The Kingdom of Cambodia
The Cambodian Mine Action Centre

Preparatory Survey Report on The Project for Improvement of Equipment for Demining Activities (Phase VII) in the Kingdom of Cambodia

April 2016

Japan International Cooperation Agency (JICA)

INGEROSEC Corporation

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Preface

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to INGERSEC Cooperation.

The survey team held a series of discussions with the officials concerned of the Kingdom of Cambodia, and conducted a 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 to the enhancement of friendly relations between our two countries.

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

April, 2016

Mr. Akira Nakamura
Director General
Infrastructure and Peacebuilding Department
Japan International Cooperation Agency

Summary

Summary

1. Overview of the Recipient Country

The Kingdom of Cambodia (hereinafter referred to as “Cambodia”) is located a little southwest of the center of the Indochina Peninsula. It borders Thailand, Laos, Viet nam on the northwest, north and southeast, respectively. Its land is approximately 560 km long and 440km long in the east-west and north-south directions, respectively, and has the total area of 181,035 km^2, which is approximately half and one third of the total areas of Japan and Thailand, respectively. The population of Cambodia is approximately 15,130,000 (The Government statistics, 2013). Its capital is Phnom Phen. Only 19.7 % of its people live in urban areas (UNESCO, 2005) and the remaining 80 % live in rural areas.

The Mekong River flows from north to south in the east of the Central Plain and the Lake Tonle Sap is located in the west of the Central Plain. Cambodia is located in the tropical monsoon climate zone and has a rainy season and a dry season in a year. In the latter, a hot season (from early February to mid-May) and a cool season (from early November to late January) can be recognized.

The economic climate remains low compared to the neighboring countries, although the nominal GDP grew 1.6 times from USD 6.3 billion in 2010 (UNDP sources) to USD 16 billion, and the GNI per capita from USD 610 (2009, UNDP sources) to USD 884 in 2013. However, as indicated in a relatively low unemployment rate of 0.4% (2013, UNDP sources), the economy continues steadily growing. The major industries are agricuture, fisheries and forestry among the primary industries. Particularly, agriculture accounts for some 30% of GDP and employes about 70% of the employed population (1996 – 2005, UNDP). As percentages of GDP, tourism and services account for 40%, agriculture 27% and the mining nad manufacturing industry 23% (2013, JBIC sources).

2.Background and Outline of the Requested Assistance

(1) Overall Goal

In the Rectangular Strategy Phase Ⅲ (2008-2013), Cambodia set “Good Governance” as a central issue, giving priority to (i) enhancement of the agricultural sector; (ii) continued rehabilitation and construction of physical infrastructure; (iii) Private sector growth and employment; and (iv) capacity building and human resources development. As it is necessary to secure safe land for “enhancement of the agricultural sector”, the Rectangular Strategy Phase Ⅲ refers to landmine/UXO clearance activities (Figure 1).

The National Strategic Development Plan (NSDP), which was framed as the operationalization of the Rectangular Strategy (the latest version covers the period of 2006-2018), links the vision in the Rectangular Strategy to concrete goals, targets and strategies. To enhance the agricultural sector, the NSDP highlights poverty reduction, improvements in agricultural production, improvements in livestock breeding, securing and development of safe land, and use of resources for self-sustaining development.

The Cambodia National Level 1 Survey conducted in 2000-2002 claimed that landmine/UXO contaminated area totaled 4,544km^2 (almost equivalent to the area of Yamanashi prefecture), but the figure included areas which might not be minefields. Based on this figure, in December 1997, the Royal Government of Cambodia ratified the Anti-Personnel Mine Ban Convention (Ottawa Treaty, whereby a deadline of antipersonnel landmine clearance was set for January 2010), starting as a nation to deal with landmines.

Despite this, the landmine problem in Cambodia is not anything that can be easily solved in a short period of time, while the consideration of the Ottawa Treaty and the National Strategy for Mine Action is closely linked with each other. The country is also planning to review the Strategy.

In passing, international mine clearance NGOs suspect, as CMAC does, that landmine/UXO clearance will not be completed in the entire land of Cambodia by 2019.

(2) Present Conditions and Problems in this Sector

Although more than 20 years has passed since the end of the conflict in 1991, Cambodia still suffers from serious landmine/UXO contamination. The number of landmine/UXO victims per year peaked at 4,320 in 1996 and has been decreasing afterwards. In 2009, however, there were 244 victims, most of whom were civilians. Most landmine/UXO contaminated areas are

located in rural areas where 80% of the total population live, and securing the safety of people's lives through landmine/UXO clearance is recognized as an urgent task for the social and economic development of the country.

The number of landmine/UXO victims fell further to 154 in 2014 because of not only demining activities but also an improvement of accuracy of surveys on contaminated areas and multifaceted efforts including various educational activities. Despite these, landmines and UXO still cause casualties.

The Cambodian Mine Action Centre (hereinafter referred to as "CMAC") was founded in 1992 as a public agency undertaking humanitarian landmine/UXO clearance activities in Cambodia. During the period between 1992 and June 2015, CMAC cleared landmine/UXO areas of approximately 700km^2, which accounts for about 50% of the areas cleared, highly contributing demining activities in Cambodia.

CMAC has adopted various efficient demining methods and produced successful results. Based on Japan's assistance, the total area cleared per year dramatically increased (from about 10km^2/year in 2003 to about 40km^2/year in 2009, and to about to 100km^2 in 2014 by the use of the "land release method" since 2010), and the demining cost decreased from 1USD/m^2 to 0.3USD/m^2, and to 0.18USD/m^2 in 2015. CMAC seeks to clear minefields of 120km^2 per year and thus needs the upgrading of mine detectors and other equipment.

However, most equipment owned by CMAC has been used under severe conditions, and exceeded their product lifetimes in terms of standard accumulated operating hours and usage. It is highly likely that the equipment will stop working around 2017.

3. Summary of the Results of the Survey and Components of the Project

The Japan International Cooperation Agency, JICA, determined to conduct a preparatory survey on the Project for Improvement of Equipment for Demining Activities (Phase VII) in the Kingdom of Cambodia, and organized a Survey Team. During the period between August 23 and September 24, 2015, the Survey Team discussed the contents of the request with the officials concerned of the Royal Government of Cambodia, conducted a field investigation and gathered relevant information and sources.

After returning to Japan, the Survey Team verified the relevance of the Project, formulated the implementation plan, and prepared (draft) preparatory survey report in consideration of the results of the field survey. JICA dispatched the Survey Team to Cambodia from December 2 to 12, 2015 and obtained the consent of the Royal Government of Cambodia for the basic

contents of the report. The Project will procure necessary equipment to achieve the objectives of Cambodia's landmine/UXO clearance programs.

The Royal Government of Cambodia ratified the Anti-Personnel Mine Ban Convention (Ottawa Treaty) and has been promoting removal of buried landmines and UXO with the focus on anti-personnel mines but also including antitank landmines, improvised explosive device (IED) and other explosives. However, as described above, as a result of the baseline surveys (BLS) having been conducted since 2010 and the additional BSL in 2014, the area of minefields was revised to 2,078km2. Thus, the Royal Government of Cambodia intends to extend the deadline to meet the Ottawa Treaty obligations to 2025. Accordingly, in consideration of the operation and maintenance capacity, project implementation capacity, equipment currently owned and other conditions of the Cambodian implementing organization, the types, specifications and numbers of equipment necessary to carry out landmine/UXO clearance programs of the government were selected and calculated. At the same time, the relevance of the request was verified, and an equipment plan was formulated as follows.

Summary of Equipment Plan：

- Brush cutter 9 units

  （Type ：Rotaly Cutter, Quality：CMAC Standard,Useage： Removal of shrubs before demining）

- Mine detector 729 units

  （Type：Hand held, Quality：CMAC Standard,Useage：Detection of metal and mines）

- Large loop UXO detector 62 units
  （Type：Flame, Quality：CMAC Standard,Useage：Detection of metal and mines）

- UXO deep search detector 1 units
  （Type：Probe, Quality：CMAC Standard, Usage：Detection of UXO）

- UXO deep search detector 1 units
  （Type：Probe, Quality：CMAC Standard, Usage：Detection of UXO）

- Station wagon 35 units

  （Type：Four Wheels drive, Useage:Transportation of demininers and materials）

- Pickup Truck single cabin 11 units

  （Type：Four Wheels drive, Quality：CMAC Standard, Useage:Transportation of demininers and materials）

- Pickup Truck double cabin 39 units

（Type : Four Wheels drive, Quality : CMAC Standard, Useage:Transportation of demininers and materials）

- Ambulanc 3 units

（Type : Four Wheels drive, Quality : CMAC Standard, Useage:Transportation of victems）

- Protective vest 450 pcs

（CMAC Standard, Useage:Protection of demininers）

- Protective visor 450 pcs

（CMAC Standard, Useage:Protection of demininers）

4. Project Period Estimated

When implementing this project under the Japanese Grant Aid scheme, expected period to be required 4.0 months and 11.5 months to draw execution designs and to procure and install equipment, respectively, in the Project.

5. Project Evaluation

(1) Quantitative Effect

The Project has a quantitative effect to increase the demining activity. Effectiveness (quantitative effect) of the Project shows in terms of numerical values.

① Landmine/UXO cleared area：525.8 km^2（Cumulative value until 2014）
→ 825.8 km^2（2 years after completion of the Project）（Full clearance）

② Area released by technical survey：105.8 km2（Cumulative value until 2014）
→ 405.4 km2 (2 years after completion of the Project) (technical survey)

(2) Qualitative Effect

(i) Maintenance of equipment performance will become more easily, and thus the efficiency of demining activities will improve. Upgrading of aged equipment will reduce the frequency of repair and thus the burden of mechanics. The safety of deminers will improve by the reduction of malfunction.

(ii) Landmine/UXO clearance and technical surveys will contribute to the release of land

that cannot be used so far.

(iii) Mine-contaminated areas will be reduced, contributing to securing the safety of peoples' lives.

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The Project for Improvement of Equipment for Demining Activities (Phase Ⅶ)

in the Kingdom of Cambodia

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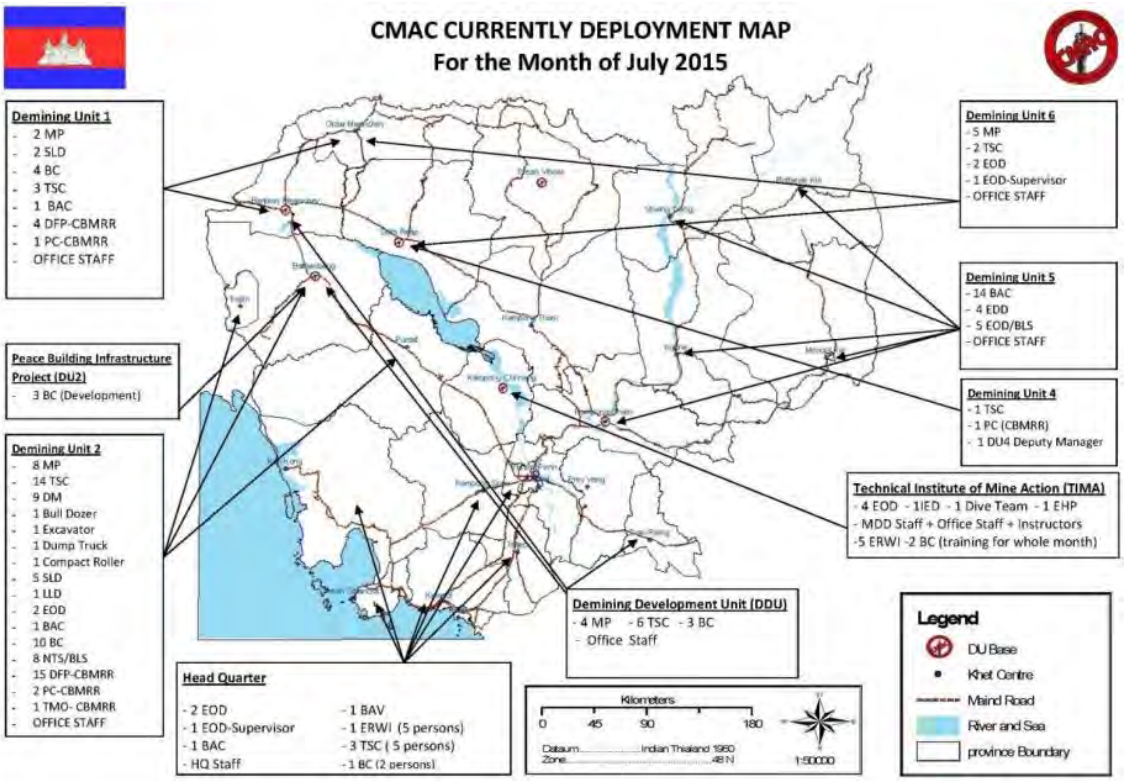

Location Map

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Abbreviations

Abbreviation	Name
B/A	Banking Arrangement
BC	Brush Cutter
CIF	Cost, Insurance and Freight
CBMRR	Community Base Mine Risk Reduction
CBURR	Community Base UXO Risk Reduction
CBD	Community Base Demining Team
CMAA	Cambodian Mine Action and Victim Assistance Authority
CMAC	Cambodian Mine Action Centre
CMC	Community Mine Clearance
DOD	Draft of Outline Design
DU	Demining Unit
EDD	Explosive Detection Dog
E/N	Exchange of Notes
EOD	Explosive Ordnance Disposal
G/A	Grant Agreement
GDP	Gross Domestic Product
GNI	Gross National Income
GPS	Global Positioning System
Halo Trust	Hazardous Area Life-Support Organization
HQ	Headquarters
JMAS	Japan Mine Action Service
JICA	Japan International Cooperation Agency
LLD	Long Leash Dog
MAG	Mine Advisory Group
MAPU	Mine Action Planning Unit
M/D	Minutes of Discussion
MPL	Mobile Platoon
MRE	Mine Risk Education
NGO	Non-Governmental Organization
PICMA	Programa Presidential para la Accion Integral contra Minas Antipersonal
PMAC	Provincial Mine Action Committee
SLD	Short Leash Dog
TC	Training Center
TS5	Technical Survey Clearance 5
TSC	Technical Survey Clearance
TST	Technical Survey Team
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNTAC	United Nations Transitional Authority in Cambodia
UXO	Unexploded Ordnance

Chapter 1 Background of the Project

1-1 Background of request

Japan has contributed to activities of the Cambodian Mine Action Centre (CMAC). It carried out a total of six Grant Aid to supply demining equipment (FY1998, FY1999, FY2002, FY2004, FY2008 and FY2010) starting with "Projects for Improvement of Equipment for Demining Activities" in FY1998 and Grant Aid for Conflict Prevention and Peacebuilding "Program for Integrated Mine Clearance and Landmine Victim Assistance" consisting of two phases (Phase I in 2009-13 and Phase II in 2013-16) to supply demining equipment and assistance for demining activities using the equipment supplied. It also carried out the "Project of Strengthening CMAC's Function for Human Security Realization" (FY2008-FY2010), a technical cooperation project with dispatch of experts, for the capacity building of CMAC for landmine/UXO clearance activities.

Assistance from Japan and other donors has yielded substantial results; CMAC increased the total annual demining area tenfold from approximately 10.5km^2 in 2003 to approximately 97km^2 in 2014.

On the other hand, in spite of although continuous efforts by CMAC for maintenance of equipment at its own workshop, equipment is severely damaged and aged as it has been used in harsh environments, which will certainly lead to a decrease in work efficiency. To maintain the accuracy and efficiency of demining work, exhausted or aged equipment need to be upgraded, but CMAC has difficulty upgrading necessary equipment because it is still short of its own budget and also because most bilateral aid is directed to the operating cost of landmine/UXO clearance activities.

Against this background, the Royal Government of Cambodia requested Grant Aid cooperation from the Government of Japan for procurement of necessary equipment for landmine/UXO clearance activities. Equipment requested is Brush Cutter, Mine Detector, Deep Search UXO Detector, Vehicles, Protective Vest and Protective Visor (PPE).

1-2 Natural Conditions

Cambodia's main geographical features include the Mekong River, which flows from north to south on the east side of the Central Plain, and the Tonle Sap Lake on the west side of the Central Plain. The country lies in the tropical monsoon zone with two distinct seasons: wet and dry. Dry season is further divided into two sub-seasons: hot (from early February to mid May) and cool (from early November to late January). As CMAC's demining activities shift their center to rural areas without much infrastructure, they become increasingly susceptible to the above-mentioned climatic conditions (hot weather, humidity, heavy rain. etc.) that create a hostile work environment for the demining staff and equipment. In addition, Cambodia's geology is characterized by

iron-rich laterite soil, which affects the function and performance of mine detectors that work as a type of metal detector.

(1) Vegetation

Cambodia is located in the Mekong River Basin in the south of the Indochina Peninsula. Its climate, geology and vegetation are greatly affected by the Mekong River. Dense forests which once covered the entire country have been almost entirely wiped out because of the long civil war, slash-and-burn farming and timber exports (including illegal felling and exports). With the exception of the mountains in the north and south, only medium-size brush composed of shrubs up to 15 cm in diameter are found scattered around in the country. In Cambodia, felling of forests for settlement has continued since 1993 and forests have been turned into paddy fields.

Sporadic fighting between the forces of the Royal Government of Cambodian and Khmer Rouge forces continued until 1999. When peace returned to Cambodia after 2000, internally-displaced people (farmers forced out of rural areas by the military conflict, ex-farmers living in urban areas who wished to go back to rural areas after failing to make a living in urban areas, the poor in urban areas, etc.) started to settle in areas where there was danger of land mines and began slash-and-burn farming. (Despite the demining and risk avoidance education activities conducted at the time, little decrease in the number of mine victims was observed.) A particularly large number of people settled and began to practice slash-and-burn farming in the former combat zone along the border with Thailand in the west and north of the country, e.g. Pailin, Battambang, Banteay Meanchey, Prey Vihear, Siem Reap and Oddor Meanchey Provinces. Land mines had been planted in the west and north of Cambodia (along the border with Thailand) for three reasons; to protect military bases, to protect the fronts and to obstruct people's lives. On the other hand, in the eastern regions, some bombs dropped during the Vietnam War but UXO were left abandoned.

(2) Soil, Climate and Stagnant Water

Reddish lateritic soil specific to the tropical zone is widely found in Cambodia. Magnetized laterite is found specifically in the east. The climate is hot and humid in the rainy season between May and October. The average annual precipitation is 1,400 mm and 4,000 mm in the capital, Phnom Penh, and in the mountains, respectively. Heavy rain in the rainy season and poor drainage facilities inevitably lead to water stagnation. Ruts that form in the roads during the rainy season become hard in the dry season and the hardened ruts make vehicle traffic very difficult and put a great strain on vehicles.

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

The Royal Government of Cambodia ratified the Anti-Personnel Mine Ban Convention in 1999 and has been implementing the “National Strategy for Mine Action 2010-2019” to fulfill its obligations of landmine clearance by 2019 set forth under the Convention. Landmine clearance is also referred to as a priority to “enhancement of the agricultural sector”, one of the four pillars of the “Rectangular Strategy” that the country formulated as a development strategy. Landmine clearance is also regarded as a priority in the “National Strategic Development Plan 2014-2018”. Meanwhile, although more than 20 years has passed since the Paris Peace Agreement was signed in 1991, landmine/UXO contamination remains a serious problem to the country. According to the baseline and other surveys conducted until 2014, the total contaminated area is estimated at 2,840km^2. Moreover, the number of dead and wounded due to landmines/UXO has been decreasing but still amounted to 154 in 2014. Landmine/UXO clearance is an urgent task for the country to solve so as to secure the safety of the people, and facilitate social and economic development.

In these situations, the Project aims to maintain demining activities by providing CMAC with demining equipment, thereby contributing to facilitating social development through clearance of antipersonnel landmines.

2-2 Outline Design of the Japanese Assistance

This project is aimed at renewing the equipment required for the demining activities of CMAC, an organization that plays a central role in demining activities in Cambodia, in order to ensure efficient and safe demining activities by CMAC and thus contribute to the achievement of the overall goals.

Table 1 and Figure 1 list and outline the Equipment.

Table 1 List of Equipment

No.	Intended use, etc.	Equipment	Remarks
1	Removal of shrubs before demining	Brush cutter	Light enough to be carried to mine fields (up to approx. 20t). It must pass trial use tests of CMAC, and obtain a relevant certificate and recommendation from CMAC.
2	Detection of metal and mines	Mine detector	Capable of detecting chiefly antipersonnel mines buried about 10cm deep. The brand will be specified in advance because the equipment must pass trial use tests of CMAC, and obtain a relevant certificate and recommendation from CMAC.
3	Detection of mines and UXO	Head for UXO detector (replacement part for mine detector)	Replacement part to detect UXO and antitank mines buried 10cm deep or deeper. Attached to the mine detector (No.2), the detector head enables the detector to detect UXO. The brand will be specified in advance because the part must pass trial use tests of CMAC, and obtain a relevant certificate and recommendation from CMAC.
4	Detection of mines and UXO in wide area	Large loop UXO detector	The detector coils wound around a square or rectangular pipe. Operable by a team of two or more operators.
5	Detection of mines and UXO in wide area	Data logger for UXO detector	Portable computer to record the depth and area of detection with UXO detector. Capable of producing data that can serve as official proof of operations and official data. Attachable to large loop UXO detector.
6	Detection of mines and UXO buried at significant depth	UXO deep search detector	Pinpoint detection of objects buried at significant depth. Effective to detect rocket bombs buried deep. The brand will be specified in advance because the equipment must pass trial use tests of CMAC, and obtain a relevant certificate and recommendation from CMAC.
7	Demining activities (transportation of mine clearance operators)	Vehicle (station wagon)	Capable of carrying nine persons and running on rough roads.
8	Demining activities (transportation of mine clearance operators and	Vehicle (pickup single cabin)	Capable of carrying three persons, running on rough roads and carrying detector or equipment.
9	Demining activities (transportation of mine clearance operators and	Vehicle (pickup double cabin)	Capable of carrying five persons, running on rough roads and carrying detector or equipment.
10	Demining activities (rescue)	Vehicle (ambulance)	Capable of carrying people injured/killed in minefields, running on rough roads and loading first-aid medical kits.
11	Demining operations (body protection)	Protective vest	Equipped with bulletproof function.
12	Demining operations (body protection)	Protective visor	Capable of protecting eyes and head.

Brush Cutter

Mine detector

Large loop UXO detector

UXO deep search detector

Vehicle (Station wagon)

Vehicle
(Pickup single cabin)

Vehicle (Pickup double cabin)

Vehicle (ambulance)

Protective vest

Protective visor

Fig. 1 Outline the Equipment

2-2-1 Design Policy

For the purpose of ensuring the safety of the lives of the Cambodian people and facilitating social and economic development by achieving the target for mine and UXO clearance in Cambodia, in order to maintain the level of skills and efficiency of the activities of CMAC by replacing or reinforcing the old and dilapidated equipment in its possession, and on the basis of the request from the Royal Government of Cambodia and the results of the survey and consultations.

2-2-1-1 Basic Policies

The following five policies were adopted as the basic policies:

(1) To maintain the capacity and efficiency of demining activities as of 2015, CMAC's equipment which is approaching the end of its life will be replaced.

(2) With regard to the above-mentioned (1), only equipment that directly contributes to the demining activities and maintenance of the demining capacity will be considered for procurement in this project and equipment which does not satisfy either of these conditions will be excluded from this Project.

Specifically,

- Priority will be given to replacement of brush cutter (machine life: 10 years) and Mine detectors (machine life: 5 years), which were procured until Phase VI of the project and reached their machine lives.
- If there is no prospect of CMAC expanding its activities (such as an increase in the workforce), the number of each type of equipment will be in principle kept under the present number (by focusing on replacement of decrepit equipment only).

(3) Information system equipment and spare parts will be excluded from this Project because many of them can be purchased with their own fund and also because they make little direct contribution to demining activities.

(4) Designated equipment that have passed CMAC's independent performance and safety tests will be procured to secure the safety of deminers and the efficiency of their activities.

(5) Demining machines will be excluded from this project because (i) they are costly; (i) the maintenance requires advanced welding and other maintenance skills, so operators may not be able to use them stably and continuously; (iii) CMAC currently uses

demining machines only in limited areas.

2-2-1-2 Policy on Environmental Conditions

In order to make it possible to procure the equipment which provides the maximum output in the demining activities under the above-mentioned natural conditions, the following policies were adopted.

1) Brush cutters:

Since Brush cutters are required for a unique purpose, those approved by CMAC will be procured not only for their suitability to the brush and the natural conditions on the ground such as topography but also for operating safety.

2) Vehicles:

Because the vehicles to be procured will be used on roads in extremely poor condition (including stagnant water), four-wheel-drive pickup trucks, station wagons and ambulances with excellent maneuverability will be procured. Moreover, because they will be used in minefields under special geological conditions, vehicle models that have been used in similar circumstances and approved by CMAC will be procured for safety purpose (except station wagons).

3) Detectors:

Performance of the mine detectors is greatly affected by the soil conditions at the sites. In particular, metal detectors reacts magnetized laterite soil found across the country. Thus, detectors that are easily operated, have functions to adjust the responsive sensitivity for red clay soil, and are approved by CMAC will be procured.

4) Protective Gear (Protective vest and visor)

Protective gear will be used by demining operators at work. For safety purposes, gear that have been used in similar circumstances and approved by CMAC will be procured.

2-2-1-3 Policy on Special Conditions at the Project Site

Special conditions at the project site include the conditions mentioned in “Policy on Environmental Conditions”. Therefore, equipment that can meet such special conditions will be selected.

2-2-1-4 Policy on Operation and Maintenance

In Cambodia, the dealers do not yet provide a sufficient support system for the maintenance of equipment (particularly vehicles and electronic devices); this situation requires CMAC to execute maintenance by themselves. Since CMAC has acquired a sufficient technical level for maintenance through past activities, there will be no problem in maintenance of equipment if spare parts required for repair work are procured at the same time as the equipment itself.

2-2-1-5 Policy on Establishment of Grade of Equipment

Most of the machines currently owned by CMAC are products procured under the Government of Japan's Grant Aid cooperation projects, and have received a high rating. All the brush cutters and detectors passed CMAC's certification tests. In consideration of the safety of demining operators and maintenance, consistency with the equipment currently in CMAC's possession will be maintained by selecting designated equipment that has passed CMAC's certification tests. Meanwhile, in view of the road and soil conditions in the demining area, four-wheel-drive vehicles with excellent maneuverability, which are certified by CMAC in accordance with past experience, will be procured. As for station wagons, models of general grades will be adopted.

2-2-1-6 Policy on Procurement Methods and Implementation Period

(1) Brush cutter

Designated brands of brush cutter will be procured to enable CMAC to use spare parts of the brush cutter currently owned.

(2) Detectors

Designated brands of detectors that are certified by CMAC in consideration of the performance and usage suitable for the site conditions will be procured. The details of CMAC's certification tests and the reasons for designating certain models are as follows:

- CMAC commissions a third-party institution to conduct highly transparent comparative tests of detectors with other models of the same type, evaluates the results of the tests objectively and grants certification to the models that pass the tests. CMAC uses

only certified detectors.

- CMAC assesses not only the comparison of performance but also evaluation by the inspector of CMAC based on their long experience in practical use of the detectors in the field, which cannot be achieved by a comparison of specifications. CMAC requests the manufacturers of the detectors to improve the quality of their detectors on the basis of the evaluation by the deminers and makes them improve their products.

- CMAC has developed Standard Operation Procedure for demining activities using the certified detectors. It is essential for the deminers to follow these manuals while working. As described in the previous item, the manuals are revised taking into consideration the evaluation based on practical use of the detectors in the field, as a way of improving the quality of the manuals.

- CMAC takes full responsibility for the use of the detectors chosen by CMAC.

The detectors owned by CMAC are the products of third countries. Their performance, quality and services are highly evaluated. From the viewpoint of safety in the specialized work of demining, the request for the procurement of the designated detector models which have passed CMAC's certification tests is considered appropriate. Therefore, designated detector models (made in Germany) for the detectors owned by CMAC will be procured in this project.

(3) Protective Vests and Visors

Protective vests and visors currently owned by CMAC are local products and have a high evaluation based on performance, quality and service. The local makers have improved the quality of the products for many years, and gained high credibility from CMAC. Because of this and to ensure safe demining operations that are considered special, it is considered reasonable that CMAC has designated certain brands of products that have passed its certification tests. Therefore, designated brands of protective vests and visors locally manufactured will be selected.

(4) Vehicles

CMAC reports that it has procured pickup trucks made in Thailand, but their durability was considerably lower than that of Japanese makes. Thus, pickup trucks of Japanese manufacturers will be designated in this project. As for ambulances, only one model of a Japanese manufacturer is available, which satisfies the specifications required. Thus, brand designation will be adopted for ambulances.

While brand designation will be adopted for the brush cutter, detectors, protective vests and visors, pickup trucks and ambulances mentioned above, tenders will be held for these pieces of equipment among trading companies.

For station wagons, since only two Japanese models satisfy the specifications required by CMAC, the procurement will be made in competitive tender.

The procured equipment will be handed over to the Cambodian side at the TIMA in Kampong Chhnang. After the inspection and initial training, CMAC will deliver the equipment to each site.

The basic policy of procuring equipment of standard specifications from the manufacturers will be adopted wherever possible to reduce the time required for the procurement. A period of eighteen (18) months is assumed as the project period from the conclusion of the E/N to the delivery of the equipment.

A detailed implementation schedule will be prepared and used for confirmation of the progress of the project at each step, including the various procedures to be implemented by the Cambodian side, in order to prevent any delay in project implementation.

2-2-2 Basic Plan (Equipment Plan)

The types, specifications and quantities of the equipment to be procured will be confirmed and calculated in accordance with the flowchart shown in Figure 2. The relevance of the request will then be verified and an equipment plan will be prepared.

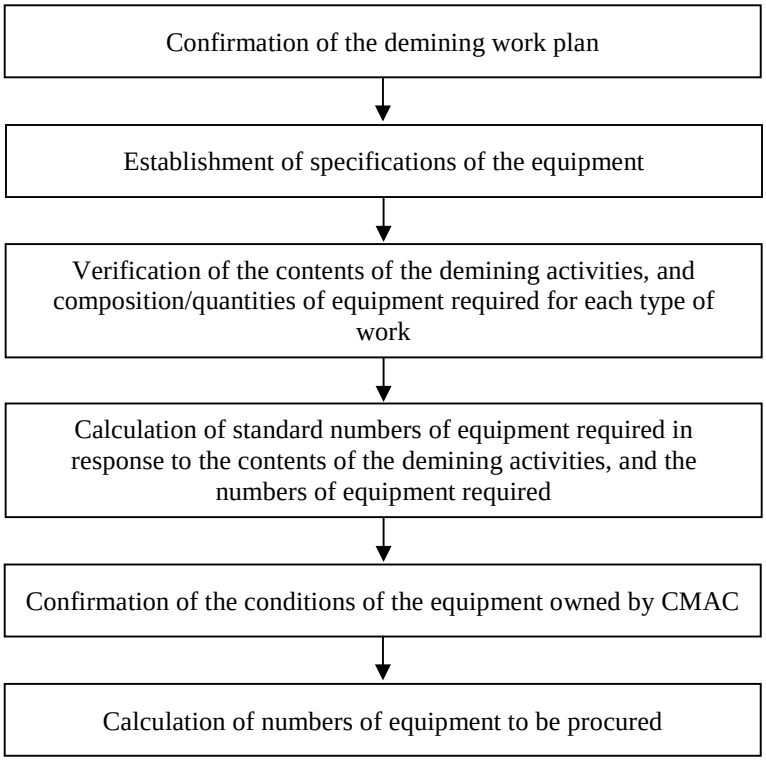
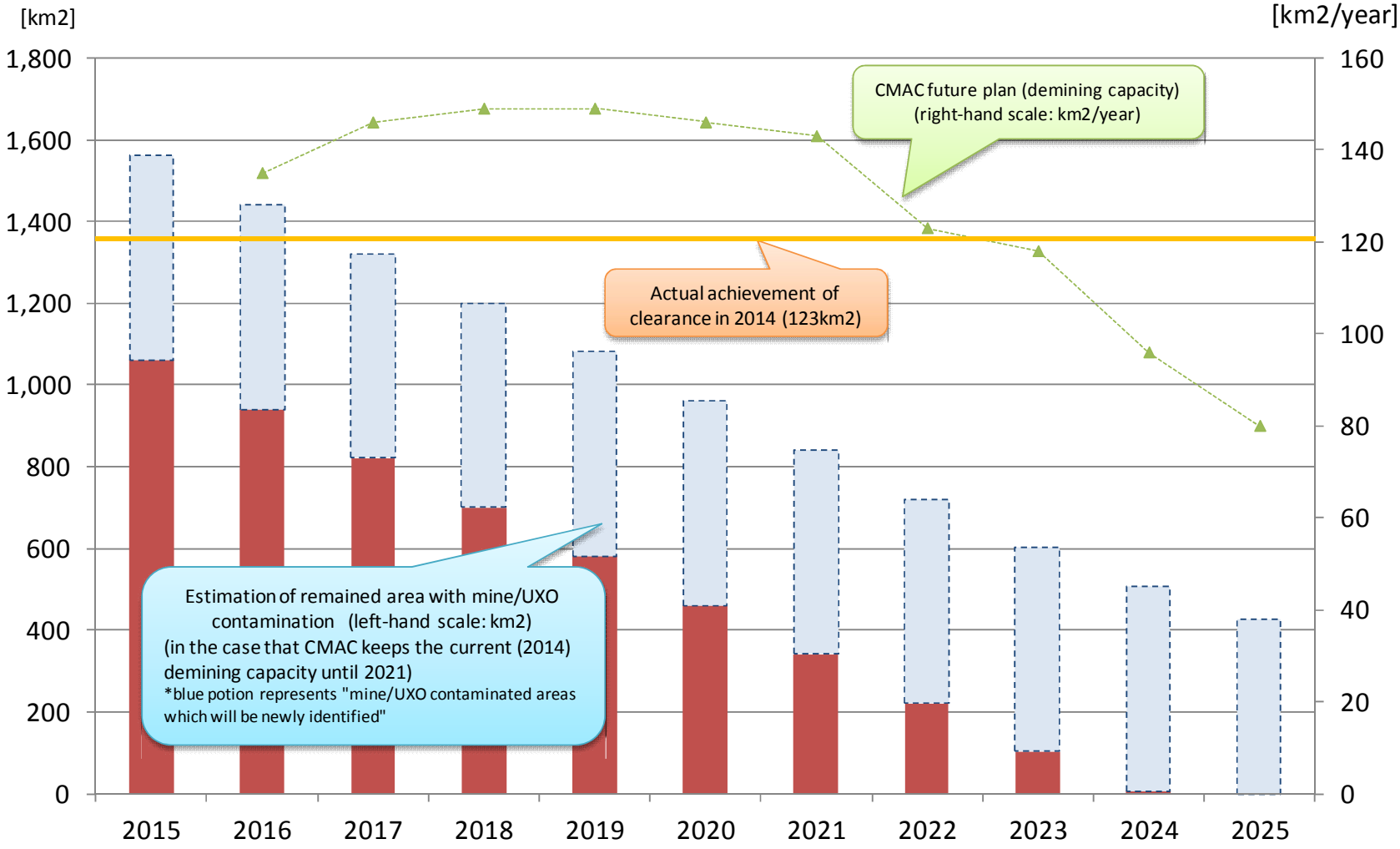


Figure 2 Flowchart for the Preparation of Types, Quantities and Specifications of the Equipment to be procured

(1) Verification of the Demining Work Plan

As stated earlier in Table “Clearance Results by Agency”, a number of agencies have engaged in demining activity and removed approximately one million antipersonnel mines and 2.6 million UXO, but untreated mines and UXO still cause victims and considerably hinder the recovery and development of agriculture, which is a major industry in Cambodia. Figure 3-2 shows future plans formulated in Cambodia at the time of this survey. As there still remain many regions that need to be cleared of landmines and undergo the land release process, CMAC needs to maintain a capacity to clear 120km^2 or so of land every year until around 2023, for which provision of equipment by the Japanese Government will be crucial.

In addition, organizational and strategic changes are being planned after 2025 on the assumption that most of the regions contaminated with landmines and UXO will be released and the number of victims will begin decreasing by that time. Specifically, such changes are two-fold: (i) shift from aggressive to passive approaches (from the present systematic survey/demining operations towards diminishing contaminated regions to small-scale survey/demining work in response to individual requests from the government, private companies and citizens, etc.), (ii) reduction of personnel hired on a project basis and rehiring some of them as government employees. These plans will need to be paid attention to in the subsequent phases.



Note 1: : In this figure, estimation of remained area with mine/UXO contamination responds to CMAC's task only. CMAC plans to clear half of the overall mine/UXO contaminated area of 2,839km2 (including mine/UXO contaminated areas which will be newly identified), and other half will be cleared by MAG, NPA and Halo trust.
Note 2:mine/UXO contaminated areas which will be newly identified refer to "(i) areas where baseline surveys which have been in progress since 2009 have not been completed (about 30% of the overall mine/UXO contaminated area)" and "(ii) areas where baseline surveys have been completed but resurveys must be conducted to clarify uncertain information". These areas are estimated to be 1,000km2 in all at present.

Figure 3 Future Demining Plan in Cambodia

(2) Establishment of the types and quantities of the Equipment

An Attachment to Appendix 1 “Minutes of Discussion” was exchanged between the investigative team and CMAC based on the basic policy. Therein noted in Section 8-1 of Section 8 “Other Relevant Issues”, “Both sides agreed that equipment plan should be formulated focusing on the following factors:”

- Equipment must directly contribute to demining activities (except Demining Machine)
- Maintaining the current functionality of brush cutters and detectors.

Moreover, selection of the equipment and the required quantities are established premised on the plan formulation of 8-2 “Agreement regarding the content considering the low procurement priority of priority level C”, based on the CMAC Demining Plan with the planned period for equipment delivery in 2017. Based on the above policy, the types and quantities of equipment are established as shown below.

Brush cutter	Quantity requested＝12, quantity to be procured＝9

Currently, 20 brush cutters are in operation by CMAC. However, of those, 9 are operating with significantly impaired operation – some having been in operation excess of 10,000 hours beyond their operating maximum. Taking into consideration the harsh conditions in which they have been used, these 9 units with impaired function are expected to decline in function and operating efficiency, and repair costs are expected to soar by the year 2017, when equipment is expected to arrive.
As for 8 units of Brush cutters has been replaced under Grant Aid Phase 6.

※ “Impaired operation” is availability of things around 70%, “Aged” is ten years or more usage and improper operation as Brush cutter. Brush cutter will be modified to be used normal excavator for digging work.

	Year of procurement	Model	Quantity	Donor	Number in use	Impaired operation	Aged	Unusable
1	2000	EX150C	2	Phase 1	0	0	0	2
2	2000	PC60-7B	2	Phase 1	0	0	0	2
3	2003	ZX160LC	8	Phase 3	0	0	7	1
4	2005	ZX160LC	15	Phase 4	3	9	2	1
5	2012	ZX160LC	8	Phase 6	8	0	0	0
Total			35	—	11	9	9	6

Mine detectors Vallon VMH3CS	Quantity requested＝729, quantity to be procured＝729

The lives of not only the deminers, but also the land users after demining, depend on the performance of the mine detectors. Since the life of a mine detector is the duration for which the manufacturer guarantees its detection function (sensitivity), it is inappropriate to use detectors that are far beyond the expiry of their life. The mine detectors to be replaced were procured before 2009 and the number in use is 1,005. The problems below exist because of the overrun past the service life of the mine detectors delivered before 2009.

1. Although their use can be continued with repairs like other general equipment, their continued use will cost a lot because of the frequent need for repair.
2. Even with repair, deterioration in their performance is inevitable. CMAC is having a hard time because of the declining efficiency and quality of demining. For example, as malfunctioning of the detectors often happens during the heat of the day, such detectors can be used only in the relatively cool mornings.

Of the 1,005 mine detectors that are beyond their service life (5 years) and currently in use, 543 devices are still in use 7 or more years following their start date. An additional 166 units have been in use 6 years and are deployed in DU2 (high frequency of use), the primary entity for demining activities. 11 units have been in use for 6 years and are currently considered under repair (out of order). Additionally, despite the short usage period of 3 to 5 years, 9 units already have failures that cannot be repaired (inoperable). These detectors comprise a total of 729 units, and were targeted for equipment replacement in this project.

	Year of procurement	Name	Quantity	Donor	Number in use/Under repair	Unusable
1	1997-99	Minilab F1A4, etc.	821	Various	57	764
2	2000	Minlab F1A4	200	Phase 1	27	173
3	2000	Minlab F1A4	11	Various	1	10
4	2003	Minlab F1A 4	400	Phase 3	85	315
5	2005	Minilab F1A4	599	Phase 4	214	385
6	2005	Minilab F3-J	4	Varo us	4	0
7	2006	Minilab F3-J	8	Various	2	6
8	2008	Minilab F3-J	40	PeaceBuilding Phase 1	22	18
9	2008	Minlab F3-J	123	Various	112	11
10	2008	CEIA MILD1	20	Various	19	1
Subtotal (in use 7 years or more)			2,226		**543**	1,683
11	2009	Minlab F3-J, CEIA MILD1	488	Phase 5	453 **(DU2 deployment 166 units) (under repair 11 units)**	35
12	2009	CEIA MILD1	9	Various	9	0
13	2010	CEIA MILD1	7	Various	4	**3**
14	2012	Minlab F3-J	221	Phase 6	215	**6**
Total			2,951		1,224	1,727

UXO detectors (large loop) Vallon VMX10	Quantity requested＝150, quantity to be procured＝62

The number of units in operation currently is 156, with 65 of those in use 6 years or longer (aged equipment). Of these, 62 were targeted for replacement, including units with a long age of service (7 years or more), equipment provided through Grant Aid, Phase 5 to high frequency-of use CMAC branches (DU1, DU2), and equipment currently under repair.

	Year of procurement	Name	Quantity	Donor	Number in use/Under repair	Unusable
1	2000	Ebinger 420GC	2	Germany	0	2
2	2001	Ebinger UPEX740M	10	Germany	3	7
3	2004	Ebinger UPEX740M, Ebinger	12	Various	1	11
4	2005	Ebinger UPEX740M	48	Phase 4	29	19
5	2007	Ebinger UPEX740M	1	Various	1	0
6	2008	Ebinger UPEX740M	3	Peacebuilding Term 1	0	3
7	2008	Ebinger UPEX740M	10	Various	9	1
Subtotal (in use 7 years or more)			86		**43**	43
8	2009	Ebinger UPEX740M	27	Phase 5	22 **(DU1, DU2 deployment 18 units) (under repair 1 unit)**	5
9	2010	Ebinger UPEX740M	7	Various	6	1
10	2011	Ebinger UPEX740M	12	Peacebuilding Term 1	10	2
11	2012	Ebinger UPEX740M	87	Phase 6	75	12
Total			219		156	63

Deep search UXO detector (bomb locator) Vallon VX1	Quantity requested ＝ 5, quantity to be procured＝2

Despite the small total of 10 units, these bomb locators owned by CMAC have already been in use 5 years (service life) or more and need to be replaced. The 2 units in use 6 years and with high frequency use by DDU team (Development Removal Unit) are targeted for replacement.

	Year of procurement	Name	Quantity	Donor	Number in use/Under repair	Unusable
1	2009	Forester Ferex 4.032 DLG	3	Phase 5	3 **(DDU deployment 2 units)**	0
2	2010	Forester Ferex 4.032 DLG	7	Various	5	2
Total			10		8	2

Station wagon	Quantity requested＝35, quantity to be procured＝35

CMAC has so far acquired a total of 148 station wagons, 49 of which late model vehicles donated by other donors from 1993 to 1999 and the remaining 91 were procured in Phases 1, 2, 4, and 6 of the Japanese Grant Aid project. An additional 8 vehicles have been provided by various donors since 2000.In the preparation of the equipment plan, the severity of the conditions of use of CMAC's vehicles (use on soft roads in the rainy season and very rough earthen roads) and the scope of the maintenance work were taken into consideration. Using the following two as the criteria, the station wagons requiring replacement were identified for the procurement plan.

1) Equipment procured in 2002 will be replaced in this project because their dilapidated condition, such as rust on the body, is beyond repair and their continued use is considered difficult.
2) Vehicles with a cumulative mileage of over 250,000 km as of October 2015 will be replaced in this project because their suspension systems and engines have been damaged so much that a large increase in the repair costs is apprehensive.

Either or both of the two conditions apply to 12 vehicles from 2002, and 23 vehicles, which although procured during or after 2002, have a cumulative mileage of over 250,000 km.

From the examination mentioned above, it was decided that 35 vehicles would be procured in this project.

	Year of procurement	Model	Quantity	Donor	Number in use	Impaired operation	Aged	Unusable
1	1993-99	TOYOTA Land Cruiser, etc.	49	Various	46	0	0	3
2	2000	ISUZU Bighorn	8	Phase 1	2	4	0	2
3	2002	ISUZU Bighorn	12	Phase 2	0	0	0	12
4	2005	TOYOTA Land Cruiser	21	Phase 4	0	21	0	0
5	2000-09	Various	8	Various	6	0	2	0
6	2012	NISSAN Patrol	50	Phase 6	49	1	0	0
Total			148	-	103	26	2	17

Pickup Truck single cabin	Quantity requested＝50 (total of single and double cab), quantity to be procured＝11

CMAC has so far acquired a total of 154 pickup trucks (single cab), 65 of which were early model vehicles provided by various donors from 1993 to 1998 and the remaining 89 were procured in Phases 1, 3, and 5 of the Japanese Grant Aid project. In the preparation of the equipment plan, the same judgment criteria were used to identify equipment for replacement as were used for station wagons.

11 of the vehicles procured in 2003 have cumulative mileage of over 250,000 km.

From the examination mentioned above, it was decided that 11 vehicles would be procured in this project.

	Year of procurement	Model	Quantity	Donor	Number in use	Impaired operation	Aged	Unusable
1	1996	TOYOTA 4WD	61	Cambodia Government	0	58	0	3
2	2000	ISUZU 4WD	11	Phase 1	0	0	11	0
3	2003	TOYOTA 4WD	28	Phase 3	17	11	0	0
4	2012	Mitsubishi 4WD	50	Phase 6	50	0	0	0
Total			150-	-	67	69	11	3

Pickup Truck double cab	Quantity requested＝50 (total of single and double cab), quantity to be procured＝39

CMAC has so far acquired a total of 45 pickup trucks (double cab) through the Japanese Grant Aid, Phase 4. In the preparation of the equipment plan, the same judgment criteria were used to identify equipment for replacement as were used for station wagons.

39 of the vehicles procured in 2005 have cumulative mileage of over 250,000 km.

From the examination mentioned above, it was decided that 39 vehicles would be procured in this project.

	Year of procurement	Model	Quantity	Donor	Number in use	Impaired operation	Aged	Unusable
1	2005	TOYOTA 4WD	45	Phase 4	7	39	0	0
Total			45	-	7	39	0	0

Ambulance	Quantity requested＝6, quantity to be procured＝3

CMAC has so far acquired a total of 13 off-road ambulances through the Japanese Grant Aid, Phase 1. In the preparation of the equipment plan, it was determined that 3 vehicles had impaired operation and cumulative mileage of over 250,000 km, requiring replacement.

From the examination mentioned above, it was decided that 3 vehicles would be procured in this project.

	Year of procurement	Model	Quantity	Donor	Number in use	Impaired operation	Aged	Unusable
1	2000	ISUZU Bighorn (ambulance)	13	Phase 1	0	3	7	3
Total			13	-	0	3	7	3

Protective vest	Quantity requested＝1700, quantity to be procured＝450

Protective vests should be distributed to all demining personnel. The maximum number is 1,578 sets, but 450 of the currently owned vests are soiled or damaged.

	Year of procurement	Model	Quantity	Donor	Number in use	Soiled
1	2005	Protective vest	1,120	Phase 4	1,120	450
Total			1,120		1,120	450

Protective visor	Quantity requested＝1700, quantity to be procured＝450

Same as protective vests.

	Year of procurement	Model	Quantity	Donor	Number in use	Soiled
1	2005	Protective visor	1,120	Phase 4	1,120	450
Total			1,120		1,120	450

Spare parts for station wagon	Quantity requested＝1 set, quantity to be procured＝0

The main purpose of this project is to replace equipment, and spare parts are therefore excluded from the equipment targeted for procurement at this time.

Spare parts for single cab pickup truck	Quantity requested＝1 set, quantity to be procured＝0

The main purpose of this project is to replace equipment, and spare parts are therefore excluded from the equipment targeted for procurement at this time.

Spare parts for mine detectors	Quantity requested＝1 set, quantity to be procured＝0

The main purpose of this project is to replace equipment, and spare parts are therefore not included in the equipment to be procured in this project.

Demining machines	Quantity requested＝4, quantity to be procured＝0

①The cost per unit is costly, ② their stable and sustainable use is uncertain due to the fact that they require a high level of welding expertise for operation and maintenance, and ③ the regions using them at present are limited. Therefore, this item is not included in the equipment to be procured in this project.

GPS	Quantity requested＝71, quantity to be procured＝0

Because this equipment is relatively inexpensive and is locally available for purchase, it will not be included in the equipment to be procured in this project.

Tools and machine tools for the Central Workshop	Quantity requested＝1 set, quantity to be procured＝0

A request was made for equipment (a set of workshop tools) to handle repairs at a high level of consideration. However, the requested item is not included in the Equipment to be procured in the Project due to the points below.

One unit of mobile workshop (equipped with a set of repair tools) procured in Phase 5 and the cargo truck (equipped with a set of repair tools to function like the mobile tool truck) procured have been

mobilized twice or more a month according to the record, indicating that they are being utilized sufficiently and effectively.	
Computer (general purpose, database)	Quantity requested＝1, quantity to be procured ＝0
Because this equipment is relatively inexpensive and is locally available for purchase, it will not be included in the equipment to be procured in this project.	
Test equipment	Quantity requested＝1, quantity to be procured＝0
This equipment is new equipment, and is therefore not included in the equipment to be procured in this project.	

(3) Establishment of the specifications of the Equipment

Table 2 Equipment plan 1

No.	Equipment name	Main specifications	Reasons for selection of specifications
1	Brush cutter	1) Base: Swing hydraulic excavator 2) Vehicle weight: less than 30 tons 3) Engine output: 73 kW or greater 4) Working device: hydraulic rotary cutter, 0.6m^3 bucket, blade 5) Driver's seat: Special reinforced cab: (against fragments) 6) Crawlers: Triple grouser track shoe, width 500 mm	Fifteen brush cutters were procured in 2005 in a Japanese Grant Aid project and all of them are in use. However, since nine of the 2005 units have aged significantly, nine brush cutters will be procured in this project to replace them. Therefore, specifications identical in principle to those of the brush cutters owned by CMAC were adopted for the brush cutters to be procured.
2	Mine detector	1) Model: Vallon VMH3CS 2) Operational weight: under 3.0 kg 3) Alarm signal: audio, LED meter display, vibration 4) Supported soil types: normal and mineralized (mode selection) 5) Water resistance: up to 4 meters 6) Function: Compliant with CMAC standards	(The equipment has already passed the CMAC acceptance test and is in use as a mine detector. deminers familiar with the use of this detector. It will be used at the forefront of demining activities and, thus, can be called equipment that which will save human lives.) Accordingly, the specifications take into account the ease of operation and weight reduction of the equipment.
3	UXO detector (large loop)	1) Model: Vallon VMX10 2) Frame dimensions: 1 x 1 m or 1 x 2 m or 2 x 2 m 3) Alarm signal: audio, LED display 4) Data transfer: Bluetooth or cable link 5) Supported soil types: normal and mineralized (mode selection) 6) Water resistance functionality: IP54 7) Function: Compliant with CMAC standards	The equipment has already passed the CMAC acceptance test and is in use as a UXO detector. CMAC personnel involved in UXO detection are familiar with the use of this detector. It is also used for confirmation of safety after demining operation, in addition to UXO detection. Its specifications allow for UXO detection over a wide area.
4	Deep search UXO detector (bomb locator)	1) Model: Vallon VX1 2) Operational weight: under 4.0 kg 3) Alarm signal: audio, LED meter display 4) Data transfer: Bluetooth or cable link 5) Detection sensitivity (range): 9	The equipment has already passed the CMAC acceptance test and is in use as a deep search UXO detector. CMAC personnel involved in UXO detection are familiar with the use of this detector. It can pinpoint deep searches and has specifications that are effective when an

		settings (ranges) possible 6) Detection depth: 500 mm or greater 7) Function: Compliant with CMAC standards	unexploded rocket is buried deep in the ground.
5	Station wagon	1) Seating capacity: 9 2) Gross vehicle weight: 3,000 kg - 3,200 kg 3) Engine type: Diesel engine 4) Engine output: 96 kW or more 5) Transmission: Manual, F5-R1 6) Drive system: Four-wheel-drive 7) Number of doors: 5	This vehicle will be used to transport deminers to and from demining sites. Most of the access roads to these sites are lateritic earthen roads. Because of the poor condition of these roads in the rainy season and dry season, the specifications at left were set for being suitable for driving on such poor roads.
6	Pickup truck single cabin	1) Seating capacity: 3 2) Gross vehicle weight: 3,200 kg 3) Engine type: Diesel engine 4) Engine output: 96 kW 5) Transmission: Manual, F5-R1 6) Drive system: Four-wheel-drive	This vehicle will transport deminers, materials, and equipment to and from demining sites. Most of the access roads to these sites are lateritic earthen roads. Because of the poor condition of these roads in the rainy season and dry season, the specifications at left were set for being suitable for driving on such poor roads.
7	Pickup truck double cabin	1) Seating capacity: 5 2) Gross vehicle weight: 3,200 kg 3) Engine type: Diesel engine 4) Engine output: 96 kW 5) Transmission: Manual, F5-R1 6) Drive system: Four-wheel-drive	This vehicle will transport deminers, materials, and equipment to and from demining sites. Most of the access roads to these sites are lateritic earthen roads. Because of the poor condition of these roads in the rainy season and dry season, the specifications at left were set for being suitable for driving on such poor roads.
8	Ambulance	1) Seating capacity: 3 (not including patient) 2) Gross vehicle weight: 3,200 kg 3) Engine type: Diesel engine 4) Engine output: 96 kW 5) Transmission: Manual, F5-R1 6) Drive system: Four-wheel-drive 7) Number of doors: 3 8) Stretcher: included 9) First aid kit: included 10) Ventilator: included	This vehicle will transport the injured from the demining sites. Most of the access roads to these sites are lateritic earthen roads. Because of the poor condition of these roads in the rainy season and dry season, the specifications at left were set for being suitable for driving on such poor roads.

9	Protective vest	1) Material (outer): Tarpon (para-aramid) 2) Inner material: High quality cotton 3) Weight: Max. 2.5 kg 4) Size: Medium build (55 – 80 kg, 160 - 180 cm) 5) Water resistance/dustproof: Full, collar, groin 6) Function: Collar integrates with visor for throat protection from bomb blasts. Has adjustable back strap. 7) Conforms to: NATO-STANAG 2920 8) STD662F (V50 450 music/1.1 g)	CMAC has approved this protective vest, improved in cooperation with a local manufacturer, for use in minefields. It meets CMAC standards and its specifications include bulletproof functionality.
10	Protective visor	1) Material: Untreated polycarbonate 2) Thickness: 5 mm or greater 3) Other: Includes visor protection cover 4) Color: White 5) Material: Plastic 6) Weight: Max. 0.5 kg 7) Helmet size: Adjustable, one size fits all	CMAC has approved this protective vest, improved in cooperation with a local manufacturer, for use in minefields. It meets CMAC standards and its specifications include eye and head protection.

(4) Equipment Plan

Table 3 shows the outline of the equipment plan prepared on the basis of the content of the request from the implementing agency, CMAC, and the results of the preparation of the plan mentioned.

Table 3 Equipment plan 2

No.	Equipment name	Main specifications	Quanti ty	Intended use, etc.
1	Brush cutter	Type: Rotary cutter Quality: CMAC standard	9	Removal of shrubs before demining
2	Mine detector	Type: Portable Quality: CMAC standard	729	Detection of mines
3	UXO detector (large loop)	Type: Frame type Quality: CMAC standard	62	Detection of UXO
4	Deep search UXO detector (bomb locator)	Type: Probe type Quality: CMAC standard	2	Detection of deep UXO
5	Station wagon	Type: Four-wheel-drive	35	Transport of personnel and materials
6	Pickup truck single cabin	Type: Four-wheel-drive	11	Transport of personnel and materials
7	Pickup truck double cabin	Type: Four-wheel-drive	39	Transport of personnel and materials
8	Ambulance	Type: Four-wheel-drive, with stretcher	3	Transport of the injured
9	Protective vest	Quality: CMAC standard	450	Protection of deminers
10	Protective visor	Quality: CMAC standard	450	Protection of deminers

As for "Item No. 3 Head for UXO detector (replacement part for mine detector) " and "No. 5 Data logger for UXO detector" which mentioned in Table 1 List of Equipment are the attachments for Item No.2 Mine detector and Item No.3 UXO detector (large loop) mentioned in the above table respectively.

2-2-3 Implementation Plan

2-2-3-1 Implementation policy

(1) Implementing agency

The implementing agency of this project on the Cambodian side is CMAC. CMAC will be responsible for operation and maintenance of the equipment. In accordance with the Grant Aid scheme, execution design and procurement supervision will be carried out by a Japanese consultant. Another Japanese corporation will be the main contractor for the supply of the equipment to be procured in this project.

(2) Consultant

After the conclusion of the E/N, CMAC will conclude a consultancy agreement with a Japanese consultant on implementation of this project. The consultant, under the contract with CMAC, will provide engineering services including execution design of the equipment to be procured in this project, preparation of the tender documents, assistance in the tender, procurement supervision and responsibility for the equipment to be procured in this project until the completion of its handover.

(3)Suppliers

In a general competitive tender with qualification for tender participation, the bidder who passes the examination on required quality and specifications and makes a successful bid will conclude an agreement with CMAC to deliver the equipment included in this project. The supplier will deliver, adjust, run trials of and provide introductory operation guidance on the equipment within the period provided in the agreement.

2-2-3-2 Implementation Conditions

Although the implementing agency, CMAC, is familiar with the implementation procedures of the Japanese Grant Aid projects because it was the recipient of equipment for demining procured in the six phases of a Japanese Grant Aid project from Fiscal 1998 to Fiscal 2010, it will be necessary to ensure that there is no delay or nonfulfillment of their responsibilities by providing ample explanation and holding due meetings with them at each implementation stage.

Equipment procured from the Government of Japan and third countries will be transported

by sea to the port of Sihanouk Ville, unloaded there, transported by land to TIMA in Kampong Chhnang and handed over to the Cambodian side there. However, of the equipment procured from “third countries”, some of the spare parts for vehicles will be transported from Thailand to Poipet and then overland to the TIMA and handed over to the Cambodian side.

The equipment supplier will take necessary measures to ensure that there will be no dispute with the Cambodian side regarding warranty against any damage or theft which may occur during the sea and land transport and unloading.

2-2-3-3 Scope of Works

The Japanese side will bear all the costs and implement all the work for the delivery of the equipment to the place of handover, TIMA in Kampong Chhnang. The Cambodian side will bear all the expenses required for obtaining tax exemptions on the imported equipment. Table 4 shows the scope of works of both the Cambodian and Japanese sides.

Table 4 Scope of works

Items	Borne by the Japanese side	Borne by the Cambodian side	Remarks
1. Equipment procurement			
Costs of equipment procurement	●		
Costs of sea transport of equipment	●		From the procurement source to the Port of Sihanouk Ville
Costs of land transport of equipment	●		From the Port of Sihanouk Ville to TIMA in Kampong Chhnang
Unpacking and installation of equipment	●		
Adjustment and test run of equipment	●		
Introductory operation guidance on the equipment	●		
Delivery of equipment to project sites		●	Transport from TIMA in Kampong Chhnang to each project site
2. Tax-exemption procedures		●	

2-2-3-4 Consultant Supervision

(1) Basic Policy of Procurement Supervision

If this project is to be implemented as a Japanese Grant Aid project, an implementation structure with personnel with ample experience in execution design and procurement supervision deployed in the right places will be established for execution of the execution design and procurement supervision, with attention paid to the issues listed below.

1) Preparatory Survey Report
2) Grant Aid scheme
3) Exchanges of Notes (E/N) concluded between the two countries
4) Grant Agreement (G/A) concluded between JICA and the government of Cambodia.

On the basis of the above-mentioned, the outline of the content of the execution design and the procurement supervision, responsibilities and points to be noted are described below.

(2) Content of the work

After the conclusion of the E/N and G/A, the consultant will conclude a consultant agreement with the implementing agency of this project within the scope of works described in the E/N and G/A. The work with the consultant is summarized as follows:

1) Execution design

- Final confirmation of the content of the project and preparation of and consultation on Tender documents
- Acquisition of approval for the tender documents by the Cambodian side
- Public announcement of the opening of the tender and distribution of the Tender Documents
- Assistance in implementation of the tender and evaluation and reporting of the Tender results
- Facilitation for conclusion of procurement agreements

2) Supervision of procurement of equipment

- Verification of the specifications for manufacture of the equipment
- Confirmation of the progress of procurement
- Attendance and production drawing inspection/Attendance at pre-shipment inspection/Confirmation of pre-loading inspection
- Confirmation of adjustment and trial run of the equipment
- Confirmation of the implementation of introductory operation guidance on the equipment
- Confirmation of acceptance test and handover

(3) Supervisor Assignment Plan

1) With regard to the manufacture of the equipment to be procured, the consultant will dispatch one inspector for confirmation of the manufacturing standards and attendance at the pre-shipment inspection and the pre-loading inspection to confirm the absence of any changes in the specifications and quantities which were clearly established at the stage of the basic design survey.
2) After delivery of the equipment to the project site, the consultant will dispatch a full-time supervisor to the project site and the supervisor will supervise the series of work consisting of unpacking, installation, adjustment, trial run, introductory operation guidance, acceptance test and handover.
3) The supervisors will be selected based on ample experience, appropriate technical specifications and coordination skills as the criteria.

2-2-3-5 Quality Control Plan

The following inspections will be implemented at the respective stages of the procurement of the equipment for the purpose of verifying the conformity of the equipment to the technical specifications provided in the agreement.

- Production drawing inspection

  To verify whether the production drawing specifications confirm to the Technical Specifications (Implementation: supplier, Verification: consultant)

- Pre-shipment inspection

  To verify whether the specifications, performance, and quantities of the manufactured equipment conform to the Technical Specifications (Implementation: supplier, Verification: consultant)

- Pre-loading inspection

  Comparison between the content of the technical specifications and the bill of lading and between the bill of lading and the equipment (Implementation: Inspection specialist, Verification: consultant)

- Pre-delivery inspection

  Confirmation of the conformity of the Equipment after delivery to the content of the technical specifications. (Implementation: supplier, Verification: consultant)

2-2-3-6 Procurement plan

(1) Source countries

1) Procurement in Japan

Among the equipment to be procured in this project, brush cutters and vehicles shall be procured in Japan.

2) Local procurement

As protective vests and blast visors are available locally, they shall be procured locally. There is no particular problem in acquiring, repairing and maintaining the parts for that equipment in Cambodia.

3) Procurement in a third country

Most of the mine detectors, UXO detectors and deep UXO detectors currently in use in CMAC, are manufactured in Australia, Italy or Germany. Since mine/metal detectors and deep underground search detectors are the equipment which is used in the vanguard of demining operations, they have to have undergone a CMAC's own certification test and obtained CMAC's certificate. Consequently, they are to be procured in a third country.

Table 5 Source countries of the equipment

Materials and equipment	Source country			Remarks
	Locally	Japan	Third country	
Brush cutter		●		
Mine detector			●	Germany
UXO detector (large loop)			●	Germany
Deep UXO detector (bomb locator)			●	Germany
Station wagon		●		
Pickup Truck single cabin		●		
Pickup Truck Double cabin		●		
Ambulance		●		
Protective vest	●			
Blast visor	●			

(2) Spare parts (appurtenances of the equipment to be procured)

1) Bush cutter

In addition to the filters necessary for the periodic maintenance, the components for the rotary cutter, which wear out and are damaged rapidly, and parts for the consumable will be procured in order to improve operation efficiency of the bush cutter. Taking into account the prime importance of bush cutter as a device used in the demining operation, the procurement of its replacement parts and consumables will be planned in the quantities which will cover about one year/ 1,000 hours run time (It is not intended to be repaired faulty equipment).

2) Detectors

Since detection operations are conducted under severe conditions, detectors are rapidly damaged. Detector spare parts will be procured by placing a priority to those having shown high failure rate in the light of the local operation experiences so that the operation efficiency of the equipment to be procured will improve.

3) Vehicles

Parts to be replaced periodically such as filters to change after 2 years/20,000km travel, and underside/brake parts and electric components likely to fail due to rough road runs will be procured as spare parts. In consideration of safety, a procurement of replacement parts and consumables will be planned for those needed after one year/10,000km travel.

(3) Transportation route

The equipment to be procured in Japan in this project will be shipped from a Japanese port and cross the South China Sea while German products will cross the Indian Ocean. Those shipments will be disembarked at Sihanoukville port, Cambodia and then land transported to be delivered to TIMA in Kampong Chhnang. Shipping time from Japan or Germany is about 3 to 5 weeks.

2-2-3-7 Operational Guidance Plan

Although the equipment to be procured by this project is in principle to replace the existing equipment CMAC owns and uses already, with a view to improve the level of operation and maintenance capability, a technical personnel of equipment maker will carry out, on delivery of the equipment at TIMA in Kampong Chhnang, the adjustment/trial run and the introductory operation guidance for the following 5 items which require on site assembly work and/or of which erroneous operation may lead directly to a loss of life, i.e. bush cutter, mine detector, UXO detector (large loop), deep UXO detector(bomb locator) and ambulance, The consultant will supervise the guidance provided by the technical personnel of equipment maker or the local representative.

Table 6　Number of days required for installation work, etc.

<table>
<tr><td rowspan="3">No.</td><td rowspan="3">Name of equipment</td><td rowspan="3">Quant ity</td><td>Unpacking / Delivery</td><td>Adjustment/ Trial</td><td>Introductory operation guidance</td><td>Total</td></tr>
<tr><td>(man-day)</td><td>(man-day)</td><td>(man-day)</td><td>(total man-days)</td></tr>
<tr><td>Local workers</td><td colspan="2">Dispatched engineers</td><td></td></tr>
<tr><td>1</td><td>Brush cutter</td><td>9</td><td>Included in equipment cost</td><td>30 days×1</td><td>Included in Adjustment/ Trial</td><td>30 days</td></tr>
<tr><td>2</td><td>Mine detector</td><td>729</td><td>Included in equipment cost</td><td rowspan="3">Included in equipment cost</td><td rowspan="3">11 days×1</td><td rowspan="3">11 days</td></tr>
<tr><td>3</td><td>UXO detector (large loop)</td><td>62</td><td>Included in equipment cost</td></tr>
<tr><td>4</td><td>Deep UXO detector (bomb locator)</td><td>2</td><td>Included in equipment cost</td></tr>
<tr><td>5</td><td>Vehicle (Ambulance)</td><td>3</td><td>Included in equipment cost</td><td>Included in equipment cost</td><td>4 days×1</td><td>4 days</td></tr>
<tr><td colspan="3">Total (Total man-days)</td><td>0 day</td><td>30 days</td><td>15 days</td><td>45 days</td></tr>
</table>

2-3-3-8 Soft Component Plan

N/A

2-2-3-9 Implementation schedule

Figure 4 gives an overview of the service implementation schedule of this project, which is based on the Grant Aid scheme of the Government of Japan.

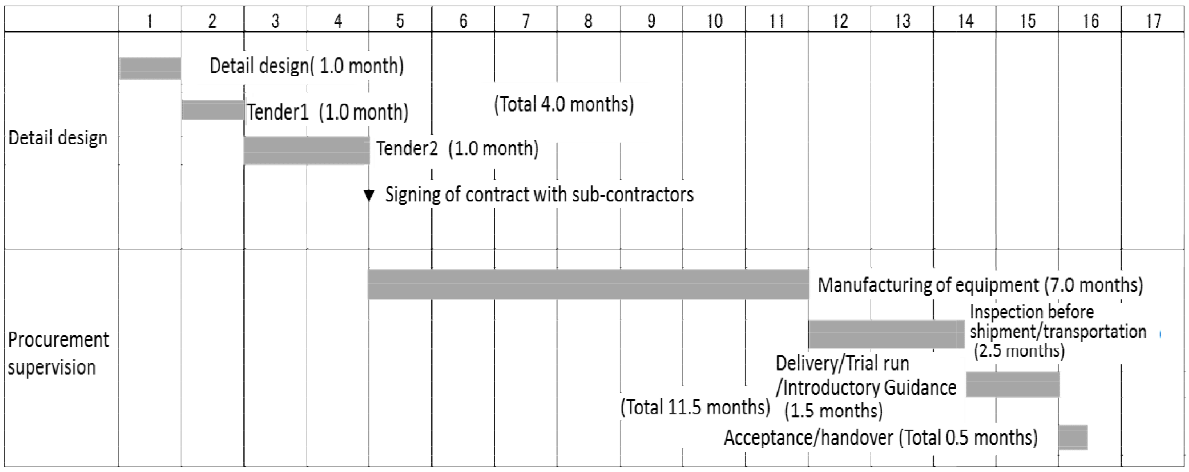


Figure 4 Service implementation schedule

2-3 Obligations of the Recipient Country

As stipulated in Paragraph 2 (During the Project Implementation) and Paragraph 3 (After the Project) of Annex 5 (Major Undertakings to be taken by Recipient Government) to the Minutes of Discussion with CMAC at the time of DOD, the undertakings of the Cambodian side as part of the implementation of this Project are as follows.

(1) Payment of commissions to the Japanese bank in accordance with the Banking Agreement (B/A)

(2) Completion of the procedures required for exemption from customs and import duties and other tax exemptions of equipment procured for this project at the Port of Sihanoukville, and assistance for prompt transport of the imported equipment to TIMA in Kampong Chhnang

(3) Assistance for the Japanese nationals involved in this project on entry to Cambodia and during their stay in Cambodia to perform their duties for this project

(4) Completion of the necessary arrangements to exempt the Japanese nationals providing goods or services in this project from paying customs duties, domestic taxes or other levies

(5) Effective and appropriate operation and maintenance of the equipment to be procured in this project

(6) Payment of all expenses which are not borne by the Japanese side as a part of the Grant Aid for this project.

2-4 Project Operation plan

The equipment to be procured will be directly managed by the Headquarters of CMAC and assigned to each demining platoon in accordance with the Demining Implementation Schedule.

Although the main items of the equipment to be procured in this project, i.e. brush cutter, detector and vehicle, account for a large part in the overall operation and maintenance cost, a reduction in repair costs can be expected because those equipment is, in principle, to replace the existing equipment, which will allow to part out the worn-out existing equipment, especially the brush cutters, and reuse those parts. In addition, it is expected that the failure rate will decrease by the renewal of the equipment.

The managements, such as inventory management, will also be able to be conducted without problem because of the considerable improvements brought by the Japanese

technical cooperation implemented in the past. Table 7 shows the breakdown of current equipment operation and maintenance cost. It reads that CMAC allocates every year about 11 to 13% of its budget, about 2.3 to 3.1 million US dollar (approx. 280 to 380 million Yen) to operation and maintenance, (approx. 280 to 380 million Yen) Since the equipment to be procured in this project is to replace the existing worn-out equipment, the operation and maintenance cost is expected to be restrained and no problem found in the operation and maintenance of the equipment.

Also from a technical point of view, since the equipment to be procured is a replacement for or addition to the existing equipment, CMAC mechanics will be able to apply immediately the technologies they have already acquired to the procured equipment. Hence even technically, it will be possible to manage the operation of the equipment without problem.

Table 7 Equipment operation/maintenance cost

Unit: US$

	2011	2012	2013	2014
Total expenditure (A) =(B)+(C)+(D)	2,262,051.64	3,138,405.93	3,100,201.26	2,960,758.78
Fuel and Grease/ oil (B)	1,331,165.56	1,669,941.59	1,823,127.43	1,786,820.95
Consumable materials (C)	178,187.00	368,939.00	301,502.00	137,595.00
Repairs (D)	752,699.08	1,099,525.34	975,571.83	1,036,342.83

2-5-1 Initial Cost Estimate

When implementing this project under the Japanese Grant Aid scheme, expected period to be required 4.0 months and 11.5 months to draw execution designs and to procure and install equipment, respectively, in the Project.

(1) Cost to be borne by the Recipient Country

Table 8 shows the cost to be borne by the Cambodian side.

Table 8 Cost items to be borne by the Recipient Country

Item	Amount (US$)
Bank charge	128.6 (about 16,000 Yen)
VAT exemption amount	76,000(about 9.4 million Yen)
Total	76,128.6(about 9.5 million Yen)

(2) Conditions of cost estimation

1) Estimation as of: September 2015

2) Foreign exchange rate: 1US$ ＝ 124.40 Yen

3) Procurement period: 18 months for detail design and equipment procurement as shown in the Implementation Schedule.

4) Others: Cost estimation shall be conducted in accordance with the Grant Aid scheme of the Japanese government.

2-5-2 Operation and Maintenance Costs

The main items among the equipment which require after installation costs to operate and maintain are bush cutter, vehicle and detector. Since operation and maintenance expenses are borne by the donors on project basis, CMAC is not supposed to pay for these expenses from its own budget, which however will not raise any problem regarding the management of the equipment because the ongoing aids provided by the donors are expected to be maintained.

(1) Operation and Maintenance Cost (Detectors)

The yearly maintenance and repair cost, which represents the management, operation and maintenance costs, of the new detectors to be procured to implement this demining project, is estimated at 156,287 US$ (about 19.4 million Yen). Since the equipment to be procured in this project is to replace the existing worn-out equipment, the failure rate of the equipment is expected to be restrained, which will not bring about an increase in the operation and maintenance cost.

Table 9 shows the breakdown estimate of the maintenance and repair cost.

Table 9 Cost estimate for maintenance and repair (Detectors)

Unit: US$

No.	Equipment	Model	Quantity(Note)	Maintenance and repair ratio (/unit/year)	Maintenance and repair cost (US$/ unit/year)	Yearly maintenance and repair cost (US$/Total number of detectors/year)
1	Mine detector	Vallon VMH3CS	729	0.05	171	124,659
2	UXO detector (large loop)	Vallon VMX10	62	0.05	501	31,062
3	Deep UXO detector (bomb locator)	Vallon VX1	2	0.05	283	566
Total						156,287

Note: "Quantity" is the number of new detectors to be procured

Conditions of cost estimation:

a. Maintenance and repair ratio: About 5% in the light of the past experience

b. Maintenance and repair cost: Equipment cost estimate x Maintenance and repair ratio

c. Parts cost for maintenance and repair: The maintenance and repair cost includes only the parts cost and does not include the labor cost because repair works will be carried out at CMAC's own workshop.

Total yearly maintenance and repair cost of the equipment (detectors):

US$ 156.3 thousand = approx. 19.4 million Yen

(2) Operation and Maintenance Cost (vehicles and brush cutter)

The yearly operation and maintenance cost of the new vehicles and brush cutters to be procured to implement this demining project, is estimated at about 52 million US$ (36.0+16.0). The existing equipment will be partially replaced by this project, which will lead

to a lower failure rate of the equipment and will not bring about an increase in the operation and maintenance cost. Cost estimates for fuel and lubricant and for maintenance and repair are given respectively in Table 10 and Table 11.

Table 10 Fuel and lubricant cost

Unit：ℓ

No.	Equipment	Spec. (kw)	Quant ity	Fuel consumption per unit (ℓ/ day-unit)	Fuel consumption (All units-ℓ /day)
1	Brush cutter	74	9	0.175× 74 kw×5.85 h = 75.8	681
2	Single cabin pickup, Double cabin pickup, Station wagon, Ambulance	94	83	0.020× 94 kw×4.00 h = 6.40	624
Total		-			1,306

Conditions of cost estimation

a. Yearly working days: 240 days

b. Daily working hours: Bush cutter (9 hours, Efficiency 65%), Vehicle (4 hours)

c. Fuel consumption rate per one hour run (ℓ/kw-h):

In accordance with the standard provided in «Equipment Cost Calculation Chart 2011 edition», published by Japan Construction Machinery and Construction Association. Cost of lubricant is estimated as equal to 1% of fuel consumption.

d. Price of diesel fuel: .9US$/ℓ

Price of lubricant: 1.9 US$//ℓ

e. Yearly fuel cost: 1,306 ℓ ×240 days × 0.9US$ ≒282,000US$ (125Yen/US$)

(= 35.3 million Yen)

Yearly lubricant cost: 13.0ℓ ×240 days × 1.9US$ ≒ 5,928 US$ (= 0.7 million Yen)

Yearly total cost of fuel and lubricant 35.3 + 0.7= 36.0 million Yen

Table 11 Maintenance and repair cost

No	Equipment	Spec. (kw)	Qua ntity	Maintenance and repair ratio (/unit/year)	Maintenance and repair cost per unit (thousand Yen-Year)	Yearly maintenance and repair cost (thousand Yen/Total number of units/Year)
1	Brush cutter	74	9	0.40 ÷ 9.0 years ×1/2 = 0.022	990	8,910
2	Pickup Truck single cabin double cabin, Station wagon, Ambulance,	94	83	0.45 ÷ 12 years × 1/2 = 0.019	86	7,138
Total		-		-	-	16,048

Conditions of cost estimation:

a. Maintenance and repair ratio and service life

In accordance with the standard provided in «Equipment Cost Calculation Chart 2011 edition», published by Japan Construction Machinery and Construction Association.

b. Yearly maintenance and repair cost per unit:

Estimated unitary price of equipment × Maintenance and repair ratio
(Bush cutter: 45 million Yen, Other vehicles such as pickup: 4.5 million Yen)

c. Parts cost for maintenance and repair:

Although the ratio of labor cost to parts cost is 50 to 50, the maintenance and repair cost includes only the parts cost and does not include the labor cost because repair works will be carried out at CMAC's own workshop.

d. Yearly maintenance and repair cost:

Maintenance and repair cost per unit x number of units

Total yearly maintenance and repair cost of the equipment 16.0 million Yen

Some existing equipment which is in an advanced stage of deterioration, fuel-inefficient and hence become unrepairable due to considerably increased repair cost is supposed to be used to part-out (to reuse its parts), which will lead to a diminution in number of equipment in a very advanced stage of deterioration. This allows expecting that the equipment will be able to be operated and maintained adequately with the same level of budget for the equipment operation and maintenance as those executed in recent years.

Chapter 3 Project Evaluation

3-1 Preconditions

Equipment will be delivered to Technical Institute of Mine Action (TIMA) in Kampong Chhnang on the assumption that CMAC will be in charge of deployment of equipment to individual fields. As another precondition, CMAC will conduct training of maintenance staff, operators, deminers and other personnel, and maintenance of equipment as in the previous projects.

3-2 Necessary Inputs by Recipient Country and Important Assumptions

As a precondition to the Project, the budget needs to be secured for the operation and maintenance of equipment to be provided under the Project. It is also necessary to increase own funds of the Royal Government of Cambodia and secure continued aid from other donors for the operating costs in order to meet the deadline of the Ottawa Treaty obligations.

3-3 Project Evaluation

3-3-1 Relevance

The Project is compatible with important areas of development plans of Cambodia and the assistance policy of Japan. It also has high urgency for the purpose of achieving the objective of the country to remove landmine/UXO, meeting the needs of landmine/UXO clearance. Equipment to be procured is to upgrade and reinforce the equipment currently owned, and thus it can be concluded that it can be operated and maintained by CMAC with its human resources and technologies, and its relevance is considered to be high.

3-3-2 Effectiveness

(1) Quantitative Effect

The Project has a quantitative effect to increase the demining area. Table 12 shows effectiveness (quantitative effect) of the Project in terms of numerical values.

Table 12 Effectiveness (Quantitative Effect) of the Project

Indicator	Baseline	Target value
	(Cumulative value until 2014)	(2 years after completion of the Project)
Landmine/UXO cleared area (km^2) (Full Clearance)	525.8	825.8
Area released by Technical Survey (km2) (Technical Survey)	105.8	405.4

(2) Qualitative Effect

1) Maintenance of equipment performance will become more easily, and thus the efficiency of demining activities will improve. Upgrading of aged equipment will reduce the frequency of repair and thus the burden of mechanics. The safety of deminers will improve by the reduction of malfunction.

2) Landmine/UXO clearance and technical surveys will contribute to the release of land that cannot be used so far.

3) Mine-contaminated areas will be reduced, contributing to securing the safety of peoples' lives.

[Appendices]

1.Members of the Study Teams

(1) Preparatory Survey

	Name	Responsibility	Organization
1	Ms. Eri Komukai	Team leader	JICA Senior Advisor (Peacebuilding)
2	Mr. Hitoshi Miyata	Project Coordinator	JICA Deputy Director Office for Peacebuilding and Reconstruction Infrastructure and Peacebuilding Department
3	Mr. Takefumi Mayumi	Work chief/ planning	Ingerosec Corp.
4	Mr. Takeshi Ajioka	Equipment plan 1/procurement plan 1/estimate 1	Ingerosec Corp.
5	Mr. Takashi Nakagawa	Equipment plan 2/procurement plan 2/estimate 2	Ingerosec Corp.

(2) Explanation on Draft Preparatory Survey Report

	Name	Responsibility	Organization
1	Ms. Eri Komukai	Team leader	JICA Senior Advisor (Peacebuilding)
2	Mr. Hitoshi Miyata	Project Coordinator	JICA Deputy Director Office for Peacebuilding and Reconstruction Infrastructure and Peacebuilding Department
3	Mr. Takefumi Mayumi	Work chief/ planning	Ingerosec Corp.
4	Mr. Takeshi Ajioka	Equipment plan 1/procurement plan 1/estimate 1	Ingerosec Corp.
5	Mr. Makoto Matsuura	Equipment plan 2/procurement plan 2/estimate 2	Ingerosec Corp.

2.Study Schedule

(1) Preparatory Survey

Schedule			JICA		Consultant (Ingerosec)			Stay
No.	Date	Day	1 Ms. Eri KOMUKAI, Team Leader	2 Mr. Hitoshi MIYATA, Project Coordinator	3 Mr. Takefumi MAYUMI, Project Manager/ Operation Planner	4 Mr. Takeshi AJIOKA, Equipment Planner1/ Procurement Planner1/ Cost Estimation1	5 Mr. Takashi NAKAGAWA, Equipment Planner2/ Procurement Planner2/ Cost Estimation2	
1	23.Aug	Sun			Narita(12:00TG643)→Bangkok(16:30) Bangkok(18:15TG584)→Phnom Penh(19:25)			Phnom Penh
2	24.Aug	Mon			9:00-10:00 Courtesy Call to JICA office @ JICA, Mr.Inokuchi Kunihiro, Representative, 012-909-603 10:15-11:15 Courtesy call to EoJ @ EOJ, Mr.Toshiki Fujimoto, Second Secretary, -016-835-408 14:00- Meeting with CMAC (Discussion about schedule)			ditto
3	25.Aug	Tue			08:30-09:30 Courtesy call to CMAA,H.E. PRUM SOPHAKMONKOL, Secretary General (Assistant Mr. Oudom ,092-456778) 13:30 Meeting with CMAC, Inquiry of local distributor			ditto
4	26.Aug	Wed			8:00 Phnom Penh→Kampong Chhnang (Training Center)→ 14:00 Phnom Penh			ditto
5	27.Aug	Thu			9:00-10:00 Courtesy call to UNDP, Mr. David Horrocks, Mine Action Advisor, Ms. Lida, and Ms. Sok Lang, Programme Analysts @ UNDP (Pasteur street) 10:30- Meeting with Mr Greg Crowther Country Director,MAG @ Address: No 16D, St 360, Phnom Penh 14:00 Meeting with CMAC and NGOs			ditto
6	28.Aug	Fri			6:00 Phnom Penh→ Meeting with DU5 (Kampong Cham)→ 16:00 Phnom Penh	Meeting with CMAC about Detector	6:00 Phnom Penh→Meeting with DU5 (Kampong Cham)→ 16:00 Phnom Penh	ditto
7	29.Aug	Sat			Data processing, Internal meeting			ditto
8	30.Aug	Sun			12:00 Phnom Penh→17:15Battambang			Battambang
9	31.Aug	Mon			8:00-16:00 Meeting with DU2 and Central Workshop (Rin Ponlork 097 200 2345)			ditto
10	1.Sep	Tue			8:00-16:00 Meeting with Central Workshop (Maintenance management plan, Required equipment, Discuss about anser of Questionnaire)			ditto
11	2.Sep	Wed			8:00-17:00 Visit to demining site on DU2 and Peace building (Pring Panharith 097 995 4954)			ditto
12	3.Sep	Thu			8:00 Battambang→Meeting with DU1(Banteay Meanchey 9:30) → 14:00 Siem Reap			Siem Reap
13	4.Sep	Fri			8:40- Courtesy call to HALO Trust, Mr. Adam Jasinski, Program Manager@HALO Trust, Siem Reap Meeting with DU4 (11:00 Kong Kimchuon 097 200 1387)			ditto
					Documentation	DU6 (15:00 Rath Puttana 097 671 6888)		
14	5.Sep	Sat			9:00 Siem Reap →16:30 Phnom Penh			Phnom Penh
15	6.Sep	Sun			Data processing, Internal meeting			ditto
16	7.Sep	Mon			8:30-16:00 Meeting with CMAC (Discussion about procurement of equipment, Questionnaire, Issue of operation, maintenance, etc)			ditto
17	8.Sep	Tue			8:30-12:00 Meeting with CMAC (Discussion about procurement of equipment, Questionnaire, Issue of operation, maintenance, etc) 14:00 - NISSAN, 15:00 - Kong Nuon Group Office (TOYOTA)			ditto
18	9.Sep	Wed			AM:Extension of VISA 14:00-17:00 Meeting with CMAC (Discussion about procurement of equipment, Questionnaire, Issue of operation, maintenance, etc)			ditto
19	10.Sep	Thu			9:00 -NPA 10:30 -JMAS	8:30-16:00 CMAC (Documentation, Discussion, etc)	8:30-13:30 CMAC (Documentation, Discussion, etc) 14:00 - ENVOSTAR	ditto
20	11.Sep	Fri			10:00-11:30 CMA		8:30 - CMAC(Documentation)	ditto
					14:00-Discussion about equipment			ditto
21	12.Sep	Sat			Data processing, Internal meeting			ditto
22	13.Sep	Sun	Narita(12:00TG643)→Bangkok(16:30) Bangkok(18:15TG584)→Phnom Penh(19:25)		Data processing, Internal meeting			ditto
23	14.Sep	Mon	8:00-12:00 Courtesy Call to JICA office @ JICA, Mr.Inokuchi Kunihiro, Representative, 012-909-603 14:00-17:00 Meeting with CMAC					ditto
24	15.Sep	Tue	10:00 Courtesy call to CMAA,H.E. PRUM SOPHAKMONKOL, Secretary General (Assistant Mr. Oudom ,092-456778) Meeting with CMAC Phnom Penh→Battambang			9:00-16:00 Meeting with CMAC (Discussion about equipment, Questionnaire, Issue of operation, maintenance, etc)		Battambang/Phnom Penh
25	16.Sep	Wed	7:30-17:00 Meeting with DU2 and Central Workshop, Visit to demining site			9:00-17:00 Meeting with CMAC (Discussion about equipment, etc)		ditto
26	17.Sep	Thu	7:00 16:30 Battambang→Kampong Chhnang (Training Center)→Phnom Penh			9:00-17:30 Meeting with CMAC (Discussion about equipment, etc)		Phnom Penh
27	18.Sep	Fri	8:00-12:00 (Discussion about MD, etc)					
			14:00 - Meeting with CMAC 17:00 - Courtesy call to H.E. OUK Sorphorn, Director General, ASEAN General Dep., Ministry of Foreign Affairs in Cambodia, (Ms. Kachana, Tel: 012-677795)		14:00 - Meeting with CMAC		14:00- Kong Nuon Group Office	ditto
28	19.Sep	Sat	Data processing, Internal meeting					ditto
29	20.Sep	Sun	Data processing, Internal meeting					ditto
30	21.Sep	Mon	8:00-9:30 Meeting with CMAC (Signing of MD)					ditto
			10:30-11:30 Report to EoJ Mr.Toshiki Fujimoto, Second Secretary, -016-835-408 14:00-MEF			9:30 - 15:00 Meeting with CMAC		
			16:00-17:00 Report to JICA office @ JICA, Mr.Inokuchi Kunihiro, Representative, 012-909-603					
31	22.Sep	Tue	Phnom Penh(10:00)→Bangkok(11:05) Bangkok(13:00)→Haneda(21:10)		9:00 - 17:00 Meeting with CMAC			ditto
32	23.Sep	Wed			Phnom Penh(20:20TG585)→Bangkok(21:25) Bangkok(23:50TG642)→			On board
33	24.Sep	Thu			→Narita(08:10)			—

(2) Explanation on Draft Preparatory Survey Report

Schedule			JICA		Consultant (Ingerosec)			
No.	Date	Day	1 Ms. Eri KOMUKAI, Team Leader	2 Mr. Hitoshi MIYATA, Project Coordinator	3 Mr. Takefumi MAYUMI, Project Manager/ Operation Planner	4 Mr. Takeshi AJIOKA, Equipment Planner1/ Procurement Planner1/ Cost Estimation1	5 Mr. Makoto MATSUURA, Equipment Planner2/ Procurement Planner2/ Cost Estimation2	Stay
1	2015/12/2	Wed			Narita(10:15, TG641)→Bangkok(15:45) Bangkok(18:20, TG584)→Phnom Penh(19:35)			Phnom Penh
2	2015/12/3	Thu			Courtesy call to CMAC Meeting with CMAC (Confirmation about schedule, Explanation of draft report)			Ditto
3	2015/12/4	Fri			Meeting with CMAC (Discussion of draft report and Monitoring Report)			Ditto
4	2015/12/5	Sat			Internal Meeting		Narita(10:15, TG641)→Bangkok(15:45) Bangkok(18:20, TG584)→Phnom Penh(19:35)	Ditto
5	2015/12/6	Sun	Narita(10:15, TG641)→Bangkok(15:45) Bangkok(18:20, TG584)→Phnom Penh(19:35)		Internal Meeting			Ditto
6	2015/12/7	Mon	Discussion on South-South Cooperation		Internal Meeting or any			Ditto
			Internal Meeting or any					
7	2015/12/8	Tue	Meeting with CMAC (Discussion of Monitoring Report and MD)					Ditto
8	2015/12/9	Wed	Meeting with CMAC (Discussion of Monitoring Report and MD)					Ditto
			Report to JICA office					
9	2015/12/10	Thu	Phnom Penh(13:00, K6 109)→ Seim Reap (13:40)	Phnom Penh(10:00, TG581)→ Bangkok(11:05) Bangkok(14:50, TG660)→ Haneda (22:30)	Meeting with CMAC (Confirmation of specifications), Phnom Penh(20:35, TG585)→Bangkok(21:40) Bangkok(23:55, TG642)→			On board / Seim Reap/Phnom Penh
10	2015/12/11	Fri	Meeting on South-South Cooperation Seim Reap (19:30,PG908)→ Bangkok(20:25)		→Narita(07:35)		Meeting with CMAC (Confirmation of specifications), Phnom Penh(20:35, TG585)→ Bangkok(21:40) Bangkok(23:55, TG642)→	On board
11	2015/12/12	Sat					→Narita(07:35)	

3.List of Parties Concerned in the Recipient Country

CMAC		
Mr. H.E Heng Ratana	DG HQ	CMAC
Mr. Oum Phomlo	DDG HQ	CMAC
Mr. H.E EK Bolin	DOSHR	CMAC
Mr. Leng Chreang		CMAC
Mr. Heng Kra	DDOS/S	CMAC
Mr. Phat Phearak	COS	CMAC
Mr. Him Vandy	DOPO	CMAC
Mr. Oum Soalieath		CMAC-TIMA
Mr. Prak Somathy	DPM	CMAC MDD TC
Mr. Parl Sowoya		CMAC-TIMA
Mr. Phoum Doeun	DGG	CMAC
Mr. Moug Sonunlkeazalk		CMAC
Mr. Som Vireak	Manager	CMAC-DU5
Mr. Ko Nuta	DG	CMAC-DU5
Mr. Kim Heang		CMAC-QA/QC
Mr. Chham Vanne		CMAC
Mr. Huon Vandeun	Log officer	CMAC
Mr. Pring Panliau	Dep Manager	CMAC
Mr. Chan Sam	Dep Manager	CMAC
Mr. Prak Boran	Officer Duz	CMAC
Mr. Yong Sokum Thea	Officer OPS	CMAC
Mr. Seng Diseth	Log officer	CMAC
Mr. Koy Lamiohoith	Log officer	CMAC
Mr. Moi Roevy	Dep Manager	CMAC
Mr. Pring Panharik	DU2 Manager	CMAC
Mr. Oak Rathanak	MC Mgr	CMAC
Mr. Lay Ponloeuk	S Mgr	CMAC
Mr. Khorn Sokha	DM6 Team Leader	CMAC
Mr. Kao Pren	DU2	CMAC
Mr. Noamg Salugn	DU2	CMAC
Mr. Ly Sarim	DM6	CMAC
Mr. Worng Veasna	DM6	CMAC
Mr. Kim Chhoun	DM Team Leader	CMAC
Mr. Sorn Sarith	DM6 Team Leader	CMAC
Mr. Pich Ya	DU6 Medical	CMAC
Mr. Chay Sdoeung	DU6	CMAC

Mr. Keo Sarath	DU1 Manager	CMAC
Mr. Som Socheat	Sr OPS	CMAC
Mr. Reath Sothearith	DU1 Finance Officer	CMAC
Mr. Tong cu	DU1	CMAC
Mr. Kong Sakeal	DU1	CMAC
Mr. Tean Sovanphala	DU1	CMAC
Mr. Chan Darom	OPS/Officer	CMAC
Mr. Diep Map	DU1	CMAC
Mr. Minh Seaor	DU1	CMAC
Mr. Sek Thearith	DU1	CMAC
Mr. Sok Sony	DU6	CMAC
Mr. Pieh Lyreaksmey	DU6	CMAC
Mr. Rown Chhouk	DU6	CMAC
Mr. Rath Pottana	DU6 Manager	CMAC
CMAC-CWS		
Mr. Rin Punlok	Manager	CMAC-CWS
Mr. Siv Sokon	Log officer	CMAC-CWS
Mr. Nget Kanfol		CMAC-CWS
CMAA		
Mr. LY Panharith	Deputy Secretary Genera	CMAA
Mr. Prum Sophakmonkol	Secretary General	CMAA
Mr. Prom Zserey Audom	Head of Secretariat	CMAA
UNDP		
Mr. David A.Horrocks	Mine Action Advisor	UNDP
Ms. So Lida	Programme Analysts	UNDP
Ms. Lang Sok	Programme Analysts	UNDP
Mr. Gregory Crowther	Regional Director	MAG
THE HALO TRUST		
Mr. Adam Jasinski	Programme Manager	THE HALO RUST
apopo		
Mr. TeKimiti Gilbert	Head of mine action	DU6-apopo
Mr. Poul McCALTHY	Programme Mcl	DU6-apopo
NPA		
Aksel Steen NILSEN		NPA
JMAS		
Hiromi FUCHIGAMI		JMAS
Keisuke YOKOYAMA		JMAS
Ministry of Forein Affairs and Internatinal Cooperation		
KE SOVANN	Deputy-Director General	General Department of ASEAN
NIEM KANCHANA	Deputy-Bureau Chief	General Department of ASEAN

4. Minutes of Discussions
(1) Preparatory Survey

Minutes of Discussions
on the Preparatory Survey for the Project for
Improvement of Equipment for Demining Activities (Phase VII)
in the Kingdom of Cambodia

In response to the request from the the Royal Government of Cambodia (hereinafter referred to as "Cambodia"), the Government of Japan decided to conduct a Preparatory Survey for the Project forImprovement of Equipment for Demining Activities (Phase VII) (hereinafter referred to as "the Project"), and entrusted the Preparatory Survey to Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") to Cambodia,headed by Ms. EriKOMUKAI, Senior Advisor, JICA and is scheduled to stay in the country from August 23 to September 23, 2015.

The Team held a series of discussions with the officials concerned of the Government of Cambodia and conducted a field survey in the Project area. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Phnom Penh, September 21, 2015

Ms. Eri KOMUKAI	H.E. Mr. HENG Ratana
Leader	Delegate of the Royal Government
Preparatory Survey Team	in charge as Director General
Japan International Cooperation Agency	Cambodian Mine Action Centre
Japan	Kingdom of Cambodia

ATTACHEMENT

1. Objective of the Project

   The objective of the Project is to improve demining and Unexploded Ordnance (UXO) clearance activities of the Cambodian Mine Action Centre (hereinafter referred to as "CMAC")through procurement of necessary equipment, thereby contributing to promotion of social development.

2. Title of the Preparatory Survey

   Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for "Improvement of Equipment for Demining Activities (Phase VII)".

3. Project Site

   Both sides confirmed that the sites of the Projectare inCMAC Headquarters, Central Workshop, Technical Institute of Mine Action, and all the activities areas of the Demining Units (DUs) as shown in Annex-1.

4. ExecutingAgency

   Both sides confirmed the executing agency is CMAC. The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the Undertakings are taken by relevant agencies properly and on time. The organization charts are shown in Annex-2.

5. Items requested by the Government of Cambodia

   5-1. As a result of discussions, both sides confirmed that the items requested by the Government of Cambodia are asdescribed in the list on Annex-3.

   5-2. The Cambodian side also explained the priority of the requested components as described in the list on Annex-3. The Cambodian side explained the necessity of equipment and requested to the Government of Japan to provide as many items on the list as possible.

   5-3. JICA will assess the appropriateness of the above requested items comprehensively and will report findings to the Government of Japan. According to those results, the quantity of items in Annex-3 is subject to changeafter consultation with Cambodian side. The final components of the Project would be decided by the Government of Japan.

E/R

6. Japanese Grant Scheme

6-1. The Cambodian side understands the Japanese Grant Scheme and its procedures as described in Annex-4, Annex-5 and Annex-6.

6-2. The Team explained to Cambodian side the necessary measures to be taken, as described in Annex-7, for smooth implementation of the Project, as a condition for the Japanese Grant to be implemented. The detailed contents of the Annex-7 will be worked out during the survey and shall be agreed no later than by the Explanation of the Draft Preparatory Survey Report.

The contents of Annex-7 will be used to determine the following:

(1) The scope of the Project.

(2) The timing of the Project implementation.

(3) Timing and possibility of budget allocation.

Contents of Annex-7 will be updated as the Preparatory Survey progresses, and will finally be the Attachment to the Grant Agreement. The exemption of the customs duties, internal taxes and other fiscal levies described in Annex 7 are the template of Japanese Grant for all recipient countries.Japanese side and Cambodian side will discuss furtherabout this issue.

7. Schedule of the Survey

7-1. The Team will proceed with further survey in Cambodia until September 23.

7-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Cambodia in order to explain its contents around December 2015.

7-3. Ifthe contents of the draft Preparatory Survey Report is accepted in principle and the Undertakings are fully agreed by the Cambodia side, JICA will complete the final report in English and send it to Cambodia around January 2016.

7-4. The above schedule is tentative and subject to change.

8. Other Relevant Issues

8-1. Both sides agreed that equipment plan should be formulated focusing on the following factors.

- Direct contribution to demining activities
- Maintaining the efficiency of the present capacity of brush cutters and mine detectors

Although above two factors are mainly focused, maintaining CMAC's demining and mine action management capacity as a leading national demining institution

can be considered.

8-2. The Team explained that Priority "C" items in Annex-3 are not highly prioritized for Japanese Grant Aid this time from the view point of selection and concentration of input within limited financial resources.

8-3. The Team requested and the Cambodian side agreed that CMAC ensures the budget and human resources to maintain its activities.

8-4. The Team requested and the Cambodian side agreed that CMAC assures appropriate maintenance work including efficient utilization of the Central Workshop.

Annex-1 Project Site

Annex-2 CMAC Organization Chart

Annex-3 Items Requested by Cambodia

Annex-4 Japanese Grant

Annex-5Flow Chart of Japanese Grant Procedures

Annex-6 Financial Flow of Japanese Grant

Annex-7Major Undertakings to be taken by Each Government

CMAC CURRENTLY DEPLOYMENT MAP
For the Month of July 2015

Demining Unit 1
- 2 MP
- 2 SLD
- 4 BC
- 3 TSC
- 1 BAC
- 4 DFP-CBMRR
- 1 PC-CBMRR
- OFFICE STAFF

Peace Building Infrastructure Project (DU2)
- 3 BC (Development)

Demining Unit 2
- 8 MP
- 14 TSC
- 9 DM
- 1 Bull Dozer
- 1 Excavator
- 1 Dump Truck
- 1 Compact Roller
- 5 SLD
- 1 LLD
- 2 EOD
- 1 BAC
- 10 BC
- 8 NTS/BLS
- 15 DFP-CBMRR
- 2 PC-CBMRR
- 1 TMO- CBMRR
- OFFICE STAFF

Head Quarter

- 2 EOD	- 1 BAV
- 1 EOD-Supervisor	- 1 ERWI (5 persons)
- 1 BAC	- 3 TSC (5 persons)
- HQ Staff	- 1 BC (2 persons)

Demining Unit 6
- 5 MP
- 2 TSC
- 2 EOD
- 1 EOD-Supervisor
- OFFICE STAFF

Demining Unit 5
- 14 BAC
- 4 EDD
- 5 EOD/BLS
- OFFICE STAFF

Demining Unit 4
- 1 TSC
- 1 PC (CBMRR)
- 1 DU4 Deputy Manager

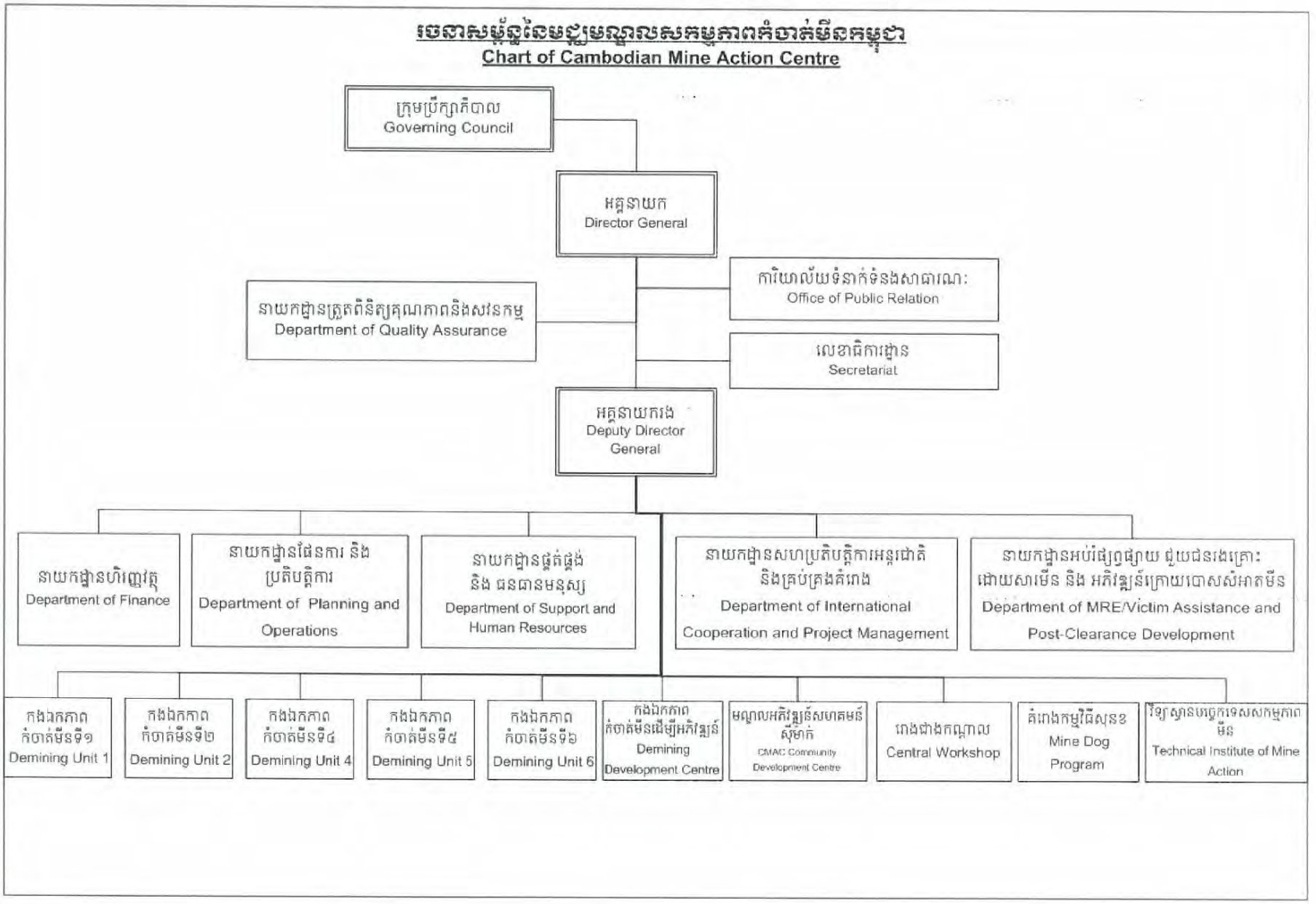
Technical Institute of Mine Action (TIMA)
- 4 EOD - 1IED - 1 Dive Team - 1 EHP
- MDD Staff + Office Staff + Instructors
- 5 ERWI -2 BC (training for whole month)

Demining Development Unit (DDU)
- 4 MP - 6 TSC - 3 BC
- Office Staff

Kilometers
0 45 90 180
Datum ..... Indian Thailand 1960
Zone ..... 48 N
1:500000

Legend
- DU Base
- Khet Centre
- Maind Road
- River and Sea
- province Boundary

CMAC ORGANIZATION CHART



Annex-3

LIST OF REQUESTED EQUIPMENT

Number	Equipment	Unit	Qty		
			Priority "A"	Priority "B"	Priority "C"
1	Demining Related Equipment				
1.1	Brush Cutter Normal	Unit	9	3	-
1.2	Mine Detector	Set	729	-	-
1.3	UXO head (60cm) of Mine Detector	Set	15	-	-
1.4	UXO Detector Large Loop Deep Search	Set	62	88	-
1.5	Field Computer for UXO Detector	Set	5	-	-
1.6	Bomb Locator	Set	2	-	-
1.7	Brush Cutter Large	Unit	-	1	1
1.8	Vehicle Station Wagon (Off-road, tough field operations)	Unit	35	16	-
1.9	Vehicle pickup (Off-road, tough field conditions)	Unit	50	43	-
1.10	Vehicle (Off-road ambulance)	Unit	3	3	-
1.11	GPS	Unit	-	71	-
1.12	Spare parts for Mine detector F3-J	Set	-	1	-
1.13	Equipment/Tool for Central Workshop	Set	-	1	-
1.14	PPE Vest	Unit	450	1,128	-
1.15	PPE Visor	Unit	450	1,128	-
2	Spare part:				
2.1	Vehicles				
	a. Nissan Patrol	Set	-	-	1
	b. Mitsubishi (Triton)	Set	-	1	-
3	Other Equipment				
3.1	General and Database Equipment	Set	-	-	1
3.2	Chemical Testing & Protection equipment	Set	-	-	1

Annex 4

JAPANESE GRANT

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

Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

1. Grant Procedures

The Grant is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal &Approval
  - -Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining 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 preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

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

- Preparation of an outline 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 project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve 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 of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

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

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japanese Grant 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 singed between the GOJ and the Government of the recipient country to make a pledge 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, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

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

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

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

(7) "Export and Re-export"

The products purchased under the Grant 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 under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen, in principle, 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 paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010).

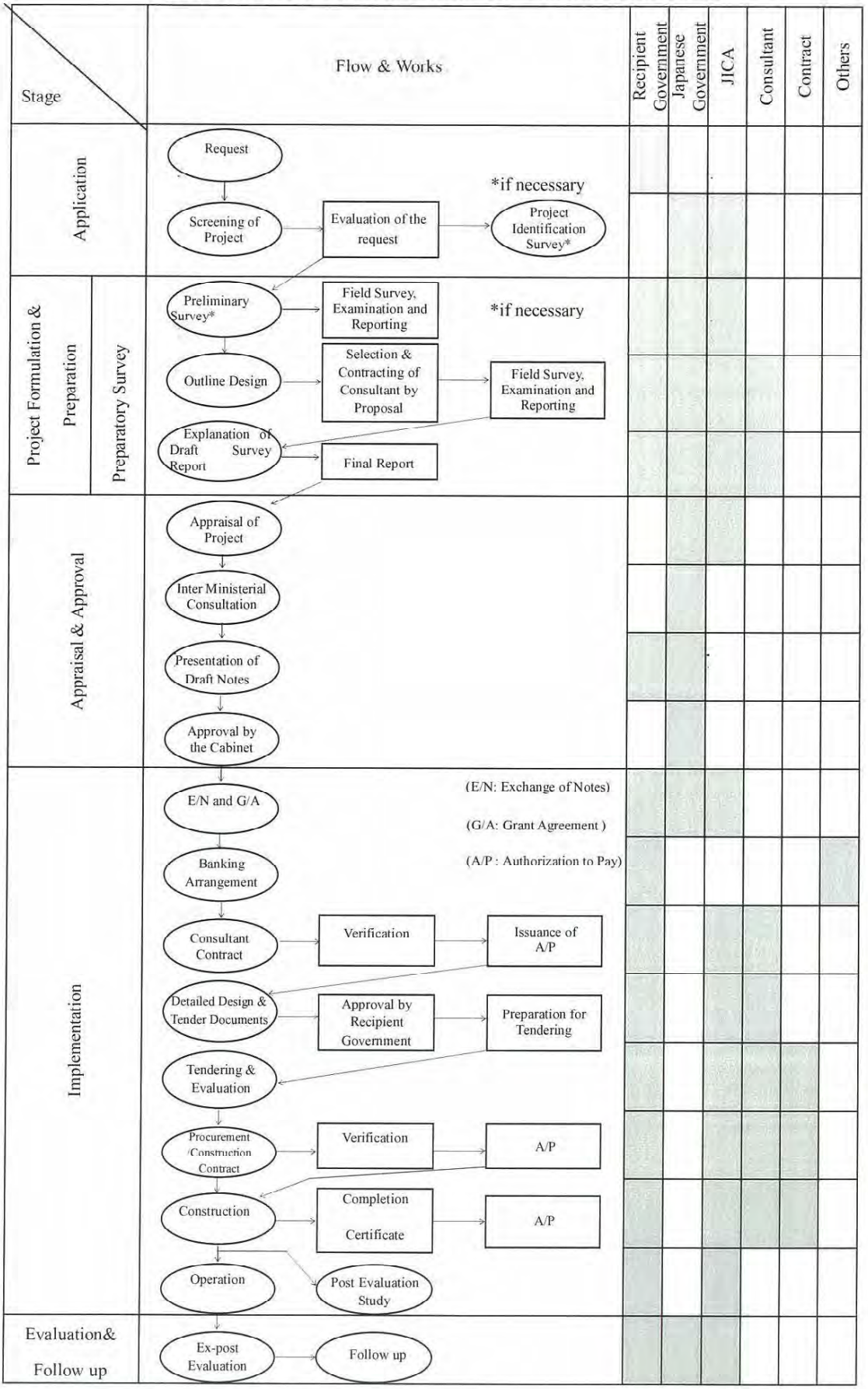
(11) Monitoring

The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

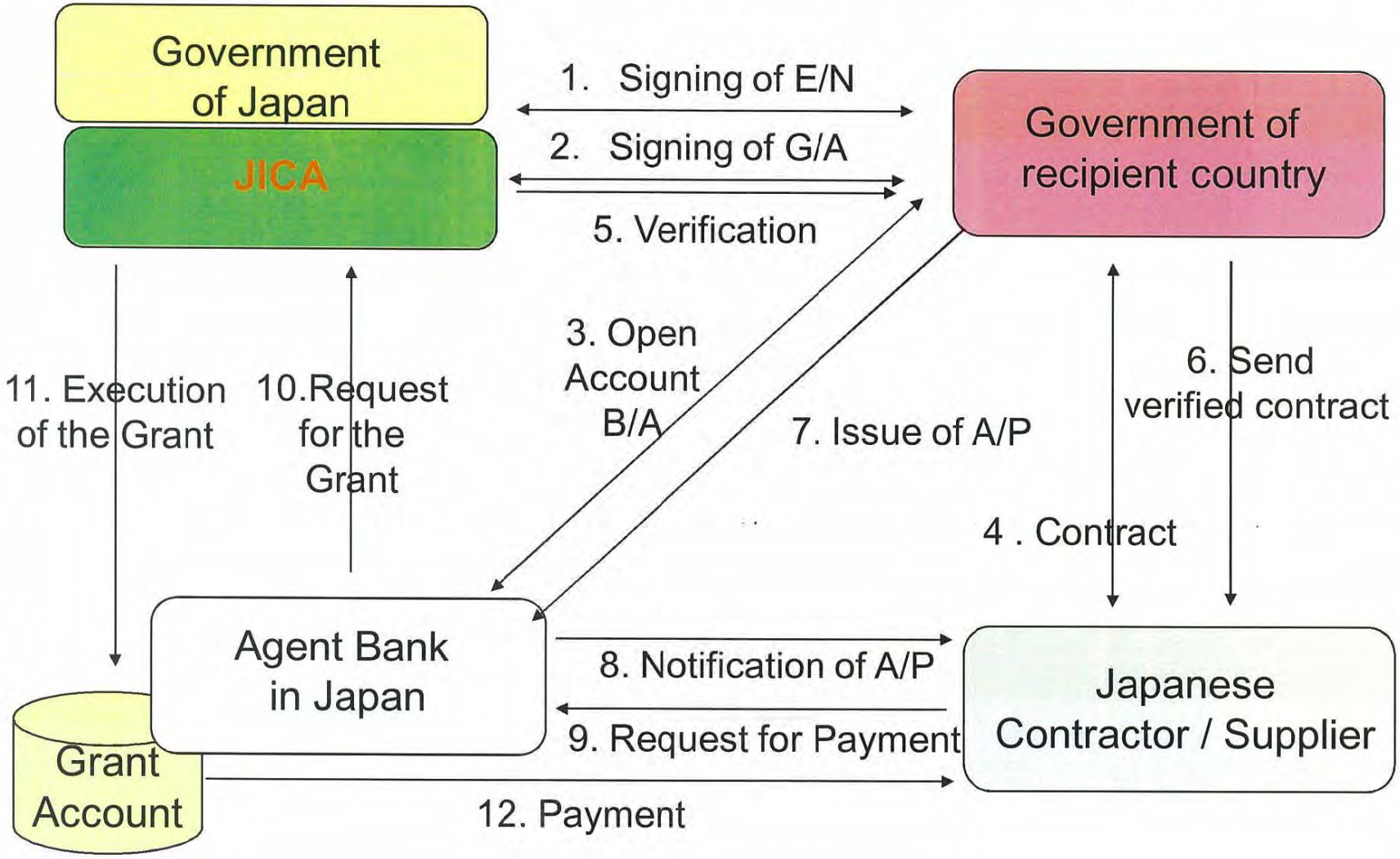
The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

FLOW CHART OF JAPANESE GRANT PROCEDURES



Annex 6

Financial Flow of Japanese Grant (A/P Type)



Annex 7

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	Ministry of XXX	XXX	

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
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	within 1 month after the singing of the contract	Ministry of XXX	XXX	
	2) Payment commission for A/P	every payment	Ministry of XXX	XXX	
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	Ministry of XXX	XXX	
	2) Internal transportation from the port of disembarkation to the project site	during the Project	Ministry of XXX	XXX	
3	To accord Japanese nationals and/or physical persons of third countries 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	during the Project	Ministry of XXX	XXX	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	Ministry of XXX	XXX	
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	Ministry of XXX	XXX	

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	Ministry of XXX	XXX	

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

Annex 7

Major Undertakings to be Covered by the Japanese Grant

No	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To provide equipment		XX.XX	
	1) To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
	a) Marine(Air) transportation of the products from Japan to the recipient country			
	b) Internal transportation from the port of disembarkation to the project site			
	2) To provide equipment with installation and commissioning			
	- XXX XXX XXX			
2	To implement detailed design, tender support and construction supervision (Consultant)		YY.YY	
	Total		ZZ.ZZ	

*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

(2) Explanation on Draft Preparatory Survey Report

Minutes of Discussions
on the Preparatory Survey for the Project for
Improvement of Equipment for Demining Activities (Phase VII)
in the Kingdom of Cambodia
(Explanation on Draft Preparatory Survey Report)

On the basis of the discussions and field survey in the Kingdom of Cambodia (hereinafter referred to as "Cambodia") in September 2015, and the subsequent technical examination of the results in Japan, the Japan International Cooperation Agency (hereinafter referred to as "JICA") prepared a draft Preparatory Survey Report on the Project for improvement of Equipment for Demining Activities (Phase VII) (hereinafter referred to as "the Draft Report").

JICA explained the Draft Report and consulted with the concerned officials of the Royal Government of Cambodia on its contents.

As a result of the discussions, both sides confirmed the main items described in the attached sheets.

Phnom Penh, January 15, 2016

for Mr. Itsu ADACHI
Chief Representative

Japan International Cooperation Agency
Cambodia Office
Japan

H.E. Mr. HENG Ratana
Delegate of the Royal Government
in charge as Director General
Cambodian Mine Action Centre

Kingdom of Cambodia

ATTACHEMENT

1. Objective of the Project

The objective of the Project is to improve demining and Unexploded Ordnance (UXO) clearance activities of the Cambodian Mine Action Centre (hereinafter referred to as "CMAC") through procurement of necessary equipment, thereby contributing to promotion of social development.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Improvement of Equipment for Demining Activities (Phase VII)".

3. Project Site

Both sides confirmed that the sites of the Project are in CMAC Headquarters, Central Workshop, Technical Institute of Mine Action, and all the activities areas of the Demining Units (DUs) as shown in Annex-1.

4. Executing Agency

Both sides confirmed the executing agency is CMAC. The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the Undertakings are taken by relevant agencies properly and on time. The organization charts are shown in Annex-2.

5. Contents of the Draft Report

After the explanation of the contents of the Draft Report by JICA, the Cambodian side agreed in principle to its contents. The list of equipment is attached to Annex-3

6. Cost Estimation

Both sides confirmed that the Project cost estimation described in Annex-6 was provisional and would be examined further by the Government of Japan for its final approval.

7. Confidentiality of the Cost Estimation and Specifications

Both sides confirmed that the Project cost estimation and technical specifications in Annex-6 and the Draft Report should never be duplicated or disclosed to any

third parties until all the contracts of the Project are concluded.

8. Project Implementation Schedule

JICA explained to the Cambodian side that the expected implementation schedule is as attached in Annex-4.

9. Expected outcomes and Indicators

Both sides agreed that key indicators for expected outcomes are as follows:

- Accumulative Areas released through Full-clearance by CMAC (km2)
- Accumulative Areas released through Technical Survey by CMAC (km2)

The Cambodian side has responsibility to monitor the progress of the indicators to achieve its planned target in year 2020.

10. Undertakings Taken by Both Sides

Both sides confirmed to undertakings described in Annex-5 and Annex-6. The Cambodian side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, more accurate costs will be calculated at the Detailed Design stage. Contents of Annex-5 and Annex-6 will be updated as the Detailed Design progresses, and will finally be the Attachment to the Grant Agreement.

11. Monitoring during the Implementation

The Project will be monitored every 6 months by the executing agency and using the Project Monitoring Report (PMR). However, the contents of PMR will be discussed for modification at the Detailed Design stage.

12. Ex-Post Evaluation

JICA will conduct ex-post evaluation three (3) years after the project completion with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability) of the Project. Result of the evaluation will be publicized. The Cambodian side is required to provide necessary support for them.

13. Issues to be Considered for the Smooth Implementation of the Project

Both sides confirmed to take necessary measures for the smooth implementation of the Project described in Annex-4.

14. Schedule of the Study

JICA will complete the Final Report of the Preparatory Survey in accordance with the confirmed items and send it to the Cambodian side around March, 2016.

15. Other Relevant Issues

15-1. Operation and Maintenance of the Equipment

JICA explained the importance of operation and maintenance of the equipment provided by the Project considering that proper asset management impacts greatly on life-span of the equipment and its maintenance cost. The Cambodian side shall secure enough staff and budgets necessary for appropriate operation and maintenance of the equipment. The annual operation and maintenance costs are estimated and shown in Annex-5.

15-2. Disclosure of Information

Both sides confirmed that the study results excluding the Project cost will be disclosed to the public after completion of the Preparatory Survey. All the study results including the project cost will be disclosed to the public after all the contracts for the Project are concluded.

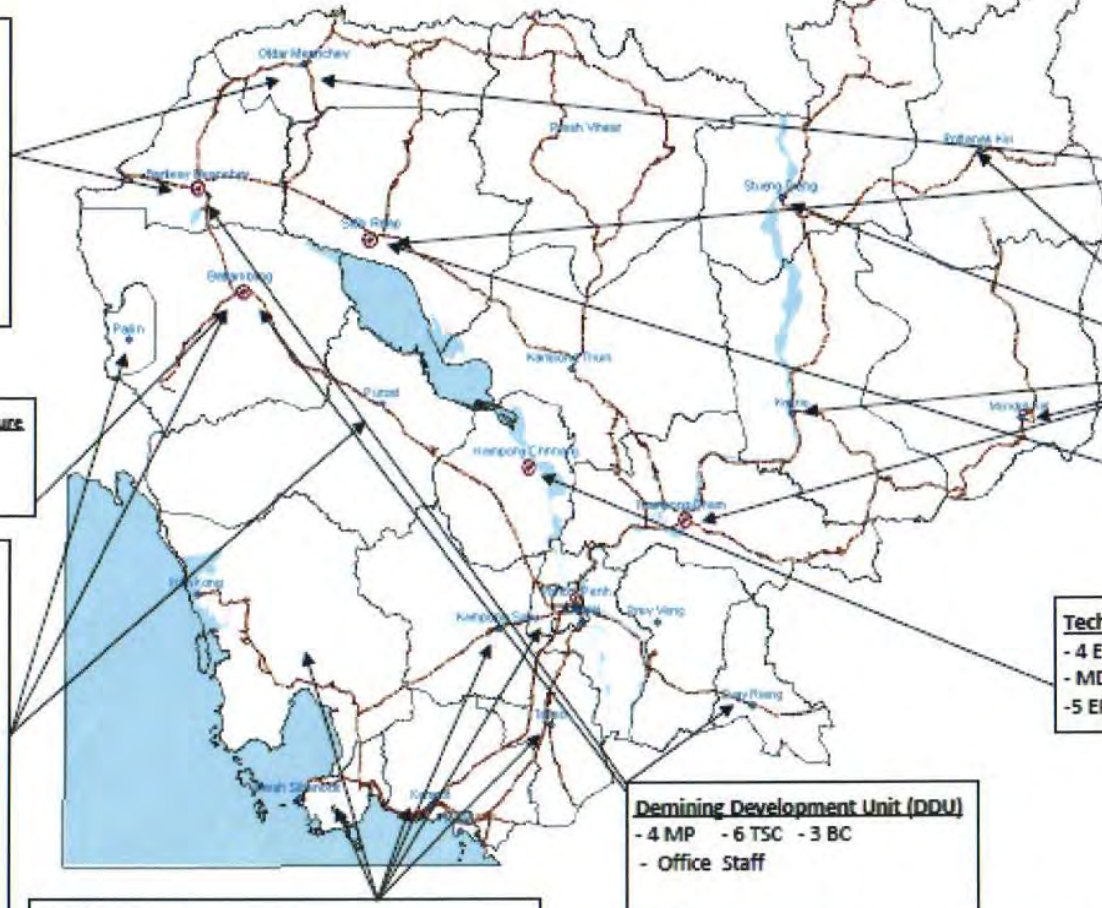
Annex-1 Project Site
Annex-2 CMAC Organization Chart
Annex-3 List of Equipment
Annex-4 Project Implementation Schedule
Annex-5 Major Undertakings to be taken by Recipient Government
Annex-6 Major Undertakings to be covered by Japanese Grant

CMAC CURRENTLY DEPLOYMENT MAP
For the Month of July 2015

Demining Unit 1
- 2 MP
- 2 SLD
- 4 BC
- 3 TSC
- 1 BAC
- 4 DFP-CBMRR
- 1 PC-CBMRR
- OFFICE STAFF

Peace Building Infrastructure Project (DU2)
- 3 BC (Development)

Demining Unit 2
- 8 MP
- 14 TSC
- 9 DM
- 1 Bull Dozer
- 1 Excavator
- 1 Dump Truck
- 1 Compact Roller
- 5 SLD
- 1 LLD
- 2 EOD
- 1 BAC
- 10 BC
- 8 NTS/BLS
- 15 DFP-CBMRR
- 2 PC-CBMRR
- 1 TMO- CBMRR
- OFFICE STAFF



Head Quarter

- 2 EOD	- 1 BAV
- 1 EOD-Supervisor	- 1 ERWI (5 persons)
- 1 BAC	- 3 TSC (5 persons)
- HQ Staff	- 1 BC (2 persons)

Demining Development Unit (DDU)
- 4 MP - 6 TSC - 3 BC
- Office Staff

Kilometers
0 45 90 180
Datum.....Indian Thisland 1960
Zone.....48 N
1:50000

Demining Unit 6
- 5 MP
- 2 TSC
- 2 EOD
- 1 EOD-Supervisor
- OFFICE STAFF

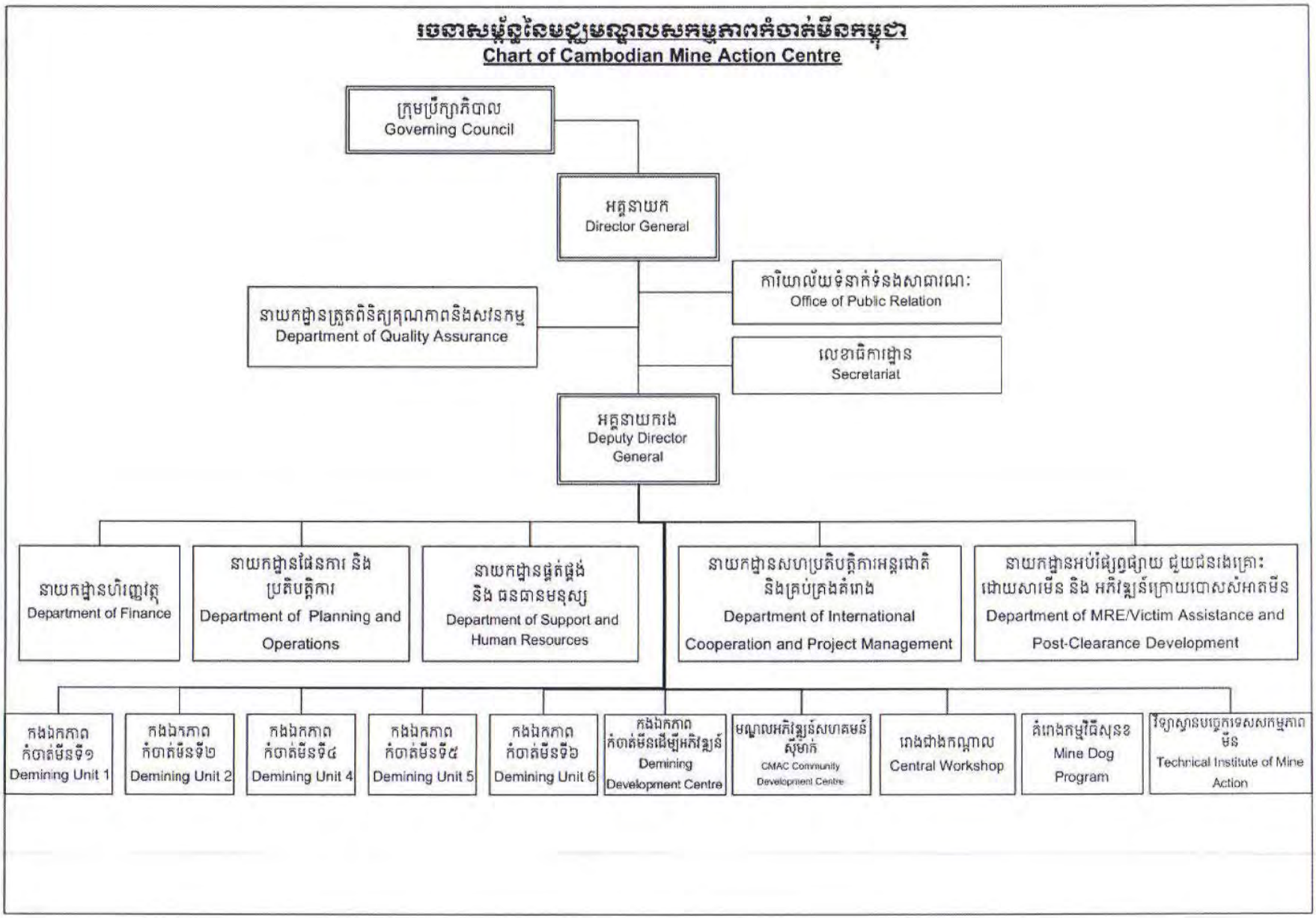
Demining Unit 5
- 14 BAC
- 4 EDD
- 5 EOD/BLS
- OFFICE STAFF

Demining Unit 4
- 1 TSC
- 1 PC (CBMRR)
- 1 DU4 Deputy Manager

Technical Institute of Mine Action (TIMA)
- 4 EOD - 1IED - 1 Dive Team - 1 EHP
- MDD Staff + Office Staff + Instructors
-5 ERWI -2 BC (training for whole month)

Legend
- DU Base
- Khet Centre
- Maind Road
- River and Sea
- province Boundary

CMAC ORGANIZATION CHART



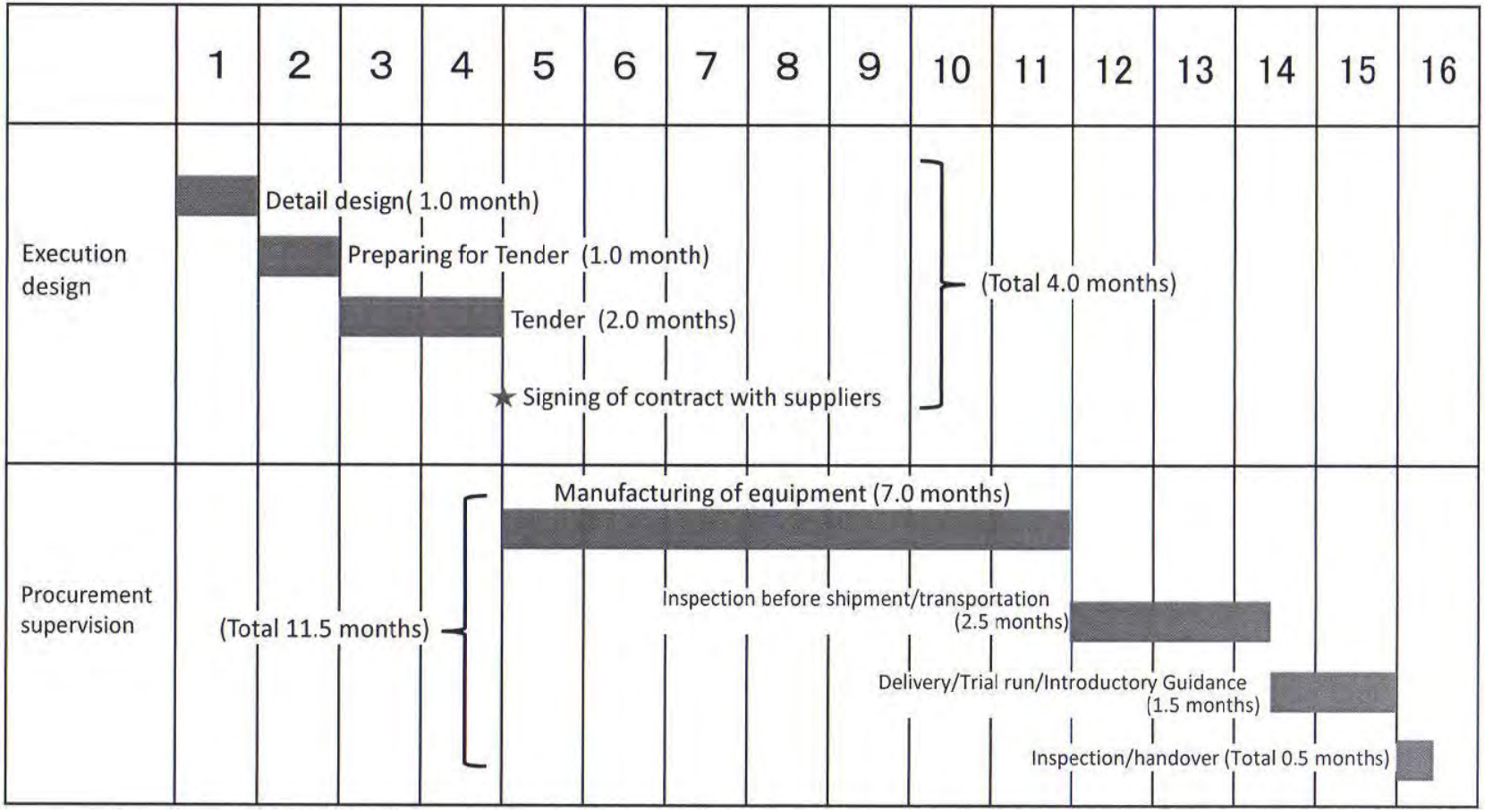
Annex-3

LIST OF EQUIPMENT

Number	Equipment	Unit	Qty
1	Brush Cutter	Unit	9
2	Mine Detector	Set	729
3	UXO head (60cm) of Mine Detector	Set	15
4	UXO Detector Large Loop Deep Search	Set	62
5	Field Computer for UXO Detector	Set	5
6	Bomb Locator	Set	2
7	Vehicle Station Wagon (Off-road, tough field operations)	Unit	35
8	Vehicle pickup (Off-road, tough field conditions)	Unit	50
9	Vehicle (Off-road ambulance)	Unit	3
10	PPE Vest	Unit	450
11	PPE Visor	Unit	450

ANNEX-4

Project Implementation Schedule



Annex 5

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	National Bank of Cambodia	No	Existed

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
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	within 1 month after the singing of the contract	National Bank of Cambodia	12,000 yen	
	2) Payment commission for A/P	every payment	National Bank of Cambodia	4,000 yen	
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	MEF	US$ 30,000	
	2) Internal transportation from the port of disembarkation to the project site	during the Project	N/A	N/A	
3	To accord Japanese nationals and/or physical persons of third countries 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	during the Project	N/A	N/A	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	MEF	US$ 40,000	
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	MEF	US$ 6,000	

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	CMAC	US$ 3,138,000	

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

5. Refernces

No.	References
1	Cambodia Millenium Development Plan
2	Cambodian Mine Action and Victin Assistance Authority
3	National Strategic Development Plan (NSDP2014-2018)
4	National Mine Action Strategy (NMAS-Cambodia-2010-2019)
5	Five-YearStrategic Plan 2015-2019
6	Administrative Map
7	Landmine and UXO contaminated area map
8	Ottawa Convention Ver.English
9	Law on The Management of Weapons, Explosives, Ammunition April 2005
10	Convention on Cluster Munitions Ver. English
11	Law to ban AP mines
12	Law on Administration of Factory and Handicraft Ver.English
13	Law on Environmental Protection Natural Resources Mgt Ver. English
14	Law on Forestry Ver. English
15	Law on Mineral Resource Management and Exploitation Ver. English
16	Law on Mining Resources Kh
17	HR Policy
18	Employment Contract
19	Standard of Conduct
20	List of Accident
21	Budget and Budgetary Plan
22	Funding from other sources
23	Number of team
24	Required Equipment
25	All Fixed Assets Detail
26	Detail Data Survey Team
27	Fund Up date 2010 to 2015
28	Report Mine Detector Sparepart Phase VI (Consume - Excess)
29	Report Vehicle Spare Parts Phase VI (Consume - Excess)
30	Spare Parts for Brush Cutters Phase VI (Consume - Excess)
31	User list each machine
32	Daily Average for Area Clearance by BC-DM-Mine Detector (CMAA)
33	Clearance progress report break down by year 92-Today (CMAA)
34	Clearance Progress Report Summary (CMAA)
35	IMSMA LR (CMAA)