National Emergency Management Agency
Mongolia

PREPARATORY SURVEY REPORT ON THE PROJECT FOR IMPROVEMENT OF CAPACITY OF FIRE FIGHTING TECHNIQUES AND EQUIPMENT IN ULAANBAATAR

DECEMBER 2011

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

FIRE EQUIPMENT AND SAFETY CENTER OF JAPAN

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to Fire Equipment and Safety Center of Japan.

The survey team held a series of discussion with the officials concerned of the Government of Mongolia, and conducted field investigations. As a result of further studies in Japan, the present report was finalized.

I hope that this report will contribute to the promotion of the project and the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Mongolia for their close cooperation extended to the survey team.

December, 2011

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SUMMARY

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① Outline of Mongolia

Mongolia is a landlocked country in East Asia possessing a population of 2,780,000 (2010, according to the National Statistical Office of Mongolia) and a land area of 1,564,100 square kilometres (roughly four times the size of Japan). To the west are located the Altai Mountains with altitudes of up to 4,300 metres and the Hangai Mountains reaching 3,500 metres, while to the east are located plateaus with altitudes of between 1,000 metres and 1,500 metres, and to the north are coniferous forests (Taiga) that stretch up to Siberia. The remainder of the country has alpine plants and steppe vegetation that continues to the Gobi Desert situated at an average altitude of 1,000 metres. Grassy steppes used for pasture occupy around 80 percent of the national land area. The climate is generally cold with the average temperature in summer at around 20°C and the winter average temperature below freezing. Since Mongolia has an arid climate with little rainfall, mountain areas apart from Taiga have few trees.

The capital Ulaanbaatar, which is the target area of the Project, is situated at altitude of around 1,300 metres at latitude roughly the same as Wakkanai in Hokkaido. In terms of climate, the annual average temperature is -1.3°C. However, temperature disparities are extreme with the maximum temperature in summer reaching in excess of 30°C and the minimum temperature in winter plummeting to -30°C. Annual precipitation is low at around 280 mm; moreover, because natural water supply from rivers and so on is scarce, Mongolia is not blessed with abundant water resources.

In terms of economy, Mongolia has a GDP of US$4.2 billion (2009, according to the World Bank) and per capita GNI of US$1,790 (ditto). Its economic growth rate fell to minus 1.3 percent in fiscal 2009, however, otherwise it has recently been high at 8.9 percent in 2008 and 6.1 percent in 2010 (IMF) thanks to growth of the mining industry. The major industry is livestock farming, with 170,000 households and 370,000 people engaged in the sector. Major exports are mining products (coal, copper, rare metals) and needlework and major imports are petrochemical products, machines and automobiles, etc. The trade balance shows a continual deficit.

② Background and Outline of the requested project

Ulaanbaatar is experiencing population growth and urbanisation in recent years in line with the economic development of Mongolia. In addition, there is a continual inflow of nomadic people who have lost their livestock due to snow disaster. These residents live in domiciles called Ger in areas designated by the municipal authorities, and approximately 60 percent of citizens live in such Ger communities. The population of Ulaanbaatar as of 2010 is put at 1,270,000, which accounts for almost half of the entire population of Mongolia.

In line with the urbanisation of Ulaanbaatar and increasing number of Ger residences, fires are becoming increasingly common and the damage caused by fires is increasing. As is shown in the following table, the number of fires occurring from 2004 onwards is more than two times higher than it was in 2000.

Fire Damage in Ulaanbaatar

	1995	2000	2003	2004	2005	2006	2007	2008	2009
Number of fires	571	1,100	1,879	2,151	2,428	2,281	2,645	2,337	2,165
Injured people	-	-	49	21	53	42	34	24	41
Fatalities	10	10	41	57	75	67	83	52	55
Cost of damage (million MNT)	188	407	1,500	1,600	2,100	9,600	3,100	4,100	3,800
Population (10,000 people)	58	77	89	93	97	99	103	107	111

The Government of Mongolia is striving to strengthen the fire fighting system in order to deal with the increasing incidence of fires in line with the population increase and urbanisation, however, it is unable to renew its deteriorated fire vehicles due to the tight fiscal situation. Excluding 17 fire vehicles that were deployed to Ulaanbaatar under Japanese grant aid in 2003, most of the current fire vehicles were made in the former Soviet Union and are more than 20 years old; moreover, they suffer from frequent breakdowns because of the difficulty of keeping in good condition due to lack of spare parts, and this acts as a major hindrance to fire fighting activities. As there is only one ladder engine, it is overworked and the fire services are finding it difficult to respond to fires in increasingly common high-rise buildings.

It was against such a background that the Government of Mongolia compiled the Project for Improvement of Capacity of Fire Fighting Techniques and Equipment and requested assistance from the Government of Japan with the objectives of building a new fire station, renewing fire fighting and rescue vehicles and improving the equipment maintenance setup, etc. and thereby establishing a reliable fire fighting system in Ulaanbaatar by 2012. Through deploying fire vehicles and fire fighting equipment to 13 fire stations in the capital Ulaanbaatar, the Project aims to improve fire service strength, protect the lives and property of residents from fires and thereby secure a safe and assured living environment for people in Ulaanbaatar.

③ Outline of survey findings and contents of the project

The Survey Team conducted field investigations in Mongolia from November 26 to December 17, 2010. In addition to discussing and confirming the contents of the request with the National Emergency Management Agency (NEMA) and the other related agencies on the Mongolian side, the team surveyed 13 fire stations in the target area and collected the necessary data. After that, it examined the necessary and optimum contents and scale for Project implementation, estimated

the Project cost, explained and discussed the draft preparatory survey report with NEMA from August 13 to August 19, 2011, and finally compiled the preparatory survey report.

The requested assistance from NEMA consisted of the deployment of 22 fire vehicles comprising pumper tankers with tanks, water tankers, rescue engines with flood lights, ladder engines, chemical engine, smoke removal engine and gas smoke protection engine to 13 fire stations in Ulaanbaatar; however, the smoke removal engine and gas smoke protection engine were omitted on the grounds that the necessary equipment can be loaded onto ordinary fire vehicles. Additionally, since it was decided to include the request by NEMA to deploy one pumper tanker with tank and one water tanker each to a new fire station, the eventual number of vehicles came to 22 as was originally requested.

In compiling the equipment deployment plan, the necessity for deployment of fire vehicles, and the specific numbers of types of vehicles were decided based on NEMA operating setup upon considering local characteristics such as areas and population of the districts under the jurisdiction of each fire station, the narrow width of roads, number of fire incidents, water supply situation, medium and high-rise buildings, hazardous facilities and road gradient, etc.

Additionally, in order to permanently ensure the efficient and effective utilization of equipment as has also been requested by NEMA, a soft component that covers pumper tanker operating technology and fire fighting technology and ladder engine operating technology has also been planned.

The following table shows the deployment plan as well as the uses and loaded equipment of each vehicle.

Equipment Deployment Plan

Target Fire Station	Deployed Vehicles					
	Pumper tanker	Water tanker	Chemical engine	Ladder engine	Rescue engine with flood light	Total
No.10			1		1	2
No.18	1	1		1		3
No.26				1		1
No.11	1	1				2
No.29	1	1				2
No.63					1	1
No.28		1				1
No.34					1	1
No.14						0
No.30	1	1				2
No.65	1	1				2
No.64	1					1
No.80	1	1				2
No.35	1	1				2
Total	8	8	1	2	3	22

List of Fire Vehicles and Their Uses

Vehicle	Use	Main Loaded Equipment	Quantity
3,500 L pumper tanker (4×4)	This fire truck is equipped with a 3,500 litre water tank and chemical tank for performing efficient fire fighting, and it can go to fire scenes and conduct independent operations until the water supply line is established. It is suited to traveling over hilly land and steep roads.	Suction hose, fire hoses, discharge nozzles, dividing breeching, , nozzle adapter, hose carrier, portable discharge gun, basic hydraulic apparatus, engine cutters, rod cutters, electric wire cutters, three section ladder, single section ladder, protective clothing, floodlight set, breathing apparatus, portable radio, etc.	8
8,000 L water tanker (6×4)	Equipped with a 8,000 litre water tank, this fire truck conducts relay water supply from behind the above vehicle, and it also has water discharge functions for fire fighting.	Suction hose, fire hoses, discharge nozzles, dividing breeching, nozzle adapter, single section ladder, protective clothing, breathing apparatus, portable radio, etc.	8
Chemical engine	Fitted with a 9,000 litre water tank and 1,000 litre chemical tank, this fire vehicle conducts fire fighting activities at petroleum refining facilities, chemical plants and other facilities that handle hazardous materials, etc.	Suction hose, fire hoses, discharge nozzles, dividing breeching, nozzle adapter, hose carrier, basic hydraulic apparatus, engine cutter, rod cutters, electric wire cutters, three section ladder, single section ladder, protective clothing, floodlight set, breathing apparatus, portable radio, etc.	1
Ladder engine	Possessing a basket that can conduct work up to 30 m, this fire vehicle conducts fire fighting activities in medium and high rise buildings of up to 10 stories.	Fire hoses, discharge gun, rescue ropes, single section ladder, protective clothing, breathing apparatus, portable pump, support plate for jack, portable radio, etc.	2
Rescue engine with flood light	This fire vehicle provides lighting to assist fire fighting activities at nighttime or during blackouts or in large buildings, etc., and it provides the equipment and personnel that are required in order to conduct rescue activities at fire scenes.	Basic hydraulic apparatus, rod cutters, electric wire cutters, floodlight set, three section ladder, single section ladder, basket stretcher, rescue ropes, protective clothing, breathing apparatus, portable pump, portable radio, etc.	3

④ Project Implementation Period and rough project cost

In the event where the Project is implemented under the Government of Japan's grant aid scheme, it is estimated that the Project cost on the Mongolian side will be 188 million yen. The Project implementation period including implementation design, equipment procurement and soft component will be approximately 22 months.

⑤ Project evaluation

5-1. The Project is deemed to be valid for implementation under the Government of Japan's grant aid scheme for the following reasons.

(1) The Project aims to provide the means to protect the lives and property of 1,150,000 residents in the capital Ulaanbaatar from fire. This figure is equivalent to roughly half of the entire population of Mongolia. In spite of ongoing increase in the number of fire

incidents, since it is becoming difficult for fire services to respond due to the deterioration of fire vehicles, the Project has a high degree of urgency in terms of protecting the safety of citizens and it is consistent with higher plans in Mongolia.

(2) Ger areas, where around 60 percent of the citizens of Ulaanbaatar live, contain many Ger houses that are highly combustible and prone to the spread of fires. In spite of this, fire hydrants and other sources of water supply for fire fighting are inadequate, and fire fighting activities are made even more difficult by narrow roads and steep hills. Currently, six out of 13 fire stations are unable to promptly reach fire scenes and conduct fire fighting activities due to the deteriorated state of fire vehicles. Therefore, deployment of fire vehicles that can travel on narrow and steep roads and conduct prompt fire fighting activities is necessary for protecting impoverished people, who account for the majority of residents in Ger areas, from fires, etc.

5-2. The anticipated effects of project implementation are as follows.

(1) Due to the procurement of new fire vehicles, engine troubles will no longer occur and the following quantitative effects will be realized due to the shortening of engine startup times and improved performance of the new ladder engines.

Quantitative Effects due to Project Implementation

Item	Current conditions	After project implementation	Effects
Mobilisation preparation time	2~8 minutes	1 minute	Reduction of 1~7 minutes
Number of pumper tankers that can mobilise in 1 minute	7/15 vehicles (47%)	15/15 vehicles (100%)	
Reduction in the time it takes for ladder engines to discharge water	Existing ladder engines 3 minutes	Newly procured ladder engines No more than 2 minutes	Reduction of 1 minute

(2) Through deploying pumper tankers that can travel on narrow, steep and poorly maintained roads to the fire stations that manage Ger areas, the fire fighting system will be secured in the said areas that are home to more than half of the population of Ulaanbaatar. Through deploying new vehicles to seven fire stations that until now have used vehicles that were made in the former Soviet Union, roughly 110,000 people living in 23,000 households in 15 Ger districts will be able to benefit from rapid fire fighting activities.

(3) Through improving the fire service strength of Ulaanbaatar, the citizens will enjoy a safe and assured living environment.

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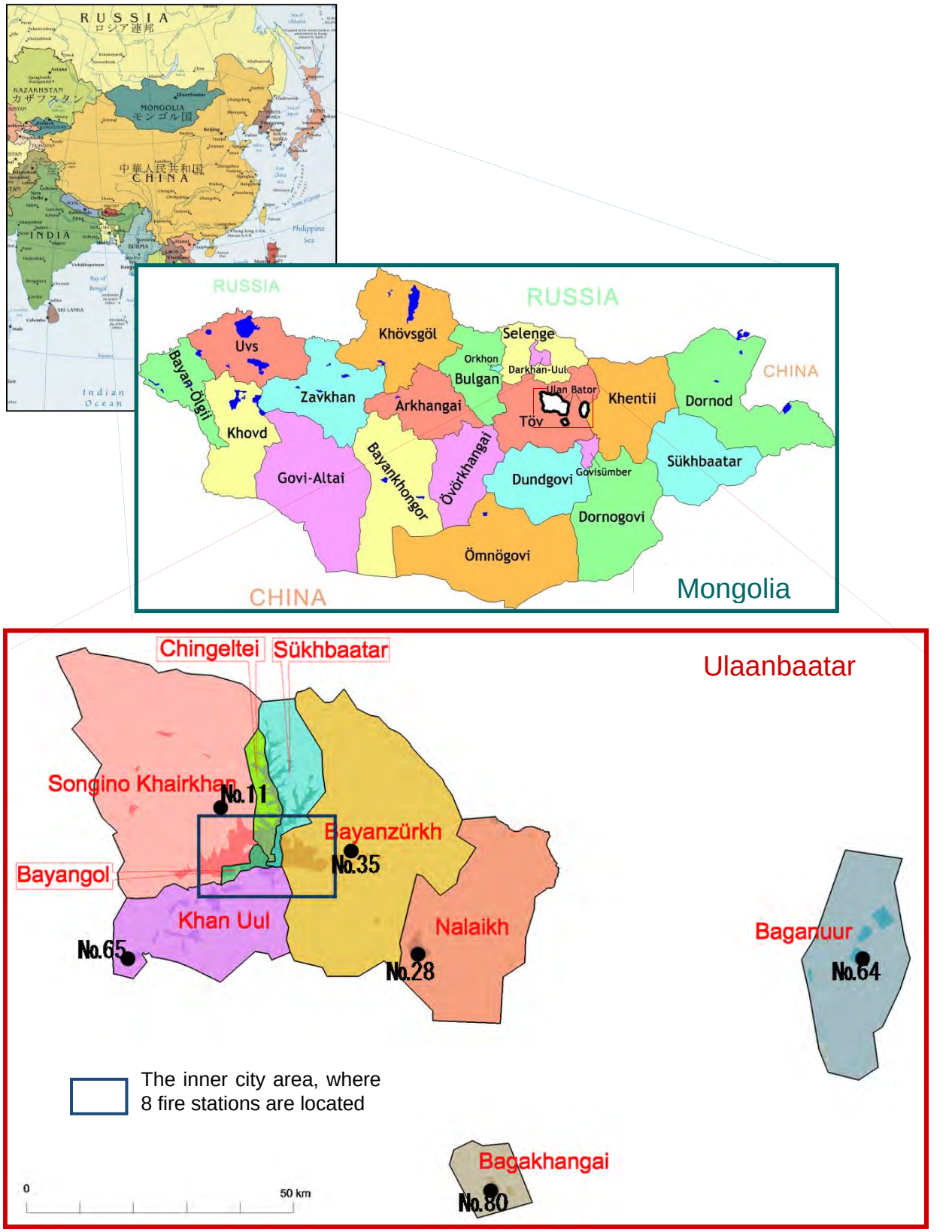
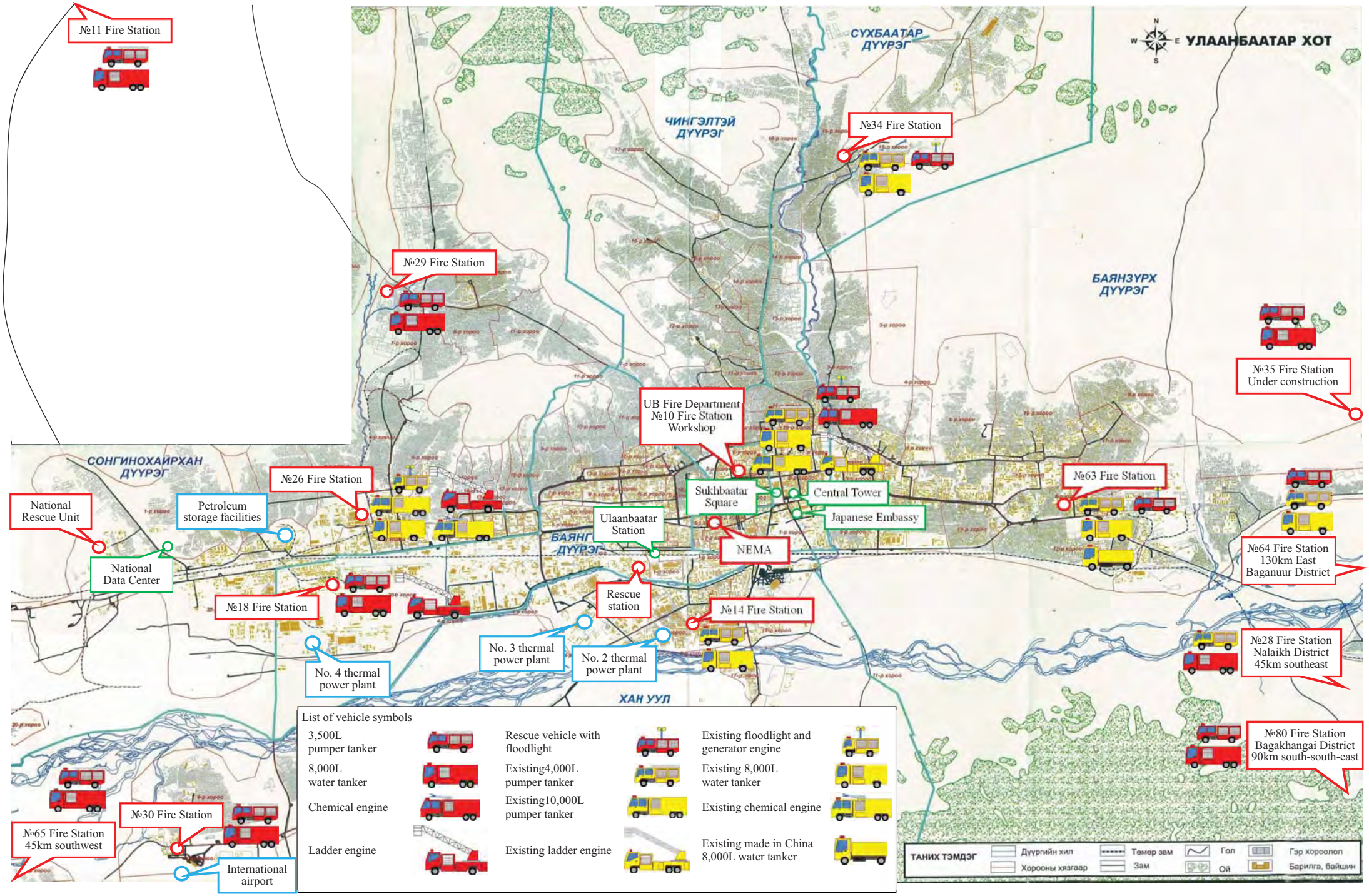


MAP OF SITES IN THE SURVEY TARGET AREA



SITES FOR DELIVERY OF PROCURED EQUIPMENT

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ABBREVIATIONS

Abbreviation	English	Remarks
E/N	Exchange of Notes	
EUR	Euro	
FM	Frequency Modulation	
G/A	Grant Agreement	
GDP	Gross Domestic Product	
GNI	Gross National Income	
GOST	Standard specifications used in the Commonwealth of Independent States including Russia	Based on the English lettering GOsudarstvennyy STandart
IMF	International Monetary Fund	
JICA	Japan International Cooperation Agency	
JIS	Japanese Industrial Standard	
MNT	Tugrik	
NEMA	National Emergency Management Agency	
NSO	National Statistical Office	
USD	US Dollar	
VHF	Very High Frequency	

CHAPTER 1

BACKGROUND OF THE PROJECT

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1-1 Background and Outline of the Grant Aid

The fire service strength of Ulaanbaatar was improved with the procurement of 17 Japanese fire vehicles under a Japanese grant aid project in FY 2001. However, due to the subsequent increase in population and spread of Ger communities in Ulaanbaatar since then, fires and fire damage have also increased as indicated in Table 1-1.1; moreover, deterioration is advanced in all but the abovementioned 17 out of the 47 fire fighting vehicles currently in service, and these 17 vehicles are responding to more than 70 percent of fire call-outs. Accordingly, it is necessary to strengthen the fire service strength through renewing the deteriorated fire vehicles. Moreover, as there is only one ladder engine, this is used very frequently over a wide area and it takes a long time to reach fire scenes. Therefore, it is necessary to procure and deploy additional ladder engines in order to better respond to fires in high-rise buildings. The Government of Mongolia is striving to strengthen the fire fighting system of Ulaanbaatar in consideration of these conditions, however, it is finding it difficult to secure the necessary budget for renewing fire vehicles.

For this reason, it compiled the Project for Improvement of Capacity of Fire Fighting Techniques and Equipment (the Project), which aims improve fire service strength in Ulaanbaatar, protect the lives and property of citizens from fires, etc., and secure local safety through renewing fire fighting and rescue vehicles at fire stations in the city, and it requested assistance from the Government of Japan for implementation of the Project.

Table 1-1.1 Fire Damage in Ulaanbaatar

Item \ Year	1995	2000	2003	2004	2005	2006	2007	2008	2009
Number of fires	571	1,100	1,879	2,151	2,428	2,281	2,645	2,337	2,165
Injured people	-	-	49	21	53	42	34	24	41
Fatalities	10	10	41	57	75	67	83	52	55
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Population (10,000 people)	58	77	89	93	97	99	103	107	111

(Data provided by the NSO and National Emergency Management Agency)

1-2 Natural Conditions

Ulaanbaatar is situated at altitude of around 1,300 metres and latitude of around 48 degrees, which is roughly the same latitude as Wakkanai in Hokkaido. The Tuul River runs through the city from east to west, and the city is located in a basin surrounded by mountains in the north and south.

The old city situated mainly on flatland on the north side of the river is home to many nomadic people who have lost their livestock due to snow disaster, and these residents live in Ger districts on hilly land and mountain foothills mostly in the north of the city.

The climate is generally cold with little precipitation. The maximum temperature in summer reaches in excess of 30°C, however, low humidity means that conditions are pleasant. In winter, temperatures plummet to -30°C or below. Table 1-2.1 shows the climate data of Ulaanbaatar.

Table 1-2.1 Climate of Ulaanbaatar

Month	Jan.	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average maximum temperature (°C)	-7.3	-1	9.9	20.1	27.9	30.4	30.9	29.3	25	18.4	5.9	-4.9
Average minimum temperature (°C)	-33.2	-30.1	-23.7	-14.3	-6.3	1.3	5.3	3.2	-5.1	-14.9	-25.1	-31.5
Precipitation (mm)	2	2	3.3	8.4	13.4	50.9	65.7	76.3	32.1	8.3	4.9	3.2
Rainfall days	4.1	2.9	3.8	5.1	5.8	11.9	15.6	14.3	7.9	4.7	5.1	5.5

1-3 Environmental and Social Consideration

Since the Project will entail replacing fire vehicles that were made in the former Soviet Union without restrictions on exhaust gases with fire vehicles that are equipped with engines designed to emit minimal amounts of harmful exhaust gases, it will impart only a minor environmental impact. Accordingly, the Project is classified as a category C undertaking under the JICA guidelines on environmental and social consideration.

Moreover, there is absolutely no possibility that enhancement of fire fighting administration will impart undesirable impacts on society.

CHAPTER 2

CONTENTS OF THE PROJECT

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2-1 Outline of the Project

2-1-1 Higher Plan and Objectives of the Project

The higher plan for the Project is the Action Plan of the Government 2008 - 2012 which has the following five goals.

1) Increase of the living standard of the people through the implementation of appropriate socioeconomic policies
2) Economic growth and stabilisation through an industrialisation policy
3) Preservation of an adequate balance with the natural environment
4) Development of the legal system to clarify desirable practices of the administration to make it much more open
5) Achievement of national security and foreign policy goals

Under the goal of national security, further policy targets are adopted as follows:

- Improvement of the disaster preparedness, rescue and emergency response systems
- Improvement of the government capacity to reduce the potential risk of disasters and to prevent damage and adverse impacts by disasters
- Step-by-step execution of plans to introduce advanced science, techniques and equipment

The Project is part of the efforts of the Government of Mongolia to achieve the above policy targets and aims at improving the strength of the fire service in Ulaanbaatar, the capital of Mongolia, where the number of fires and other disasters has been increasing because of population concentration, increase of high rise buildings due to urbanisation and increase of settlement by means of improving the fire fighting equipment deployed at fire stations in the city. The ultimate aim is to protect the lives and property of the city's residents from fires and other disasters to ensure a safe and assured living environment for such residents.

2-1-2 Outline of the Project

The population of Ulaanbaatar has been rapidly increasing in recent years due to a continual inflow of people seeking a cash income, including nomadic people who have lost their livestock due to snow disaster. Although these people are offered land in suburban areas by the government, they cannot afford to build houses and continue to live in tents called Ger. Because of this, the areas in which these people live are called Ger areas. These areas are located in the east, north and southwest of the city and have no water supply, sewerage or proper road connections. Many people have simply pitched their tents on vacant land without properly notifying the government. It is estimated that some 60% of the

residents of Ulaanbaatar living in Ger areas, making improvement of the housing environment an issue that requires urgent attention.

Meanwhile, in line with economic development, the central area of Ulaanbaatar has been witnessing the steady construction of high rise buildings, including apartment buildings, which has resulted in the steady increase of the number of fires and other disasters. The population of the city has massively increased from 790,000 in 2000 to 1.15 million in 2010 while the number of fires has increased from 1,100 to more than 2,100 in the same period. Many of these fires actually occur in Ger areas.

With the procurement of 17 Japanese fire vehicles under a Japanese grant aid project in FY 2001, there is a total of 47 fire vehicles, including those procured before 1990. Except for those procured with the Japanese assistance, most of the fire vehicles are highly deteriorated. As these old vehicles frequently suffer from engine problems, etc., the newer Japanese fire vehicles are used in more than 70 percent of fire call-outs. The recent expansion of suburban Ulaanbaatar, partly due to the ongoing process of urbanisation and also partly due to the massive enlargement of the Ger areas, has made it difficult for the limited number of fire vehicles in working order to swiftly and effectively respond to fires. In addition, as more and more high-rise buildings are constructed, the number of fires occurring in high-rise buildings is also increasing, however, as there is only one ladder engine, this is used very frequently over a wide area; moreover, since it takes such a long time to reach fire scenes, it is necessary to procure and deploy additional ladder engines in order to better respond to fires in high-rise buildings.

Under these circumstances, the Government of Mongolia has been trying hard to reduce the damage caused by fires and other disasters in Ulaanbaatar in order to develop a safe and assured living environment for its residents following the successful implementation of Japan's grant aid project in FY 2001. However, as it is finding it difficult to improve the fire fighting strength because of the difficulty of securing the necessary budget for the replacement of old vehicles, it made the request to the Government of Japan.

The requested Japanese assistance consists of the procurement and deployment of 22 fire vehicles, i.e. eight pumper tankers with a 3,500 litre tank, eight water tankers with an 8,000 litre tank, one chemical engine, three rescue engines with flood lights and two ladder engines, as well as a soft component to provide technical guidance on effective fire fighting using fire vehicles. The new fire vehicles and other equipment will be deployed at 13 fire stations belonging to the Emergency Management Department of Capital City under the control of NEMA.

2-2 Outline Design of the Requested Japanese Assistance

2-2-1 Design Policies

2-2-1-1 Basic Policies

The field investigations found the following five tasks that need to be urgently dealt with by NEMA:

- Shortening of the response time from initial turn-out to arrival at the scene of a fire to start fire extinguishing activities (discharge of water)
- Increase and proper maintenance of fire vehicles which are loaded with water and ready for action at any time
- Development of effective fire fighting and rescue measures for medium and high rise buildings
- Shortening of the time required by ladder engines from arrival at fire scenes to start of water discharge to fires in medium to high rise buildings
- Development of effective fire fighting and rescue measures for Ger areas

With a view to resolving these issues, basic policies were compiled from diverse viewpoints of social, economic and natural conditions, etc. in order to decide the scope and scale of the Project activities.

(1) Scope of Assistance

The scope of the Japanese assistance under the Project entails planning and procuring fire vehicles of appropriate size and content for fire stations in Ulaanbaatar with a view to improving the fire service strength in the city.

The fire vehicles will be equipped with the fire fighting equipment required to conduct fire fighting activities and the minimum necessary rescue activities, and spare parts which are necessary for the maintenance of the equipment will also be procured.

In addition, as a soft component aimed at further enhancing the effectiveness of the procured fire vehicles, technical guidance geared to improving operation and fire fighting techniques will be included in the Project scope and will be implemented before the equipment is handed over.

(2) Selection of Target Sites

The target sites are 13 fire stations in Ulaanbaatar comprising 12 with fire vehicles that need renewal and one new fire station that will be constructed in response to the increasing demand placed on the authorities.

(3) Scale and Specifications, etc.

The fire vehicle operation plan of Mongolia stipulates that a fire is, in principle, dealt with using a combination of one pumper tanker and one water tanker. Accordingly, these two types of fire vehicles are deployed at each fire station. The fire fighting standards based on the Mongolian fire service law additionally require the deployment of pumper tankers, water tanks, rescue engines, ladder engines and others depending on the situation of the area of jurisdiction of each fire station in anticipation of the outbreak of multiple fires.

Based on the operating plan, the request aims to build a setup whereby each fire station can deploy one pumper tanker and one water tanker promptly and without any trouble, and to deploy the fire vehicles based on fire fighting standards that are necessary in order to respond to fires that are becoming increasing diverse due to increasing numbers of high rise buildings and facilities handling hazardous materials in line with the advance of urbanization as well as the spread of Ger communities.

Against this background, the number of fire vehicles required and the state of the fire vehicles currently deployed at each fire station are carefully examined to determine the required number of new fire vehicles. The specifications and deployment destinations of these new fire vehicles are also examined based on the following factors which can characterise the particular area served by each fire station.

<Factors>

- Number, conditions and locations of hydrants and other fire water sources
- Presence of areas with narrow streets
- General gradient of local roads
- Number of fires in the past
- Number of high rise buildings
- Population
- Area

The quantity and specifications of each type of equipment will be decided to satisfy the following requirements.

- Equipment which can be operated with the maintenance capacity of NEMA in terms of funding and fire personnel
- Equipment that can be adequately handled assuming the operating techniques and maintenance capability of fire fighters at the target sites
- Minimum required quantity of the optimal equipment which has been actively used for fire fighting tactics in Japan and other countries to deal with the types of disasters which are likely to be faced by fire stations in Ulaanbaatar

- Equipment which can conduct basic fire fighting activities on its own even if some time is required for the arrival of reinforcements at the scene

2-2-1-2 Natural and Environmental Conditions

(1) Climate

Influenced by a continental climate, Ulaanbaatar experiences huge temperature disparity from -30°C to more than 40°C through the year, making it essential for the design of the equipment to consider its use under both very high and very low temperatures.

Particularly in winter, temperatures are almost constantly below zero from November, dropping to -30°C between December and February and causing ignition fluid to freeze. Accordingly, special measures are necessary to ensure the heat insulation of the fire vehicle engines and to prevent freezing of the fire pump system to ensure that the fire vehicles can conduct fire fighting activities at any time without hitch. Moreover, regarding the soft component, test driving, adjustment and guidance on operation, since it will be difficult to conduct operation and training outdoors for extended periods, the implementation schedule will need to be designed carefully.

(2) Topography

Some Ger areas served by certain fire stations are characterised by much undulating land with steep sloping roads. The specifications for the engine output, suspension, tyres and others must be determined so as to ensure an adequate travelling performance of the fire vehicles when negotiating sloping and/or poorly maintained roads.

(3) Water Sources

Ulaanbaatar is not endowed with such natural water sources as rivers and fountains as the level of rainfall is low throughout the year. To make matters worse, in winter it is not feasible to use surface water, including water kept in cisterns, as it is frozen. The number of installed hydrants is quite limited. In Ger areas in particular, the only available water sources are small waterworks which are unsuitable for fire fighting activities. It is, therefore, essential for fire stations serving these areas to have pumper tankers as well as water tankers. Given the fact that a fire-extinguishing chemical is mixed to ensure efficient fire fighting activities with the minimum amount of water, fire vehicles should be equipped with chemical tanks.

The fire pumps of the old Soviet-made fire vehicles are made of cast iron while the pipes and water tanks are made of steel. Most of these have some degree of corrosion, indicating that the specifications of coating, materials and wall thicknesses were unsuitable for use over many years. Therefore, the materials for the water tanks, pipes and others should be carefully selected at the equipment design stage.

2-2-1-3 Socioeconomic Conditions

Buildings in central Ulaanbaatar are basically fire-resistant as they are made of either stone or reinforced concrete.

However, the suburbs of Ulaanbaatar have witnessed the sprawling of Ger areas as well as areas with wooden houses built with scant regard to building regulations. This has resulted in densely built up areas with little fire protection. As these areas pose a grave danger for the extensive spread of fire, the implementation of fire control measures which are primarily designed to contain the spread of fire is essential.

Once a fire breaks out, a Ger can be engulfed by fire in as quickly as five minutes. In the case of a wooden house, a room can be engulfed by fire in some 10 minutes. In either case, a fire starts to spread to neighbouring buildings around 10 minutes after the start of the initial fire due to the fire itself or radiation heat.

To prevent the spread of a fire, NEMA aims at achieving an arrival time of less than 10 minutes. This arrival time target will be adopted for the planning of the fire vehicle deployment under the Project.

2-2-1-4 Procurement Conditions

(1) Permit and Certification Systems, Laws and Regulations Concerning the Implementation of the Project

1) Permit and Certification Systems

After the handing over of the new fire vehicles, NEMA will be responsible for the registration and also for their inspection by the Inspection Agency of the Mongolian government.

Fire radio equipment is subject to regulation under the Radio Communication Law and the Radio Law. However, no new permit or certification is required for the radio equipment to be provided under the Project as this equipment will simply replace existing radio equipment of an established system.

2) Relevant Laws and Regulations

The travelling of the new fire vehicles will comply with the Traffic Law of Mongolia. Concerning emission control for diesel-engine vehicles, the relevant standards adopted by manufacturers will be used in the absence of a specific law or regulation addressing this issue in Mongolia.

(2) Applicable Design Standards

Since Mongolia does not have any automobile manufacturing facilities, the standards for diesel-engine vehicles manufactured in Japan, Europe or the USA will be used.

All of the equipment to be loaded on the fire vehicles will, in principle, comply with the relevant JIS or European/American standards. In regard to the connecting coupling for hoses, etc., the relevant GOST standards will be used in view of their common use in Mongolia.

The design frequency for the new radio equipment will be VHF (FM) as in the case of the existing radio communication system.

(3) Others

Although some of the fire equipment used in Mongolia, excluding fire vehicles, can be procured domestically, most is procured abroad. Hardly any domestic procurement is recorded for spare parts and replacement parts for fire vehicles while domestic procurement is also quite difficult for such parts as truck chasses. As it is essential that the fire vehicles be robust and easy to maintain using general-purpose parts and components, their procurement from a manufacturer (s) with a good track record of supply fire vehicles with cold weather specifications will be necessary.

2-2-1-5 Operation and Maintenance Capability of the Implementing Body

The budgets of NEMA and the EMDCC, both of which will be responsible for the operation and maintenance of the new fire vehicles, etc. to be procured under the Project, are shown in Table 2-1.1 and Table 2-2.2 respectively.

Table 2-2.1 NEMA Budget

(USD)

Item \ Year			2006	2007	2008	2009	2010
Budget of National Emergency Management Agency (NEMA)			1,846,353.70	2,155,434.60	4,672,966.20	2,514,109.20	2,753,509.70
NEMA Budget Breakdown	Salaries		377,456.00	702,016.00	842,263.50	537,773.30	617,989.00
	Lighting, Heating and Water		28,560.20	68,009.90	47,566.50	37,012.00	35,696.20
	Vehicles	Procurement	0.00	0.00	829,184.50	110,453.60	325,147.00
		Maintenance	480,686.00	0.00	128,755.30	32,710.10	38,014.50
	Equipment	Procurement	0.00	0.00	643,461.90	76,601.90	55,620.90
		Maintenance	0.00	0.00	0.00	0.00	0.00
	Fuel		39,425.50	80,726.80	39,364.40	30,080.30	61,448.60
	Fire Fighting		35,364.80	42,421.20	49,985.60	30,615.70	27,553.50
	Fire Prevention		85,836.90	85,836.90	126,232.70	42,545.70	27,558.00
	Other Operation Costs		532,187.40	901,050.10	1,574,435.90	1,053,436.00	1,007,504.00
	Other		266,836.90	275,373.70	391,715.90	562,880.60	556,978.00
	Total		1,846,353.70	2,155,434.60	4,672,966.20	2,514,109.20	2,753,509.70

Table 2-2.2 Budget of the EMDCC

(USD)

Item \ Year	2004~2006	2007	2008	2009	2010
Salaries	4,091,385.15	1,808,627.90	2,756,944.12	2,568,181.83	2,775,831.97
Lighting Heating and Water	38,296.74	100,545.92	109,108.92	114,162.83	118,850.03
Building Maintenance	33,427.73	4,230.99	7,892.66	7,121.98	2,877.44
Equipment Maintenance	447.64	671.42	851.54	1,999.65	1,991.28
Fuel	310,022.15	165,326.78	203,935.28	165,482.45	138,960.21
Fire Fighting	195,219.31	35,075.45	69,640.25	26,630.93	16,210.17
Fire Prevention	2,264.55	1,767.38	8,972.45	2,964.63	1,337.02
Other Operation Costs	772.53	13,992.88	21,618.07	22,104.16	19,557.09
Other	470,904.72	181,113.13	224,699.05	219,579.13	254,114.53
Total	5,142,740.52	2,311,351.85	3,403,662.35	3,128,227.60	3,329,729.76

Although it will be difficult for NEMA to allocate any budget for the phased renewal of fire vehicles in the coming years, it can secure enough funds to maintain all vehicles.

The EMDCC controls 13 fire stations in Ulaanbaatar and its personnel cost (salaries) and fuel cost for fire vehicles are paid from its own budget. As the Project commands important status in the disaster preparedness strategy of NEMA and Government of Mongolia, the EMDCC intends to actively secure the extra necessary personnel and budget that it will entail.

NEMA has its own checking and maintenance standards for fire vehicles. Based on these standards, personnel conduct the daily as well as periodic checking and maintenance and breakdown repair of the fire vehicles. Therefore, there is no problem concerning the technical capacity of personnel.

Japan's grant aid project in FY 2001 included a soft component regarding the maintenance of the fire vehicles by the EMDCC. Mechanics of the EMDCC underwent training on the fire vehicle maintenance system of the Tokyo Fire Department and other relevant matters and the positive outcomes of this soft component are still evident with the fire vehicle maintenance system of the EMDCC.

Since it appears that the Mongolian side will be able to secure the budget to cover the maintenance costs of the procured fire vehicles and the personnel expenses of the additional staff that will be needed to operate them, there appears to be no problem on the operation side.

Concerning maintenance capacity too, since all the Japanese vehicles that were procured in the grant aid project of 2001 are operating in good condition, there appear to be no inhibiting circumstances.

In view of these points, the fire fighting equipment will be manufactured using general technologies, and guidance on initial control and operation will be carried out in order to enhance the effectiveness of equipment.

2-2-1-6 Equipment Grades

The policies regarding the equipment grades are explained below to ensure that the Project generates and maintains its expected outcomes.

The essential requirements of the equipment are (i) compatibility with the general situation of disasters, topography and climate of Ulaanbaatar, (ii) excellent versatility and robustness, and (iii) easy operation and maintenance.

In view of the above requirements, the equipment to be procured under the Project will be that with a good performance record based on proven and reliable technologies rather than the latest equipment using advanced technologies.

2-2-1-7 Procurement Method and Project Implementation Period

(1) Procurement Method

Countries that have manufacturers of fire vehicles that satisfy the following criteria will be considered eligible countries for procurement.

- Fire vehicles which can be properly operated with the experience and skills of NEMA
- Fire vehicles which are compatible with the geological, topographical and meteorological conditions of Ulaanbaatar and also with the relevant laws and regulations in Mongolia
- Fire vehicles which are capable of maintaining their original performance level for a long period of time, which are robust and which do not easily break down.
- Fire vehicles which can be maintained with the current skill level of NEMA
- Fire vehicles which use only the minimum quantity of special parts or components, such as electronic components, the replacement parts of which are difficult to procure in Mongolia
- Fire vehicles which can operate in very cold weather in Mongolia

(2) Project Implementation Period

As the Project stretches over a period of 22 months from the signing of the E/N to handing over, an efficient implementation schedule will be planned.

2-2-2 Basic Plan

The flow for the formulation of the basic plan is as shown in Fig. 2-2-1.

In compiling the plan, it is necessary to select the types, specifications and quantities of equipment needed to maintain the minimum required level of fire fighting strength in Ulaanbaatar. Based on the basic policies (see 2-2-1-1), the contents of the original request will be examined, and then the

minimum fire service strength (in particular the fire vehicle deployment plan) required to satisfy the needed criteria will be decided.

While deploying the compiled plans into the equipment plan, the soft component plan will also be compiled with a view to realizing measures geared to securing a safe and assured living environment for the citizens of Ulaanbaatar.

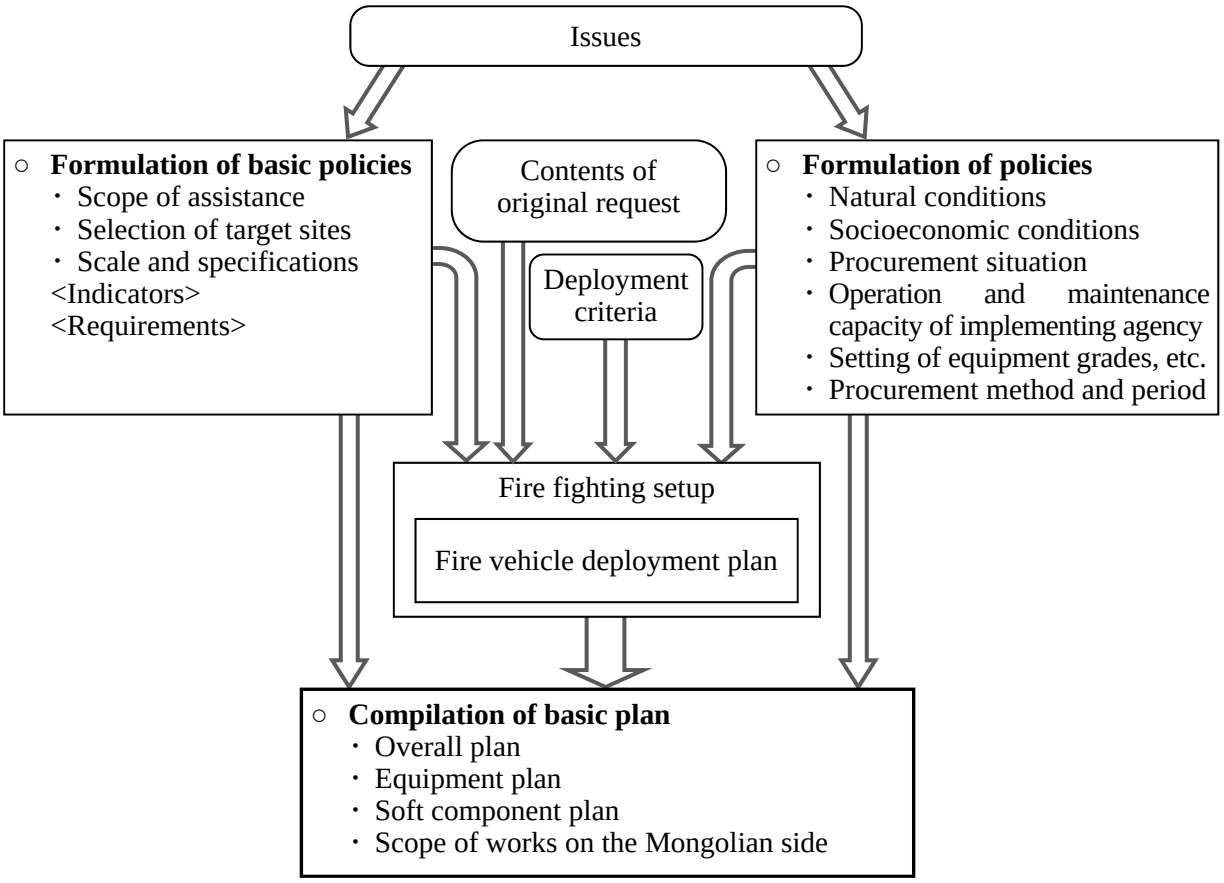

Figure 2-2.1 Basic Plan Formulation Process

2-2-2-1 Modification of the Requested Contents

During the preparatory survey, NEMA made an additional request for provision of a pumper truck and a water tanker to No. 35 Fire Station, which is currently under construction. The detailed specifications of the requested vehicles and equipment were confirmed in the technical discussions. Moreover, it was confirmed that fire fighting equipment other than the fire vehicles would be included in the onboard equipment.

Table 2-2.3 shows the results of discussions concerning the requested equipment.

Table 2-2.3 Results of Discussions

Original Request	Results of Discussions	Remarks
Pumper tanker 4WD 4,000 L	Pumper tanker 4WD 3,500 L	In view of the additional installation of a 300 L chemical tank, the original tank capacity is reduced.
Pumper tanker 4WD 8,000 L	Water tanker 6 x 4 8,000 L	Because of the difficulty of a 4WD water tanker of this size, a 6 x 4 driving system is opted for.
Chemical engine	Chemical engine	This will be equipped with an 8,000 L water tank and 1,000 L chemical tank in order to respond to fires in hazardous facilities in the east of Ulaanbaatar.
Ladder engine	Ladder engine (30 m)	A working height of up to 30 m is selected as this is the international standard.
Light and communication engine	Rescue engine with floodlight	These will be deployed at fire stations primarily serving Ger areas.
Smoke removal engine	Smoke removal engine: not included in the scope of the Project	The required smoke removal function will be met by loading a blower on rescue engines with a floodlight.
Gas smoke protection engine	Breathing apparatus cylinder filling truck: not included in the scope of the Project	While this vehicle is used to refill breathing apparatus at the scene, the refilling time is too long. Reserve cylinders will be procured instead.
Other fire extinguishing equipment	To be included in the loaded equipment	That which can be procured in Mongolia is not included.
Labour safety sets	To be included in the loaded equipment	Quantities to match the number of fire fighters for each fire vehicle will be procured.

The rescue engine with flood light, ladder engine and chemical engine need to be deployed because they are necessary for fire fighting activities in Ulaanbaatar. Out of the three planned rescue engines with a floodlight, one is to replace the existing truck made in 1988. One smoke removal engine and one gas smoke protection engine, both of which were included in the original request, are not included in the scope of the Project as their functions can be performed by some of the loaded equipment. Deployment of vehicles to Fire Station No. 35 to be newly constructed will be included, although this wasn't included in the original request. Table 2-2.4 shows the equipment to be included in the Project.

Table 2-2.4 Modification of Requested Contents

Requested Item		Requested Units			Deployment Plan	
Original Request	Results of Discussion	Order of Priority			Original Request	Additional Request
		A	B	C		
Pumper tanker 4WD 4,000 L	Pumper tanker 4WD 3,500 L	8			No.11, No.18, No.29, No.30, No.65, No.64, No.80 (7 units)	No.35
Pumper tanker 4WD 8,000 L	Water tanker 6 x 4 8,000 L	7	1		No.11, No.18, No.29, No.30, No.65, No.28, No.80 (7 units)	No.35
Chemical engine	Chemical engine	1			No.10	
Ladder engine	Ladder engine (30 m)	2			No.18, No.26	
Light and communication engine	Rescue engine with floodlight	3			No.10, No.34, No.63	
Smoke removal engine	Smoke removal engine: not included in the scope of the Project			1	No.10	
Gas smoke protection engine	Breathing apparatus cylinder filling truck: not included in the scope of the Project			1	No.10	
Other fire extinguishing equipment	To be included in the loaded equipment	Details to be decided in the technical discussions.				
Labour safety sets	To be included in the loaded equipment					
Soft component	Implementation of technical guidance to fire chiefs and fire fighters					

Based on the minutes dated December 3
Items with a C order of priority will not be included in the Project.

2-2-2-2 Fire Vehicles Deployment Plan

(1) Deployment Standards

NEMA has prepared standards for fire fighting activities, including rescue activities, and has secured their approval by the parliament (State Great Khural). Among the standards introduced so far, the following sections are relevant to the latest request:

- Standards for establishment of fire stations
- Standards for numbers and types of fire vehicles
- Standards for loaded equipment on pumper tankers

Concerning establishment of fire stations, NEMA requires one station within 3 kilometres of the city center and 22 stations over the entire area of Ulaanbaatar. Standards have been compiled to reflect the view of NEMA's Research Institute of Disaster Preparedness that there is a need for one fire station per 50,000 people.

Concerns are currently raised over the spread of Ger districts in line with population increase; in particular, the expansion of Ger districts due to the inflow of people is conspicuous on the east side of No. 63 Fire Station. Due to the extremely high administrative demand for fire prevention in this area, it has been decided to newly constructed No. 35 Fire Station. This was decided as an emergency countermeasure by NEMA after the Project request was made to the Government of Japan. Through transferring some of the duties of No. 63 Fire Station, which currently manages an area containing more than 220,000 people, to the new No. 35 Fire Station, a safer living environment will be secured for many citizens.

Accordingly, the Government of Mongolia has requested the provision of equipment to the new fire station under construction in addition to the originally requested equipment.

The sizes of the fire vehicle and personnel deployment are set for each class as shown in Table 2-2.5. The number of fire fighters required for each type of fire vehicle is shown in Table 2-2.6.

Even so, the number of operating vehicles of the Emergency Management Department of Capital City still doesn't meet the fire station standard, even when deteriorated vehicles are included.

Table 2-2.5 List of Required Fire Vehicles by Fire Station Class

Duty	Type of Fire Vehicle	Required No. of Fire Vehicles by Fire Station Class		
		Class I	Class II	Class III
First Response	Pumper tanker	2	2	2
Specialist Operation	Chemical engine	2	1	-
	Ladder engine	1	1	-
	Rescue engine with floodlight	1	1	1
	Smoke removal engine	1	-	-
	Hose truck	1	1	-
Support	Water tanker	2	2	1
	Command car	1	-	-
	Fire investigation car	1	1	1
Total		12	9	5

Table 2-2.6 Required Number of Fire Fighters by Fire Vehicle Type

Duty	Type of Fire Vehicle	No. of Fire Fighters by Duty			Total
		Commander	Driver	Fire Fighter	
First Response	Pumper tanker	1	1	4	6
Specialist Operation	Chemical engine	1	1	4	6
	Ladder engine	1	1	1	3
	Rescue engine with floodlight	1	1	4	6
	Smoke removal engine	-	1	1	2
	Hose truck	-	1	1	2
Support	Water tanker	-	1	2	3
	Command car	-	1	-	1
	Fire investigation car	-	1	-	1

Japanese standards set the required number of fire vehicles, excluding such special trucks as ladder engines and lighting engines, at one per 20,000 people for a large city. Based on the Japanese standards, since Ulaanbaatar has a population of 1,150,000 people, it requires at least 57 fire vehicles. Given the situation of hydrant installation in the city, it is reasonable to argue that fire vehicles above the Japanese deployment standards are required. In either case, the actual number of fire vehicles currently operating in the city is far below the standards. Assuming that this standard is applied, the present fleet of 30 fire vehicles excluding three special vehicles in Ulaanbaatar corresponds to just over 52 percent of the required level. However, considering the situation regarding installation of fire hydrants, an even more stringent standard should be applied.

In reality, according to the standards that stipulate fire station grades and number of fire vehicles in Mongolia, one fire vehicle is required for every 15,000 of population, meaning that at least 76 vehicles are required in Ulaanbaatar. Applying this standard, the current fleet of 33 vehicles corresponds to just 43 percent of the required total.

(2) Deployment Plan

In order to get closer to the stipulated number of vehicles according to grade and the fire vehicle deployment standard, NEMA has a deployment plan for five vehicle types to provide a basis for ire fighting activities including those by No. 35 Fire Station as shown in Table 2-2.7. According to this plan, each fire station has at least one pumper tanker and one water tanker. According to this, compared to the 40 vehicles that are required, there is a shortfall of 22 vehicles. If 22 vehicles are deployed under the Project, the DEMA deployment plan will be satisfied and the resulting 33 vehicles excluding special vehicles (ladder engines and flood light (rescue) vehicles) will account for 57 percent of the Japanese standard, or 52 percent compared to the Mongolian standard.

Table 2-2.7 NEMA Fire Vehicle Deployment Plan

№	Fire Station	Class	Deployment Plan						Operable Fire Vehicles *1						New Deployment					
			Pumper tanker	Water tanker	Chemical engine	Ladder engine	Lighting Engine	Total	Pumper tanker	Water tanker	Chemical engine	Ladder engine	Lighting Engine	Total	Pumper tanker	Water tanker	Chemical engine	Ladder engine	Lighting Engine	Total
1	No.10	I	2	1	1	1	1	6	2	1		1		4			1		1	2
2	No.18	II	1	1		1		3							1	1		1		3
3	No.26	II	1	1	1	1	1	5	1	1	1		1	4				1		1
4	No.11	III	1	1				2							1	1				2
5	No.29	III	1	1				2							1	1				2
6	No.63	II	1	2			1	4	1	2				3					1	1
7	No.28	III	1	1				2	1					1		1				1
8	No.34	II	1	1			1	3	1	1				2					1	1
9	N0.14	III	1	1				2	1	1				2						0
10	No.30	III	1	1				2							1	1				2
11	No.65	III	1	1				2							1	1				2
12	No.64	II	2	1				3	1	1				2	1					1
13	No.80	III	1	1				2							1	1				2
14	No.35	III	1	1				2							1	1				2
Total			16	15	2	3	4	40	8	7	1	1	1	18	8	8	1	2	3	22

*1 : Ongoing operable vehicles are vehicles that can continue to be used including those that were procured in the grant aid project of 2001.

Although the total number of fire vehicles after 22 are procured in the Project will still fall short of the number required by the standards, the basic principle for fire fighting operation by NEMA, i.e. the initial turning out of two fire vehicles, will be met by having at least one pumper tanker and one water tanker deployed at each fire station.

Ulaanbaatar is sandwiched by mountain ranges to the north and south. The city is divided by a railway line as well as Tuul River, both of which run through the central area of the city. The urbanised area is mainly located to the north of this central divide while a power station and many factories are located to the south. These areas are surrounded by Ger areas which stretch in all directions except in the southeast. 10 fire stations, including No. 35 currently under construction, are situated to cover one Ger area or another. Four other fire stations (Nos. 28, 64, 65 and 80) are located in four distant areas from the central city, including two exclaves.

Figure2-2.2 shows an outline of current fire stations and deployed fire vehicles in Ulaanbaatar, while Table 2-2.8 outlines the jurisdiction of each fire station.

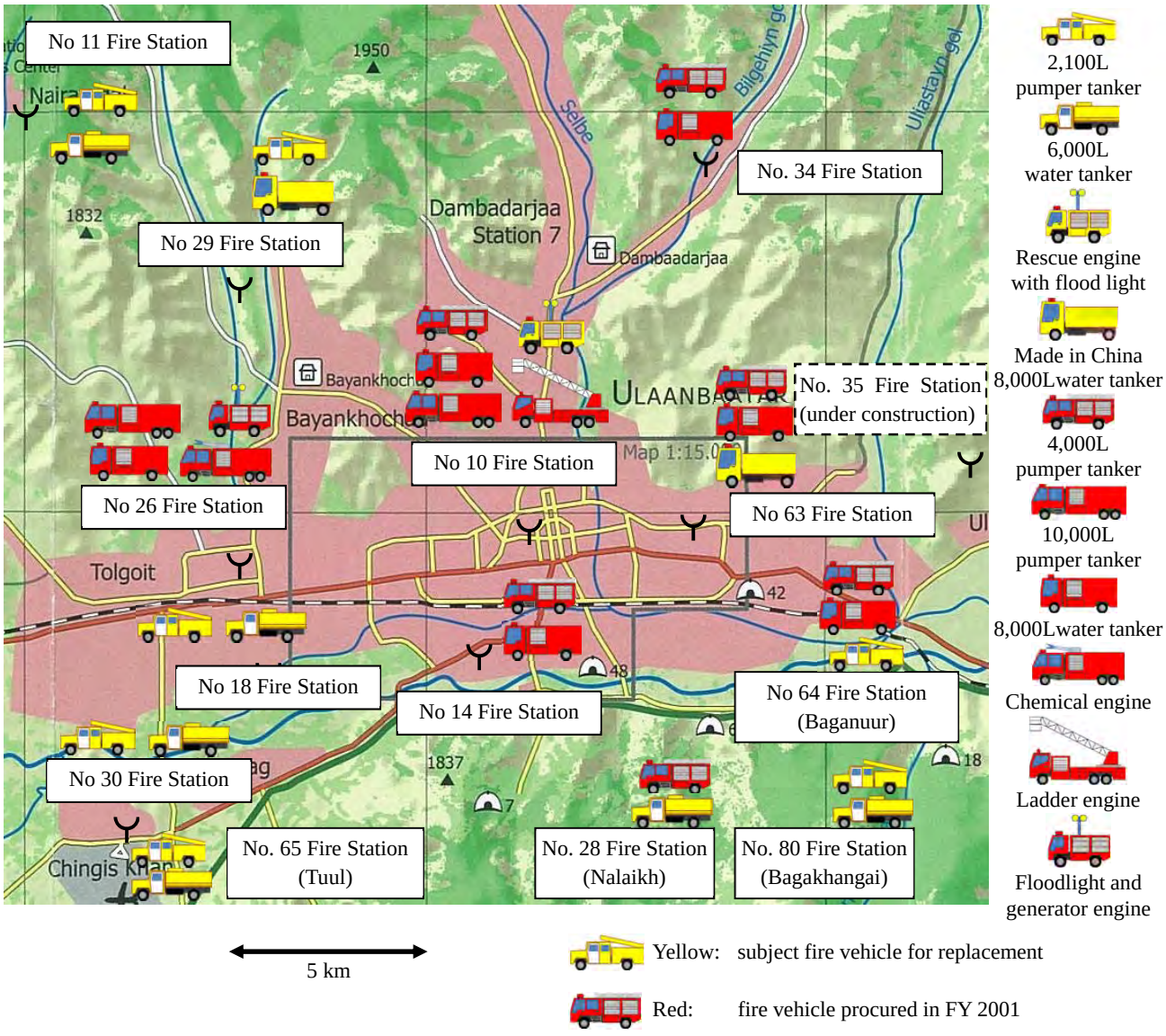

Figure 2-2.2 Locations of Fire Stations in Ulaanbaatar and Existing Fire Vehicles

Table 2-2.8 General Description of Service Area of Each Fire Station in Ulaanbaatar

	Fire Station	Function	District	Population	Service Area (km^2)	Characteristics of the Area	High Rise Buildings		Roads, Topography and Others	Number of Water Sources			
							6 ~ 9 Floors	10 or More Floors		Hydrant	Well	Cistern	Natural Sources
Central	10	Priority	Chingeltei	137,000	8.9	The service area covers the city centre with many government offices, restaurants, department and other stores. The area accounts for some 40% of the total fire incidents in the city.	41	23	The service area includes Ger areas. An outside response is made. Fire trucks regularly face traffic congestion because of the central location of this fire station.	6			Lake Nogoon, Selbe River
	14	Ordinary	Khan-Uul	56,000	33.8	The area accommodates factories, food processing and other factories, vehicle workshops, power station, housing areas and Ger areas.	30	26	The service area is flat. There is a problem of traffic congestion as the trunk road linking the airport to the city centre runs through the middle of the service area.	6	2		
North	34	Priority	Sukhbaatar	112,533	21.8	Most residents live in Ger areas which have been expanding into the northern mountain parts.	19	28	Ger areas spread from the mountain foot towards the peak. The roads are unpaved.	5			
East	63	Priority	Bayanzurkh	255,000	124.4	The service area was once part of the service area of No. 10 Fire Station. The site was formerly owned by the military. The large service area with a large population has prompted the work to establish No. 35 Fire Station in the northeastern part. Two water tankers are deployed because of the high frequency of fires.	139	50	As is also the case with No. 10 Fire Station, this has jurisdiction over the central city as well as Ger areas in the eastern part of the city.	8	4	2	Tuul River, Selbe River
	35	Ordinary	Bayanzurkh			The new fire station will primarily serve Ger areas. The assumed service population at the time of its opening is 90,000			Ger areas spread across the hillsides. The roads are unpaved.				

	Fire Station	Function	District	Population	Service Area (km^2)	Characteristics of the Area	High Rise Buildings		Roads, Topography and Others	Number of Water Sources			
							6 ~ 9 Floors	10 or More Floors		Hydrant	Well	Cistern	Natural Sources
Northwest	26	Priority	Songinokhairhan	211,000	84.1	The service area is in the northwestern part of the central city and includes oil storage tanks and food processing factories. There are many high rise apartment buildings and fires at these buildings used to be dealt with by a second-hand ladder engine made in the US which has now been withdrawn from active service. Most residents live in apartments or Gers. The Ger areas are currently located on hillsides and at the foot of mountains in the northern part which is adjacent to the service areas of No. 11 and No. 29 Fire Stations.	30	28	The service area stretches on both sides of the railway line but will be confined to the north of the railway line once No. 18 Fire Station is improved.	4			Tuul River
	29	Ordinary	Songinokhairhan	62,800	30.2	The station used to be located in an oil complex. Following privatisation, the station was relocated northwards to a training facility of the NEMA in February, 2009. The new location is surrounded by Ger areas where most local residents live.	12	0	Ger areas spread in the hillside and mountain foot areas. The roads are unpaved.				
	11	Ordinary	Songinokhairhan	38,000	6.1	The fire station was originally established to serve youth training and camp facilities. Because of the proximity to the city centre and good air quality, the area has been subject to intensive housing development and the number of Gers has also been sharply increasing. More than 60% of the population lives in Gers.	3	0	Ger areas spread from the mountain foot towards the peak. The roads are unpaved.		1		
Southwest	18	Priority	Bayangol	179,278	2.9	The service area covers No. 4 Power Station. A project to construct high rise apartment buildings is in progress to eliminate Gers from the central area of the city (to be completed in 2015). The first phase due to be completed in 2011 has already started.	151	53	Together with No. 30 Fire Station, this fire station serves Ger areas in the southwestern part of the city.	15			
	30	Local Base	Khan-Uul	16,000	9.7	This fire station was originally established to serve the airport. Because of the introduction of a fire station on the airport premises, this fire station now primarily serves Ger areas which have been steadily expanding in its service area.	10	4	The service area is separated from the service area of No. 18 Fire Station by Tuul River. The roads are unpaved.	11	1		

	Fire Station	Function	District	Population	Service Area (km^2)	Characteristics of the Area	High Rise Buildings		Roads, Topography and Others	Number of Water Sources			
							6 ~ 9 Floors	10 or More Floors		Hydrant	Well	Cistern	Natural Sources
Remote	65	Local Base	Khan-Uul (Tuul District)	8,500	4.8	In order to improve the inner city environment, a housing plot has been provided for 2,000 households and the construction of new Gers has started 45 km southwest of the city. It is planned to build an access road to the new airport.	0	0	The service area is mostly flat. The roads are unpaved.	1	3		Tuul River, Turgeniy River
Remote	28	Local Base	Nalaikh	31,000	68.7	The area, located 45 km southeast of the city, was formerly a coal mining area. Although the mine has been closed, local residents continue to dig to support their livelihood. More than 60% of the residents live in Gers. The municipal authority is planning to relocate the university from its current city centre site to the east of Nalaikh (completion in 2010) and dormitories are scheduled for construction in 2012.	0	0	The service area is a gently sloping hillside and the roads are unpaved.	1	2		Tuul River, Tereljyn River
Remote	64	Priority	Baganuur	25,750	62.2	The area is in an industrial area centering around a coal mine located 130 km east of the city centre. This mine supplies 80% of the coal used by the city's power stations. With a steady increase of the population, 70% of the residents live in Gers. The deployment of a pumper tanker (4 WD) was requested to serve Ger areas as well as neighbouring areas.	0	0	The service area is flat and the roads are unpaved.	1	2	1	
Remote	80	Local Base	Bagakhangai	3,700	14.0	The service area covers four villages in Tov Province, essentially serving 12,000 people. Because of the distance of 60 km from the nearest fire station (No. 28 in Nalaikh), this fire station must have its own fire fighting strength. The disaster risk is rising because of the commencement of mining of the coal seam stretching from Baganaur utilising a local railway shunting yard.	0	0	The service area is a gently sloping hillside and the roads are unpaved.	8	1		
				1,136,561	471.5					66	16	3	

Priority fire station — This type of fire station has a service population of more than 100,000, many important facilities in the service area and is often involved in outside responses. Although the population of Baganuur is small, the fire station there is classified as a priority fire station because of a distance from the city centre and the local presence of a coal mine supplying coal to thermal power stations which are lifelines of the city

Local Base Fire Station — Although the service population is small, it represents an important area for the future urbanisation of the city. In view of an expected population increase in the coming years, the upgrading of those fire stations is being planned.

The Project will entail the renewal of deteriorated pumper tankers and water tankers deployed at eight out of 14 fire stations (excluding the newly constructed fire station), as well as the deployment of a pumper tanker and water tanker to the new No. 35 Fire Station.

This will lead to the deployment of fire vehicles to fire stations that currently have no operable vehicles but have Ger districts under their jurisdiction. Moreover, the pumper tankers can conduct water discharge and fire fighting using foam fire extinguishing agent for small oil fires, etc. until water tankers can arrive on the scene.

The ladder engines and chemical engines will be deployed at hub fire stations in the city to ensure that they can reach fire scenes in no more than 10 minutes. Considering traffic conditions in the city, running distance of 10 minutes roughly corresponds to 4 kilometres, however, as there is currently only one operable ladder engine deployed at No. 10 Fire Station, it is difficult to respond to the increase in high-rise building fires. Considering locations of high rise buildings and road conditions in Ulaanbaatar, it is necessary to deploy ladder engines and chemical engines to No. 10 Fire Station as well as No. 26 Fire Station and No. 18 Fire Station in the area divided by the railway tracks as shown in Figure 2-2.3.

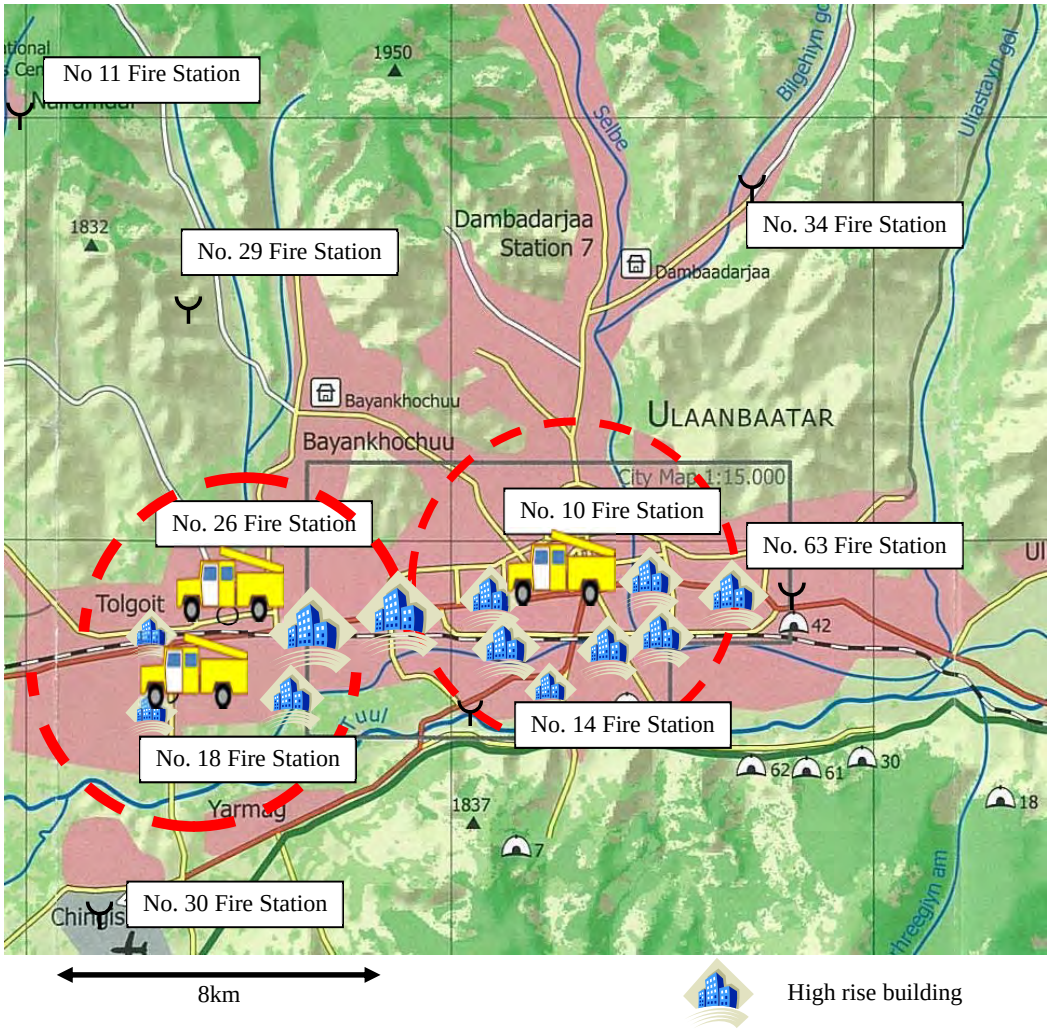

Figure 2-2.3 Deployment of Ladder Engines

A chemical engine is a type of fire vehicle which is specially designed to tackle fires involving hazardous facilities, such as oil tanks and factories. As is shown in Figure 2-2.4, these facilities are concentrated in a zone which stretches 10 kilometres in the east-west direction and 2 kilometres to 3 kilometres in the north-south direction in the central part of the city. At present, one chemical engine is deployed at No. 26 Fire Station to the west of the city centre to serve hazardous facilities such as petroleum storage tanks and factories in the area. When a fire which demands the deployment of this chemical engine breaks out to the east of the city centre, more than 10 minutes are required for this engine to reach the scene of the fire. The deployment of another chemical engine at No. 10 Fire Station is, therefore, extremely important.

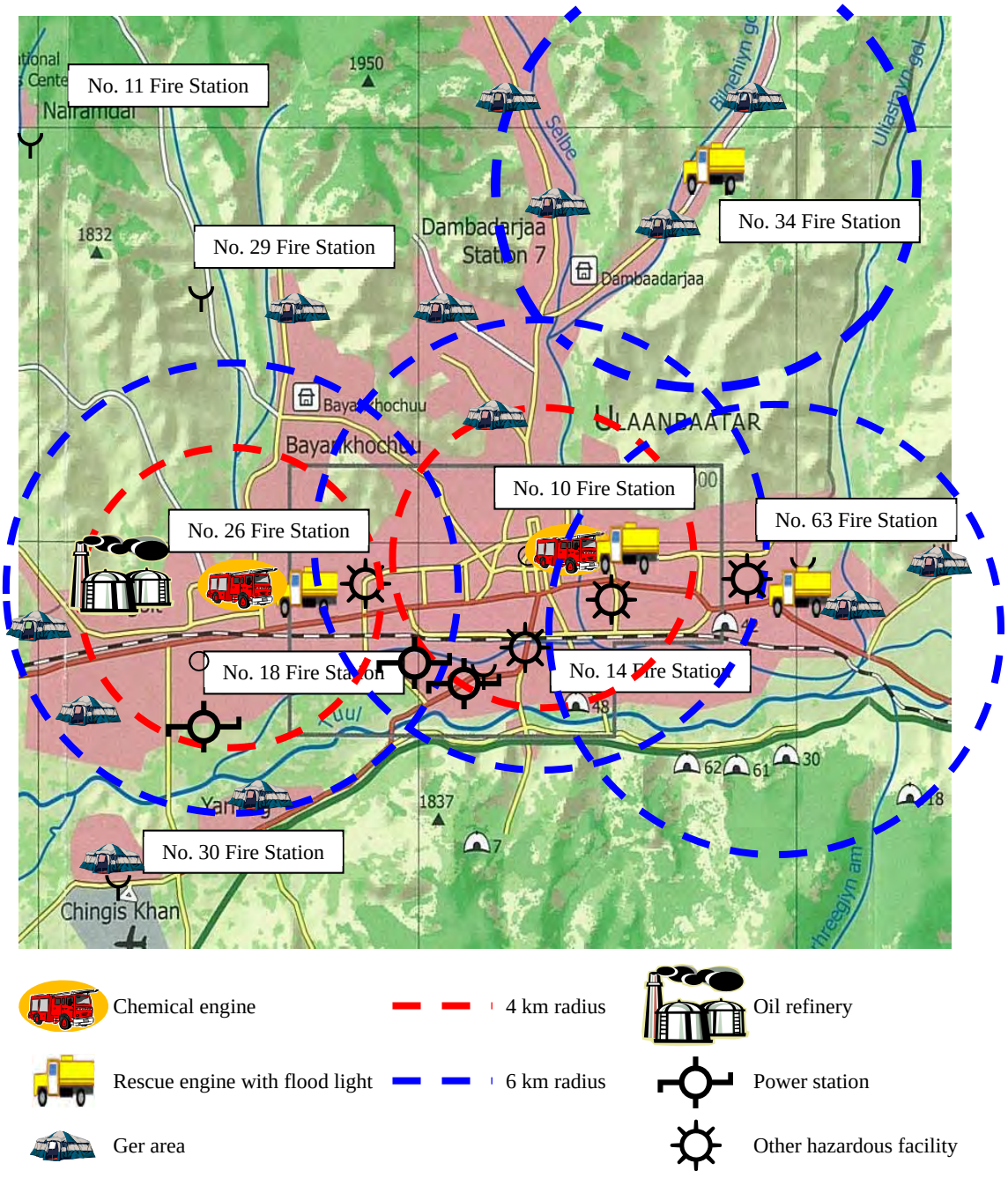

Figure 2-2.4 Deployment of Chemical Engine and Rescue Engine

A rescue engine with a floodlight is designed to provide light in places with poor street lighting, such as Ger areas, and also inside large buildings while performing rescue activities at large fires and other disasters. The rapidly expanding Ger areas cannot adequately be served by just one such truck. New rescue engines with floodlights will be deployed at three stations (Nos. 10, 63, 34) which cover Ger areas. As a support vehicle, a rescue engine with flood light is a rearguard support vehicle that should arrive at the scene of a fire in around 10 to 15 minutes (meaning a service area with a 6 kilometre radius).

In the case of four fire stations (Nos. 28, 64, 65 and 80) located in other areas, fire fighting is conducted using a combination of one pumper tanker and one water tanker. However, as there is currently no risk of a fire requiring the deployment of a ladder engine and/or chemical engine, and a pumper tanker is capable of combating a small-scale oil fire and also of conducting rescue activities as part of fire fighting operation, ladder engines chemical engines will not be deployed.

Bearing in mind the above points, Table 2-2.9 shows the newly established deployment plan for fire vehicles at each fire station in Ulaanbaatar.

Table 2-2.9 Fire Vehicles Deployment Plan in Ulaanbaatar

Area		Fire Station	Deployed Vehicles
< Central > Chingeltei Khan-Uul		10	Pumper tanker 10,000 L Pumper tanker (4WD) 4,000 L Water tanker 8,000 L **Chemical engine** **Rescue engine with floodlight** Ladder engine (35 m)
		14	Pumper tanker (2 WD) 4,000 L Water tanker 8,000 L
< North > Sukhbaatar		34	Pumper tanker (4WD) 4,000 L 2 x water tanker 8,000 L **Rescue engine with floodlight**
< East > Bayanzurkh		63	Pumper tanker (2 WD) 4,000 L 2 x water tanker 8,000 L **Rescue engine with floodlight**
		35	**Pumper tanker (4WD) 3,500 L** **Water tanker 8,000 L**
<Northwest> Songhinokhairhan		26	Pumper tanker 10,000 L Water tanker 8,000 L Chemical engine Lighting engine **Ladder engine (30 m)**
		29	**Pumper tanker (4WD) 3,500 L** **Water tanker 8,000 L**
		11	**Pumper tanker (4WD) 4,000 L** **Water tanker 8,000 L**
<Southwest> Bayangol Khan-Uul		18	**Pumper tanker (4WD) 3,500 L** **Water tanker 8,000 L** **Ladder engine (30 m)**
		30	**Pumper tanker (4WD) 3,500 L** **Water tanker 8,000 L**
Distant Areas	Tuul	65	**Pumper tanker (4WD) 3,500 L** **Water tanker 8,000 L**
	Nalaikh	28	Pumper tanker (4WD) 4,000 L **Water tanker 8,000 L**
	Baganuur	64	**Pumper tanker (4WD) 3,500 L** Pumper tanker (2 WD) 4,000 L Water tanker 8,000 L
	Bagakhangai	80	**Pumper tanker (4WD) 3,500 L** **Water tanker 8,000 L**

Note: The items in bold are fire vehicles for new deployment or for the replacement of old fire vehicles.

See Section 2-2-2-4 for details of the fire vehicles targeted for new deployment.

2-2-2-3 Overall Plan

The overall plan will be formulated based on the deployment plan.

In regard to the contents of the original request, the smoke removal engine has been removed from the scope of the Japanese assistance because smoke removal blowers loaded onto ordinary fire vehicles can perform the same function.

Concerning the gas smoke protection engine, the request asks for a special vehicle equipped with a compressor for supplying air to the breathing apparatus tanks, however, since air filling takes a long time and the compressor can only fill a limited number of tanks at a time, it is extremely inefficient to fill air at the scene of fires.

More efficient and faster fire fighting activities can be conducted if fire fighters coming out of a burning room can simply exchange air tanks without having to refill the air. Accordingly, since this function can be served by equipping all fire vehicles with spare tanks, the gas smoke protection engine has been omitted from the Project.

Apart from fire vehicles, since the other equipment stated in the request is for use in fire fighting activities, it will be loaded onto vehicles as confirmed in the technical discussions. The detailed specifications of fire vehicles have been confirmed in the technical discussions.

As a result of discussions with NEMA, the deployment plan finally arrived at is consistent with the contents of Table 2-2.4 (Modification of Requested Contents)

2-2-2-4 Equipment Plan

(1) Fire Vehicles

1) Pumper Tanker with 3,500 Litre Tank (4WD)

Pumper tankers form the mainstay of the fire vehicles deployed at fire stations. They are the first to arrive at the scene of a fire and are equipped with a 3,500 litre tank which enables each pumper tank to continue the discharge of water until the water relay system is established. They are also equipped with a 300 litre chemical tank for efficient fire fighting activities, including the extinguishing of small-scale fires involving hazardous materials. As one pumper tanker is operated by one company of six fire fighters, it has double cabins. Those to be procured under the Project will be 4WD vehicles in view of the poor conditions of the steep roads in the many Ger areas served by the target fire stations.

2) Water Tanker with 8,000 L Tank

In view of the poor water supply conditions in Ulaanbaatar, it is necessary to deploy water tankers with large water tanks. Since more than 10,000 litres of water is normally used to extinguish a fire in a wooden residence, an 8,000 litre water tanker will be procured for joint use with the abovementioned 3,500 litre pumper tanker.[1] As each tanker is operated by three fire fighters, it has a single cabin. To enable these tankers to enter Ger areas that are characterised by steep and narrow roads, the dimensions will be carefully determined. The

1 Since water that cannot be pumped (more than 10% of tank capacity) remains in fire vehicle pipes and tanks, the required 10,000 litres of water cannot be secured from a 7,000 litre tank. Therefore, tank capacity of 8,000 litres or more is needed.

distance between the front and rear axles in particular will be as short as possible as long as the overall performance is not adversely affected. A good climbing and travelling performance is another important requirement for water tankers. They will be equipped with a large capacity engine-driven fire pump in case the relaying of water over a long distance is necessary due to the inability of a water tanker to enter a narrow street to reach the scene of a fire. The specifications should allow the discharge of water without reliance on a pumper tanker.

3) Chemical engine

A chemical engine is capable of dealing with fires involving hazardous materials at gasoline stands, oil storage facilities, chemical factories and other similar facilities using a foam fire extinguishing agent. Such agent is produced by mixing a fire extinguishing chemical solution with water. The minimum water tank capacity of a chemical engine is set at 9,000 litres to ensure fire fighting activities over a long period of time in Ulaanbaatar which lacks many fire water sources, including hydrants. A chemical engine will also have a chemical tank of 1,000 litres or more. As operation from a site near a fire source may be difficult in the case of a fire at hazardous facilities, a water gun is placed on the roof deck. As one chemical engine is operated by a team of six fire fighters, it has double cabins.

4) Ladder engine

There are various types of ladder engines whose maximum working heights range from 15 metres to as high as 50 metres. The relevant international standard is 30 metres and many ladder engines are manufactured to meet this standard. When the maximum working height exceeds 30 metres, the size of the ladder engine must be much larger, making it difficult to pass through narrow streets. At the same time, a larger ladder engine is much heavier and its travelling performance deteriorates. Such a large and heavy ladder engine is slow to arrive at the scene of a disaster and its operable area is more restricted than that of a smaller ladder engine.

In Ulaanbaatar, high rise buildings of 10 stories or more are equipped with a fire prevention system as well as evacuation facilities. The ladder engine to be newly procured will, therefore, primarily serve high rise buildings of up to nine stories. It is equipped with a basket of which the maximum working height is at least 30 metres, and the vehicle dimensions are reduced to secure running performance even in congested inner city areas. This ladder engine has a single cabin as it is operated by the minimum required fire personnel of one commander and two fire fighters.

5) Rescue engine with flood light

A rescue engine is used for the rescue of those trapped in buildings, etc. in tandem with fire fighting activities by other fire vehicles. A floodlight is essential for fire fighting as well as rescue activities at night or in dark places inside buildings. This truck is loaded with a generator for lighting, a light mast which can be extended and a range of rescue equipment and tools. As it is operated by a team of six fire fighters, it has double cabins.

(2) Superstructure

As every fire vehicle is operated as an emergency vehicle, it has a warning light, siren, loud speaker and in-vehicle radio communication system.

Moreover, the radios can be used within the framework of the existing system.

1) Pumping System

Each of the new pumper tankers, water tankers and chemical engine will be equipped with a fire pump. As water discharge over a long period is required to completely extinguish a fire, the specifications for these trucks include continual pumping operation for a long period of time. The discharge capacity of the pump is equivalent to or higher than 2,400 L/minute (1.1 MPa) which is the capacity of the existing fire pumps on board fire vehicles. The ladder engine will not be equipped with pumping system as it receives pressurised water for discharge from another fire vehicle.

2) Water Tank

The water tank and pipes of the fire vehicles manufactured in the former Soviet Union are made of steel and are highly corroded. A suitable material and thickness will be selected for the water tank and pipes to ensure their long and reliable use.

3) Chemical Tank

Each pumper tanker with a 3,500 litre tank will be equipped with a 300 litre chemical tank so that it can deal with vehicle fires and small-scale oil fires. Moreover, the amount of water used for fire extinguishing can be reduced through having higher penetration to burning objects and enhanced fire fighting efficiency.

Meanwhile, the chemical engine will have a 1,000 litre chemical tank, allowing it to respond to large-scale oil fires.

The chemical tank and pipes will be made of materials which are resistant to corrosion by chemical agents. The mixing of the fire extinguishing chemical with water will use a standard type of in-pump mixing system which does not suffer from pressure loss.

(3) Main Loaded Equipment

1) Protective clothing sets

Protective clothing sets, i.e. labour safety sets, are important to protect fire fighters from fire, radiation heat and falling objects at the scene of a fire where there is dense smoke and hot air.

- Helmet : Resin helmet with a transparent plastic face shield and neck protector
- Clothing : Made of heat-resistant and flame-resistant synthetic fabric with a safety belt
- Gloves : Made of heat-resistant and cut-protective synthetic fabric

Six sets will be provided for each pumper tanker, chemical engine and rescue engine with a floodlight and three sets will be provided for each water tanker and ladder engine.

2) Breathing apparatus

Breathing apparatus protects a fire fighter from the inhalation of smoke and toxic gas. Five sets will be provided for each pumper tanker, chemical engine and rescue engine with a floodlight and two sets will be provided for each water tanker and ladder engine.

Also, spare tanks will be provided to enable fire fighting activities over an extended period.

3) Radio equipment

Portable radio equipment sets are provided for communication between fire fighters and between fire fighters and a fire vehicle and/or fire station. Four sets will be provided for each pumper tanker, chemical engine and rescue engine with a floodlight and two sets will be provided for each water tanker and ladder engine.

4) Fire fighting equipment and rescue equipment

A range of fire fighting equipment as well as equipment for rescue activities accompanying fire fighting activities will be loaded on the fire vehicles, including ladders, axes, crowbars, saws, rod cutters, engine cutters, chainsaws and rescue ropes.

In the case of a rescue engine with a floodlight that is used solely for rescue activities, a hydraulic pump, hydraulic rescue equipment, pneumatic jack and blower will be added.

In order to respond to forest fires and so on, portable pumps with discharge capacity of 1,000 litres per minute or more will be loaded on ladder engines and rescue engines with flood lights that aren’t equipped with fire pump.

(4) Spare parts

There is currently no agency of fire vehicle manufacturers in Mongolia and the procurement of parts, including chassis-related consumables, is difficult. Those parts which are uniquely loaded on fire vehicles, such as fire pumps and ladders, must be ordered from the respective manufacturers. It is, therefore, necessary to maintain a stock of some spare parts in view of the likely long time required to obtain parts during which the fire vehicles in question cannot be operated.

It is also essential to take the very harsh operating conditions posed by the severe cold winter weather and poor road conditions, among others, into consideration. Selection criteria are, therefore, adopted for certain spare parts to be provided under the Project. These are consumable parts and those which are likely to be required in three years' time for chassis-related parts and those which are likely to be required in five years' time for parts which are unique to fire vehicles. NEMA has made a request for the provision of certain parts based on its experience of the grant aid project in 2001 and this request will be taken into consideration when finalising the list of spare parts to be supplied under the Project.

Table 2-2.10 outlines the basic specifications for the fire vehicles (including loaded equipment).

Table 2-2.10 Outline of Main Equipment (1)

Type	(1) 3, 500 L pumper tanker	(2) 8, 000 L water tanker
Description	This very mobile fire truck is equipped with a fire pump, water tank and chemical tank and is used for fire fighting and rescue activities. The 4 wheel drive allows it to easily travel on steep and/or poor roads.	This water tanker is equipped with a fire pump and a large water tank and is capable of supplying water to pumper tankers or conducting its own fire fighting activities. Because of its small turning radius, it is quite mobile and can travel on narrow, steep roads and/or poor roads.
W x L x H (m)	2.5×7.5×3.3 or less	2.5×7.7×3.3 or less
Gross Weight (kg)	13, 000 or less	24, 000 or less
Engine Type	Diesel	Diesel
Engine Output (kW)	145 or more	260 or more
Maximum Travelling Speed (km/hr)	100 or more	90 or more
Driving Mechanism	4x4 (4 WD)	6x4 (rear drive)
Steering	Left-hand drive (power steering)	Left-hand drive (power steering)
Seats (Cabins)	6 (double cabins)	3 (single cabin)
Pumping Performance (litres/min)	2, 400 or more (at 1.0MPa)	2, 400 or more (at 1.0MPa)
Water Tank Capacity (litres)	3, 500 or more	8, 000 or more
Chemical Tank Capacity (litres)	300 or more	-
Electrical Installations	Blue warning light, electronic siren with loudspeaker, motor siren, in-vehicle radio communication system, searchlight	Blue warning light, electronic siren with loudspeaker, motor siren, in-vehicle radio communication system, searchlight
Loaded Equipment	Suction pipe, suction pipe strainer, fire hoses, discharge nozzles, foam nozzles, hose carrier, portable hose gun, basic hydraulic rescue apparatus, engine cutters, reinforcing bar cutters, chainsaw, cable cutters, floodlight set, three section ladder, single section ladder, rescue ropes, hose bridge, drainage hardware, branching hardware, connectors, large bar, shovel, axe, ceiling hooks, dry chemical fire extinguisher, protective clothes set, breathing apparatus, portable radio, flashlights	Suction pipe, suction pipe strainer, fire hoses, discharge nozzles, single section ladder, rescue ropes, hose bridge, drainage hardware, branching hardware, connectors, large car, small axe, ceiling hooks, dry chemical fire extinguisher, protective clothes set, breathing apparatus, portable radio, flashlights
Paint Colour	Red	Red

Type	(3) chemical engine
Description	This fire truck is equipped with a fire pump, large water tank and large chemical tank for the fighting of fires at hazardous facilities, oil storages and others. It can also be used as a pumper tanker.
W x L x H (m)	2.5×9.6×3.5 or less
Gross Weight (kg)	26, 000 or less
Engine Type	Diesel
Engine Output (kW)	280 or more
Maximum Travelling Speed (km/hr)	90 or more
Driving Mechanism	6×4（rear 4WD）
Steering	Left-hand drive (power steering)
Seats (Cabins)	6 (double cabins)
Pumping Performance (litres/min)	2, 400 or more (at 1.0MPa)
Water Tank Capacity (litres)	9, 000 or more
Chemical Tank Capacity (litres)	1, 000 or more
Electrical Installations	Blue warning light, electronic siren with loudspeaker, motor siren, in-vehicle radio communication system, searchlight
Loaded Equipment	Suction pipe, suction pipe strainer, fire hoses, discharge nozzles, foam nozzles, hose carrier, basic hydraulic rescue apparatus, engine cutters, reinforcing bar cutters, chainsaw, cable cutters, floodlight set, three section ladder, single section ladder, rescue ropes, hose bridge, drainage hardware, branching hardware, connectors, large bar, shovel, axe, ceiling hooks, dry chemical fire extinguisher, protective clothes set, breathing apparatus, portable radio, flashlights
Paint Colour	Red

Table 2-2.10 Outline of Main Equipment (2)

Type	(4) ladder engine
Description	Using a ladder which can be extended and swiveled and a basket at the top of the ladder, a ladder engine is used for fire fighting and rescue activities involving high rise buildings.
W x L x H (m)	2.5×10.0×3.7 or less
Gross Weight (kg)	16, 000or less
Engine Type	Diesel
Engine Output (kW)	175 or more
Maximum Travelling Speed (km/hr)	90 or more
Driving Mechanism	4x2 (rear drive)
Steering	Left-hand drive (power steering)
Seats (Cabins)	3 (single cabin)
Ladder Performance	Maximum working height of 30 m, minimum withstand load of basket of 3,530 N or more, automatic tilt adjustment system and other safety systems
Electrical Installations	Blue warning light, electronic siren with loudspeaker, motor siren, in-vehicle radio communication system, searchlight
Loaded Equipment	fire hoses, single section ladder, rescue ropes, small axe, dry chemical fire extinguisher, protective clothes set, breathing apparatus, portable radio, flashlights, plate for jack
Paint Colour	Red

Type	(5) rescue engine with flood light
Description	This fire truck has a light mast to provide lighting to assist fire fighting and rescue activities at night or in dark indoor spaces. It is also used for rescue activities at the scene of a fire or other disasters.
W x L x H (m)	2.45×7.5×3.3 or less
Gross Weight (kg)	13, 000 or less
Engine Type	Diesel
Engine Output (kW)	145 or more
Maximum Travelling Speed (km/hr)	100 or more
Driving Mechanism	4x4 (4 WD)
Steering	Left-hand drive (power steering)
Seats (Cabins)	6 (double cabins)
Specifications of Main Equipment	PTO generator (7.5 kVA), 6 m high light mast (2 x 1,500 kW lamp), portable floodlight (2 x 1,000 kW), portable hydraulic pump and hydraulic rescue equipment
Electrical Installations	Blue warning light, electronic siren with loudspeaker, motor siren, in-vehicle radio communication system, searchlight
Loaded Equipment	Basic hydraulic rescue apparatus, engine cutters, reinforcing bar cutters, cable cutters, floodlight set (including a portable generator of 600 W or more), three section ladder, single section ladder, basket stretcher, rescue ropes, large bar, shovel, axe, ceiling hooks, dry chemical fire extinguisher, protective clothes set, breathing apparatus, portable radio, flashlights
Paint Colour	Red

2-2-3 Outline Design Drawings

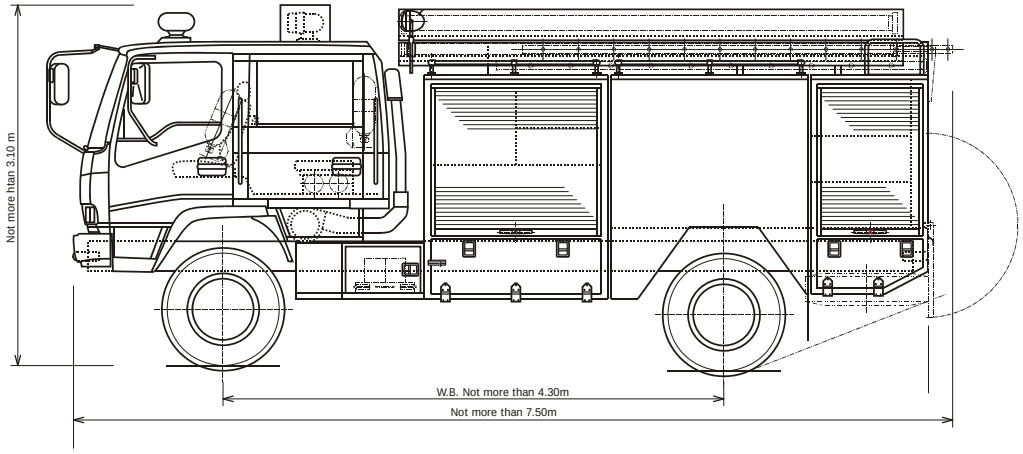

Figure 2-2.5 Pumper Tanker (3,500 L Tank)

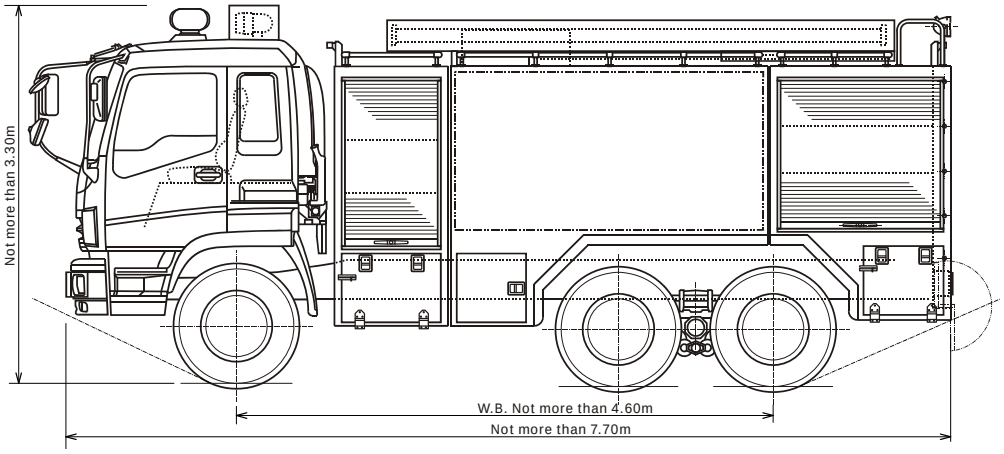

Figure 2-2.6 Water Tanker

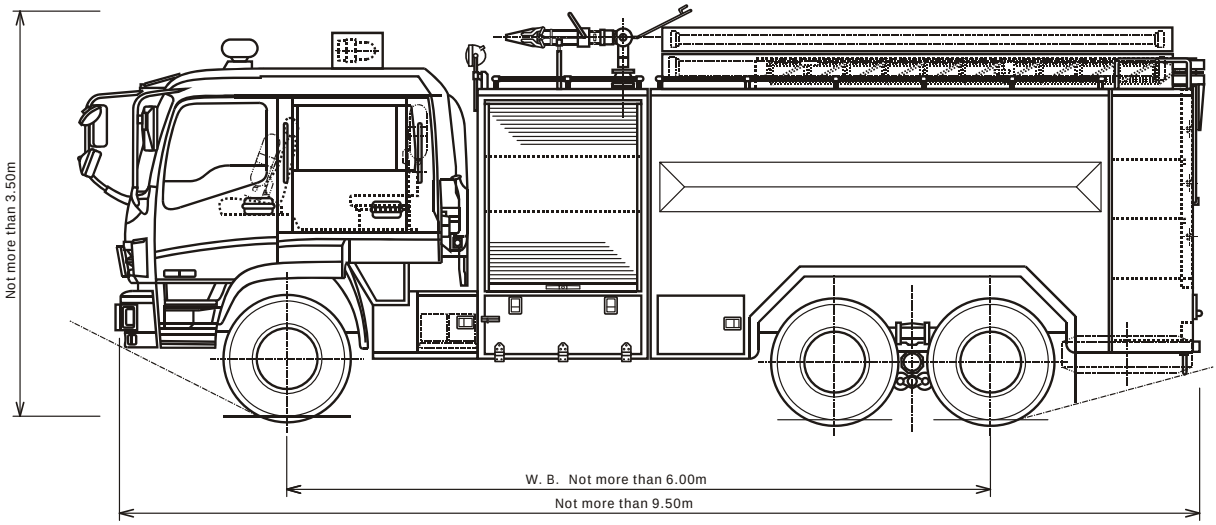

Figure 2-2.7 Chemical Engine

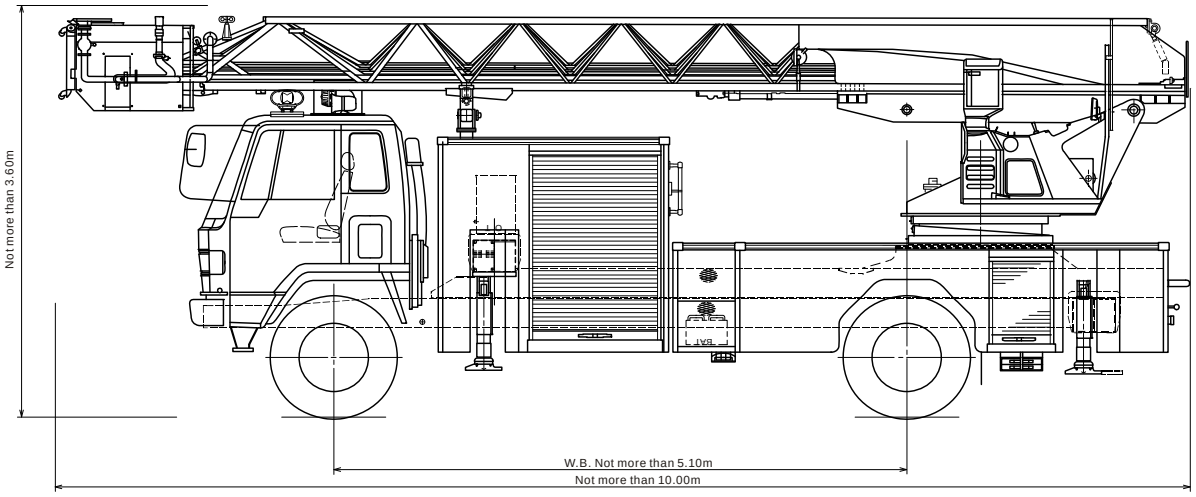

Figure 2-2.8 Ladder Engine

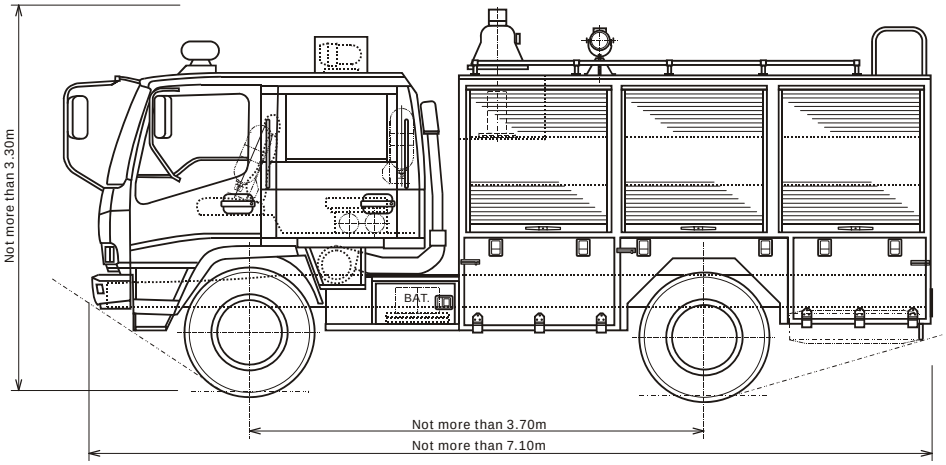

Figure 2-2.9 Rescue Engine with Floodlight

2-2-4 Procurement Plan

2-2-4-1 Procurement Policies

(1) Basic Issues

The Project will be implemented in accordance with the following sequence in line with the guidelines for Japan's grant aid.

1) Following a cabinet decision by the Government of Japan to approve the project, an E/N (Exchange of Note) on the Grant Aid will be signed by the Government of Japan and the Government of Mongolia while a G/A (Grant Agreement) will be signed by JICA and the Government of Mongolia.

2) Following the signing of the E/N and G/A, a consultancy agreement will be concluded between a Japanese consultant and the Mongolian side. The consultant will commence work once this agreement has been approved by JICA.

3) The consultant will prepare tender documents based on the report on the preparatory survey and will request the approval of these tender documents by the Mongolian side.

4) The tender for the Project will be executed and a Japanese equipment supplier will be selected.

   The tender executer will be the implementing agency on the Mongolian side with full cooperation provided by the consultant.

5) The successful equipment supplier of the tender will conclude a procurement contract with the Mongolian side and will commence work once the contract has been verified by the JICA.

(2) Equipment Procurement Policy

The Japanese-made fire vehicles that were procured under the grant aid project of 2001 are used in more than 70 percent of call-outs. Since it is easy to procure spare parts and the Japanese vehicles are easy to maintain, the Mongolian side hopes to procure reliable Japanese vehicles. In Mongolia, Japanese-made trucks are more common than American and European models; moreover, since at least one Japanese truck maker has an agent in Mongolia, this reinforces the view that Japanese-made fire vehicles are better in terms of maintenance including spare parts procurement. Therefore, the fire vehicles in the Project will be procured from Japan only.

(3) Implementation Setup

The Project implementation setup is as follows.

1) The project implementing body will be NEMA.

2) The operation and maintenance of the fire equipment to be procured under the Project will be conducted by NEMA.

The Project implementation system with the main Japanese and Mongolian organizations involved is shown in Fig. 2-2.11.

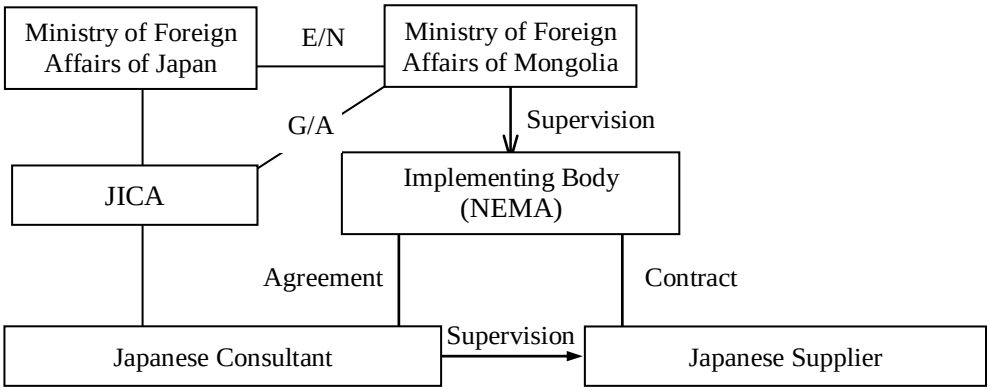

Figure 2-2.10 Project Implementation Setup

2-2-4-2 Important Points for Procurement

In regard to the procurement of fire equipment, the procurement schedule must be carefully planned with due consideration of the following issues to achieve the smooth transportation and handing over of the equipment.

- The equipment supplier must continually check the progress of equipment transportation and ensure swift customs clearance and delivery.
- The Mongolian side must ensure that the fire vehicles, etc. are exempt from tax and import tariffs and also ensure their smooth customs clearance and registration.

2-2-4-3 Scope of Works for Procurement and Installation

All of the work and costs relating to the fire equipment to be procured under the Project will be borne by the Japanese side up to their handing over to the Mongolian side in Ulaanbaatar. This means that the transportation of the handed over fire vehicles to each fire station and subsequent maintenance will be the responsibility of the Mongolian side. Such scope of works is outlined in Table 2-2.11.

Table 2-2.11 Scope of Works

No.	Work to be Conducted	Japan	Mongolia
1	Securing of land and construction of building for the installation and/or storage of the procured equipment		●
2	Arrangement of storage space for spare parts		●
3	Procurement, test operation and adjustment and guidance on the operation and handling of fire vehicles	●	
4	Supply of water and fuel required for the test operation and adjustment and guidance on the operation and handling of the fire vehicles		●
5	Procurement of loaded equipment and guidance on its operation and handling	●	
6	Procurement of the spare parts required for initial operation and guidance on their handling	●	
7	Provision of power supply, water supply and drainage systems required for the procured equipment		●
8	Tax exemption and customs clearance of the procured equipment		●
9	Registration of the fire vehicles		●
10	Transportation of the procured equipment to the site of their handing over	●	
11	Transportation of the procured fire vehicles from the site of handing over to each fire station		●
12	Soft component	●	

2-2-4-4 Procurement Supervision Plan

In accordance with the implementation procedure under Japan's grant aid scheme, the Japanese consultant will conclude a detailed design and procurement supervision agreement (i.e. consultancy agreement) for the Project with the Government of Mongolia and will implement the work with the approval of JICA. The principal work of the consultant is described next.

(1) Detailed Design

1) Detailed Design

Based on the findings of the preparatory survey and the contents of the E/N and G/A, the consultant will check the finalised contents of the Project and review the equipment specifications. The consultant will then prepare the tender documents which are required by potential tenderers for equipment procurement and transportation to estimate the cost.

2) Tender

The consultant will discuss such issues as the selection of tenderers and the tender method with NEMA and will conduct the tender on behalf of NEMA. The various types of work relating to the tender are listed below.

- Preparation of the tender documents
- Public announcement of the tender

- Distribution of the tender documents
- Witnessing of the tender
- Examination of the bids
- Preparation of a bid examination report
- Preparation of a tender assessment report

(2) Procurement Supervision

The consultant will supervise the proper progress of the manufacture of the fire vehicles and procurement of loaded equipment, in-vehicle radio equipment and spare parts in line with the contents of the agreement. In particular, the consultant will maintain close contact with the equipment supplier and NEMA to ensure that the procurement work progresses as planned. Such close contact and the sharing of vital information with the equipment supplier and NEMA will make it possible to formulate measures if a situation arises which affects the manufacture, procurement or transportation of the equipment. The consultant will dispatch an engineer(s) with good experience of fire equipment to attend the performance test or inspection at factories, etc. to ensure a high level of quality management.

The consultant will also dispatch a supervisory engineer for supervision during the period from equipment arrival in Mongolia to handing over to the Mongolian side. The said engineer will witness the test operation, adjustment and training to be conducted by the equipment supplier prior to handing over, issue a completion certificate and prepare a work completion report.

2-2-4-5 Equipment Procurement Plan

(1) Procurement Contractor

The procurement contractor will design, manufacture, paint, test, inspect, pack and transport the fire vehicles and fire equipment in accordance with the specifications prepared by the consultant. The procurement contractor will also check the quantity and operational status of the equipment by means of a field test and inspection prior to its handing over to the Mongolian side. The procurement contractor will also prepare the necessary documents to obtain permits relating to inland transportation and handing over site and will fully consult with NEMA on these issues. The actual permits will be applied for and obtained by the Mongolian side.

(2) Equipment Procurement Sources

No fire vehicles are manufactured in Mongolia. The fire vehicles currently used by the EMDCC were made in Japan, the former Soviet Union or Germany. Those made in the former Soviet Union have the above-mentioned maintenance issues, while the only German-made truck is a second-hand rescue engine with a floodlight manufactured in 1988. There are two water tankers which were made in China but these are simply tankers without the function of a pumper tanker.

As was described in 2-2-4-1 Procurement Policies, it is intended to procure all vehicle types from Japan, and it will be essential to select a manufacturer capable of manufacturing fire vehicles with suitable specifications for the freezing climate of Mongolia. The fact that the water tanks and pipes of the Soviet-made fire vehicles are corroded indicates the need to select a manufacturer with high level manufacturing technologies.

Table 2-2.12 List of Possible Procurement Sources

№	Equipment	Procurement Source		
		Mongolia	Japan	Third Country
1	3,500L pumper tanker		●	
2	8,000L water tanker		●	
3	Chemical engine		●	
4	Ladder engine		●	
5	Rescue engine with flood light		●	

(3) Transportation Plan

The transportation of the equipment will be maritime transportation up to the port of landing. As Mongolia is an inland country, Port Tianjin in neighbouring China is the most likely port of landing. Railway will be used for transportation between Port Tianjin and Ulaanbaatar.

2-2-4-6 Initial Operation Guidance Plan

Since fire vehicles will be procured under the Project for the first time in 10 years in Mongolia, the operating mechanisms and methods of these fire vehicles will differ from those of the existing fire vehicles. It is, therefore, essential for engineers/operators of the manufacturer(s) to provide thorough guidance on their operation. In particular, the operation of a ladder engine involves additional risk due to work in high places. As such, all fire fighters involved in the operation of a ladder engine and trainers will be trained by an engineer/operator of the manufacturer. Training on fire vehicle operation will also be provided for drivers, representative fire fighters of each fire station and trainers in regard to the pumper tankers, water tankers, chemical engine and rescue engine with a floodlight. The scope of this training will include loaded equipment.

2-2-4-7 Soft Component

Almost 10 years have passed since fire vehicles were renewed in the previous grant aid project in FY 2001. At present, half of the fire vehicles operating in Ulaanbaatar were made in the former Soviet Union and their functional features and operating methods differ from those of new fire vehicles. Because of this, NEMA has made a request for practical drills using the new fire vehicles. As the implementation of such drills by the manufacturer(s) will be difficult, it is believed that such drills should be implemented by the consultant under a soft component of the Project to ensure the efficient as well as effective use of the new fire vehicles. It has, therefore, been decided to introduce a soft component comprising the following contents.

(1) Operating and Fire Fighting Techniques for Pumper Tanker

In Mongolia, a turn-out normally involves one pumper tanker and one water tanker. The pumper tanker arrives at the scene of a fire first to discharge water. The water tanker then parks next to the pumper tanker to convey water to the pumper tanker. Alternatively, the pumper tanker uses its own suction hose to obtain water from the water tanker. As a water tanker is larger than a pumper tanker, parking next to the pumper tanker may not be possible. In this case, extension of the hose to convey water to the pumper tanker may be necessary. However, the water tankers made in the former Soviet Union or China do not have a pump and cannot supply water over a distance. The new tankers will be provided with a pump, making guidance on the technique to convey water through an extended hose line necessary to ensure efficient fire fighting activities.

In regard to actual fire fighting activities, it is often necessary to get as close as possible to a burning building for effective water discharge or even to enter a building for fire fighting and rescue activities. When it is necessary to move into an area of dense smoke and strong heat, it is essential to spray a water mist to protect fire fighters from the extreme heat. As the planned equipment is capable of discharging water in the form of a pressure mist, guidance should be provided on the effective application of this function. Further guidance should also be given on making correct decisions about not entering buildings in dangerous condition to ensure the safety of fire fighters.

(2) Ladder Engine Operating Techniques

Only one ladder engine procured some 10 years ago is currently in working order in Mongolia and its functions and mechanism differ from that to be procured under the Project.

Since an extendable ladder has a complicated structure and it is necessary to give consideration to safety, the fire fighters operating a ladder engine must be very skilled in its operation with the ability to make correct judgments in the face of the various and changing states of fires and other disasters.

Technical guidance and training on the use of a ladder engine will be provided for those fire fighters operating the ladder engine to be newly deployed and also for those fire fighters of the pumper tankers which will be operated along with the ladder engine.

(3) Preparation of Manuals

A "manual for fire fighting (pumper tanker)" and a "manual for fire fighting (ladder engine)” will be prepared in the Mongolian language for the education and training of fire fighters.

Such guidance will be directly provided by the Japanese consultant who has experience of providing similar guidance on fire fighting techniques under the soft component of the previous

grant aid and who is responsible for procurement supervision in the Project. An operation manual will be prepared in the Mongolian language and the inclusion of local trainers in the planned guidance and training will make it possible to pass on knowledge and skills in the post-project period without outside help.

(4) Goals

The implementation of the planned soft component is expected to achieve the following goals:

- Fire fighters will be able to conduct swift and efficient fire fighting activities using the pumper tankers
- Fire fighters will be able to conduct efficient fire fighting and rescue activities in high places using the ladder engine

(5) Implementation Method, etc.

1) Fire Truck Operating Techniques

a)	Trainers and training duration	:	2 trainers x 7 days twice
b)	Timing	:	After the arrival of the equipment
c)	Target persons	:	Designated commanders and fire fighters of the pumper tankers and water tanks; local trainers
d)	Method	:	Lecture and practical training using the actual fire trucks

2) Ladder Engine Operating Techniques

a)	Trainers and training duration	:	2 trainers x 8 days
b)	Timing	:	After the arrival of the equipment
c)	Target persons	:	Commander and fire fighters assigned to the ladder engine of the intended fire stations, and local trainers
d)	Method	:	Lecture and practical training using the ladder engine

2-2-4-8 Project Implementation Schedule

The anticipated project implementation schedule is shown below.

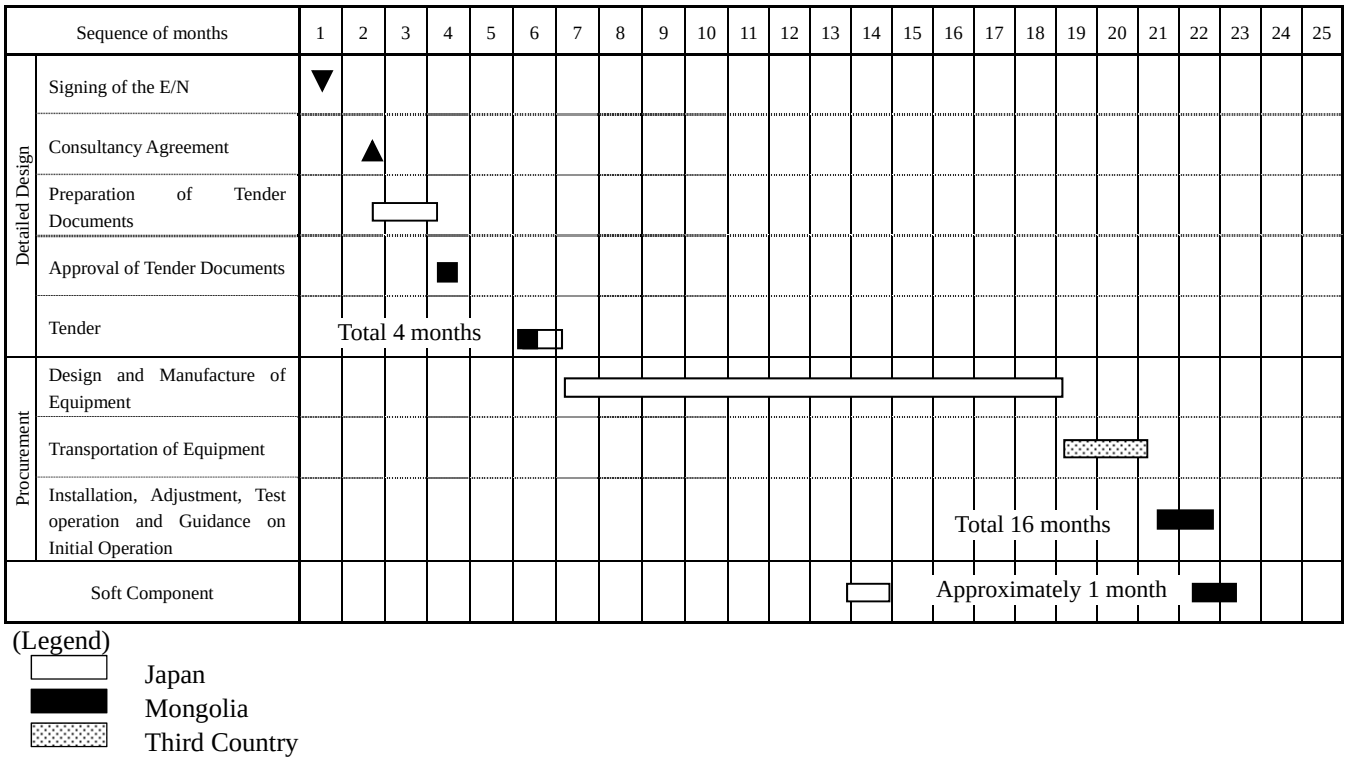

Figure 2-2.11 Project Implementation Schedule

As the temperature in Mongolia drops below freezing point in November, it will be difficult to provide the efficient guidance (training) on initial operation and to implement the soft component activities outdoors for a long period of time. From December onwards, the temperature further drops below -10°C when it will be difficult to conduct the adjustment, test operation and training involving water discharge because of the fairly rapid freezing of water. This means that the Project implementation schedule must be arranged to complete the guidance on initial operation and the soft component activities by the end of October at the latest.

2-3 Obligations of the Recipient Country

The Government of Mongolia must fulfill the obligations described below if the Project is to be implemented as a grant aid project of the Government of Japan.

2-3-1 Procedural Matters

(1) Acquisition of Land, etc.

The Mongolian side must secure space to keep or store the fire vehicles and spare parts. As space is available at the existing facilities, the construction of garages or other structures will be unnecessary except at the new No. 35 Fire Station. However, the public ownership of these facilities must be guaranteed.

(2) Vehicle Registration

The new fire vehicles must be registered with the competent authority to be able to legally travel on the road.

(3) Tax Exemption

All Japanese nationals entering Mongolia to perform work based on the procurement agreement for the Project must be afforded exemption from all customs duties, domestic taxes and other levies.

The Mongolian side must ensure the swift customs clearance of the procured equipment and exempt this equipment from all taxes.

(4) Conveniences

The Mongolian side must guarantee the necessary measures to allow the entry of Japanese nationals assigned to provide services based on a certified agreement to Mongolia and their stay therein so that they can duly perform their services.

The Mongolian side must supply fuel and fire extinguishing water, etc. required for the adjustment and test operation of the fire vehicles and equipment.

(5) Banking Arrangements and Authorization to Pay (A/P)

The Mongolian side must open an account in its name at a bank in Japan and must issue an A/P to the bank in question.

Furthermore, the Mongolian side must also pay any bank commission for notification of the A/P and actual payments without fail based on the banking agreement.

2-3-2 Undertakings of the Recipient Country

(1) Securing of Garages for Fire Vehicles

The garages for the fire vehicles must have heating to maintain a minimum indoor temperature of 15°C even in winter when the outdoor temperature can drop to -30°C or even lower.

Out of the fire stations intended for deployment of procured equipment, since No. 18 Fire Station is dated and was built to house the former Soviet model fire vehicles, it will be necessary to relocate it. In the case of No. 26 Fire Station at which the new ladder engine will be deployed, as the present height of the entrance door to the garage is too low, it will need to be raised. No. 65 Fire Station will also need to be reformed as it is currently not tall enough to house the water tanker intended for deployment. In all cases, it will be necessary to carry out the necessary work

by 2013 when the fire vehicles are scheduled to be deployed. Table 2-3.1 shows the fire stations that require rebuilding and/or reform.

Table 2-3.1 Need for Reform of Garages to Allow Deployment of Fire Vehicles

Deployed vehicle type and height / Fire station	Pumper tanker	Water tanker	Chemical engine	Ladder engine	Rescue engine with flood light	Need for Reform
	3.1m	3.2m	3.5m	3.6m	3.3m	
10	-	-	○	-	○	Unnecessary
18	○	○	-	○	-	Necessary (scheduled for relocation)
26	-	-	-	○	-	Necessary
11	○	○	-	-	-	Unnecessary
29	○	○	-	-	-	Unnecessary
63	-	-	-	-	○	Unnecessary
28	-	○	-	-	-	Unnecessary
34	-	-	-	-	○	Unnecessary
14	-	-	-	-	-	Unnecessary
30	○	○	-	-	-	Unnecessary
65	○	○	-	-	-	Necessary (scheduled for relocation)
64	○	-	-	-	-	Unnecessary
80	○	○	-	-	-	Unnecessary
35	○	○	-	-	-	(To be newly constructed)

(2) Infrastructure Development

The introduction of new infrastructure is unnecessary as the new fire vehicles will be deployed at existing fire stations. At No. 35 Fire Station, it will be necessary to set up wired as well as wireless communication systems along with the supply of electricity and water.

(3) Supply of Fuel, etc. for Test Operation, Adjustment, Training and Soft Component

It will be necessary for the Mongolian side to supply the fuel, etc. required for the test operation and adjustment of the equipment to be conducted prior to its handing over and for the subsequent training and soft component activities.

(4) Equipment Transportation

The Mongolian side will be responsible for the transportation of the equipment from the site of handing over to the individual fire stations and workshop.

(5) Improvement of the Operation and Maintenance System for Newly Procured Equipment

The Mongolian side will be responsible for the recruitment/appointment of the personnel required for the operation and maintenance of the newly procured equipment.

2-4 Project Operation and Maintenance Plan

Of the newly procured fire vehicles under the Project, seven pumper tankers, seven water tankers and one rescue engine with a floodlight will replace existing trucks and the fire fighters already deployed at the fire stations will operate these new fire vehicles. In contrast, as is shown in Table 2-4.1, the recruitment of fire fighters to operate the additional one pumper tanker, one water tanker, two ladder engines, two rescue engines with a floodlight and one chemical engine will be necessary.

Table 2-4.1 Required Personnel

Vehicle Type	Number of Units	Additional Personnel per Vehicle	Total
Pumper tanker	7 (renewal of existing vehicles)	(To be operated by existing personnel)	-
	1*1	6*1	6
Water tanker	7 (renewal of existing vehicles)	(To be operated by existing personnel)	-
	1*1	3*1	3
Chemical engine	1	6	6
Ladder engine	2	3	6
Rescue engine with flood light	1 (renewal of existing vehicle)	(To be operated by existing personnel)	-
	2	6	12
Total (per shift)			33
Additional personnel (1 shift x 4)			132

*1 Deployment and assignment to the new No. 35 Fire Station
*2 Of whom, 36 additional personnel (9 members x 4 shifts) will be assigned to the new No. 35 Fire Station

Routine maintenance will be conducted by the existing and newly appointed fire personnel. The present level of maintenance skills appears to be acceptable as the current personnel conduct the reloading of engines and other difficult tasks. As the number of vehicles will remain the same, there will be no need to recruit additional maintenance personnel. The equipment supplier, i.e. procurement contractor, will provide guidance/training on the maintenance of the fire vehicles to be provided under the Project at the time of their handing over. Given the request by NEMA to conduct the training of its engineers in Japan to improve their skills, it is desirable to consider the implementation of such training after the handing over of the trucks to meet this request.

NEMA plans to recruit new fire fighters along with the re-assignment of existing fire fighters. Their training will be conducted at each fire station in the form of fresher training as well as OJT

2-5 Project Cost Estimation

2-5-1 Project Cost Estimation

The cost burden on each side in the event of Project implementation is estimated as follows based on the previously stated scope of works and estimation conditions indicated below. However, this figure does not denote the limit of the grant specified in the E/N.

(1) Project Cost for Mongolia

Table 2-5.1 Project Cost for the Mongolian Side

Item	Amount (million yen)
Transportation (from the site of handing over to individual fire stations)	3,000,000 MNT
Fuel for test operation ,adjustment, training and soft component	10,000,000 MNT
Construction of a new fire station (No. 35)	916,000,000 MNT
Reforming of an existing fire station (No. 18, No. 65)	1,982,000,000 MNT
Vehicle registration of the new fire vehicles	15,400,000 MNT
Authorization to Pay (A/P) procedure (bank commission)	14,440,000 MNT
Total	2,940, 840,000 MNT (188 million yen)

(2) Estimation Conditions

Table 2-5.2 Estimation Conditions

Item	Conditions
1. Date of Estimation	December, 2010
2. Foreign Exchange Rates	US$ 1 = ¥86.61 Euro 1 = ¥113.06 MNT 1 = ¥0.064
3. Procurement Period	Procurement will take place approximately 17 months after the completion of the tender.
4. Other	Estimation is based on the grant aid scheme of the Government of Japan

2-5-2 Operation and Maintenance Cost

As is indicated in Table 2-4.1, in line with the procurement of new fire vehicles in the Project, it will be necessary for the EMDCC controlling the intended deployment fire stations to secure an additional 132 fire fighters. As the EMDCC currently has no surplus fire personnel, it will need to newly recruit these fire fighters with additional budgetary allocation to pay their wages. NEMA estimates that each new recruit will require annual funding of MNT 6.3 million, totaling MNT 831.6 million (¥54.37 million) a year. It intends to secure this budget from FY 2011 in which new personnel will be required to operate the new No. 35 Fire Station.

Other costs, including that for fuel, lubricating oil, consumables, spare parts and utilities, will also increase as the additional fire vehicles commence operation.

Since the procurement of 22 new fire vehicles in the Project will lead to the scrapping of 29 deteriorated vehicles, the number of vehicles requiring maintenance will decrease and it will thus be possible to secure the necessary maintenance budget.

The fuel budget of the EMDCC covers 40 vehicles including fire vehicles, disaster prevention vehicles and rescue vehicles, etc. At present, the EMDCC allocates some US$ 160,000 for this purpose.

Following procurement of new vehicles in the Project, since the number of vehicles in operation will increase by seven, additional funding of approximately US$ 28,000 a year will be required to pay for the fuel cost, etc.

Since the Project is regarded as important in terms of disaster prevention by NEMA and the Government of Mongolia, priority will be given to securing the necessary budget to cover these costs.

CHAPTER 3

PROJECT EVALUATION

CHAPTER 3 PROJECT EVALUATION

3-1 Preconditions for Project Implementation

(1) Construction of and Deployment of Personnel to No. 35 Fire Station

Construction of No. 35 Fire Station must be completed by fiscal 2013, when the fire vehicles will be deployed. Moreover, NEMA must recruit and train the 36 drivers (engine operators) and fire fighters, etc. who are needed to operate the fire vehicles. Also, the engine operators will need to maintain the vehicles.

(2) Improvement of vehicle garages

NEMA must rebuild the old garage at No. 18 Fire Station and reform the garage at No. 26 Fire Station to enable the deployment of a ladder engine. Rebuilding is additionally planned at No. 18 Fire Station and No. 65 Fire Station, where it is necessary to modify the garage height, and these works must be completed by fiscal 2013, when the fire vehicles will be deployed.

(3) Bolstering of personnel

As was indicated in section 3-4 Project Operation and Maintenance Plan, in addition to the deployment of 36 personnel to No. 35 Fire Station, NEMA will need to recruit another 96 fire fighting personnel by fiscal 2013, when the fire vehicles will be deployed.

(4) Tax exemption

The Government of Mongolia shall implement the customs clearance of the procured equipment and exempt it from any taxes.

(5) Procedures on the Mongolian side necessary for Project implementation

The registration of vehicles shall be carried out promptly, and location will be secured in order to carry out test driving, adjustment, guidance on operation and the soft component. Also, the Mongolian side will take part in the guidance on operation and the soft component.

(6) Items to be borne on the Mongolian side

The fuel and fire fighting water, etc. necessary to carry out the adjustment and test driving of procured equipment, guidance on operation and soft component shall be supplied.

3-2 Scope of Works on the Mongolian Side for Achievement of the Overall Project Plan

The items that need to be tackled on the Mongolian side in order to ensure the actualization and maintenance of the Project effects are as follows.

- Implement and continue the training geared to utilizing the outputs of the soft component.
- Employees (fire fighters and maintenance personnel) who have received training will operate and maintain the procured equipment on a continuous basis.
- Secure the necessary budget for operation and maintenance.

3-3 External Conditions

The external conditions that need to be in place in order to ensure the actualization and maintenance of the Project effects are as follows.

- There will be no changes in the fire fighting and disaster prevention policies and disaster prevention plans in Mongolia.

3-4 Project Evaluation

3-4-1 Validity

The Project is deemed to be valid for implementation under the Government of Japan's grant aid scheme for the following reasons.

(1) The Project aims to provide the means to protect the lives and property from fire of 1,150,000 residents in the capital Ulaanbaatar against a background of growing difficulty in responding to increasingly common fires due to the deterioration of existing fire vehicles. Accordingly, the Project has a high degree of urgency for citizens.

(2) Ger areas, where around 60 percent of the citizens of Ulaanbaatar live, contain many Ger houses that are highly combustible and prone to spreading fires. In spite of this, fire hydrants and other aspects of water supply for fire fighting are inadequate, and fire fighting activities are made even more difficult by narrow roads and steep hills. Therefore, deployment of fire vehicles that have excellent ability to travel on narrow and steep roads and conduct prompt fire fighting activities is necessary for protecting the impoverished people, who account for the majority of residents in Ger areas, from fires, etc.

(3) The Project is consistent with higher plans in Mongolia.

3-4-2 Effectiveness

(1) Quantitative Effects

Table 3.4-1 shows the quantitative effects of Project implementation.

Table 3-4.1 Project Output Indicators

Indicator	Reference Value (2011)	Target Value (2016)	Effect
1. Improvement of vehicle performance Mobilisation preparation time	Vehicles before renewal (vehicles made in the former Soviet Union) 2~8 minutes	Newly procured vehicles 1 minute	Reduction of 1~7 minutes
2. Number of pumper tankers that can mobilise in 1 minute	7/15 vehicles (47%)	15/15 vehicles (100%)	
3. Reduction in the time it takes for ladder engines to discharge water	Existing ladder engines 3 minutes	Newly procured ladder engines No more than 2 minutes	Reduction of 1 minute
4. Number of residents in Ger areas who can receive prompt fire fighting activities (within 10 minutes from fire occurrence)	19 Ger districts 27,690 households 149,900 people	24 Ger districts 50,690 households 259,900 people (According to data compiled by NEMA)	

(2) Qualitative Effects

Project implementation will impart the following qualitative effects.

1) Thanks to improvement in the fire fighting capacity of Ulaanbaatar, the citizens of Ulaanbaatar will enjoy a safe and assured living environment.

2) Since two ladder engines will be deployed to Ulaanbaatar, it will become possible to respond even if two fires occur in medium and high-rise buildings at the same time, thus mitigating damage from fires.

3) Due to implementation of the soft component, it will become possible to effectively operate pumper tankers and the technology for using ladder engines will improve.

4) Through adding training instructors to the targets of the soft component, this will contribute to the passing-on of operating techniques for pumper tankers and ladder engines.

5) Renewal of fire vehicles and equipment will help secure the safety and improve the morale of fire fighters.

APPENDICES

1. Member List of the Survey Team

1-1 Preparatory Survey

Work Assignment	Name	Affiliation
Leader	Senya MORI	Deputy Director General and Grope Director for Governance Public Policy Department, JICA
Project Coordinator	Yuko FURUICHI	Deputy Assistant Director Public Administration Division Governance Grope, JICA
Chief Consultant/Operation and Maintenance Planner	Sadahiko NAITO	FESC (Fire Equipment and Safety Center of Japan)
Fire Vehicles and Equipment Planner	Hiroaki SHIMAKURA	FESC
Fire Fighting and Prevention/Natural Conditions Analyst	Shinji AOKI	FESC
Procurement Planner/Cost Estimator	Takashi OGAWA	FESC

Note: Affiliations were correct at the time of the field survey.

1-2 Explanation of the Summary of the Preparatory Survey

Work Assignment	Name	Affiliation
Leader	Motonori TANAKA	Deputy Director General and Grope Director for Governance Industrial Development and Public Policy Department, JICA
Project Coordinator	Yuko FURUICHI	Deputy Assistant Director Public Administration Division Governance Grope, JICA
Chief Consultant/Operation and Maintenance Planner	Sadahiko NAITO	FESC (Fire Equipment and Safety Center of Japan)
Fire Vehicles and Equipment Planner	Hiroaki SHIMAKURA	FESC
Fire Fighting and Prevention/Natural Conditions Analyst (company backup)	Shinji AOKI	FESC

2. Study Schedule

2-1 Preparatory Survey

Day	Date	Day of Week	Activity		Over-Night Stay
			Survey Team (Naito/Shimakura/Aoki)	Survey Team (Ogawa)	
1	November 26th	Fri	- Narita (OM502) 16:25→Ulaanbaatar 21:05		Ulaanbaatar
2	27th	Sat	- Discussions at National Emergency Management Agency (NEMA) - Site survey (N14, N30)		Ulaanbaatar
3	28th	Sun	- Site survey (N18, N26, N29)		Ulaanbaatar
4	29th	Mon	- Courtesy call to NEMA and JICA Office - Site survey (N10) - Courtesy call to Embassy		Ulaanbaatar
5	30th	Tue	- Courtesy call to Deputy Mayor of Ulaanbaatar - Explanation and Discussion of Inception Report		Ulaanbaatar
6	December 1st	Wed	- Site survey (N34, Emergency Command Center, rescue station) - Discussion of minutes		Ulaanbaatar
7	2nd	Thu	- Discussion of minutes		Ulaanbaatar
8	3rd	Fri	- Courtesy call to Mr. B. Tugurdur of the Aid Policy and Cooperation Bureau, Ministry of Finance - Signing of minutes - Reporting to the JICA office and Embassy of Japan …JICA members only	- Narita (OM502) 16:25→Ulaanbaatar 21:05	Ulaanbaatar
9	4th	Sat	- Site survey (N28: Nalaikh, N64:Baganuur)		Baganuur
10	5th	Sun	- Travel to Ulaanbaatar		Ulaanbaatar
11	6th	Mon	- Site survey (N11: Nairamdal)		Ulaanbaatar
12	7th	Tue	- Site survey (N80: Bagakhangai)		Ulaanbaatar
13	8th	Wed	- Discussions with the Fire Department (questionnaire, specifications of fire vehicles and fire fighting equipment)		Ulaanbaatar

Day	Date	Day of Week	Activity		Over-Night Stay
			Survey Team (Naito/Shimakura/Aoki)	Survey Team (Ogawa)	
14	December 9th	Thu	- Site survey (N10) - Discussions with the Fire Department (specifications of fire vehicles and fire fighting equipment)	- Survey of the local procurement situation	Ulaanbaatar
15	10th	Fri	- Site survey (N63, N35 (construction site)	- Survey of the local procurement situation	Ulaanbaatar
16	11th	Sat	- Site survey (N65: Tuul Village)	- Survey of the local procurement situation	Ulaanbaatar
17	12th	Sun	- Observation of fire fighting training		Ulaanbaatar
18	13th	Mon	- Site survey (commercial buildings: Central Tower, NEMA Special Rescue Team) - Discussions with the Fire Department (specifications of fire vehicles and fire fighting equipment)		Ulaanbaatar
19	14th	Tue	- Discussions with the Fire Department (specifications of fire vehicles and fire fighting equipment)		Ulaanbaatar
20	15th	Wed	- Discussions with the Fire Department (specifications of fire vehicles and fire fighting equipment)		Ulaanbaatar
21	16th	Thu	- Preparation of the technical memorandum		Ulaanbaatar
22	17th	Fri	- Ulaanbaatar (OM0501) 9:05→ Narita 14:55		

2-2 Explanation of the Summary of the Preparatory Survey

Day	Date	Day of Week	Activity	Over-Night Stay
			Survey Team (Naito/Shimakura/Aoki)	
1	August 13th	Sat	- Narita 13:30→Ulaanbaatar 17:40 (OM502)	Ulaanbaatar
2	14th	Sun	- Survey of new fire station (No35) and building reform work at existing fire stations (No18, 26, 65)	Ulaanbaatar
3	15th	Mon	- Technical discussions with NEMA	Ulaanbaatar
4	16th	Tue	- Technical discussions with NEMA	Ulaanbaatar
5	17th	Wed	- Technical discussions with NEMA, signing of minutes	Ulaanbaatar
6	18th	Thu	- Reporting to the JICA office and Embassy of Japan	Ulaanbaatar
7	19th	Fri	- Ulaanbaatar 6:55→ Narita 12:30 (OM501)	

3. List of Parties Concerned

(1) Embassy of Japan in Mongolia

Ambassador Extraordinary and Plenipotentiary	Takuo KIDOKORO
First Secretary	Hiromichi MIYASHITA

(2) JICA Office in Mongolia

Resident Representative	Toshinori ISOGAI
Senior Representative	Atsumu IWAI
Project Formulation Advisor	Takayuki TOMIHARA

(3) Ministry of Finance of Mongolia

Development Financing and Cooperation Department, Director General	KHURENBAATAR Baavgai
Aid Effectiveness and Data Management Team, Head Department of Development Financing and Cooperation, Senior Officer	Baajiikhuu TUGULDUR

(4) Ulaanbaatar City

Vice Mayor

(In charge of Construction, Urban Development and Infrastructure)

MUNKHBAATAR Begzjav

(5) Information Emergency and Command Center

Emergency Command Department /101,105/, Head, Colonel	B. ALTANKHUYAG

(6) National Emergency Management Agency of Mongolia

Chief, High commissioner, Doctor of Law (Ph. D), Professor	AMGALANBAYAR Tsevegmid
Fire Fighting Department, Senior Captain, Director	ZALUUKHUU Sukhbaatar
Fire e Fighting Division, Head, Colonel	ISHJAMTS Yadam
Prevention and Inspection Division, Head	BYAMBATSOGT Dugarsuren
Rescue Specialist Unit, Chief of Staff, Colonel	ULANBAYAR Nyamhuu

(7) Mongolia Metropolitan Emergency Management Department

Director, Commissioner	BATBILEG Khalzankhuu
Fire Fighting Division, Chief	D. Erdenebaatar
UB city Fire-Fighting Section, Mechanic Engineer	ENKHAMGALAN Tumurkhuyag
A Specialist of Communications	ENKHBOLD Lamjav
Khan-Ul Emergency Department, Chief	B.Ganbat

Sukhbaatar Emergency Department, Chief	Yo. Amarbayasgalan
Bagakhangai Emergency Department, Chief	DASHPUNTSAG Natsang
Baganuur Emergency Department, Chief	S.Tsendsuren
Bayanzurkh Emergency Department, Chief	J.Ganzorigt
No. 10 Fire Station, Station Manager	Ch.Tsogtbayar
No. 11 Fire Station, Station Manager	D.Gankhuyag
No. 14 Fire Station, Station Manager	Kh.Buyandelger
No. 18 Fire Station, Station Manager	Sh.Battseren
No. 26 Fire Station, Station Manager	S.Erdenebayar
No. 28 Fire Station, Station Manager	Ganbaatar
No. 29 Fire Station, Station Manager	L.Tegshbayar
No. 30 Fire Station, Station Manager	J.Orgodol
No. 34 Fire Station, Station Manager	O.Bulgantamir
No. 63 Fire Station, Station Manager	B.Oyunbat
No. 64 Fire Station, Station Manager	D.Batjargal
No. 65 Fire Station, Station Manager	D.Dagvasuren
No. 80 Fire Station, Station Manager	B.Tsogbadrah
No. 105 Rescue Station, Manager	D.Chinzorig
Rescue Subunit of Capacity of Mongolia, Head, Officer	Ganbold. B

(8) Private sector

TUUSHIN LLC. (transport operator), General Manager	Mr. Zorigt
Mongolian Express (transport operator), President	Mr. Davaanyamyn
Sangrila Ulaanbaatar (commercial building), Security Manager	Amarjargal D.
MIG INSURANCE Co., Ltd (insurance company), Manager	Batmunkh ANKHBAYAR

(9) Agents

KHET Co., Ltd (local agent of Isuzu Motors), General Manager	Battulga Ganbat
Baterol Co., Ltd. (local agent of Icom (radios)), Director	V. BAT-ERDENE

4. Minutes of Discussions

4-1 Preparatory Survey

THE MINUTES OF MEETINGS

ON

THE MISSION FOR THE PREPARATORY SURVEY

ON

THE PROJECT FOR IMPROVEMENT OF CAPACITY OF FIRE FIGHTING TECHNIQUES AND EQUIPMENT

IN

ULAANBAATAR

AGREED UPON BETWEEN

THE GOVERNMENT OF MONGOLIA

AND

THE JAPAN INTERNATIONAL COOPERATION AGENCY

Ulaanbaatar, 2010/12/4

Amgalanbayar Tsevegmid
Chief, High commissioner
National Emergency Management Agency
Mongolia

Senya Mori
Leader
Preparatory Survey team
Japan International Cooperation Agency

Baavgai Khurenbaatar
Director General
Department of Policy and Coordination
for Loans and Aid
Ministry of Finance
Mongolia
(Witness)

Munkhbaatar Begzjav
Vice Mayor
Municipality of Ulaanbaatar
Mongolia
(Witness)

The Government of Mongolia (hereinafter referred to as "GOM") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") have made several preliminary discussions in order to identify priority projects in the field of Fire Fighting, and agreed to make preparation for the Project for the Improvement of Capacity of Fire Fighting Techniques and Equipment in Ulaanbaatar (hereinafter referred to as "the Project"). Accordingly, JICA dispatched a mission on the Project (hereinafter referred to as "the JICA Mission") to Mongolia from November 26 to December 17 in order to develop scope and implementing arrangements of a further survey which will make the site survey and collect the necessary data and information of the situation for renovating fire fighting techniques and equipment of the Fire fighting units (hereinafter referred to as "the Preparatory Survey"). The scope and implementing arrangements of the Preparatory Survey are described in the Appendix 1. The main points discussed during its visit are described in the Appendix 2.

It should be noted that implementation of the Preparatory Survey does not imply any decision or commitment by JICA to extend its grant for the project at this stage.

Appendix 1: Scope and Implementing Arrangements of the Preparatory Survey
Appendix 2: Main Points Discussed
Appendix 3: Japan's Grant Aid Scheme
Appendix 4: Major Undertakings to be taken by Each Government

Annex1: Items requested by the GOM
Annex2: Tentative Schedule of the Survey

Appendix 1

SCOPE AND IMPLEMENTING ARRANGEMENTS OF THE PREPARATORY SURVEY

I. BACKGROUND AND OBJECTIVES OF THE PREPARATORY SURVERY

Average annual occurrence of fire in Ulaanbaatar is increasing year by year in the context of the increase of the population. In order to reduce damage caused by fire and to improve capacity of fire fighting techniques and equipment in Ulaanbaatar, the GOM made a request for Grant Aid for the Project in March 2009.

This Survey has the objective of confirming the necessity and appropriateness of the Project, and preparing the related reports and documents.

II. OBJECTIVES OF THE PROJECT

The objective of the Project is to provide necessary fire vehicles in Ulaanbaatar to National Emergency Management Agency for improving the capacity of fire fighting service system.

III. ITEMS REQUESTED BY THE GOM

After discussions with the JICA Mission, the items listed in Annex1 were finally requested by the GOM.
However, final components of the Project will be decided after further surveys and analysis.

IV. SURVEY AREA

Survey Area is as follows:
- National Emergency Management Agency (NEMA)
- Mongolia Emergency Department of Capital City
- Fourteen (14) Fire Stations (No.10, No.11, No.14, No.18, No.26, No.28, No.29, No. 30, No.34, No.63, No.64, No.65, No.80, N35)
- Maintenance Shop
- Fire Prevention property
- Main high-rise buildings in Ulaanbaatar
- Ger Areas

V. SCOPE OF THE PREPARATORY SURVEY

1. Terms of Reference

The Preparatory Survey shall cover the following items:

- To identify and confirm the components of the proposed Project (as set forth in the "Application Form for Japan's Grant Aid" issued by the GOM in 2009)
- To coordinate with the development plan at national, regional, sector and other levels
- To appraise and evaluate technical and economic viability of the Project
- To make outline design including the equipment plan and equipment specifications
- To estimate the cost of the Project and the schedule required for implementing its procurement

2. Desirable specialists for the Preparatory Survey

JICA will select and dispatch a survey team to carry out the Preparatory Survey. The team will include the following specialists.

- Leader
- Project Coordinator
- Chief Consultant / Operation and Maintenance Planner
- Fire Vehicle and Equipment Planner
- Fire Prevention Planner / Natural Condition Analyst
- Procurement Planner and Cost Estimator

The assignment of the specialists may be subject to change. The Survey team may engage local consultants, NGOs, and/or other supporting staffs.

VI. SCHEDULE OF THE PREPARATORY SURVEY

The Preparatory Survey will be carried out in accordance with the tentative schedule attached in the Annex 2. The schedule may be subject to change during the preparation and the course of the survey.

VII. REPORTS

JICA will prepare and submit following reports in English to the GOM.

1. Inception Report:

5 copies will be submitted at the commencement of the first work period in Mongolia.

2. Draft Final Report:

5 copies will be submitted 5 months after the commencement of the Preparatory Survey. The GOM shall submit its comments within one month after the receipt of the Draft Final Report.

3. Final Report:

5 copies will be submitted within one month after the receipt of the comments on the Draft Final Report.

VIII. JAPAN'S GRANT AID SCHEME

GOM understands the Japan's Grant Aid Scheme explained by the JICA Mission as described in Appendix 3 and Appendix4.

IX. UNDERTAKINGS OF THE GOM

The GOM shall act as a counterpart agency to the survey team and also as a coordinating body with other organizations concerned for the smooth implementation of the Preparatory Survey.

The GOM shall, at its own expense, provide the survey team with the following items in cooperation with other organizations concerned:

(1) security-related information as well as measures to ensure the safety of the survey team;
(2) information as well as support in obtaining medical service;
(3) data and information related to the Preparatory Survey;
(4) counterpart personnel;
(5) suitable office space with necessary equipment and secretarial service;
(6) credentials or identification cards;
(7) entry permits necessary for the survey team members to conduct field surveys;
(8) support in making transportation arrangements; and
(9) support in obtaining other privileges and benefits if necessary.

- Taxation: Assist the team in custom clearance, exempt from any duties with respect to equipment, instruments, tools and other articles to be brought into and out of Mongolia in connection with the implementation of the survey.
- Exemption from prosecution: The GOM shall bear claims, if any arises, against the members of the survey team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in implementation of the Preparatory Survey, except when such claims arise from gross negligence or willful misconduct on the part of the member of the survey team.

X. CONSULTATION

JICA and the GOM shall consult with each other in respect of any matter that may arise from or in connection with the Preparatory Survey.

END

Appendix 2

THE MAIN POINTS DISCUSSED

1. Fire Fighting Vehicle(s) and loaded equipment for #35 Fire station

#35 Fire station was not included when the request was made. However, the GOM newly made a request for Fire Fighting Vehicle(s) and loaded equipment for #35 Fire station which will be completed in 2011. Both sides agreed the new request as higher priority, and Smoke remover engine and Gas smoke protective engine requested for #10 Fire station as lower priority.

2. Deployment of the Fire Fighting Vehicle

Both sides agreed Deployment of the Fire Fighting Vehicle will be as Annex 1.

3. Soft Components

The GOM requested 3 kinds of trainings as Soft Components as below:

- training for drivers of new Fire Fighting Vehicles
- training for the captains of Fire brigade
- training for Fire Fighters

JICA mission explained that "training for drivers of new Fire Fighting Vehicles" is included in supplier's responsibility. Then both sides agreed that "training for the captains of Fire brigade" and "training for Fire Fighters" will be considered as Soft Components of the Project.

4. Spare Parts

The GOM made comments that it is very difficult to procure the Spare Parts in Mongolia for the newly provided Fire Fighting Vehicles. Therefore the GOM strongly requested the provision of the Spare Parts as much as former Grant Aid Project in JPY2001.

The GOM will prepare the list of necessary Spare Parts and submit it to JICA Mission.

Appendix 3

JAPAN'S GRANT AID SCHEME

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on the law and the decision of the Government of Japan (hereinafter referred to as "the GOJ"), JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is conducted as follows-

- Preparatory Survey (hereinafter referred to as "the Survey")
  - The Survey conducted by JICA
- Appraisal &Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Determination of Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide a basic document necessary for the appraisal of the Project by JICA and the GOJ. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

The Report on the Survey is reviewed by JICA, and after the appropriateness of the Project is confirmed, JICA recommends the GOJ to appraise the implementation of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a plead for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

The consultant firm(s) used for the Survey will be recommended by JICA to the recipient country to also work on the Project's implementation after the E/N and the G/A, in order to maintain technical consistency.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be

verified by JICA. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

(10) Social and Environmental Considerations

A recipient country must ensure the social and environmental considerations for the Project and must follow the environmental regulation of the recipient country and JICA socio-environmental guidelines.

(End)

Appendix 4

Major Undertakings to be taken by Each Government (Equipment)

NO	Items	To be covered by the Grant	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay,)

Items Requested by the GOM

The contents of the Project covered under the Japanese Grant Aid finally requested by the Mongolian Side are as follows with priority "A","B" and "C" in this order. However, the final contents of the Project will be determined be the Japanese side at discretion.

Items		Number of Items requested			Allocation plan	
Original Request in March 2009	Result of Discussion	Priority			Original request	Additional request
		A	B	C		
Pumper Tanker 4WD 4,000 lit.	Pumper Tanker 4WD 3,500 lit.	8			No.11, No.18, No.29, No.30, No.65, No.64, No.80	No.35
Pumper Tanker 4WD 8,000 lit.	Water Tanker 6x4 8,000 lit.	7	1		No.11, No.18, No.29, No.30, No.65, No.28, No.80	No.35
Light and communication engine	Rescue truck with light mast	3			No.10, No.34, No.63	
Ladder engine	Ladder engine (30m)	2			No.18, No.26	
Smoke remover engine	Smoke remover engine			1	No.10	
Chemical foam engine	Pumper Tanker 8,000 lit. with Chemical Tank	1			No.10	
Gas smoke protective engine	Breathing apparatus cylinder filling truck			1	No.10	

(NOTE)

Requested Fire Extinguishing Equipment and Labor Safety Set will be provided as loaded equipment of the newly provided Fire Vehicles.

Annex2

Tentative Schedule of the Survey

Date	Day	Activities
Nov-26	Fri.	Transfer (Narita/Japan to Ulaanbaatar)
Nov-27	Sat.	Visit to Mongolia Emergency Department of Capital City , Survey of the fire station (N14, N30)
Nov-28	Sun	Survey of the fire stations (N26, N18, N29,)
Nov-29	Mon	Visit to the National Emergency Management Agency (NEMA), JICA Mongolia office, Japan Embassy, Survey of the fire stations (N10)
Nov-30	Tue	Visit to Municipality of Ulaanbaatar, Discussion with NEMA
Dec-1	Wed	Survey of the fire station (N34), Discussion with NEMA
Dec-2	Thu	Discussion with NEMA
Dec-3	Fri	Sign on Minutes of Meetings, Visit to Ministry of Finance
Dec-4	Sat	Survey of the fire station (N64)
Dec-5	Sun	Survey of the fire station (N28)
Dec-6	Mon	Survey of fire station (N11)
Dec-7	Tue	Survey of fire station (N80)
Dec-8	Wed	Ditto
Dec-9	Thu	Technical discussion with NEMA, Survey of delivery route, agents or distributor of the fire equipment and customs procedures
Dec-10	Fri	Survey of fire stations (N63, N35)
Dec-11	Sat	Survey of fire stations (N65)
Dec-12	Sun	Analysis of collected data and information including laws and regulations / Occasional date for the survey of fire stations
Dec-13~15	Mon	Discussion with NEMA, Fire Fighting Department about the specifications of the fire fighting equipment
Dec-16	Thu	Preparation of the memorandum for technical discussion,
Dec-17	Fri	Departure (Ulaanbaatar to Narita)

4-2 Explanation of the Summary of the Preparatory Survey

Minutes of Discussions
on
the Preparatory Survey
for the project for improvement of capacity of fire fighting techniques and equipment in Ulaanbaatar
(Explanation on Draft Report)

In November 2010, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Preparatory Survey Team on the Project for improvement of capacity of fire fighting techniques and equipment in Ulaanbaatar (hereinafter referred to as "the Project") to Mongolia and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Mongolian authorities concerned on the components of the draft report, JICA dispatched to Mongolia the Draft Report Explanation Team (hereinafter referred to as " the Team "), which was headed by Mr. Motonori Tanaka, Deputy Director General and Group Director for Governance, Industrial Development and Public Policy Department, JICA, from August 13th, 2011.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Ulaanbaatar, 17th August 2011

Amgalanbayar Tsevegmid
Chief, High commissioner
National Emergency Management Agency
Mongolia

Motonori Tanaka
Leader
Preparatory Survey team
Japan International Cooperation Agency

Khurenbaatar Baavgai
Director General
Development financing and Cooperation Department
Ministry of Finance
Mongolia
(Witness)

Munkhbaatar Begzjav
Vice Mayor
Municipality of Ulaanbaatar
Mongolia
(Witness)

ATTACHMENT

1. Components of the Draft Report

The Mongolian side agreed and accepted in principle the components of the draft outline design explained by the Team.

2. Japan's Grant Aid scheme

The Mongolian side understood the scheme of Japan's Grant Aid and would take the necessary measures and allocate necessary budget properly for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented. The Grant Aid Scheme and necessary measures were described in the Appendix 3, 4 of the Minutes of Discussions signed by both sides on 4th December, 2010 (hereinafter referred to as "the previous minute").

3. Responsible and Implementing Agency

Both sides reconfirmed the responsible and implementing agencies as follow:

- National Emergency Management Agency (hereinafter referred to as " NEMA ")

4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Mongolia by the end of November, 2011.

5. Other Relevant Issues

(1) Component of the Project

Both sides agreed to the component of the Project as shown in **Annex1.**

(2) Undertaking of Mongolian side for Soft Component implementation

Soft component of the Project will be training of fire fighting techniques for ladder engine and pumper tanker, and trainees will be captains of Fire brigade and Fire Fighters. Mongolian side agreed to provide necessary places as well as water and fuel, assign necessary staff including instructors for implementation of training. Mongolian side also agreed to reflect the result of training to NEMA's own training curriculum.

(3) Spare Parts

The Mongolian side agreed the spare parts list proposed by the Japanese side.

(4) Construction of No.35 fire station

1 Pumper tanker 4 WD (3,500 L) and 1 Water tanker 6 x 4 (8,000 L) will be installed in No.35 fire station which is under construction. Mongolian side agreed to finish the construction of No.35 fire station before the planned installation date.

(5) Renovation of No.18, No.26 and No.65 fire stations

Ladder engine (30 m) will be installed in No.18, No.26 fire stations, but present height of entrance and ceiling of each garage is lower than necessary height. Mongolian side agreed to finish the renovation of No.18 and No.26 fire stations before the planned

T.D

installation date. Also as the garage of No. 65 fire station is little lower to install water tanker 6 x 4 (8,000 L), Mongolian side will reconstruct the fire station before the planned installation date.

(6) Change of contents of the loaded equipment

(i) Mongolian side agreed that jumping cushions for rescue activity in hi-rise building aren't necessary because rescue activities using jumping cushion are less efficient than using ladder engine and often fail to evacuate people from hi-rise building.

(ii) Mongolian side also agreed to minimize the quantity of portable pumps from 10 to 5 considering the number of emergency cases. These portable pumps are required for emergency cases such as enforcing fire fighting strength for catastrophic fire or case of malfunction of fire engines.

Annex1: Components of the Project
Annex2: Project Cost for Mongolian side

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Annex1

Component of the Project

	Items	Quantity of Items	Deployment Plan
<Equipment>			
1	Pumper tanker 4 WD 3,500 L	8	No. 11, No. 18, No. 29, No. 30, No. 64, No. 65, No. 80, No. 35
2	Water tanker 6 x 4 8,000 L	8	No. 11, No. 18, No. 28, No. 29, No. 30, No. 65, No. 80, No. 35
3	Rescue engine with floodlight	3	No. 10, No. 34, No. 63
4	Ladder engine (30 m)	2	No. 18, No. 26
5	Pumper tanker with 9,000 L water tank and 1,000 L chemical tank	1	No. 10
<Soft Component>			
1	Technical guidance for fire fighters and captains		

TO

Annex2

Project Cost for Mongolian side

Project cost for Mongolian side will increase shown as below since Mongolian side plans the reconstruction of No.65 fire station additionally.

Cost Item	Amount (MNT)
Transportation (from the site of handing over to individual fire stations)	3,000,000
Fuel for test operation and adjustment	10,000,000
Construction of a new fire station (No. 35)	916,000,000
Remodelling of an existing fire station (No. 18, 65)	1,982,000,000
Vehicle registration of the new fire vehicles	15,400,000
Total	2,926,400,000 (¥187 million)

(MNT 1 = ¥0.064)

JAPAN INTERNATIONAL COOPERATION AGENCY

The Project for Improvement of Capacity of Fire Fighting Techniques and Equipment in Ulaanbaatar, Mongolia

SOFT COMPONENT PLAN

November 2011

FIRE EQUIPMENT AND SAFETY CENTER OF JAPAN

CONTENTS

1. Background of the Soft Component Plan

(1) Present Situation

Ulaanbaatar, the capital city of Mongolia, is experiencing population growth and urbanisation in recent years, and this has led to the sprawling expansion of Ger areas and rapid emergence of medium and high rise buildings in the inner city. There is a high risk of fires occurring in these Ger districts, where residents still use naked flame in their everyday lives, and there are also increasing cases of fires in medium and high rise buildings.

The National Emergency Management Agency (NEMA), which is responsible for responding to fires and other disasters, established the fire fighting system of Ulaanbaatar with the aid of fire vehicles procured under the Government of Japan's grant aid project in 2001. Eight years later, since the population increased from 770,000 in 2000 to 1,110,000 in 2009 and the number of fires increased from 1,100 to 2,100 or more over the same period, there is now an urgent need to improve the fire fighting system. Out of the 47 fire fighting vehicles currently in service, 27 were manufactured in the former Soviet Union prior to 1990, however, these vehicles are badly deteriorated, suffer from frequent breakdowns and cannot fulfill the functions required of them as fire vehicles. As these vehicles are more than 20 years old and it is becoming increasingly difficult to obtain spare parts for them, they cannot be easily repaired. Moreover, as NEMA can only secure around 5 percent of the budget required for their renewal, it is making hardly any progress on renewal work.

It was against such a background that the Government of Mongolia compiled the Project for Improvement of Capacity of Fire Fighting Techniques and Equipment and requested assistance from the Government of Japan with the objectives of ① procuring fire vehicles such as pumper tankers and water tankers, and ② offering support in techniques for operating pumper tankers and ladder engines.

NEMA, the implementing agency for the Project, is confronted with the following fire fighting and disaster prevention issues:

1) Development of effective fire fighting and rescue measures for expanding Ger areas and medium and high rise buildings
2) Renewal of fire vehicles (pumper tankers and water tankers, etc.) and fire fighting equipment, which are badly deteriorated and lacking in terms of quantities
3) Introduction of fire vehicles that can respond to fires in Ger areas in hilly areas and on slopes
4) Introduction of ladder engines that can promptly respond to fires in medium and high rise buildings

5) Effective utilization of equipment through acquisition of new operating techniques for pumper tankers and ladder engines

(2) Reasons for Planning of the Soft Component

The Project plans the deployment of new fire tank engines and ladder trucks. However, any satisfactory solution to above requirements will demand the skilful handling of the fire vehicles, the ability to properly judge the situation of a disaster and operation of the fire vehicles in an efficient manner. Fire fighters need to make quick situation judgments and conduct organized responses after arriving at fire scenes. It is essential to improve situation judgment capacity and operating techniques according to the structure of buildings in flames, the situation of fire and the presence of people trapped by fire, etc. To enhance the effect of the assistance and ensure the sustainability of the positive outcomes of the assistance, technical guidance on fire fighting and rescue activities using pumper tankers and ladder engines is required in addition to guidance on the handling of such vehicles by the manufacturer. This guidance should be provided in the form of a soft component by an expert(s) with rich experience of the operation of ladder engines and other types of fire vehicles so that these will be permanently used in an efficient and effective manner.

(3) Matters Requiring Concrete Technical Guidance

In Ulaanbaatar, where fire hydrants and other aspects of water supply for fire fighting are inadequate, the basic response to fires entails a pumper tanker first arriving on the scene and fighting the fire at the source, and this is followed by arrival of a water tanker to provide a swift supply of water to the pumper tanker. Currently, because the water tankers do not have water transmission capacity, in Ger districts where roads are narrow, restrictions are placed on fire fighting activities based on collaboration of two vehicles. It is thus necessary to deploy efficient fire fighting activities based on swift relay using new water tankers possessing water transmission capacity.

Moreover, because all fire stations have densely packed Ger districts within their jurisdiction, it is necessary to establish a swift fire fighting system to deal with frequent fires that carry risk of easily spreading in such areas.

It is also necessary to efficiently utilize breathing apparatus tanks, three-section ladders, engine cutters and other equipment in fire fighting activities.

Concerning ladder engines, unlike the ladder engines equipped with fire pumps that were procured in the grant aid of 2001, for cost reasons it has been decided not to install pumps on the assumption that the engines will be used in conjunction with pumper tankers, however, because

performance in terms of operability and speed is much better, it is necessary to train operators in how to use and operate the new equipment.

Accordingly, the necessary knowledge and techniques for conducting efficient fire fighting activities using pumper tanker and ladder engine will be taught to ensure that the procured fire fighting equipment is utilized effectively.

2. Goals of the Soft Component

(1) Fire fighters will become able to conduct rapid and efficient fire fighting activities through combining the pumper tankers and water tankers.

(2) Fire fighters will become able to conduct fire fighting and rescue activities in high places through combining ladder engines and pumper tankers.

The higher goal is as follows:

"To appropriately conduct fire fighting activities in the Project target area of Ulaanbaatar, and thereby reduce damage to human lives and property due to fires."

3. Outcomes of the Soft Component

The implementation of the soft component is expected to have the following outcomes.

(1) Operating techniques combining the pumper tankers and water tankers

Acting under the instruction of the fire chief and utilizing the fire fighting equipment in organized manner, fire fighters will have the skills required to swiftly extend hose and discharge water to the fire source from the pumper tanker as well as to obtain water from the water tanker hydrant, operate the pump and continuously relay water, thereby conducting efficient collaborative operation.

(2) Operating techniques combining ladder engines and pumper tankers

Fire fighters will have the skills required to relay water from the pumper tanker to the ladder engine, discharge water from the basket at the top end of the ladder, to conduct fire fighting activities inside buildings and to quickly rescue people trapped on upper floors, ensuring optimal fire fighting activities in accordance with the type, scale and presented risk of a disaster.

(3) Utilization of teaching materials in the Mongolian language

Manuals will be prepared in the Mongolian language in order to effectively pervade training and education to trainees in limited time. The manuals, referred to as "Fire Fighting Techniques Manuals," will comprise a pumper tanker version and a ladder engine version, and since they will be prepared in Mongolian, they will enable continuous training and education to be conducted for fire chiefs and fire fighters, etc. without having to use English.

4. Achievement Verification Method

(1) Operating techniques combining the pumper tankers and water tankers

On the final day of training, general training will be conducted beginning from water transmission from the water tank to pumper tanker and including water discharge from the pumper tanker, entry to the fire source room, and search and rescue of people left behind, and the time will be measured to assess the level of achievement.

Items for improvement will be proposed based on the conditions of the training.

(2) Operating techniques for ladder engines

On the final day of training, the time taken from arrival at the scene to extension of the ladder to the target floor will be measured.

(3) Operating techniques combining ladder engines and pumper tankers

On the final day of training, general training will be conducted entailing water transmission from the pumper tanker to the ladder engine and water discharge from the gun at the end of the ladder, and the time will be measured to assess the level of achievement.

Items for improvement will be proposed based on the conditions of the training.

(4) Utilization of teaching materials in the Mongolian language

NEMA will be requested to reflect the education and training plan utilizing teaching materials into its annual training plan.

5. Soft Component Activities (Input Plan)

Considering the current state of fire fighting services in Ulaanbaatar, where new fire vehicles haven’t been procured since the grant aid project of 2001, the local side will need the techniques to ensure that the new fire fighting equipment is effectively operated.

The fire vehicles to be introduced in the Project have different structures and far higher performance that the deteriorated Soviet-made vehicles currently in operation. Moreover, since technology has improved since the last deployment of vehicles in 2001, technical guidance will be conducted using teaching materials in Mongolian to cover the two items of “Operating techniques combining the pumper tankers and water tankers” and “Operating techniques combining ladder engines and pumper tankers” to ensure that fire fighting activities can be conducted with even greater efficiency.

(1) Contents of activities

1) The following teaching materials will be prepared in Japan:

- Guidance materials (total 100 pages)
  Fire fighting techniques manuals (pumper tanker version and ladder engine version)
- Lecture materials (preparation of presentation materials on PC)
  Introduction of fire vehicle and equipment illustrations and operating techniques by video

2) Operating techniques combining the pumper tankers and water tankers

In cases where the pumper tanker arrives at a fire scene and fire fighters conduct fire fighting and rescue activities as close to the fire source as possible, the crew members on the tanker must quickly extend the hose and ensure that water is supplied to maintain the activities. Training and guidance will be conducted to ensure that these activities combined with water suction to the water tanker are swiftly carried out. Such training will be conducted assuming fire fighting activities in Ger residential areas.

Moreover, in addition to initial operation guidance by makers, training will be conducted on using breathing apparatus, three-section ladders, gun nozzles and forcible entry tools such as hydraulic cutters, rod cutters and engine cutters, etc. to ensure that fire fighters can effectively use them in high places with unsteady footing or where there is thick smoke, heat and poor visibility.

a. Necessary techniques

Hose extension method
Pump operating method in line with water relaying and transmission
Method for gaining entry to the source of fire
Method for searching for and rescuing people in distress
Handling of the procured equipment
Safety control

b. Current technical level

Since the present water tankers are not equipped with pumps, two vehicles always work in tandem and never apart. As a result, fire fighters have no experience of conducting water transmission via and pump operation.

Since fire fighters have no breathing apparatus, they have to discharge water from outside without being able to enter the fire source room. This also means that they are unable to safely search for and rescue people in distress.

c. Necessary technical level

Since two fire vehicles operate in tandem, it should be possible to rapidly release the hose and conduct appropriate pump operation.

Fire fighters are properly protected and are able to enter burning rooms in teams in order to safely search for and rescue people in distress.

Fire fighters can grasp changing conditions of fire scenes and eliminate risk factors.

They can conduct fire fighting activities utilizing the procured equipment.

d. Targets

Fire fighters, senior commanders and trainers selected from the fire stations intended for deployment: 80 in total (40 members x 2 times)

e. Implementation method

a) Lectures will be given on the following contents using the fire fighting technique manuals (pumper tanker version) and lecture materials (equipment illustrations and introduction of operating and activity techniques) prepared in Japan:

- Organized activities
- Fire fighting tactics
- Safety management
- Operation, etc. of procured equipment

b) The following training will be conducted using the procured equipment:

- Unit management including safety management
- Efficient relay water transmission and fire fighting activities
- Water discharge and building entry according to fire conditions
- Search and rescue of persons in distress
- How to utilize loaded equipment such as breathing apparatus, forcible entry tools and rescue apparatus, etc.

3) Operating techniques combining ladder engines and pumper tankers

Training and guidance will be conducted to ensure that fire fighters can promptly relay water from the pumper tanker, raise and extend the ladder, conduct turning and bridge with buildings to ensure rapid water discharge from the basket at the end of the ladder, and to ensure that fire fighting and rescue activities in high places are conducted smoothly and effectively.

As it is necessary to pay ample attention to prevention of toppling and other safety factors when operating ladder engines, technical guidance will be provided on understanding the operating limit of the ladder engine and making appropriate decisions in various disaster situations.

a. Necessary techniques

Grasping vehicle performance
Decision of vehicle deployment stations
Ladder raising, extension and turning geared to achieving swift bridging to buildings
Water transmission and relaying and pump operation from the pumper tanker
Water discharge from basket
Entry from basket to upper floors
Swift rescue of persons in distress
Safety control

b. Current technical level

Since education on safety management has not been implemented in the past and fire fighters are not required to wear safety belts or helmets when working in high places, they pay scant regard to safety issues such as prevention of falling and so on.

Since ladder engines have not been renewed or bolstered since the current engines were procured 10 years ago, fire fighters have no knowledge or experience of using the latest ladder engines that entail shorter ladder operating time and easier operation.

c. Necessary technical level

Fire fighters can confirm obstructions such as overhead lines, etc. and can determine where to park the ladder engine so that the ladder can be extended.

Fire fighters can swiftly conduct operations up to bridging while considering vehicle stability in the ladder extension direction and rescue efficiency, etc.

Safety should be secured in ladder operation when receiving water from the pumper tanker and discharging the water onto the fire.

Fire fighters can safely enter verandas and windows from the basket as well as rescue people from inside buildings.

When safety mechanisms fail, fire fighters should be able to safely conduct ladder operations upon grasping the operating limit.

d. Targets

Fire fighters, senior commanders and trainers selected from the fire stations intended for deployment of ladder engines: 30 in total

e. Implementation method

a) Lectures will be given on the following contents using the fire fighting technique manuals (ladder engine version) and lecture materials (equipment illustrations and introduction of operating and activity techniques) prepared in Japan:

- Organized activities
- Fire fighting tactics
- Safety management
- Operation, etc. of procured equipment

b) The following training will be conducted using the procured equipment:

- Unit management including safety management
- Fire fighting activities from the end basket (monitor nozzle water discharge, relay hose extension, build entry)
- Bridging to buildings from the ladder engine
- Rescue of trapped persons in high places
- Safety management upon considering the operating limit

(2) Implementation Resources

1) Japan side

a. Human resources

Two consultants who have experience of various fire fighting activities and rescue operations using ladder engines and are well versed in fire fighting tactics, strategy and techniques will be dispatched. One of these consultants will have experience of training fire fighters. The two consultants will offer guidance on fire fighting techniques based on combination of pumper tankers and water tankers and techniques based on combination of ladder engines and pumper tankers. They will prepare the teaching materials in Japan.

b. Man-months

a) Operating techniques combining the pumper tankers and water tankers

Staff	Number	Number of days	Total	Man-months (M/M)	Remarks
Technical instructor	2	14	28	0.93	Technical guidance
	2	4	8	0.27	Preparations, etc.
	2	2	4	0.13	Transfer (outward and inward)
Teaching materials drafter	2	10	20	1.00	Work in Japan
Assistant staff	2	16*1	32	1.07	Local employment

*1 Technical guidance: 14 days, preparations, etc.: 2 days

b) Operating techniques combining ladder engines and pumper tankers

Staff	Number	Number of days	Total	Man-months (M/M)	Remarks
Technical instructor	2	8	16	0.53	Technical guidance
	2	4	8	0.27	Preparations, etc.
Teaching materials drafter	2	10	20	1.00	Transfer (outward and inward)
Assistant staff	2	10*1	20	0.67	Work in Japan

*1 Technical guidance: 8 days, preparations, etc.: 2 days

2) Mongol Side

a. Selection of trainees

To ensure that the techniques acquired in the soft component are continually passed on, it will be important for trainees to acts as trainers themselves after they return to their respective fire stations.

Therefore, through selecting persons who have the status and capacity to act as trainers (not just be able to handle the equipment), techniques can be polished even more in routine training.

In selecting the trainees, a sense of responsibility and confidence can be imparted to senior commanders and fire fighters if the selection process is conducted by the fire stations and NEMA.

b. Establishment of training venue

Through having trainees participate from the preparation and setting up of the training venue, they can grasp training methods and advancement and learn about the preparations and attitude they will need when they become trainers themselves.

Moreover, through utilizing a routinely used training venue, the trainees will be able to enjoy greater continuity and reproducibility when they conduct training themselves.

c. Securing water and fuel, etc. required for operations

Since training is intended to conduct practical fire fighting activities, it is essential to implement water discharge training and rescue training using the procured equipment. For this reason, the Mongolian side is expected to provide the necessary fire fighting water, fire extinguishing chemicals and engine fuel, etc.

6. Procurement of Teaching Resources for the Soft Component

Training Based on Direct Guidance by Japanese Instructors

As the techniques for which guidance/assistance will be provided under the soft component of the Project are limited to expert fire fighters who are well versed in fire vehicles, there are no local resources, such as local consultants, who can be used in Mongolia. For this reason, Japanese instructors will be dispatched to Armenia to provide direct guidance. These instructors will be selected from the consultant, which has experience of training fire fighters and rescue personnel at a fire fighting college and providing technical guidance under a soft component scheme and which will supervise the procurement under the Project.

7. Soft Component Implementation Schedule

See the Attached Paper

8. Soft Component Outcomes

① Completion Report
② Fire Personnel Training Materials
Fire Fighting Techniques Manuals (pumper tanker version and ladder engine version)
Lecture materials (DVD, etc.)
③ Implementation status of activities (work diary and photographs, etc.)
④ Technical advancement table (to check the degree of achievement of the technical training goals)

9. Soft Component Cost Estimate

The overall cost will be 10,522,000 yen.

Direct personnel expenses	3,510,720 yen
Direct costs	3,360,548 yen
Indirect costs	3,651,149 yen
Total	10,522,417 yen

10. Obligations of the Mongolian Side

(1) Continuity

NEMA, which is the implementing agency for the Project, compiles and executes training and education plans for fire fighters, while the fire stations plan and implement the everyday training. Doing so ensures that the training of fire fighters and management of skills is carried out to a certain level.

Through passing on the outcomes of the soft component to these agencies, it will be possible to sustain the effects; moreover, techniques can be enhanced through developing trainers.

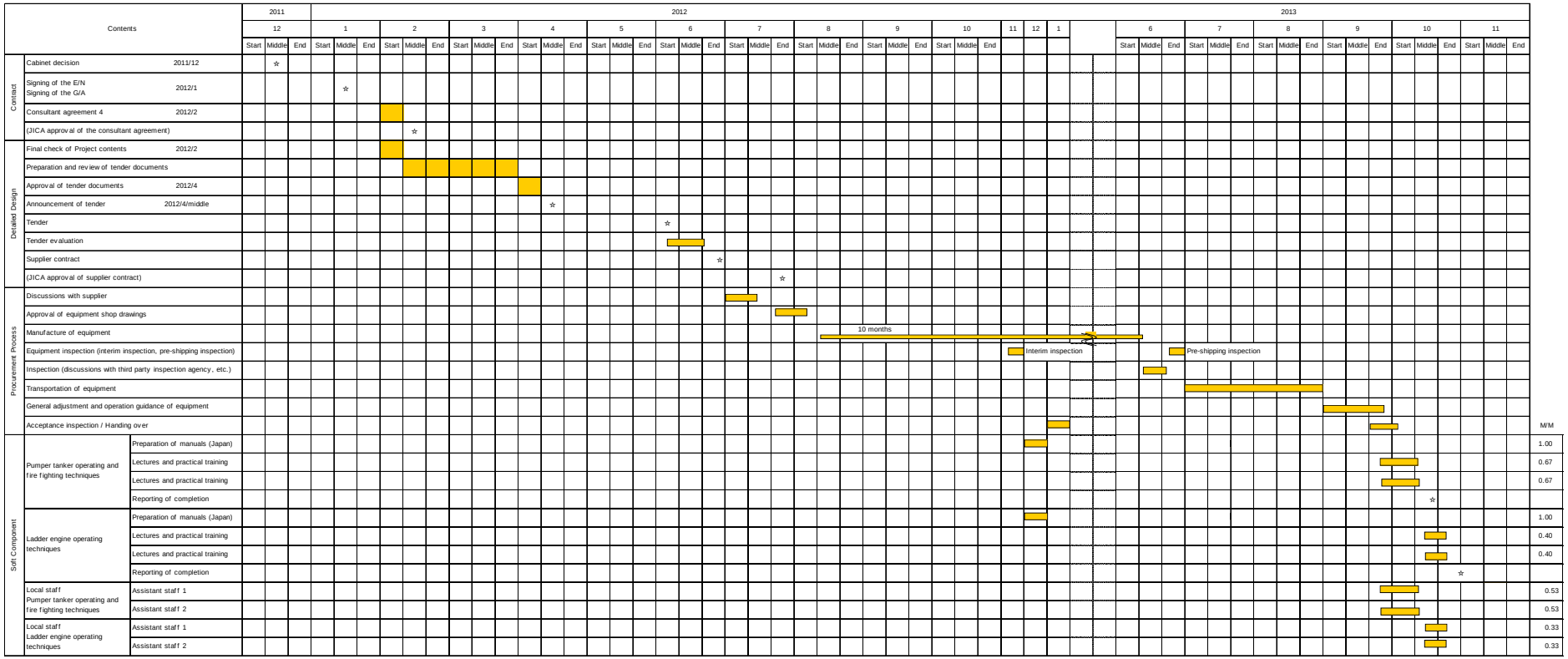
(2) Implementation Feasibility, etc.

As was mentioned above, everyday training is already customarily implemented, and there is strong awareness of the need for this. Therefore, it is anticipated that the techniques acquired in the soft component can be disseminated on a continuing basis.

A possible impediment is the cutting of budget for fuel and water, etc. for use in training, although cuts are unlikely to occur judging from the current budget situation. Even if cuts should arise, training can still be implemented without water for activities such as hose extension, building entry, search and rescue of stranded persons. Such training activities are routinely implemented in Japan with good effects.

Attachment 1

Soft Component Implementation Schedule



6. Reference Materials

No.	Name of materials	Format	Size	Pages	Original or Copy	Number of Copies	Acquired Source or Issuer	Donated or Purchased (price)	Handling Category	Use Display	User Affiliation	Scheduled Supply Date	Supply Confir mation
1	Map of Ulaanbaatar, 1/14,000	Folded	L 67cm W 98cm	1	Original	1	COLLAGE, Ltd.	Purchased	FESC	FESC			
2	Fire Safety Law, Japanese translation	Data			Copy	1	NEMAS	Donated	FESC	FESC		Nil	
3	Fire Fighting Activities Standards, Japanese translation	Data			Copy	1	NEMA	Donated	FESC	FESC		Nil	
4	Building Law (partial, Japanese translation)	Pamphlet	L 29.5cm W 21cm	275	Original	1	Ministry of Urban Development	Purchased	FESC	FESC			

7. Other Relevant Data

Document from NEMA requesting provision of Japanese-made fire vehicles

NATIONAL
EMERGENCY MANAGEMENT AGENCY
REGULATORY AGENCY OF THE GOVERNMENT OF MONGOLIA
14250 Partizanii gudamj
Sukhbaatar duureg, Ulaanbaatar, MONGOLIA
Tel: (976-11) 26-35-67, Fax: (976-11) 26-24-16,
E-mail: for.rel@nema.mn; http://www.nema.mn

Date 16 09 2011
Ref. 1/1804

MR. TAKANA MOTONORI DEPUTY
DIRECTOR GENERAL AND GROUP
DIRECTOR
FOR GOVERNANCE INDUSTRIAL
DEVELOPMENT AND POLICY
DEPARTMENT

The National Emergency Management Agency of Mongolia presents its compliments to You and to the team.

First of all, I would like to express our sincere gratitude to you for your valuable contribution to humanitarian aims to protect citizens and entities from fires through improving capacity of fire fighting techniques and equipment of Fire Units of Emergency Management Department, Ulaanbaatar.

17 fire engines, produced in Japan and contributed within the project I of 2003, have been used for 70 percent of total fire calls in Ulaanbaatar for 2003-2011 and saved people's lives and properties proving their high capacity, reliability and suitability to extreme climate of Mongolia.

During this period of time, our staff has experienced in usage of Japanese fire engines and equipments; and in their proper maintenance.

Upgrading fire units with same fire engines of one country will make ordering of spare parts for engines and maintaining them easier.

Therefore, we would like to request you to consider our interests to receive Japanese fire engines in the framework of the project II for improvement of capacity of fire fighting techniques and equipment in Ulaanbaatar under Japanese Grant Aid.

The National Emergency Management Agency of Mongolia wishes to avail itself of this opportunity to renew to You and to the team the assurances of its highest consideration.

Respectfully,

TS.AMGALANBAYAR
CHIEF, HIGH COMMISSIONER
NATIONAL EMERGENCY
MANAGEMENT AGENCY
MONGOLIA

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Survey data concerning fire fighting activities by the Emergency Management Department of Capital City

НИЙСЛЭЛИЙН ОНЦГОЙ БАЙДЛЫН ГАЗРЫН АВРАХ ГАЛ УНТРААХ АНГИУДЫН
ГАЛ ТҮЙМРИЙН ДУУДЛАГААР ГАРЧ АЖИЛЛАСАН АВТОМАШИНЫ СУДАЛГАА

2011.08.17 Улаанбаатар хот

№	Аврах гал унтраах анги	Гал түймрийн 1 дуудлагад дундажаар зарцуулсан хугацаа						Галын автомашин хүрэлцэн очих боломжгүй газар					10 минутад туулах зай /км/					
		2000-2002 он			2007-2009 он								Орос АЦ-40		Япон 1-р төсөл		Япон 2-р төсөл	
		Зарцуулсан дундаж зай /км/	Дуудлагад явсан дундаж хугацаа /цаг/	Гал унтраахад зарцуулсан дундаж хугацаа /цаг/	Зарцуулсан дундаж зай /км/	Дуудлагад явсан дундаж хугацаа /цаг	Гал унтраахад зарцуулсан дундаж хугацаа /цаг/	ГАМ хүрэлцэн очиход хүндрэлтэй газар	Налуугийн хэмжээ /градусаар/	Айл өрх	Хүн амын тоо	Газар нутгийн хэмжээ	Шулуун замд	Бартаат замд	Шулуун замд	Бартаат замд	Шулуун замд	Бартаат замд
1	АГУ 10 анги	15.4	23.24	15	18.4	22.5	9	БГД-ийн 21-р хороо, Горькийн гудамжнууд	15-30	4712	23560	2,9	6	4.5	8	6.5	=	=
								БГД-ийн 11-р хороо, Зүүн Ард Аюушын гудамжнууд	35	2240	11200	1,4						
								ЧД-ийн 7-р хороо Хувьсгалчдын гудамжнууд	30-40	3120	15600	2,7						
								ЧД-ийн 16-р хороо, Сургуулийн, Жаргалантын гудамжнууд	20-30	7900	39500	4,2						
								ЧД-ийн 12-р хороо Дэнжийн 1000-ын гудамжнууд	15-30	3278	27840	2,6						
2	АГУ 11 анги	42.6	71	45	=	=	=	СХД-ийн 1-р хороо Шижирийн даваа	35	2540	12700	6,05	7	5	=	=	8.5	6.5
3	АГУ 14 анги	93.1	155.1	18	94.3	125.7	16,5	ХУД-ийн 11-р хороо “Хан богд” амралтын газар	30-36	2811	14056	9,68	6	4.5	7.5	6	=	=
								ХУД-ийн 11-р хороо, Соёмбо толгойн ард талын айлууд	30-40	3500	17500	3,8						
								ХУД-ийн 11-р хороо Дүнжин гарав эмнэлэг	15	1720	8600	2,9						
4	АГУ 18 анги	121.4	173.4	9	=	=	=	СХД-ийн 1-р Эмээлт хотхон	20-35	1380	6900	84,07	7	5	=	=	8.5	6.5
								СХД-ийн 21-р хороо Мал бордох газар	15-30	1160	5800	2,9						
								СХД-ийн 22-р хороо, Тахилтын ам	25-35	2400	12000	3,7						
5	АГУ 26 анги	42.9	71.5	14.8	32.2	42.9	12.4	СХД-ийн 23-р хороо, 1, 2-р хэсэгийн гудамжнууд	15-25	300	1500	24,3	6	4.5	7.5	5.5	=	=
								СХД-ийн 23-р хороо Тоосгоны гудамжнууд	15-30	1570	7850	5,9						
								СХД-ийн 2-р хороо 42-р сургуулийн арын Орбитын гудамжну	10-25	912	4560	8,1						
								СХД-ийн 6-р хороо, Чулуут, Хангайн гудамжнууд	16-28	1100	5500	7,9						
6	АГУ 28 анги	106.6	133.2	9	183.3	215.6	8	НД-ийн 6-р хороо Тэрэлжийн орчим	20-40	460	2300	34,2	8	6	9	7.5		
7	АГУ 29 анги	113.7	174.9	8,4	=	=	=	СХД-ийн 7-р хороо, Зээлийн гудамжнууд	20-35	1500	7500	30,2	6.5	5	=	=	8	6.5
								СХД-ийн 11-р хороо Нуурын гудамжнууд	25-40	2540	12700	6,5						
								СХД-ийн 25-р хороо, Одонтын гудамжнууд	20-35	1460	7300	2,2						
								СХД-ийн 8-р хороо, Жанцангийн гудамжнууд	15-35	2640	13200	3,8						
8	АГУ 30 анги	106.8	152.5	7.87	=	=	=	ХУД-ийн 9-р хороо, Бурхантын гудамжнууд	25-40	700	3500	2,11	7	5	=	=	8.5	6.5
								ХУД-ийн 9-р 23-ын задгай	20-35	1240	6200	5,4						
								ХУД-ийн 12-р хороо Био комбинат	15-25	1720	8600	6,3						
9	АГУ 34 анги	83.7	119.5	7.24	91.1	107.1	7.5	ЧД-ийн 18-р хороо, Зүрх уулын гудамжнууд	15-30	1900	9500	21,8	7	5	8.5	6.5	=	=
								БЗД-ийн 21-р хороо, Ганцын гудамжнууд	20-25	2120	10600	4,1						
								СБД-ийн 18-р хороо, Доод салхитын гудамжнууд	30-42	1960	9800	6,8						
10	АГУ 63 анги	40.3	57.5	9.02	39.2	46.1	10	БЗД-ийн 5-р хороо, Монелийн гудамжнууд	20-38	307	1532	3,45	7	5	8.5	6.5	=	=
								БЗД-ийн 17-р хороо, Холбоо толгойн гудамжнууд	20-35	2180	10900	2,9						
								БЗД-ийн 19-р хороо, Моносын гудамжнууд	20-40	1512	7560	3,1						
								БЗД-ийн 24-р хороо, Газарчин ДС-ийн арын дэнж	20-35	1879	8972	2,9						
11	АГУ 64 анги	25.1	3.1	8	26.3	2.6	7.5	БНД-ийн 3-р хороо, Мэлз уулын орчмын айл өрхүүд	20-35	840	4200	62,2	8	6	10	8	11	9.5
12	АГУ 65 анги	7.21	9	7	=	=	=	ХУД-ийн 12-р хороо 5-р хэсэг	15-35	700	3500	2,11	8	6	=	=	10	8
13	АГУ 80 анги	10.46	1.1	6		-	-	БХД-ийн 2-р хоро, Хангайн гудамжнууд	15-25	1000	5000	14,5	9	7	=	=	8.5	6.5
14	АГУ 35 анги	=	=	=	=	=	=	=	20-35	=	=	=	=	=	=	=	8.5	6.5

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