2010.
- Treatment of all black spots prioritized and completed in 2013.

#### Inputs

- Project approval.
- Budget.
- Consultants.
- Procedures and Guidelines.
- Good-quality project management.
- Project approved by the UNDP in November 2009.
- Budget allocated by the UNDP.
- PM completed terms of reference for the specialized consultants in 2010, and timely recruitment of the specialized consultants.
- Consulting services recruitment commenced on time.
- GDT provided all requirements.
- Field study commenced as planned to identify black spots, in consultation with the relevant agencies.
- Preparation of human resources development and training plan, to continuously enhance skills and capacity.
Output 3: Capacity building and training of the national cadres and provide support for the establishment of a National Traffic Training Centre of Excellence (NTTC) in partnership with well-regarded international bodies.

Year: 2011-2013

Responsible Party: GDT & coordination with Ministry of Public Works, Kuwait Municipality, and Ministry of Communications.

<table>
<thead>
<tr>
<th>Expected Outputs</th>
<th>Planned Activities and Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output 3</td>
<td>2011 (see also Annex 3 to Annex 5)</td>
</tr>
<tr>
<td></td>
<td>To train national cadres and establish national center which provides decision-makers and practitioners with efficient capability to promote leadership in various traffic and transport areas.</td>
</tr>
<tr>
<td></td>
<td>Impact</td>
</tr>
<tr>
<td></td>
<td>Reduction of road accidents and casualties, congestion alleviation, environmental protection, efficient enforcement, collection of reliable information, and efficient implementation of the NTTS 2009-2019.</td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td></td>
<td>• Need to develop and adopt national traffic and transport strategy.</td>
</tr>
<tr>
<td></td>
<td>• Need for institutional reform of the GDT and establishment of the GRTA.</td>
</tr>
<tr>
<td></td>
<td>• National cadres shortage.</td>
</tr>
<tr>
<td></td>
<td>• Inadequate training regime.</td>
</tr>
<tr>
<td></td>
<td>• Promotion of more effective traffic police enforcement through increased use of scientific knowledge, modern equipment, and tactics.</td>
</tr>
<tr>
<td></td>
<td>• Promotion of modern traffic engineering practice.</td>
</tr>
<tr>
<td></td>
<td>• Enhance exchange of interagency information and resources.</td>
</tr>
<tr>
<td></td>
<td>• Promote intelligent management and community policing practice.</td>
</tr>
<tr>
<td></td>
<td>• Efficient implementation of the legislations.</td>
</tr>
<tr>
<td></td>
<td>• Development of national guidelines and sustainable training programs.</td>
</tr>
<tr>
<td></td>
<td>• Facilitate efficient implementation of the NTTS annual institutional plans.</td>
</tr>
</tbody>
</table>

N.B:
Training of some of the relevant police officers and engineers will be commenced, as part of Component 1 of the Project, in 2010.

Full plan of this component will be developed in 2010, subject to the Project progress and availability of fund.

Risks
• Insufficient budget to fund Output 3.
• Lack of providing project requirements by the government.
• Restricted availability and access to Government personnel.
<table>
<thead>
<tr>
<th>Expected Outputs</th>
<th>Planned Activities and Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Targets</strong></td>
<td></td>
</tr>
<tr>
<td>Center established and national cadres trained during 2010-2013.</td>
<td></td>
</tr>
<tr>
<td><strong>Related CP outcome</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Indicators</strong></td>
<td></td>
</tr>
<tr>
<td>• Skills of traffic police and engineers strengthened to engender their leadership role in modern enforcement and transport issues, and fulfill requirement of the Government strategy and community expectations.</td>
<td>• Establishment of a center of excellence at national and regional level, with strong link with world leaders in policing, traffic, and transport themes, in 2013.</td>
</tr>
<tr>
<td>• Establishment of the center supported by the Government.</td>
<td>• Fill current knowledge gap.</td>
</tr>
<tr>
<td>• Training national cadres provided.</td>
<td>• Creation of on-going skill development program.</td>
</tr>
<tr>
<td><strong>Inputs</strong></td>
<td></td>
</tr>
<tr>
<td>• Project approval.</td>
<td>• Building efficient national work force.</td>
</tr>
<tr>
<td>• Budget.</td>
<td>• Creation of strong knowledge and research base, internet link and efficient counterpart coordination.</td>
</tr>
<tr>
<td>• Consultants.</td>
<td>• Overcome staff shortage problem.</td>
</tr>
<tr>
<td>• Procedures and Guidelines.</td>
<td>• Aim at ISO certificate to promote credibility and best-practice of the GDT and center.</td>
</tr>
<tr>
<td>• Good-quality project management.</td>
<td>• Promote technical skills of staff and managers.</td>
</tr>
<tr>
<td></td>
<td>• Train assigned Project staff and the workforce on use of modern information technologies, computer systems, and website development issues.</td>
</tr>
<tr>
<td></td>
<td>• Use of modern equipment.</td>
</tr>
<tr>
<td></td>
<td>• Appreciation of the importance of data collection and analysis.</td>
</tr>
<tr>
<td></td>
<td>• Promote intelligent management practice.</td>
</tr>
<tr>
<td></td>
<td>• Ability to contribute in implementing national strategies and institutional work plan efficiently.</td>
</tr>
</tbody>
</table>
VII. Management Arrangements

A. Project Activities

71. The Project will involve various activities such as:

- Action plans to facilitate national implementation.
- Project requirements, including international consultants, experts, local staff, and office equipment and furniture.
- Consultation with stakeholders.
- Tripartite meetings involving the GDT, UNDP, SCPD, and consultants, to evaluate implementation needs.
- Workshops for senior government officials, UNDP staff, stakeholders, and relevant bodies, to discuss issues and outcome, disseminate knowledge gained, and provide guidance on priority issues.
- Selection of appropriate software and database specifications, and development of procedures and guidelines.
- Capacity building and human resources development to enhance skills.
- Link with relevant institutions, NGO, research centers, universities, government agencies, libraries, UN reports, and think tanks at national and international levels.
- Project implementation.
- Project monitoring.

B. Project Management

72. The GDT will be responsible for implementation and supervision of the Project, through a number of mechanisms and partners. The UNDP will provide financial and technical support. The SCPD will provide support regarding engagement of the consultants and administration and technical matters of the project. The Project will commence in December 2009 and will initially last till 2013. The Project will be monitored by a steering committee.

C. Steering Committee of the Project

73. The steering committee (SC) will include members of the relevant organizations of the Project as per Figure 6. The SC will be responsible for the whole implementation, assessment of the obstacles and budget requirements, and provision of measures to enhance effectiveness. The Assistant Under Secretary for Traffic Affairs is responsible for the field monitoring of the Project, providing office requirements, and submission of the monthly GDT’s letter to the SCPD together with the PM progress report.

D. Project Team

74. The duties of the PT include:

1. National Project Manager: The national Project Manager (PM) was recruited in July 2009 for implementation of the NTTS 2009-2019 for Kuwait and Management of this Project. He is responsible for supervision of activities, planning, management, budget

Footnote: Following the successful development of the NTTS 2009-2019 and its adoption by the Ministers Council, the Strategy Preparation Consultant (Prof Dr Kim Jrawi) was assigned on 13 July 2009 to monitor implementation of the NTTS and as a Manager of this Project.
availability, progress reports and monitoring of the Project. He is also responsible for liaison and meetings with relevant agencies to ensure stakeholders are familiar with intended process and outputs of the Project. The PM is responsible for identification of the required consultants, local staff, technical specifications, and overall implementation matters for the period of 2009-2013.

2. National Project Coordinator (PC): The PC was appointed by the GDT to represent the national executing agency and coordinate with relevant parties. He will oversee in collaboration with the PM, implementation of various activities of the Project, obtain appropriate authorization, and provide input, to ensure practicality and feasibility of proposed action plan and schedules. 14

3. UNDP Programme Analyst: The Analyst will be responsible for overseeing implementation of the project in accordance with UNDP rules and regulations. The Analyst also will provide advice to the PT and ensure that the implementation is carried out in a smooth and professional fashion, approves disbursement of project fund, ensure deadlines are met and activities are carried out as described in the Project documents, and provide input into budget allocation. The Officer will provide feedback on the progress reports to strengthen the monitoring and evaluation process of the Project.

Figure 6: Project Organization Structure

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14 Colonel Nassir Al Anzi was assigned as a National Coordinator for the NTTS 2009-2019 and this Project.
E. NIRSIS Unit

75. The GDT will establish a Project Unit to run the NIRSIS. The Unit will have a series of important tasks and responsibilities:

- Collect, store, analyse and update all relevant data.
- Provide information of interest for the GDT and other parties in various traffic, enforcement, economic, education, and safety areas.
- Assist the GDT and relevant bodies in the development of efficient studies, research and policies.
- Strengthen interagency data coordination and improve human resources development.
- Facilitate planning and operations of future projects.
- Enable staff to update the final project outcome regularly.
- Provide expert advice and conduct monitoring.
- Facilitate implementation of the NTTS.

76. The Unit requires establishment of a multidisciplinary team of trained:

1. Supervisor - to assist the PM, and ensure that data are collected and updated on time, and the Unit is fully operational on daily basis.
2. Police officer or traffic engineer - to review data from traffic engineering and enforcement point of view.
3. Data officers - for coding, entry, maintenance, and monitoring of data.
4. Assistant - for typing and clerical matters.
5. Software, programmer and statistical experts.
6. GIS expert.
7. Road safety and black spot expert.
8. Training experts.
9. Website expert.

77. Assignment of the local staff is required prior to the Project commencement, while recruitment of the foreign consultants will be subject to the Project progress and need. The UNDP-GDT Project will provide consultations such as the GIS expert and software programmer.

F. NBSS

78. Following progress of the NIRSIS and training of some staff in 2010, the NBSS will commence. This is necessary due to the difficulty of implementation of this output without availability of the electronic NIRSIS and GIS function.

G. NTTCE

79. Full implementation of this Output will commence following training of some staff as of 2010 and progress of other Outputs of the projects, due to the need for a reliable data system, development of some training materials and other requirements.

H. GDT's Resources Mobilization

80. The GDT will provide the following facilities:
1. Designate office space for the Project, including the PM, consultants and NIRGIS cadres.
2. Provide equipment, furniture, computer stations, internet, stationary, and other necessary office requirements to render efficient functions.
3. Assign local team of the NIRGIS, for data collection, entry, and analysis.
4. Assign Project Assistant / Secretary for clerical work.
5. Nominate the focal points of the relevant MOI Directorates for GIS, statistical packages and internet facilities.

81. A letter was submitted by the PM to the Assistant Under Secretary for Traffic Affairs in November 2009 regarding details of the above requirements, and the Deputy Minister of the MOI issued instruction to the relevant departments for urgent action to provide the requirements.

VIII. Cost and Financing Plan

82. The available Project budget is $750,000 which will be provided by the UNDP. The budget will cover remuneration of the international and national consultants, statistical packages, GIS and specialized devices and equipment which are “non-Government standard” and required to implement the project and transfer new technology. Cost of the workshops, reports, translation, guidelines, training materials, and field survey will also be covered. The GDT will provide $300,000 (in-kind) for local staff, office requirements, computers, standard software, e.g. word and excel, printers, photocopy machines, fax, telephone, server, and other services required to implement the project. The detailed cost estimates and financing plan are in Annex 4.

83. The UNDP, GDT and SCPD will review the budget after one year of the commencement of the Project, to assess status of the budget, progress of the project, and address obstacles and requirements, to ensure efficient implementation of the Project and optimize its socioeconomic benefits which will serve the public and private sectors, community, environment, sustainable development, and fulfill requirements of the national vision of making Kuwait a “hub for regional and international investments” by 2030.

IX. Monitoring and Evaluation

84. Evaluation will focus on outputs and their contribution towards the intended outcome. This will involve consultation with all stakeholders and will feed into the overall performance monitoring mechanism of the project.

85. The right mix of monitoring tools will be used including practical performance indicators, reporting, information sharing, and regular contacts. A computer system will be used to keep track of the progress of the Project, and online information will be made available for interested parties to follow progress of the Project, provide timely comments, and then to access reliable information after Project completion.

1. Reporting

86. The Project will be monitored through the following process and reports which will be prepared by the PM.

- Regular evaluation of progress towards the completion of key results.
• Identify obstacles and problems and provide the required measurers.
• Regular updating of the lessons-learned to ensure ongoing learning and adaptation and to facilitate preparation of the completion report and lessons-learned comments at the end of the project.
• Regular updating of the Project implementation plan to track key management actions and events.
• Regular budget review.
• Quarterly report.
• Online information, and website service.
• Annual Review Report. The report will be prepared by the PM, with help of other consultants, and shared with the PT. The report will consist updated information as well as a summary of results achieved against pre-defined annual targets.
• Annual Project Review. Based on the above report, an annual project review will be conducted during the fourth quarter of the year or soon after, to assess the performance of the Project and appraise the work plan for the following year. In the last year, this review will be a final assessment. The review is driven by the PT and involves other stakeholders as required. It will focus on the extent to which progress is being made towards outputs, and that these remain aligned to appropriate outcomes.
• Completion report at the end of the project.

2. Performance Indicators

87. To assess effectiveness, several performance indicators at national and project levels have been identified, under the NTTS, taking into the account the following advantages:

1. Establish a uniform and clear evaluation system.
2. Assess risk and evaluate results.
3. Assess effectiveness of the project objectives.
4. Facilitate data and program updating and adoption of countermeasures.
5. Provide solid information to win the community, private sector, and decision maker's support.
6. Comparison with other countries.

88. The key performance indicators of the Project include:

• 30% reduction of road accident fatalities by 2015 (Figure 3).
• Implementation of the institutional reform during 2009-2010.
• Sustainable training program and number of cadres trained annually.
• Maintaining of current and reliable data, and production of the regular reports.
• Uniform technical specifications and guidelines.
• Reduction of fatality rate per 100,000 population to below 16 by 2015.
• Reduction of fatality rate per 10,000 registered vehicles to below 3.8 by 2015.
• Number of identified and treated black spots annually.
• Reduction of the serious road accident injuries number to below 8600 per annum.
X. LEGAL CONTEXT

89. This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sccommittees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.
SPECIFICATIONS OF THE NIRSIS

Nationwide data collection, storage, retrieval, analysis and dissemination will be dealt with by using the NIRSIS. Institutional development, standards, and protocol for data dissemination and monitoring of effectiveness will be included. The system implementation stages will include activities to extend the quality and consistency of data collected throughout the country and to increase the amount of analysis and research using the data. Initially, the system will be set up centrally, but later it may become necessary to extend the system so that it is available on microcomputers in all Governorates and selected agencies.

The system will be developed in a comprehensive and integrated manner and will cover all standard data in line with the international specifications, including traffic, demographic and geographic data.

The NIRSIS will enable the production of a number of useful outputs, including regular reports varying from simple 24 hour reports often required by the police to comprehensive annual reports available as a public document. It will also provide online access to various organisations and local road safety groups. The components of the NIRSIS will include the following facilities.

A. Data Groups: This function covers various data collection requirements which should be structured for easy data entry and grouping as per the following table.

<table>
<thead>
<tr>
<th>General Details / Attendant</th>
<th>Road / Traffic:</th>
<th>Environmental Features:</th>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circumstances:</td>
<td>Road Number</td>
<td>Light Conditions</td>
<td>Map Reference</td>
</tr>
<tr>
<td>Police reference</td>
<td>Carriageway Type</td>
<td>Weather Conditions</td>
<td>X-coordinate</td>
</tr>
<tr>
<td>Year</td>
<td>No of Lanes</td>
<td>Hit and Run</td>
<td>Y-coordinate</td>
</tr>
<tr>
<td>Month</td>
<td>Speed Limit</td>
<td>Land Use</td>
<td>Nodes</td>
</tr>
<tr>
<td>Day</td>
<td>Junction Type</td>
<td></td>
<td>Kilometre Post</td>
</tr>
<tr>
<td>Date</td>
<td>Road Width</td>
<td></td>
<td>Location Description</td>
</tr>
<tr>
<td>Time</td>
<td>Road Shoulder</td>
<td></td>
<td>Accident Description</td>
</tr>
<tr>
<td>City</td>
<td>Roadside Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governorate</td>
<td>Road Surface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Police Station Code</td>
<td>Geometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accident Type</td>
<td>Traffic Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributor Factors</td>
<td>Signs and Marks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description Summary</td>
<td>Summary</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casualty details:</th>
<th>People Involved:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casualty Numbers</td>
<td>Number and Type</td>
</tr>
<tr>
<td>Type of Road User</td>
<td>Age</td>
</tr>
<tr>
<td>Age</td>
<td>Sex</td>
</tr>
<tr>
<td>Severity of Injury</td>
<td>License No</td>
</tr>
<tr>
<td>Fatalities</td>
<td>Seat Belt / Helmet</td>
</tr>
<tr>
<td>Pedestrian Issues</td>
<td>Alcohol / Drugs</td>
</tr>
<tr>
<td>Passenger Issues</td>
<td></td>
</tr>
</tbody>
</table>

A. Vehicle Details:  
- Vehicle Numbers / Types
- Vehicle Manoeuvre
- Vehicle Damage
- Length of Skid Marks
B. Entry Form: The format of the data entry screen of the NIRSIS should be clear and easy to use. The following example shows a data entry format which is used in the UK.

![Data Entry Format Example]

C. Accident Diagrams: The accident diagram is another tool which is required by traffic police, engineers, and interested bodies, and this will be incorporated in the NIRSIS. The objective of this function is to show in a simple way all types of accidents and related road user movements over a period of time, just before the accident. The following example explores sketch of accident scene (Source: TRL).

![Accident Diagram Example]

As the amount of data is quite large and often collected under difficult circumstances, it is essential that the quality of the data collected is effectively controlled. This means that missing data and errors are quickly detected and then corrected.

D. Software Packages: Accident databases are complex in structure but powerful and easy to use software is available. The software packages chosen should be simple to use, with easy

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15 Transport Research Laboratory (TRL). UK. 2007
data entry, full editing and back-up facilities, and logical internal checking routines to ensure that the data is as accurate as possible when entered. Validation of data should be done as close to the data entry as possible, to enable rapid follow up and correction of errors in the data records.

E. **Stick Diagrams or Accident Factor Grid**: This function provides engineers and police with a simple visual tool for searching for accident patterns at selected sites and areas. Key features of accident (e.g. type of accident, hour of day, vehicle types) can be selected and these are shown using symbols where each column represents one accident. The following sample is used by the TRL in the UK.

![Sample Stick Diagram](image)

F. **Data Validation and Checks**: This function is required to enable electronic file management and provides standard logical checks within fields and between fields which are usually automatically applied on data entry.

G. **Database Searches**: The objective of this function is to enable the user to find quickly an individual record or group of records satisfying user-specified conditions. Provide a fast means of identifying problems by people or location characteristics and enable the production of subsets of files for special analysis, such as a road section or urban area.

H. **Tabulations**: This function provides cross tabulations of fields by crash frequencies, or casualties, or the vehicles involved. Tables can be set up as standard for regular and automatic output.

I. **Presentation Graphics**: This function is required to display figures and tabular results graphically in the form of bar charts or pie charts.

J. **Geographic Information System (GIS)**: This function will involve identification of locations. The following figure shows example of accident analysis using GIS (Source: TRL).
K. **Black Spot Location Identification and Investigation**: This function is required to provide the user with a list of the "worst" sites in any area of interest. Electronic maps and powerful onscreen tools for selecting sites and areas and carrying out on line analysis are required. The following figure illustrates some blackspot locations (Source: TRL).

L. **Performance Indicators**: This function is important for assessing risk and monitoring effectiveness.
SPECIFICATIONS OF THE NBSS

The objective of the National Back Spot System (NBSS) is to reduce the social and economic cost of road accidents by (i) identification and cost effective treatment of sites and areas with a record of road accident fatality and injuries; and (ii) funding cost effective safety oriented projects, using the National NIRSIS. The NBSS will cover the following issues.  

- Adoption of uniform definitions, procedures and selection criteria.  
- Identification of accident locations.  
- Analysis of high frequency accident locations.  
- Direction of travel.  
- Injury and fatality information.  
- Special conditions.  
- On-site description and observations, e.g. actual driving behaviors that were followed by drivers involved in accidents at the location.  
- Traffic flow issues, e.g. braking and traffic disturbance.  
- Day / night observations.  
- Road sign, signals and roadway features.  
- NIRSIS data entry functions.  
- Treatment countermeasures, e.g. they range from low cost improvement such as adding lane marking or adjusting timing of traffic signal interval or phase, to spot improvement and major reconstruction of the road way to overcome geometric or capacity deficiencies.  
- Estimation level of accident reduction.  
- Estimated accident cost reduction, and cost / benefit ratio.  
- Comprehensive guidelines and training program.  
- Implementation.  
- Publicity campaign to show the benefit and advance community awareness.  
- Evaluation and monitoring of the treated location – before and after.
TERMS OF REFERENCE FOR CONSULTANTS

A. Background

The State of Kuwait and the United Nations Development Programme (UNDP) have a rich history of partnership and cooperation that dates back to 1968. The latest manifestation of this partnership is the adaptation of a Country Programme Action Plan (CPAP) aimed at implementing the Country Programme Document (CPD) covering the period from 2009 to 2013. This CPAP addresses four important development priorities namely: Governance and Development Planning, Gender and Social development, Economic and Private Sector Development, and The Environment; and it includes 25 different programmes.

Since the CPAP has been signed on April 1st 2009; the first phase of its implementation begins with the preparation of Project Documents to be used as roadmaps for each individual programme.

Full terms of reference together with detailed background information will be developed prior to the engagement of each international or national consultant.

B. Objectives

The Government of Kuwait has requested continued support in implementing the National and Comprehensive Traffic and Transport Strategy 2009-2019 for Kuwait, to create a sustainable transport system with measure for a high degree of traffic safety.

UNDP will provide support for the implementation of the strategy by building a National Integrated Road Safety Information System; Accident Black Spot System; and providing training for the national cadres in the Ministry of Interior and other bodies, and support for the establishment of a National Traffic Training Centre of Excellence in partnership with international bodies.

C. Methodology

- Meetings with the UNDP Programme Team.
- Meetings with relevant partners and target beneficiaries especially governmental institutions and NGOs.
- Desk review of relevant documents: Country Program Document (CPD), Country Programme Action Plan (CPAP), National and Comprehensive Traffic and Transport Strategy 2009-2019 for Kuwait (NTTS), evaluation reports, survey/study reports; as well as regional and international studies related to these objectives.
- Field Activities: Accident locations, black spot identification, survey and training.
- System development: Computerised NIRIS, data collection and entry, and guidelines
- Customer Service: Analysis, reporting, and on-line service.

The UNDP Country Office and Project Manager will provide the consultants with the necessary briefings.
D. Expected Outputs

- Reports of meetings with relevant counterparts.
- System developments.
- Other requirements.

E. Duration of Assignment

The total duration of the consultancy is subject to the nature of the assignment. Assignment of the Project Manager, GIS, and information technology consultants will be for the whole designated periods of the Project. The period of other consultants will be decided during the first year of the implementation.

F. Consultants

The consultants' scope of work will include, but not necessarily be limited to the following:

I. Project Manager

1. The consultant will act as a Project Manager (PM) responsible for consolidating the overall Project findings, with the support of other international and domestic consultants and local staff. The consultant will have demonstrated skills to deal with an interdisciplinary team, and a wide range of experience in developing road safety, information technology, and black spot, training, and transport projects in a complex environment, with full understanding of the relevant institutional, socioeconomic, policy, technology, and modern transport sector issues.

2. The consultant will be responsible for the following:
   
   
   (ii) Implementation of the UNDP-GDT Project, to integrate engineering, enforcement, education, and emergency service issues. The project will support the NTTS implementation and demonstrate the benefit of road safety and information system improvements.
   
   (iii) Strengthening GDT and other agencies capacity, including staffing, resource and administration issues, monitoring, and interagency coordination.
   
   (iv) Developing an efficient plan to address the shortage of resources and skills, and ensure sustainable road safety and transport improvement, in accordance with the TTS recommendations, including:
   
   (a) a set of indicators characterizing the objectives, goals, inputs, outputs, impacts, and baseline and target values of the indicators.
   
   (b) provide technical advice guidance, and direction in matters pertaining to the project implementation, and submitting reports on the progress.
   
   (v) Reviewing relevant international best-practice, including the accident data system, road construction, traffic management, accident investigation.
procedures, enforcement, black spot, transport planning, heavy vehicle operation, traffic control system, and safer road use, and assess their effectiveness and constraints under Kuwait’s conditions.

(vi) Conducting workshops, implementing NBSS, training center, introducing knowledge materials, and tailoring a suitable accident investigation system, including an accident data system, and relevant policing activities, based on the international best-practice to (a) enhance data standards and definitions, and (b) promote accident investigation procedures, new technology use, in-depth research of causes, and assessment of strategy effectiveness against target.

Qualifications

- PhD degree from an accredited university, in the field of traffic or transport engineering and strategies or related field.

- At least 25 years experience in Programme and Project Planning, Design, Implementation, Monitoring Evaluation, Policy and management.

- Solid international employment experience, execution of interdisciplinary projects, and achievement of satisfactory operational outputs.

- Solid knowledge of similar projects, capacity building, human resources development, and information management.

- Good knowledge of and experience with UNDP practice areas.

- Substantive experience working with Government partners on the implementation of complex and socially sensitive programs.

- Good knowledge and experience of working with communities, and ability to conduct workshops and conferences.

- Strong writing, communications, interpersonal, and facilitation skills.

- Solid knowledge of English is required in addition to solid knowledge of Arabic.

- Previous experience working with UNDP, multilateral development banks, or international development agencies is an added advantage.

II. Information Technology Consultant

The consultants’ scope of work will include, but not necessarily be limited to, the following

(i) Review databases, planning and analysis resources, monitoring system, and guidelines, and develop a uniform computerized data protocol, including data collection, analysis, storage, validation, and graphic facilities, and user manuals. Data should include accidents, social issues, road and road transport, and characteristics of the area. Incorporate cross-checking, reporting, and information dissemination protocols.
(ii) Based on socioeconomic, engineering, and other data, develop NIRSIS, in collaboration with Project team, taking into account traffic, urbanization, roads, transport service, economic activity, and travel demand issues. The system should incorporate traffic analysis and management procedures, strategic planning process, and link with other systems. NIRSIS should be capable of producing range of scenarios and conditions. NIRSIS should be used to fulfill the requirements of the road network and transport strategy, and traffic management issues.

(iii) Prepare user manuals and guidelines, including design standards, showing road classification, vehicle characteristics, road conditions, traffic volume and composition, road safety, social issues, cost, and other related matters. Prepare computerized mapping facilities to assess road network routes, public transport services, accidents, and a profile of the study area.

(iv) Develop the NIRSIS using well-known and user-friendly software and statistical packages, e.g., SPSS, including menu-driven and graphical input and output.

(v) Prepare procedures to ensure that the data bank, schedules, maps, and standards can be regularly updated. Prepare training materials to facilitate use of all systems by the relevant staff. The NIRSIS should be flexible enough to be used anywhere.

Qualifications

- Degree from an accredited university in GIS, Computer Science, Statistics, or related field.
- 7 years of professional work experience, including experience such as GIS data, ArcGIS 9.x (including ArcInfo, Spatial Analyst, ArcSDE), Statistical Packages, Microsoft Office (including Word, Excel, Access, Outlook, PowerPoint and Access), and database development.
- Experience in data modeling, database development, software maintenance, data storage, and enterprise database architecture, and standards techniques and software specifications.
- Strong written and oral communication, problem solving, troubleshooting and organizational skills and a desire to research and learn to advance skills.
- Ability to take initiative and handle multiple tasks simultaneously while meeting deadlines, drawing conclusions and making recommendations.
- Knowledge of and experience with other software and hardware techniques or other programming languages and of web and database design, development and maintenance.

III. GIS Consultant

The consultants’ scope of work will include, but not necessarily be limited to, the following
• Experience in data modeling, database development, and enterprise database architecture.

• Providing on-going support to users, including technical and functional understanding of the application.

• Create some custom reports and quality maps that show street address, accident locations, street segment, land use area, etc.

• Collection, creation, editing, verification, updating, analysis, and management of data in file based, and required format.

• Operate and maintain GIS hardware and software, including computers, printers, and plotters. Microsoft Office, ArcInfo 9.3, and Mapinfo.

• Ability to work in a collaborative team environment, and work closely with various individuals and agencies such as the Kuwait Municipality and Ministry of Public Works.

• Work as a hands-on technical analyst who can work collaboratively with the Project Manager and other team members to assist in analysis of data and mapping needs.

• Utilization of maps from various sources, identify and correct error, and ability to convert format, e.g., Convert ESRI format data to and from other formats, including MapInfo, AutoCAD, Google Earth, and Excel.

• Excellent organization and customer service skills.

Qualifications

• A Bachelors degree, or higher, from an accredited university in GIS, Geography, Computer Science, Statistics, Urban Planning, Civil Engineering or related field.

• 7 years of professional work experience, including experience such as GIS data, ArcGIS 9.x (including ArcInfo, Spatial Analyst, ArcSDE), and Microsoft Office (including Word, Excel, Access, Outlook, PowerPoint and Access).

• Knowledge of statistical methods, techniques and software.

• Strong written and oral communication, problem solving, troubleshooting and organizational skills and a desire to research and learn to advance GIS skills.

• Ability to take initiative and handle multiple tasks simultaneously while meeting deadlines, drawing conclusions and making recommendations.

• Experience in other software (including CAD, Microsoft SQL, or other programming languages and of web and database design, development and maintenance.

IV. Statistical Consultant

The consultants scope of work will include, but not necessarily be limited to, the following
• Experience in the use of statistical packages, e.g. SPSS, data modeling, and database development, and enterprise database architecture.

• Provide support to users, including technical understanding of the application.

• Create some custom reports that show street address, accident locations, street segment, land use area, etc.

• Creation, editing, verification, updating, analysis, and management of statistical data in file-based, and required format.

• Operate and maintain SPSS and other packages, including comprehensive reporting system.

• Ability and desire to work in efficiently in a team environment, and work closely with various external individuals and agencies such as the Kuwait Municipality, Ministry of Interior and Ministry of Public Works.

• Work as a hands-on technical analyst who can assist the Project Manager and other team members in the analysis of statistical data and reporting needs.

• Excellent organization and customer service skills.

Qualifications

• A Bachelor's degree, or higher, from an accredited university in Statistics, Engineering or related field.

• 7 years of professional work experience, including experience such as designing operations of SPSS or other statistical packages, analysis, production of reports, and creating interface with other software, e.g. Microsoft Office (including Word, Excel, Access, Outlook, and Power).

• Knowledge of statistical methods, techniques and software.

• Strong written and oral communication, problem solving, troubleshooting and organizational skills and a desire to research and learn to advance GIS skills.

• Ability to take initiative and handle multiple tasks simultaneously while meeting deadlines, drawing conclusions and making recommendations.

• Knowledge of and experience with other software (including CAD, Microsoft SQL or other programming languages and of web and database design, development and maintenance.

V. Road Safety and black spot Consultant

The consultants' scope of work will include, but not necessarily be limited to, the following:
- Review the state of the art of the accident black spot procedures, including identification and treatment, enforcement practice, relevant policing activities in highly motorized countries, and Kuwait needs.

- Identify constraints and provide initiatives to enhance effectiveness in Kuwait, including road design, annual black spot program, roadside hazard management, safety devices, and maintenance issues.

- Develop detailed procedures for identification and treatment of the black spots; and a set of indicators characterizing the plan objectives, goals, inputs, outputs, impacts, road design, traffic volume, baseline and target values of the indicators.

- Provide technical advice in matters pertaining to the NIRSIS components, training requirements, and assess associated institutional and policy issues.

- Assess role of relevant ministries and potential sources of funding including budgetary allocations, actual requirements and cost-benefits.

- Develop uniform Guidelines; and promote efficient data standards and definitions; accident investigation procedures, new technology use, in-depth research of accident causes, and assessment of plan effectiveness against target.

- Prepare a road network classification strategy that promotes, in an integrated manner, expressways and local roads to improve accessibility, meet communities' needs, and support economic growth.

- Develop a comprehensive and effective feasibility study methodology and guidelines to improve planning and selection of accident black spots, and road network projects, based on the integration of the engineering component with the economic, environmental, and social issues.

- Conduct a field study to demonstrate that black spot improvements will result in a more efficient and integrated road system and increases the socioeconomic benefits.

**Qualifications**

- Degree from an accredited university in Transport Engineering, or related field.

- 15 years of professional work experience, including experience in road safety programs, black spots, road safety audits, road design, and traffic management.

- Experience in data modeling, database development, black spot identifications and treatments, road maintenance, analysis, reporting, and standard techniques.

- Strong written and oral communication, problem solving, troubleshooting and organizational skills.

- Ability to take initiative and handle multiple tasks simultaneously while meeting deadlines, drawing conclusions and making recommendations.
VI. National Consultants

Domestic consultants will be selected to work on short-time basis, and as required, to assist in the development of the SPSS, GIS, NiRSIS, black spot system, and staff training. The consultants will provide assistant, but not necessarily be limited to, in the following areas:

- Help the Project Manager and international consultants to tailor suitable systems, conduct training, and develop guidelines.
- Enhancement of data standards and definitions.
- Promote use of new technology, and in-depth research of accident causes.
- Assessment of the action plan effectiveness against targets.
- Help in the running the training workshops.

Qualifications

The individual consultants will be subject to the following conditions, based on the required expertise, while detailed terms of reference will be prepared prior to the recruitment:

- Degree from an accredited university in Transport Engineering, or related field.
- Appropriate professional work experience in the relevant field.
- Experience in data modeling, database development, black spot identifications and treatments, road maintenance, data analysis, reporting, techniques and specifications.
- Strong written and oral communication, problem solving, troubleshooting and organizational skills.
- Ability to take initiative and handle multiple tasks simultaneously while meeting deadlines, drawing conclusions and making recommendations.
- Knowledge of and experience with the relevant software and hardware techniques and web and database design, development and maintenance.

G. Budget

The consultants' budget will be utilized as one package to cover the international and national consultant remunerations according to the project needs, required consultant period and required expertise.
### Annex 4

#### COST ESTIMATES AND FINANCING PLAN

<table>
<thead>
<tr>
<th>Item</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>• International and National Consultants. a</td>
<td>54.0</td>
<td>160.0</td>
<td>140.0</td>
<td>140.0</td>
<td>122.0</td>
<td>616.0</td>
</tr>
<tr>
<td>• SPSS, GIS, and Specialized Devices and Equipment. b</td>
<td></td>
<td>75.0</td>
<td>10.0</td>
<td>10.0</td>
<td></td>
<td>95.0</td>
</tr>
<tr>
<td>• Workshops, Reports, Translation, Guidelines, Training Materials, and Field Survey. c</td>
<td></td>
<td>10.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>25.0</td>
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<tr>
<td>• Miscellaneous and Administration Support.</td>
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<td>5.0</td>
<td>5.0</td>
<td>2.0</td>
<td>2.0</td>
<td>14.0</td>
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<tr>
<td><strong>Total</strong></td>
<td>54.0</td>
<td>250.0</td>
<td>160.0</td>
<td>157.0</td>
<td>129.0</td>
<td>750.0</td>
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</table>

**General Directorate of Traffic (in-kind)**

<table>
<thead>
<tr>
<th>Item</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Office Services : Office, Computers, Standard Software, Furniture, Printers, Fax, Photocopy Machine, Internet Access, Local Staff ...etc</td>
<td></td>
<td>100.0</td>
<td>90.0</td>
<td>80.0</td>
<td>30.0</td>
<td>300.0</td>
</tr>
</tbody>
</table>

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a International and national consultants will be hired under the UNDP rules and regulations, including project manager, GIS, information technology, statistical, and road safety and black spot consultants. Some domestic consultants will also be hired for a short-term period as required.

b Including statistical package, e.g. SPSS, GIS devices and equipment, maps, and other equipment, which are non-Government standard or the Government cannot support them due to their specialized nature, and required to implement the project and transfer new technology. Ownership of all specialized devices and equipment and the developed systems will be transferred to the GDT after the Project.

c Including production of audiovisual demonstration package, guidelines, and promotion materials.
<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment of the Project Manager</td>
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<tr>
<td>Coordination with relevant bodies</td>
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<tr>
<td>Completion of the Project Document</td>
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<tr>
<td>Designation of Office, Computers, Local Cadres &amp; other Services</td>
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<tr>
<td>Provide Monthly Progress Report</td>
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<tr>
<td>Develop rules &amp; Specifications</td>
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<tr>
<td>Assignment of the Consultants Staff Training</td>
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<tr>
<td>NIRSIS Development &amp; Installation</td>
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<tr>
<td>NIRSIS Testing and Modifications Meetings of Stakeholders</td>
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<tr>
<td>Final Delivery &amp; Monitoring of NIRSIS Operations</td>
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<tr>
<td>NBSS Procedures and Guidelines NBSS Field Survey &amp; Analysis</td>
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<tr>
<td>Monitoring &amp; Evaluation of the Black Spot Treatments</td>
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<tr>
<td>Organization Structure &amp; Action Plan of the NTTC</td>
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<tr>
<td>Commence Thorough Training Program of the NTTC</td>
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<tr>
<td>Support &amp; Monitoring of the NTTC Operations</td>
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</tbody>
</table>

Implementation Schedule of the Project