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### 8.1 Background of the Project

Jakarta, the capital of Republic of Indonesia, is undergoing rapid urbanization in recent years, resulting in an intense population growth that its population reached 4.6 million in 1975. In 1990 it had reached 8,259,600 million then to 9,341,400 at the end of 1996. This rapid growth is caused by many factors, such as the rapid urbanization; development of urban infrastructures, demand of urban labor. Among others, the development of urban infrastructures such as the housing areas and the drainage system, including water supply system are not catching up the growth of population. Thus there are still seen in some locations affected by flooding during the rainy seasons.

It is anticipated that the population of Jakarta in 2010 would reach 12.8 million. The Government of Indonesia has been making progress to overcome the flooding problem in Jakarta and many projects have been accomplished to date. One of them was to prepare the Master Plan of Drainage and Flood Control for Jakarta in 1972. However, because of population growth and rapid development in Jakarta, that Master Plan needed to be revised thereafter. In response to this, Japan International Cooperation Agency (JICA) conducted the Study on Urban Drainage and Wastewater Disposal of the City of Jakarta (hereinafter referred to as the "JICA Study") that was completed in 1991. As a consequence, Cengkareng west area (hereinafter referred to as the "project area") has been selected as the area urgently required to conduct rehabilitation of urban drainage system for the following reasons:

The extent and the frequency of the flood damages are greater than the other areas;

The drainage requirement to meet future land development is necessary than the other areas;

- The progress rate of urban development is rapid than the other areas;

The area is already with very high population density; and

The income level of residents in the project area is relatively low.

There are 12 habitual inundation areas within the project area as shown in Fig 1.These are counted for 273.40 ha while potential inundation area is 474.3 ha. Depth of habitual inundation area within the project area is estimated to be 20 to 50 cm and the

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duration of inundation is from 1 day to 7 days. For the potential inundation area, depth goes up to 30 - 60 cm and duration is from 1 day to 10 days.

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The project area covers about 38  $\text{km}^2$  including residential, commercial and industrial areas which will increase from 22.44  $\text{km}^2$  in 1990 to 27.98  $\text{km}^2$ in 2005. Population in the project area was 263,000 in 1988 and is expected to reach 456,000 in 2010, given the average annual growth rate of 2.53% per year.

As the implementation of drainage development project in the project area takes place, it may cause the impact to the environment. It is therefore according to the Government Regulation of the Republic of Indonesia No.51, Year 1993, Environmental Impact Analysis is required to conduct. Based on this, it is therefore necessary to prepare Environmental Management Plan (RKL) for the project.

8.2 Objectives and Use of Environmental Management Plan (RKL)

8.2.1 Objectives of RKL

The objectives of RKL are as follows:

- Identify all impact management measures against the impacts which are possibly induced by the project activities and that they occur to the local environment.

- Identify feasible and effective measures that may reduce or modify adverse environmental impacts to an acceptable level based on the use of technological approach, socio-economic approach and institutional approach.
- Provide guidance to all the parties concerned with the project on how to protect the local environment and how to handle the significant impacts induced by the project.
- Provide ways to implement the measures and the requirements necessary to ensure that the proposed measures are properly conducted, made effective to the local environment, and timely completed.

8.2.2 Use of RKL

- (1) For the Use of Decision Makers
  - RKL is to provide information to the decision makers of the members of Indonesian Government on how far RKL could possibly reduce the impacts induced by the project

activities while environmental quality is controlled by the measures suggested to carry out within RKL.

The owner of the project can make use of RKL as reference for the points of concern on the way the environmental management is conducted when other development project of similar nature takes place within the project area or in other areas within the borders of Indonesia.

(2) For the use of the government of Indonesia

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The Government of Indonesia can make use of RKL as reference for the points of concern on the way the environmental management is conducted when other development project takes place within the project area, or the project of similar nature takes place within the borders of Indonesia.

(3) For the Use of the Local Communities

RKL provides information to the members of local communities of the government intentions on the ways to protect the local environment disrupted by the project. Thereby, the local residents can cross-check measures of environmental management against their own interests.

8.3 Environmental Components Subject to Observation

8.3.1 Physico-chemical environment

(1) Rainfall and flood events

Since the project is aimed at reducing habitual inundation chronically occurring within the project area, rainfall data maintained at Cengkareng Meteorological Station is necessary in relation to the flood events. Data on the flooded area, depth of water, and duration of the flood should be maintained where possible.

(2) Water quality

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Since the project involves major rehabilitation of the drainage channels within the project area, water quality in these drainage channels and that of in the coastal area should be observed during dry and rainy seasons.

(3) Air quality and noise level

Since the project is conducted in the congested residential areas, air quality and noise level during the construction period should be observed.

8.3.2 Biological environment

#### (1) Fauna

Fauna within the project area is less significant at the moment since all of the project area has already been developed for residential, commercial and industrial activities.

#### (2) Flora

The mangrove forests remaining on the coastal area within the project area should receive significant impacts upon implementation of the project. Thus, its biological entity and the way it is managed in relation to implementation of the project, or the means to increase area of mangrove forest currently available in Indonesia should be observed.

8.3.3 Socio-economic environment

#### (1) Demographic characteristics

The most significant impact induced by the project is relocation of the local residents with land certificate as well as the squatters living along the drainage channels. Thus relocation operation, resettlement procedures, and the changes on the demographic characteristics of each kelurahan on the increase and decrease should be observed.

Relocation of the squatters, some of them have been living in the area for more than 30 years, will be the sensitive issue. Thus, assessment of their properties, the rate of compensation, the way the squatters are relocated, government organization responsible for relocation operation, and the destination of the squatters should also be observed.

Destination of the squatters are usually the area similar to where they are living at the moment i.e. riverside areas owned by the government. Relocating them to other riverside areas does not solve the issue on urban slum development. Thus, measures appropriate to reduce urban slum development should be elaborated as a part of environmental management plan.

(2) Economic activities

In relation to the relocation of the local residents, local economic activities as well as that of in the resettlement area will be affected to some extent. Thus small and medium scale economic activities within the project area should be observed.

#### (3) Land use patterns

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Since the project area is under the process of rapid urbanization and that there are a lot of residential, commercial and industrial development schemes undertaken within the project area, it is necessary to observe changes on the patterns of land use.

#### (4) Infrastructure and traffic conditions

There are a number of places within the project area where major changes on the length of bridge should be made as the drainage channels are widened. During the construction period, diversion of these bridges and the road linked to them are necessary. Thus observing the rearrangement of road link and traffic conditions is necessary in relation to the environmental management measures.

#### (5) Public health

Public health conditions in relation to waste water and solid waste would be one of the major issues related to the project. Thus public health conditions should be observed as the project is implemented.

#### (6) Spoil bank

Excavated materials produced from the existing drainage channel is disposed to the area designated as spoil bank. Public dump in Tangerang is the area nominated for this purpose. Haulage and disposal operation should therefore be observed as part of environmental management measures.

8.4 Sub-division of the Period of Environmental Management Plan

Based on the evaluation of the significant impacts which is stated in the document of the Environmental Impact Statement (Analisis Dampak Lingkungan, or ANDAL) of the project, the period of project implementation will be sub-divided into four different stage as shown in Fig 15.

8.4.1 Pre-construction period

As shown in Fig 16, environmental impacts induced by the project during this period are summarized as follows:

Social unrest as the local residents worries on the rearrangement of job opportunities and family affairs, adjustment to the new living environment in the resettlement area among those of subject to relocation;

Worries among those of not subject to relocation living next to the drainage area as they will feel unease of up-coming construction works and jealous of those compensated and moving out of the area;

Incumbent residents living in or around the resettlement areas would have to feel unease momentarily as new comers begin to flow into the resettlement areas.

8.4.2 Construction preparation period

As shown in Fig 17, environmental impacts induced by the project during this period are summarized as follows:

- Increase of non-community members as construction workers are mobilized;

- Traffic congestion should occur to some extent as storage areas for construction equipment and materials are designated;

Dust and noise emanation during the demolition of the existing houses;

Increasing demand on water for construction works;

- Disruption of public utilities to some extent as construction works demand; and

• Other minor disturbances.

These impacts will all lead to social unrest and disturbances to some extent among the local residents within the project area.

8.4.3 Construction implemented period

As shown in Fig 18, environmental impacts induced by the project during this period are summarized as follows:

- General road conditions are down-graded as haulage of excavated materials and filling materials are conducted;

- Increase of turbidity in the water of drainage channels;

Odor, dust and noise emanated from the construction works;

- Possible disruption of public utilities;
- Traffic disruptions by the construction works of the bridges; and
- Mangrove forest on the coastal areas would be affected to some extent as the Tanjungan and Kamal drainage channel excavation works are conducted

#### 8.4.4 Post-construction period

Post-construction period shown in Fig 19 would be the period that there are no negative impacts affect the local residents, or on the natural environment. The following is considered as significant impacts:

- Inspection roads constructed along the drainage channels would provide wider transportation ability than the present congested traffic conditions;
- Prevention of flood events would provide more amenity to the project area than the area used to be. Permanent changes of the topography and river morphology is obvious while it is linked to function as a means to provide more economic activities;
- Protection of the riverside areas would become an important part of the operation and maintenance works not only from the view points of protecting the structures but also preventing squatters from entering into the riverside areas

8.5 Mechanism of Environmental Management Plan

8.5.1 Jurisdiction of government agencies

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The mechanism of implementation of the Environmental Management Plan for the project would be as follows:

- To increase the efficiency of implementation of environmental management plan, it is not necessary to form specialized unit to handle the environmental issue, but it is necessary to make use of and to expand the existing organizations;
- To coordinate among the related government agencies, a body of implementation of environmental management plan is necessary.

The owner of the project should play an important role and take initiative to implement the environmental Management Plan. To successfully complete with stable operation, the Environmental Management Plan should be formulated according to the existing local conditions of jurisdiction for authorization to conduct such plan. Thereby the scope of work would fit with the jurisdiction of each government agency.

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8.5.2 Procedure of implementation

Environmental Management Plan will be implemented with the procedures as follows:

To investigate and evaluate the existing environment in relation to the scope of works of the Environmental Management Plan;

To investigate and evaluate the works prepared to implement by other government agencies in order to implement the Environmental Management Plan effectively;

To investigate and evaluate the information provided by the owner of the project and the related government agencies on the implementation of Environmental Management Plan; and

To conduct the works according to the plan.

8.6 Environmental Management Plan for Pre-construction Period

As shown in Table 17, the most significant environmental management plan conducted during pre-construction period is the relocation of the local residents. Including other activities, the Environmental Management Plan of this period is summarized in this section.

8.6.1 Source of impact

The source of impact is activities on research and survey for determining the project area, drainage area, and the number of houses for relocation.

8.6.2 Classification of impact induced by the project activity

The project area is the densely populated area of the Cengkareng area while Manya Utara is not the case. Because of the dissemination of information on the project, social unrest among the local residents is created until actual resettlement operation is conducted. Actual relocation operation, demolition of the houses, and land acquisition are also conducted during this period. These impacts are classified as negative and significant in relation to socio-economic environment.

#### 8.6.3 Objectives of the environmental management plan

Objectives of the environmental management plan for the above impacts is to reduce the level of social unrest with a means of precautions in most cases. For relocation operation, proper assessment of the values of houses and land for compensation, formal negotiation between the government and the land owners and the payment made to the land owners with the agreed amount would also function as a means of environmental management plan.

8.6.4 Measures of environmental management

Measures of Environmental Management are conducted for the following reasons:

To explain the information of the project to the members of the communities directly affected by the project ;

- To disseminate the information on the project to the local government organizations for cooperation; and

- These measures are taken only for the socio-economic environment.

8.6.5 Location and agency conducting environmental management activity

(1) Administrative areas

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The locations of conducting environmental management activity for reducing the social unrest is as follows:

<u>Kotamadya</u> Jakarta Utara Jakarta Barat	Kecamatana Penjaringan Cengkareng	Kelurahan Kamal Muara Cengkareng Barat
		Cengkareng Timur Kapuk
	Kalideres	Pegadungan
		Tegal Alur Kalideres
		Kamal
	Kembangan	Meruya Utara

(2) Government agencies concerned with the environmental management plan

Executing agencies concerned with the Environmental Management Plan during the preconstruction period would be as follows:

(a) Executing agencies;

Local Government Level II of Jakarta Utara and Jakarta Barat

Department of Housing, DKI Jakarta

(b) -Inspector;

Inspector of the above departments of the Province of DKI Jakarta

Recipient of the report; (c)

Governor of DKI Jakarta.

Further, the contractor for EIA study under the supervision of JICA Study Team of the project will play an important role to disseminate information to the local government offices during the period of BIA study, which is a part of the Pre-construction Period.

8.6.6 Implementation schedule

As shown in Table 19, the implementation schedule of environmental management plan begins at the start of the period of determination of the drainage area up to the period of which land acquisition and demolition of the acquired houses are conducted.

8.6.7 Cost of the implementation of the environmental management plan

(1)Cost of environmental management plan

The financing of environmental management plan conducted during this period is borne mainly by DPU DKI Jakarta and the contractor under the supervision of JICA Study Team. Local government offices of kotamadya, kecamatan and kelurahan, are voluntarily acting to conduct the measures.

(2)Cost of compensation for relocation

Cost of compensation including land acquisition is born by DPU DKI Jakarta as follows:

- a. Resettlement of the Local Households Rp. 17,438.2 million
- with Land Certificate
- b. Relocation of the Squatters Rp. 3,639.8 million Rp. 21,078.0 million
  - Total

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#### (3) Cost of the construction of resettlement area

Construction of the low cost apartment as resettlement area is born by the Department of Housing, DKI Jakarta as follows and it is for the construction of low cost apartment complex in Bulak Wadon, Tegal Alur that would cost Rp. 34,676.1 million.

8.6.8 Related laws and regulations

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- (1) Government Regulation of The Republic Indonesia Number 51 of 1993.
- (2) Guidelines for the Implementation of Government Regulation Number 51 of 1994.
- (3) Environmental Impact assessment for the Detailed Design of the Urban Drainage Project in the City Of Jakarta.
- (4) Decree of the Governor of DKI Jakarta on the formation of Land Procurement Committee to determine the rate of compensation for housing and land affected by the project in Jakarta Barat and Jakarta Utara. The decree is scheduled to issue upon approval of the project by the Government of Indonesia.
- 8.7 Environmental Management Plan For Construction Preparation Period

As shown in Table 18, there are not large scale environmental management plan conducted during the construction preparation period. It is summarized as follows.

8.7.1 Source of impact

The source of impact during the construction preparation period is as follows:

- Mobilization of work force;
- Mobilization of construction material and equipment; and
- Custruction of access road.

During the Packages-1 and 2 construction preparation works, excavation and filling operation for access road are conducted in the area to the north of Jl. Tol Prof. Sediyatmo. This involves opening up of a small part of coastal vegetation mainly mangrove forest.

8.7.2 Classification of impact induced by the project activity

Because of the preparation works for the project is conducted, more physical disturbances begin among the areas within the project area. Thus social unrest of psychological disturbances among the local residents would be topped with physical disturbances. These impacts are classified as negative and significant.

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Construction works conducted in the coastal areas would also induce negative impact to mangrove forest area in the coastal area of the project area.

8.7.3 Objectives of the environmental management plan

Objectives of the environmental management plan for the impacts induced during the construction preparation period is as follows:

To reduce the level of social unrest;

To reduce dust and noise during the period of construction preparation works with a means of preventive measures such as to install silencer on the construction equipment, spraying water for dust suppression, etc.

To minimize damages to the mangrove forest on the coastal area while preparation of planting selected species of mangrove is conducted separately.

8.7.4 Measures of environmental management plan

Measures of the Environmental Management Plan would be as follows:

- To explain the information of the project to the members of the communities directly affected by the project .
- To disseminate the information on the project to the local government organizations for cooperation.
- To conduct construction works with regular practice of which dust and noise suppression system is employed.

8.7.5 Location and agency conducting environmental management activity

(1) Administrative areas

The administrative areas that the activities of environmental management plan taking place for reducing the social unrest is as follows:

Kotamadya	Kecamatana	Kelurahan
Jakarta Utara	Penjaringan	Kamal Muara
Jakarta Barat	Cengkareng	Cengkareng Barat
		Cengkareng Timur
		Kapuk
	Kalideres	Pegadungan
· <u>· ·</u>		Tegal Alur
		Kalideres
		Kamal
	Kembangan	Meruya Utara
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In terms of biological environment, a limited part of mangrove forest in Kamal Muara, Jakarta Utara, will be opened up for drainage area and environmental management plan will take place for this portion of the project area during the post-construction period.

(2) Government agencies concerned with the environmental management plan

(a) Executing agencies

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Executing agencies concerned with the Environmental Management Plan during the preconstruction period would be as follows:

Local Government Level II, Jakaita Utara and Jakarta Barat

District Office of Public Works, Jakarta Utara and Jakarta Barat

District Office of Traffic Department, Jakarta Utara and Jakarta Barat

Traffic Police Department of Jakarta Utara and Jakarta Barat

District Office of Health Department, Jakarta Utara and Jakarta Barat

District Office of State Electricity Company (PLN) in Tangerang

District Office of PT. Telekom Kandatel, Jakarta Utara and Jakarta Barat

District Company of Water Supply in Jakarta Utara and Jakarta Barat

Dept. of Gardens, District Office of Public Works, Jakarta Utara and Jakarta Barat

Dept. of Cleaning, District Office of Public Works, Jakarta Utara and Jakarta Barat

(b) Inspector

- Inspector of the above departments of the Province of DKI Jakarta

(c) Recipient of the report

Governor of DKI Jakarta

8.7.6 Implementation schedule

The implementation schedule of environmental management plan for the construction preparation period begins at the start of mobilization of work force, construction equipment and construction materials, whichever is the fastest as shown in Table 19.

8.7.7 Cost of the implementation of the environmental management plan

The financing of environmental management plan conducted during this period is borne mainly by DPU DKI Jakarta and the contractor of the construction works. Voluntary effort of the district offices will also contribute to conduct the Environmental Management Plan.

8.7.8 Related laws and regulations

Decrees related to the Environmental Management Plan during this period is as follows:

(1) Government Regulation of The Republic Indonesia Number 51 of 1993;

(2) Guidelines for the Implementation of Government Regulation Number 51 of 1994;

(3) Environmental Impact assessment for the Detailed Design of the Urban Drainage Project in the City Of Jakarta;

(4) Decree of Governor DKI Jakarta Number 582/1995 on water quality;

8.8 Environmental Management Plan For Construction Period

As shown in Table 18, there are relatively extensive scale of Environmental Management Plan conducted during the construction period. It was summarized as follows.

8.8.1 Source of impact

The source of impact during the construction period is as follows:

Excavation of drainage channel;

Ancillary structure construction works;

Main structure construction works; and

Construction works for bridges;

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8.8.2 Classification of impact induced by the project activity

Because of the construction works for the project is conducted, physical disturbances to the general public continues within the project area. During the construction works for bridges, traffic diversion is necessary. This will involve major traffic congestion within the project area. Thus social unrest of psychological disturbances among the local residents in relation to the construction works and subsequently caused traffic congestion would worsen during this period. These impacts are classified as negative and significant.

Changes on the physico-chemical environment within the project area should take place and there will be permanent changes on the natural drainage scheme as excavation work for the drainage channels are conducted.

There would be very limited project activity affecting the biological environment within the project area.

8.8.3 Objectives of the environmental management plan

Objectives of the environmental management plan for the impacts induced during the construction implementation period is as follows:

To reduce the level of social unrest;

To reduce dust and noise during the period of construction works with a means of preventive measures such as to install silencer on the construction equipment, spraying water for dust suppression, etc.;

To minimize traffic congestion thereby general economic activities are not severely disrupted by the construction works;

To monitor and observe major changes on the physico-chemical environment in the event that environmental management plan has to be implemented during the construction period or post construction period; and

 To monitor and observe major changes on the biological environment in the event that environmental management plan has to be implemented during the construction period or post construction period.

#### 8.8.4 Measures of environmental management plan

Measures of the Environmental Management Plan would be as follows:

To explain the information of the project to the members of the communities directly affected by the project;

To disseminate the information on the project to the local government organizations for cooperation;

To conduct construction works with regular practice of which dust and noise suppression system is employed; and

To prevent major traffic congestion.

8.8.5 Location and agency conducting environmental management activity

(1) Administrative areas

The overall administrative areas that the activities of environmental management plan taking place for reducing the general social unrest is as follows:

Kotamadya	Kecamatana	Kelurahan
Jakaita Utara	Penjaringan	Kamal Muara
Jakarta Barat	Cengkareng	Cengkareng Barat
		Cengkareng Timur
		Kapuk
	Kalideres	Pegadungan
		Tegal Alur
		Kalideres
		Kamal
	Kembangan	Meniya Utara

(2) Government agencies concerned with the environmental management plan

(a) Executing agencies

Executing agencies concerned with the Environmental Management Plan during the preconstruction period would be as follows:

Local Government Level II, Jakarta Utara and Jakarta Barat

District Office of Public Works, Jakarta Utara and Jakarta Barat

District Office of Traffic Department, Jakarta Utara and Jakarta Barat

Traffic Police Department of Jakarta Utara and Jakarta Barat

- District Office of Health Department, Jakarta Utara and Jakarta Barat

- District Office of State Electricity Company (PLN) in Tangerang
- District Office of PT.Telekom Kandatel, Jakarta Utara and Jakarta Barat
- District Company of Water Supply in Jakarta Utara and Jakarta Barat
- Dept. of Gardens, District Office of Public Works, Jakarta Utara and Jakarta Barat
- Dept. of Cleaning, District Office of Public Works, Jakarta Utara and Jakarta Barat

(b) Inspector

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Inspector of the above departments of the Province of DKI Jakarta

(c) Recipient of the reportGovernor of DKI Jakarta

8.8.6 Implementation schedule

The implementation schedule of environmental management plan for the construction period begins at the start of excavation works as shown in Table 19.

8.8.7 Cost of the implementation of the environmental management plan

The financing of environmental management plan conducted during this period is borne mainly by DPU DKI Jakarta and the contractor of the construction works. Voluntary effort of the district offices will also contribute to conduct the Environmental Management Plan.

8.8.8 Related laws and regulations

Decrees related to the Environmental Management Plan during this period is as follows:

- (1) Government Regulation of The Republic Indonesia Number 51 of 1993;
- (2) Guidelines for the Implementation of Government Regulation Number 51 of 1994;
- (3) Environmental Impact assessment for the Detailed Design of the Urban Drainage Project in the City Of Jakarta;
- (4) Decree of Governor DKI Jakarta Number 582/1995 on water quality;
- 8.9 Environmental Management Plan for Post Construction Period

As shown in Table 18, there are not large scale environmental management plan conducted during the post construction period. It is summarized in this section.

8.9.1 Source of impact

The source of impact during the post construction period is as follows:

- Use of the structures constructed for drainage channels;

8.9.2 Classification of impact induced by the project activity

Because of the construction works for the project is completed, physical disturbances to the general public is ceased. Traffic congestion within the project area would be solved to some extent as inspection road along the drainage channels are made use of the general public. Habitual flood events would be drastically reduced as a result of the completion of drainage channel. Thus large part of hitherto social unrest of physical and psychological disturbances among the local residents in relation to the drainage channels and subsequently caused disruption to general economic activities would be normalized to some extent. These impacts are classified as positive and significant.

Physico-chemical environment within the project area taking place during the construction period would lead to the changes on land use as the permanent changes on the natural drainage scheme takes place.

There would be large scale reinstatement of the biological environment of mangrove forest on the coastal areas within the project area.

8.9.3 Objectives of the environmental management plan

Objectives of the environmental management plan for the impacts induced during the post construction period is as follows:

To ensure impacts caused by construction period does not linger;

To monitor and observe major changes on the physico-chemical environment in the event that environmental management plan has to be implemented during the post construction period; and - To monitor and observe major changes on the biological environment in the event that environmental management plan has to be implemented during the post construction period.

8.9.4 Measures of environmental management plan

Measures to be taken during the post construction period would be as follows:

Planting selected mangrove species in the coastal area in order to reinstate the damaged mangrove forest.

8.9.5 Location and agency conducting environmental management activity

(1) Administrative areas

Kamal Muara in Jakarta Utara is the only administrative area where the Environmental Management Plan would take place.

(2) Government agencies concerned with the environmental management plan

(a) Executing agencies

Executing agencies concerned with the Environmental Management Plan during the post construction period would be as follows:

Local Government Level II, Jakarta Utara

Dept. of Gardens, District Office of Public Works, Jakarta Utara

Dept. of Forestry, DKI Jakarta

(b) Inspector

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Inspector of the above departments of the Province of DKI Jakarta

(c) Recipient of the report

Governor of DKI Jakarta

8.9.6 Implementation schedule

The implementation of environmental management plan for the post construction period will be started at the completion of structure construction works as shown in Table 19.

8.9.7 Cost of the implementation of the environmental management plan

The financing of environmental management plan conducted during this period within the area to the northeast of Jl.Kamal Muara is borne mainly by PANTURA. Voluntary effort of the kecamatan, kabutaten and kelurahan offices will also contribute to conduct the Environmental Management Plan during this period.

8.9.8 Related laws and regulations

Decrees related to the Environmental Management Plan during this period is as follows:

(1) Government Regulation of The Republic Indonesia Number 51 of 1993;

(2) Guidelines for the Implementation of Government Regulation Number 51 of 1994;

(3) Environmental Impact assessment for the Detailed Design of the Urban Drainage

Project in the City Of Jakarta; and

(4) Decree of Governor DKI Jakarta Number 582/1995 on water quality.

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#### ENVIRONMENTAL MONITORING PLAN (RPL)

#### 9.1 Objectives of Environmental Monitoring Plan (RPL)

Basic reasons that the Environmental Monitoring Plan is conducted is that it is a means to provide data for which environmental management plan can not be conducted without detailed data. Thus the following is required to conduct:

Inventory environmental components that require environmental management activities;

Classify these environmental components that require detailed data before their environmental management activities are conducted; and

Provide detailed information to the organization(s) designated to conduct environmental management activities so as the organization(s) would be able to conduct environmental management plan in order to optimize the positive impacts, or minimize the negative impacts as considered necessary.

9.2 Environmental Monitoring Plan

9.2.1 Physico-chemical environment

Environmental monitoring works during the construction period is mainly monitoring on the air, noise, and water quality which are all related to the performance of construction equipment.

(1) Air quality and noise level

(a) Air quality

Reference data have been taken during the EIA Study Period. Measured Parameters as follows should be analyzed against the reference data as well as the standard of air quality in DKI Jakarta:

(TSSP, µg/m <sup>3</sup> )
(No <sub>x,</sub> μg/m³)
(CO, ppm)
(HC, ppm)
(So <sub>x,</sub> µg/m <sup>3</sup> )
(Pb, µg/m³µg/m³)

The above monitoring works are the obligation of the contractor as it is included in the contract as standard practice during the implementation of the construction works.

#### (b) Noise level

Measuring noise level in decibels (dB) at the selected locations as shown in Fig 5 is conducted. Obtained data is compared with reference data during the construction period as noises is generated from each construction machinery. The result is also compared with the standardized maximum values of the noise being adopted by DKI Jakarta.

#### (2) Water quality

Sampling locations for water quality is in and around the Tanjungan drainage channel. Parameters to be measured are as follows:

Total Suspended Solids	(TSS)
Dissolved Oxygen	(DO)
Biological Oxygen Demand	(BOD)
Chemical Oxygen Demand	(COD)
ារី	(pH)

Other chemical parameters as per the Standard of Water Quality being adapted to use in DKI Jakarta.

Based on the obtained data, each value is compared to the standard of water quality for fishpond and for the growth of mangrove being adapted by DKI Jakarta.

(3) Method of conducting monitoring works for air and water quality

Period and interval of monitoring is shown in Table 19. Air quality, noise level, dust and vibration as well as the water quality sampling works should be conducted by the Contractor of the project. Alternatively, it could be sublet together with the analysis of the samplings, which should be conducted by the competitive third party specialized in the field of air quality and water measurement and analysis. Cost of monitoring work should be included in the construction works.

9.2.2 Biological environment

Over and above water quality monitoring plan, mangrove growth area should be monitored during the construction period of the Tanjungan drainage channel. Turbidity is 6)

the major parameter specifically concerned with the growth of mangrove during the construction implementation period. However, depending on the discharge of industries in the upstream area, monitoring of water quality described in the section 9.2.1 (2) should be applied.

Period of monitoring should be from the commencement of the construction works to the completion of it in the section of the Tanjungan drainage channel to the northeast of JI. Tol. Prof. Sediyatmo. Department of Forestry, DKI Jakarta would be the organization conducting the monitoring work. It would also be the source of the ideas of recommendations for conducting mitigation measures. For conducting monitoring works, a formal request has to be made by the contractor via DPU DKI Jakarta.

9.2.3 Socio-economic environment

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 $\langle \mathbf{I} \rangle$ 

As shown in Table19, socio-economic survey on the resettlement area should be conducted 6 months after the resettlement operation is completed. General living conditions should be surveyed by using questionnaire. Questionnaire to be used for the socioeconomic survey is subject to elaboration at the time of survey to suit the conditions of living in the resettlement area. Generally, it could be based on the questionnaires used during the period of "Social Impact Management Study". Annex I shows a sample of the "Questionnaire for Monitoring and Evaluation of the Resettlement Program".

The same survey should also be conducted for the squatters who are subject to resettlement in the designated rented land areas with in the project area.

For the monitoring works of the survey and evaluation of the resettlement areas, the following survey team has to be formed to conduct the work:

I Team Leader

2 Sociologist

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3 Socio-economist

Public Health Expert

AMDAL Certificate A with more than 15 years of experiences in the field of resettlement plan AMDAL Certificate B with more than 8 years of experiences in the field of resettlement plan AMDAL Certificate B with more than 8 years of experiences in the field of resettlement plan AMDAL Certificate B with more than 8 years of experiences in the field of resettlement plan



# Tables

<b>R</b> 1986	TO 1995	Total (mm)	2,171 1,846 1,477 1,307 1,807 1,807 1,869 1,869 1,861 1,962 2,047
THE YEA	T	Dec.	237 280 313 352 117 117 177 157 157 250 250
Ř. FROM		Nov.	244 311 244 311 244 244 244 244 244 244 244 244 244 2
MM) AT CENGARENG METEOROLOGICAL STATION: FROM THE YEAR 1986	-	Oct.	5 35 35 107 107 107 102
LOGICAL		Sep.	21 24 25 25 25 25 25 25 25 25 25 25 25 25 25
ETEORO		Aug	268 268 153 153 16 18 18 18 18 18 18 18
SARENG M		Jul.	93 124 115 35 0 0 4 115 115 115
T CENGA		Jun	111 112 112 112 112 112 112 112 112 112
		May	77 208 1162 117 98 98 98 98 98 98 98 98 98 98 98 98 98
AINFALL		Apr.	164 116 73 68 68 75 94 108 166 131 131 ncy, Jakat
AVERAGE MAXIMUM RAINFALL (		Mar.	146 103 103 105 155 328 364 198 198 198
AGE MAX		Feb.	369 369 384 384 171 171 171 171 171 171 171 171 171 17
AVER	an a	Jan.	1       1986       503       369       146       164         2       1987       644       384       103       116         3       1988       371       237       106       73         4       1989       209       441       155       68         5       1990       462       171       73       104         6       1991       334       135       256       75         7       1992       384       151       73       104         8       1993       494       345       88       108         9       1994       383       401       364       166         10       1995       403       328       198       131         Source : Meteorology and Geophysical Agency , Jakarta
Table 1		Year	1986 1987 1988 1989 1992 1993 1993 1993 1994 1995 Ce : Met
E.		No.	

Tal	Table 2	AVERA	GE MAXI	MUM TE	MPERAT	URES (°C	) AT CEN	VGKARE	NG MET	SOROLOC	JICAL ST	ATION F	ROM TH	AVERAGE MAXIMUM TEMPERATURES (°C) AT CENGKARENG METEOROLOGICAL STATION FROM THE YEAR 1985 TO 1995
°Z	Year	Jan	Feb.	MRT	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov	Dec.	MAX Temp.( <sup>°</sup> C)
	1985	•			•	33.1	33.0	33.0	32.8	32.0	33.6	34.5	34.0	34.5
2	1986	31.6	32.6	33.4	32.9	33.4	33.6	33.9	33.9	32.5	32.5	33.5	32.8	33.9
Ŵ	1987	31:0	32.0	33.2	32.8	33.4	33.2	33.6	33.4	33.8	34.8	35.2	31.2	35.2
4	1988	32.8	32.4	33.4	33.4	33.3	32.6	32.5	33.2	34.0	34.2	34.4	33.5	34.4
ŝ	1989	31.4	30.0	32.8	33.3	32.6	33.0	33.2	32.6	33.9	34.2	33.6	ł	34.2
9	1990	32.1	32.8	32.6	33.0	34.9	33.0	31.8	32.0	32.8	32.8	34.4	32.5	34.9
7	1661	31.4	31.0	32.0	33.2	33.2	34.4	33.2	33.2	54.2	34.9	33.4	I	34.9
~	1992	30.0	30.9	31.2	31.6	31.5	31.8	31.2	31.2	32.7	33.0	33.0	ł	33.0
<u>م</u>	1993	29.8	30.0	31.4	31.5	31.8	31.9	31.2	31.5	32.0	32.1	32.0	31.0	32.1
10	1994	31.2	32.0	33.0	32.4	32.8	32.7	32.3	33.0	34.2	35.0	34,4	33.6	35.0
11	1995	32.4	32.0	32.0	33.2	33.2	32.9	32.1	33.2	33.2	33.1	32.8	33.4	33.4

Source : Meteorology and Geophysical Agency, Jakarta

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AVERAGE MINIMUM TEMPERATURES (°C) AT CENGKARENG METEOROLOGICAL STATION FROM THE YEAR 1985 TO 1995 Table 3

Temp.(<sup>O</sup>C) Minimum 21.6 21.3 221.3 221.3 221.3 221.3 221.4 21.4 21.4 21.4 22.3 23.2 23.6 22.9 23.3 23.5 22.6 22.3 Dec. 22.5 21.8 23.6 23.7 23.7 23.7 23.7 23.2 22.8 22.5 22.5 22.5 Nov. ಕಂ Sep. 21.6 21.6 21.8 21.8 22.5 22.6 23 1 22.7 22.8 17.4 Aug. 51.7 21.7 21.7 21.3 22.5 22.5 22.5 22.5 22.5 22.8 18.6 21.8 Jul. 21.9 Jun. May Apr. 22.24 23.25 22.25 22.25 22.25 22.25 22.25 22.25 22.25 22.6 22.55 25.55 2 Mar. Feb. ł Jan. 1986 1987 1987 1989 1991 1992 1993 1994 1995 1985 Year ŝ 2 - 10 m 4 5 0 0 0

Source : Meteorology and Geophysical Agency, Jakarta

No.	Year	Jan.	Feb.	Mar.	Apr.	May	Jup	Jul	Aug.	Sep.	Oct	Nov.	Dec.
	1985	1			•	85	28	28	82	83	83	18	82
+ A	1986	00	86	\$	86	3 S	<u>.</u>	\$	3	8 8	. 8	84	5 8
m	1987	87	88	84	84	82	81	62	76	76	76	17	84
4	1988	86	85	85	8	86	83	80	81	78	81	81	85
s	1989	87	87	88	82	86	83	81	80	78	81	81	85
Ŷ	1990	87	87	86	83	83	83	8	. 85	82	89	80	87
~	1991	89	89	87	87	84	83	80	80	77	77	83	96
60	1992	88	88	87	86	86	83	82	82	83	85	83	
\$	1993	87	87	83	85	84	84	81	82	79	80	83	84
2	1994	86	86	87	85	8	80	78	76	75	75	85	82
11	1995	. 22	87	87	85	85	85	33	80	80	83	85	84

AVERAGE HUMIDITY AT CENGKARENG METEOROLOGICAL STATION FROM THE YEAR 1985 TO 1995

Table 4

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CHARACTERISTICS OF PREVAILING WIND AT CENGKARENG METEOROLOGICAL STATION FROM THE YEAR 1986 Table 5

Nov.		ب. مر مستد مست	V/22		W/26		S/38 SW/30			E/40 W/50	
t O O		<b>ب</b> دي مريد م	. اسم خار و سور	سعن الله برجم	S/22 V			a			
Sep.		NE/20	E/18	NE/24	N/24	S/31	E/26	SW/44	NE/38	NE/34	NE/42
Aug.	,	N/20	E/18	S/24	S/24	NE/27	E/36	S/36	E/38	E/42	NE/34
Ţ,		NE/18	E/16	NE/22	S/26	S/26	E/28	E/4	E/36	NE/38	S/46
Jun		E/25	E/20	E/22	SW/28	SE/20	S/28	NE/36	NE/40	NE/40	N/46
May		NE/18	S/20	NW/24	S/18	NE/38	E/26	NE/36	E/38	E/46	- W/60
Apr		NE/16	E/18	E/22	W/36	NE/26	W/27	NE/50	SW/42	N/40	E/58
Mar.		NW/18	91/MN	W/28	W/42	W/32	E/28	NE/34	W/44	W/44	W/42
Feb.		NW/24	NW/18	E/18	W/28	W/28	W/34	N/50	W/54	NW/52	W/52
Jan.		NW/18	81/MN	NW/18	N/20	W/38	W/27	N/50	W/54	NW/60	W/52
Year		1986	1987	1988	1989	1990	1661	1992	1993	1994	1995
V			3	Ś	4	ŝ	9	7	00	σ	10

Source : Meteorology and Geophysical Agency , Jakarta

Note: direction/speed(knot)

RESULT OF WATER QUALITY ANALYSIS

Table 6

< 0.005 < 0.005 < 0.005 < 0.001 < 0.001 < 0.01 0.16 0.02 2.5 2.8 1.48 1.41 24.2 W-12 £ 3 ទ < 0.005 < 0.005 < 0.002 < 0.005 < 0.002 < 0.001 < 0.01 < 0.005 < 0.02 < 0.01 0.05 0.21 6.1 7.7 12.2 W-11 2 ი წ < 0.005 < 0.005 < 0:005 < 0.002 < 0.005 < 0.002 < 0.001 < 0.001 < 0.02 < 0.01 W-10 0.16 0.05 5.6 54 53 < 0.005 < 0.002 < 0.005 < 0.001 3.05 < 0.005 < 0.002 < 0.02 < 0.03 0.114 < 0.01</pre> 0.35 0.15 0.05 23.8 63.8 6.8 2.06 4.4 6-M 27 0 0.06 < 0.002 : 0.005 < 0.005 < 0.002 : 0.001 3.36 :0.005 < 0.02 < 0.03 < 0.01 0.203 0.14 0.41 2.78 W-8 27 516 4.8 15.2 05 0.03 < 0.005 0.549 < 0.001 5.74 < 0.005 < 0.002 < 0.005 1.68 < 0.005 < 0.02 < 0.03 0.02 27 1433 7.2 1.2 0.85 4 7 6.22 45.5 96.8 W-7 0.05 < 0.005 < 0.005 < 0.005 < 0.002 < 0.001 5.83 < 0.005 0.42 0.03 0.308 < 0.02 < 0.03 0.685 27 0.9 7.45 32.8 70.4 W-6 4 Sampling Location < 0.002 0.04 < 0.005 0.0017.190.050.45 < 0.005 0.03 < 0.002 1.244 < 0.02 < 0.03 118.8 0.787 6.4 12.88 W-5 28 1696 .1.0 47 < 0.005 < 0.005 1.5 6.8 < 0.002 < 0.005 < 0.002 < 0.02 < 0.001 < 0.001 2.13 < 0.005 < 0.03 < 0.01 0.23 0.06 0.04 46.2 ¥ 4 4.8 6 252 < 0.002 < 0.005 <.0.005 < 0.002 < 0.005 < 0.02 < 0.02 < 0.03 < 0.001 < 0.001 < 0.01 1.33 0.12 3.2 1.69 0.04 1.7 W-3 6.7 27 \$3 7 < 0.005 200.05 < 0.005 < 0.002 < 0.005 < 0.002 < 0.001 < 0.02 < 0.03 < 0.001 < 0.001 114 0.13 0.101 2:48 0.02 0.01 6.6 7.6 17.6 <u>W-2</u> 29 2 < 0.005 < 0.002 < 0.001 < 0.005 < 0.03 < 0.001 < 0.005 1.468 < 0.02 0.57 0.038 5.44 < 0.01 3.42 0 4 0.02 6.5 5.2 35.8 83.6 28 734 **I-**₩ 0 mg/lt | mg/lt | mg/It mg/lt ng/It ng/lt mg/It mg/lt mg/lt ng/it mg/lt ng/lt mg/lt mg/lt mg/lt ng/It ng/lt ng/lt ng/It ng/it ng/lt mg/lt Cuit. ò Diluted Oxigen (DO) Chemical Parameters Physical Parameters Free Clonine (C12) Cromium (Cr 6 +) Amonia (NH-N) Parameters Cadnium (CD) Nitrit (NO2-N) Selentium (Se) Plumbum (Pb) Mercury (Hg) Sulfide (H2S) Cuprum (Cu) Cianide (Cn) Iuonide (F) Tempeature Oil and Fat Arsen (AS) Suspended Zeng (Zn) Detergent F B O I d 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0000 Щ ii Sote 8 5 ន ŋ 4 5 Ś 3 . Z ∢ ø

1. Fresh water quality analysis is based on the SK. GUB. KDKI Jakarta, No. 582/1995.

Sca water quality analysys is based on Kep 02/MENKLH/I/1988

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## Table 7

## STANDARD OF RIVER WATER QUALITY IN DKI JAKARTA(1/2)

			and the second	MAXIMUM	LIMITS	in an air gan an de la sherre an an an an an air an
	ĺ		A	B	C	D
No.	Parameter	Unit	Drinking Water		Fishery and	Agriculture and
110.		Unit		Source	Animal Husbandry	Industry
Ī	Physical			NATION CONTRACTOR IN THE OWNER		
	Odor		Odorless			
2	Total dissolved Soli	mg/l	1000	500		1000
3	Turbidity	NTU	5			
	Color	TCU	15			
	Condustivity	µms/cm				1000
Ш	Chemical					
A	Inorganics					
1	Hg	mg/l	0.001	0.0005	0.002	0.0005
2	A	mg/l	0.2			0.00
3	4	mg/1	0.05	0.05	0.5	0,05
· 4	Ba	mg/l	1	1		
5	Fe	mg/l	0.3	2		
6	F-	mg/l	0.5	1.5	1.5	0.01
. 7	Cd	mg/l	0.005	i i Nil	0.01	0.01
8	<ul> <li>A second sec second second sec</li></ul>	mg/l	500			
1 9		mg/l	250	250	0.003	
	) Cr <sup>+6</sup>	mg/l		Nil	Nil	0.05
	l Mn	mg/l	0.1	0.05		1 1
	2 Na	mg/l	200			40 µg/l
		mg/l	10	5		
	3 NO3 -N			0.1	0.06	
	4 NO <sub>2</sub> -N	mg/l	1	0.1	0.00	
	5 Ag	mg/1	0.05	6.0 - 8.5	6.0 - 8.5	6.0 - 8.5
	6 pH	units	6.5 - 8.5	0.01	0.05	0.05
	7 Se	mg/l	0.01	0.01	0.2	1
1	8 Zn	mg/l	5	0.05	0.01	
	9 CN-	mg/l	0.1		0.01	
2	0 SO₄	ng/l	400	50	0.000	
2	1 S - H <sub>2</sub> S	mg/l	0.05	0.1	0.002	
2	2 Cu	mg/l	1	0.05	0.03	0.05
	3 Pb	mg/l	0.05	0.05	0.03	0.05
	4 NH N	mg/l		0.5	0.02	e at
_	5 Disolved Oxygen	: mg/l		>6	>3	· · · ·
	6B	mg/l	a de la companya de l			1
	7 Co	mg/l				0.02
	8 Ni	mg/l	. 1			0.05
	9 Residual Sodium	mg/l				1.25 - 2.5
1	Carbonate (RSC)					·
	0 Sodium Absorption	n mg/l				10
1 .	Ratio (SAR)					

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100.0

## Table 7 STANDARD OF RIVER WATER QUALITY IN DKI JAKARTA(2/2)

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		an a		MAXIMUM	LIMITS	a aray in pada sa ana si kara na sa sa ay ay ay ay ara ara ay
			A	В	С	D
No.	Parameter	Unit	Drinking Water		Fishery and	Agriculture and
17. 18. 18. 18. 18. 18. 18. 18. 18. 18. 18			an a	Source	Animal Husbandry	Industry
B	Organics	·:	0.0007			
	Aldrin & Dieldrin Benzene	mg/l	0.0007	0.017		
	1	mg/l	0.01			
	Benzo (a) Pyrene Chlordane (isomer)	mg/l	0.00001 0.0003	0.000		
	Chloroform	mg/1 mg/1	0.0003	0.003		
	2, 4 - D					
	DDT	mg/l	0.1			
	Detergent	mg/l mg/l	0.03 0.5			
	1,2 Dichloroethane	mg/l	0.01	(1)		
	1,1 Dichloroethane	mg/l	0.0003	· · ·		
	Heptachlor and	ing/1	0.0005	·		
···**	Heptachor Epoxide	mg/l	0.0003	0.018		
	Heptachlorobenzen	mg/l	0.00001	0.016		
	Lindane	mg/l	0.0001	0.056		· · ·
	Methoxychlor	mg/l	0.03	0.035		
	Pentachlorophenol	mg/l	0.01	0.035	and the second	
	Total Pestcicides	mg/l	0.1			
	2,4,6 Trichlorophen		0.01			
- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Organics (KMNO4	mg/l	10			
	Endrin	mg/l	10	0.001	0.004	
	Phenol	mg/l		0.001	0.004	
-	Carbon Chloroform			0.002	0.001	
	Oit and Grease	mg/l		Nil	0.5	
	Organophosphates	105/1		MI	0.3	
	Carbamates	mg/l	100 C	0.1	0.1	
2.	PCB	mg/l		Nil	<b>U</b> .1	
	Methylene Blue	mg/l		0.5	0.2	
	Toxaphene	mg/l		0,01	V.2	
	BHC	mg/l		0.01	0.21	• • • • • •
					<b></b>	
III –	Microbiological					
1	Tinja Coliform	per/100cc	0	2000		
2		per/100cc	3	10000		-
		· .				· · ·
IV	Radioactivity					.*
- j - 1	Alpha Activity	Bq/L	0.1	0.1	0.1	0.1
	Beta Activity (8)	Bq/L	1	1	1	<b>1</b>
Sour	ce : Decree on Water	Quality, No	582 of the Year	1995, DKI Jakarta		ويركب ويستعرف والمنافع والمتركمين والمنافع والمنافع والمنافع والمنافع والمنافع والمنافع والمنافع والم

Table 8 ANALYSIS OF AIR QUALITY

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					Samr	Sampling Location	tion				•
Z	Parameter	Unit	A-1	A-2	A-3	A-4	A-5	A-6	A-7-	A-8	DKI Air standard *
 -		ug/m3	39	102	58	82	549	116	177	151	0.26 mg/m3 (260 ug/m3)
<ul><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li></ul>	Sulfur dioxide (S.2)	ug/m3	p/u	p/q	n/d	p/u	p/q	p/a	p/a	n/d	0.1 mg/m3 (260 ug/m3)
(1)	Nitrogen dioxide (No2)	ug/m3	13.07	10.59	6.21	7.52	4.52	6.8	9.34	7.27	0.05 PPM (92.5 ug/m3)
4	Oxidant (O <sub>1</sub> )	ug/m3	1.56	p/u	0.06	1.39	14.36	3.23	n/đ	ב/ק	0.08 PPM (42 ug/m3)
v	Carbon monoxide (CO) PPM	PPM	0.5	80	8	1.5	1.5	2	1.2	<b>p</b> -and	20 PPM
<u> </u>	Hvdrocarbon (HC)	Mdd	0.0021	0.023	0.025	0.024	0.02	0.023	0.024	0.02	0.24 PPM
	Plumb	ug/m3	29	30	29	30	31	30	31	30	0.06 mg/m3 (1.5 ug/m3)
00	Temperature	, or	29	30	29	30	31	30	31	30	
0	Speed of wind	m/knot	0.5-0.9	0.5 - 2	0.8-1.6	0.5-2	0.8 - 1.7	1.2-3	0.5 - 1.8	0.5 - 1.1	•
2	Humidity	%	72	67	74	79	62	62	68	8	•
	Noise	පු	50 - 90	50 - 90	50-90	50 - 90	50 - 90	50 - 90	50 - 90	50 - 90	
Note:		Decree o	f the Gove	1 C	nor of DKI Jakarta, No. 587/1980	No. 587/1	980				···

According to the Decree of the Governor of DNJ Jakarta, No. 30//1900
 n/d - Parameters not detected.
 Samples of air have been taken during December 1996, the wet season in DKI Jakarta.

Table 9 RESULT OF NOISE MEASUREMENT(1/4)

a. Locatic	I. Location: Riverside A	de Area i	Area in Kelurahan Kamal	i Kamal (	•	Date: 13 / 01 / 1997	/ 10/ / 1997				
Time		6		4	:	9	· L	80	6	01	Average
10.00	- t oy	699	68.8	69.5	68.1	6.69	70.9	66.3	66.1	67.6	68.32
20,00	2 8 9	2 9 9 9 9	1 89	67.7	67.2	66.7	70.1	67.7	68.9	68	67.92
76.00		5 5 5 6	1.00	107	714	71.8	669	68.1	68.6	69.2	70.41
10.00	1.1	0.47 7		545	, c 1, ,	66.5	66.7	68.1	65.3	65.8	67.27
Verel Voice	00 1 0.07 1 0. 4	(%)00)	rance = 50 - 90  dB	- 90 dB				Averag	Average of the Location	ocation	68.48
T ACION	~~~	101 011									

tion: Industrial Area in Tegal Alur (N - 2) Date: 13 / 01 / 1997

Time											
		2	ŝ	4	<u> </u>	9	7	8	6	10	Average
10 30 8	44	86.6	79.2	89.9	78.6	67.6	70.1	72.0	86.7	76.2	79.13
13 30 1 7	5.5	74.0	74.9	74.3	74.6	74.7	75.5	76.0	78.1	75.2	75.28
1630	2 2	187	73.6	72.9	77.4	81.3	77.1	53.1	85.6	73.4	4
20.00		69.3	62.8	70.5	68.4	66.1	60.5	66.4	68.1	62.7	66.65
Noise Level	1: L50	S	18	- 90 dB				Averas	Average of the Location	ocation	73.77

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RESULT OF NOISE MEASUREMENT(2/4) Table 9 1

c Yocatic	c Vocation: Mosque in		Tegal Alur (N -32)	( <u>7</u>		Date: 14 /	Date: 14 / 01 / 1997				
Time i			6	4	5	9	7	~	6	10	Average
	4	*						000	6 27	004	27 72
10.00	58.3	76.2	81.5	68.7	11.6	80.8	17.71	07.0	0.00	10.7	1.1
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2				1		0 00		20.0	71 5	76.05
12.00	10.8	70.9	00	77.4		<u>.</u>	5	11.1	10.7	11.0	
22.01	>							C + 7	202	21 S	7 2 2 2
16 20	0	ر د وې	608	66.4	62.9	0.70	20.4	c.10	C.20	2	11.12
20.01							( • •	- (1	K2 7	4	71 96
10.20		698	70.4	73.5	<u>\</u>	2.0	54.5	1.4.1		-	,
		1/0 007		ar vo . (				Averas	Average of the Location	ocation	1 71.25
Noise L	CACI: LOC										

ocation: Jakarta Barat riea										
l l lem		5	4			- <u></u>	ő	6	10	Average
		1 2 4	74.2	75 4	74.8	75.4	73.3	76.5	74.3	74.74
1.5/ 05.01	7.0/			t.	<b>7</b>				ç	
12 20 70 4	\$3.0	202	78.6	81.1	80.2	80.2	82.9	80.7	02.1	(17.4)
			7.02	0 63	8.7°	83.1	78.3	6.64	78.9	79.94
16.30 / /8.0	/ 2.1	77.7	0.0/	07.70				0.04	70.7	78.00
20 00 79 7	80.4	13.1	77.3	78.1	0.6/	0.0/	10.1	17.0	10.1	>.>

78.05

Average of the Location

= 50 - 90 dB

range

Noise

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RESULT OF NOISE MEASUREMENT(3/4) Table 9

e: Location: Cengkareng Indah Housing Estate (N - 5) Date: 15 / 1 / 1997

66.82	ocation	Average of the Location	Averag				Ë	= 50 - 90 dB	), range	LSO (90%	Noise
63.86	65.7	65.2	64.3	63.1	63.1	63.6	62.8	63.8	65.7	61.3	19.30
71.95	74.4	72.5	76.3	76.8	69.4	68.8	67.2	74.5	69.5	70.1	16.00
64.9	65.7	65.2	65.8	63.7	64.6	63.6	64.4	65.2	66.1	64.7	13.00
66.58	68.0	64.7	65.5	65.7	65.8	65.0	64.3	63.5	76.5	66.8	10.00
Average	10	6	8	7	: 6	5	4		. 2	· · · · <b>1</b> · · · ·	Time

	ocation: Trigonal Intersection in Kelurahan Kapuk (N-6) Date: 15/01/1997	
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	73.1 77.8	78.44
80.7		78.59
82.8	·	81 82
79.9		79.28
85.4 79.3	82.8 79.9	

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RESULT OF NOISE MEASUREMENT(4/4) Table 9

	,	< <	۰ ۲	۲	- <b>-</b>	Y	-	~	0	0	Average
Ime		7	2	<b>†</b>	2			,			
1030	5.43	64.7	63.8		60.9	70.1	64.9	63.1	72.6	13.3	67.6
			12.0	N.	424	630	629	63 1	61.6	61.8	65.95
05.21	0.4	2.1.		5	5	3				1	20 62
1530	75.3	70.5	21.6	59.8	68.9	70.5	69.4	65.7	2.40	1.00	07.70
	1.09	65.5	6.53	68.9	65.5	707	67.5	69.3	64.9	6.9	67.06

<b>OCati</b>	. Location: Security Guar	ry Guard 1	TO FOST TOT IN MOUTH INTELLING OUR DAME. TO TATE AND	AN ATTE A		21 .2.22					
ime		, 2	Ś	4	S	9	7 . 7	00	6	10	Average
S	68.0	66.3	64.6	63.7	68.8	71.6	73.1	69.0	66.4	66.2	67.77
2	222	2 C 2	244	¢ 19	۲ کا کا	62.3	63.7	67.5	65.9	63.2	63.84
3	2. v 2. v	C 7 7		1 V V V		2022	501	584	58.8	58.0	60.74
00.00	0.0	7.70	4	1.0					3.02	010	0 77
0.00	61.6	63.3	63.9	71.3	67.7	01.5	13.2	04.4	0.70	01.0	3
Loice	1.50 (90%)	rance	= 50 - 90 dB	dB				Averas	Average of the Lo	Location	64.81

Table 10

#### COMPOSITION OF PLANKTON IN THE STUDY AREA

No.	Sampling	Number	Number	Н	X	E	C
	Location	of Types	of ind/lit.				
1	W-1	23	30.46	0.93	-0.50	0.30	0.65
2	W-2	20	15.38	1.64	-0.56	0.55	0.26
3	W-3	30	12.77	2.00	-0.88	0.59	0,19
4	W-4	28	11.01	1.95	-0.54	0.59	0.21
5	W-5	8	2.35	0.57	-1.40	0.27	0.76
6	W-6	18	16.05	0.84	-1.00	0.29	0.70
7	W-7	21	16.43	0.95	-1.40	0.31	0.62
8	W-8	12	2.88	0.98	-1.00	0.40	0.56
9	W-9	22	90.91	0.87	-1.75	0.28	0.54
10	W-10	16	13.16	0.27	1.50	0.10	0.10
11	W-11	16	141,14	0.58	1.00	0.21	0.72
12	W-12	21	8.01	1.54	-0.71	0.51	0.30

**X** : **C** :

Notes :

Date of Sampling: December 14, 1996 H : Shanon Diversity Index

Mean Index **E** ;

Saprobity Index **Diminance Index**  ()

ind/lit. : individuals per litre

COMPOSITION OF BENTHOS IN THE STUDY AREA Table 11

	and the second	1					
No.	Sampling Location	Number of Types	Number of ind/lif.	H	H max	B	Dominance
1	W-1	-	-	-	-		_
2	W-2	-	-	•	-	-	-
3	W-3	2	700	0.15	0.69	0.22	0.93
4	- W-4	2	200	0.37	0.69	0.54	0.78
. 5	W-5	· 1 ·	50	0.15	0	0	1
6	W-6	5	600	1.39	1.61	0.86	0.28
1	W-7	2	50	0.69	0.69	. 0	0.5
8	W-8		-		•	-	•
9	W-9	5	250	1.36	1.61	0.84	0.32
10	W-10	4	40.300	0.05	1.38	0.03	0.98
1 II	W-11	8	65,275	0.11	2.08	0.05	0.96
12	W-12	1	100		0	0	1
Note:	Н:	Shanon Di	versity Inde	X	<b></b>		

Shanon Diversity Index Н: E :

Mean Index

# Table 12 FISH SPECIES IN THE STUDY AREA

No.	Local Name	Scientific Name	Sea	Marshland	River / Canal
	UDANG	CRUSTACEAN	an a		
· 1	Udang jerbung	Penaeus merguensis	· +		
	Udang windu	Penaeus Monodon	+		
	Rajungan	Plotunus pelagicus	+		
3	Kajungan	I manas penagions	44		
	IKAN	FISH			
4	Sembilang 👘 😳	Plotosus canius	4		
5	Ikan manyung	Arius spp	+		
6	Ketang-ketang	Drepane punctata	+		
7	Terigi	Balistodes spp	+		
	Tengkek	Megalaspis cordyla	+		
	Kerapu'	Epinephelus spp	+	· ·	the second second
	Kembung	Rastrelliger bracchysoma	+		
	Petek	Leiognathus sp	+		
	Belanak	Mugil spp	+		
	Cumi-cumi	Lolygo sp	+	<b>+</b>	
	Baronang	Siganus spp	+		
	Mujair	Oreochromis mosambiqus	+	<b> </b> + ↓	
	Golok-golok	Chirecentrus dorab	+		
	Nila hitam	Oreachromis niloticus			
	Bandeng	Chanos chanos	· · · · + · · · ·		
	Ekor kuning	Chaesio erythrogester	+		
	Bawal batik	Caranx spp	· · · + · ·		
	Cakalang	Scomberomorus Comersiinii	+		
	Gabus	Ophiocephalus sp	an an Arrange An Arrange		
	Sepat	Trichigaster sp			
	Betok	Anabas testudineus			
	Lele	Clarias batrachus	an a		1
	Sapu-sapu	Hyposarcus sp			, , , , , , , , , , , , , , , , , , ,
20	oupu oupu				
i i t	KERANG	CRUSTACEAN			
27	Kerang darah	Anadara sp	<b> </b> . + ···	· · · ·	1.
28	Alu-alu	Sphyraena jello	+	+	
29	Bulan-bulan	Megalops cyprinoides	+	+	
30	Kerang buluk	Anadara indica	+	+	+ .
31	Kerang hijau	Perna viridis	+	+	
32	Siput laut	Olivella sp	<b>+</b>		
	•			A Constant States	

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# Table 13 VEGETATION IN THE STUDY AREA(1/2)

	an ann an Chrange a' an 1860 ann an 1860 ann an 1860 ann an	ŢĸĸĸŢĸĊĸĊĸĸŶŧġĊŊĊŴŎŗŎĔĊŶĊŔĹġĸŢŊĊŎŎŎĸŎĬĬĊŎĬĊŎĬĬĊŎĬĊŎĊĬŎŎĊĬŎŎŎŎŎŎĬĬĬĬĬŎŎŎŎ		Value Indes	in the Drain	age Channel	
No.	Local Name	Botanical Name	Kamal D/Channel	Cengkareng D/Channel	Tunjungan D/Channel	PIK Junction D/Channel	Mangrove Growth Area
	· · · · · · · · · · · · · · · · · · ·			······································	· · · · · · · · · · · · · · · · · · ·		
	PEPOHONAN	TREES					
1	Akasia	Accacia auriculiformis	2.07	3.71			
2	Ambon	Excocerca sp	2.72	11.66	8.55		
3	Angsana	Pterocarpus indicus	28.23	5.26	15.25		
4	Api-api	Avicenia sp					128.98
	Asam kranji 👘	Pithellobium dulce	8.81	7.56			
6	Bakau	Rhizopora sp			9.96	1997 - A.	18.78
7	Bakau	Bruguiera sp		:			
8	Belimbing	Averhoa carambola	4.35				
	Beringin	Ficus benjamina	6.96			9.75	1
	Dadap	Erythrina variegata	5.66		11 - 11 - 11 - 11 - 11 - 11 - 11 - 11	ļ	1. 
	Glodogan tihang			3.85			· · ·
	Jalu jaran	Lannea coromandellca	2.72	3.43		)	:
	Jambu air	Euginea aqua	4.79		· ·	1. State 1.	
	Jambu biji	Fsidium guajava	4.35		8.55		
	Kedondong	Spondias pinnata	12.48		0.00		1
	Kelapa	Cocos mucifera	13.91	37.08	39.64		l ·
	Keluwih	Arthocarpus sp	2.07	3.85	37.04		and the state
			4.24	2.72			and the second second
	Kersen	Muntingia colobura	4.24 5.76			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	in a said a
	Ketapang	Terminalia catapa		2.58		200	
	Mahoni	Switzenia macrophylla	10.98	6.11	(1,1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2	36.91	
	Mangga	Mangifera indica	5,87	3.85			
	Mindi	Melia azedarach	12.7			20.35	
	Nangka	Arthocarpus integra	4.35		1		
	Randu	Ceiba petendra	4.35			1	
	Petai	Parkia speciasa	4,35				
	Rambutan	Nephelum lapecum		2,58			
27	Sonokeling	Dalbergia lactifolia	14.00				. 1

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# Table 13 VEGETATION IN THE STUDY AREA(2/2)

225-682.0	, our eller 7, o gen a. Graft an article internation ar	an mana diran masék mananang tana in karna kanakan di Para Kara tang tang		Value Index	t in the Drain	age Channel	
No.	Local Name	<b>Botanical Name</b>	Kamal D/Channel	Cengkareng D/Channel		<b>PIK</b> Junction	Mangrove Growth Area
	BELUKAR	SHRUB					
28	Pace	Morinda citrifolia	2.94	2.86	· · · ·		
29	Palem	Arecha sp			15.25		
30	Pepaya	Carica papaya	2.07	7.28		10.41	
31	Pisang	Musa paradisiaca	9.03	5.02	43.76	22.34	
32	Salak	Salaca edulis 👘 👘		3.00			
33	Turi	Sesbanta citrifolia		2.58		:	
34	Waru	Hibiscus tiliaceus		2.58	Ī		
35	Bambu	Bamboosa sp	4.35	2.58			
36	Srikaya	Annoa squamosa	(1, 2)	2.86			
37	Jarak	Jothropa curcas	3.37				
38	Jeruk	Citrus sp					
39	Kangkungan	Ipomomea sp	2.94		14,18		
40	Ketela	Manihot sp	4.14	2.86			
41	Kirai	Nyha sp			9.96		
42	Lamtoro	Leucaena glauca	5,44		8.55		
.43	Bogenvil	Bogenvillea sp		2.58	9.84		
44	Bunga Kuning	Caesalpinea sp			9.84	10.42	
1							
		GRASS			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		
.45	Bayam	Amaranthus sp			· •	19.02	
46	Eceng gondok	Eichornia crassipes			8.55	1	
47	Lobak	Elephantopus sp			:	22.34	
48	Talas	Colocasia esculenta 👘		4.98			
49	Tebu	Sacharum sp		9.78			

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	FAUNA IN THE STUDY AREA
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	Table 14

>	DITTON' TONON	Scienunc Iname	<b>Nama</b>	engraren	engkaren   Junjungan PIK Jein.		Coastal
1 - -			D/Channel	D/Channel	D/Channel D/Channel D/Channel D/Channel	D/Channel	Area
	Memamah Biak	Mamalia					
pind.	Kera	Maraca fascicularis	<b>t</b>	•	1	• *	+
9	Babi hutan	Sus barbatus	•	1	. 1	1	÷
ູຕ	Anjing	Canis sp	+	+ +	+	4	1
4	Kucing	Flis sp	+	+	+	+	i
5	Tixus	Retus sp	+	Ŧ	+	÷	+
:	Malata	Reptilia			1		
Ó	Ular Sawah	Phyton sp	1	•	,	1	+
5	Kadal	Mabouya multifaciata	+	+	+	+	+
8	Biawak	Veramus salvator	4	+	+	+	+
6	Ular hijau	Drylis orasianus	<b>+</b>	+***	<b>+</b>	+	÷
	-					:	•
	Bulung	Aves				:	
2	Cangak abu	Ardea purpurea	.*	•	•	+	ť
11	Cangak merah	A. purpurea	•	1		1,	+
2	Bangau tontong	Leptoptillus javanicus	•	1	1	•	ł
13	Camar	Larus sp		•	Ì	•	+
4	Belibis	Amas gibberifrons		•	+	+	÷
15	Belibis kembang	Dendrocygna javanica	ı	•	ł	;	÷
20	Bluwok'	Ibis cinerens	<b>P</b>	•	+	. 1	+
11	Bangau	Egretta sp	•	1	+	,	+

CHARACTERISTICS OF THE POPULATION IN THE PROJECT AREA(1/2) Table 15

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a. Administrative Area and the Population	Area and the Pc	pulation		and the second secon		
					Pop.Density	
City Region	Kecamatan	Kelurahan	Area (km2)	Area (km2) Population	(Persons/km)	
1 Jakarta Utara	Penjaringan	Kamal Muara	10.53	3,193	303	
2 Jakarta Barat	Kembungan	Meruya Utara	4.76	25,242	5,303	
	Cengkareng	Kapuk	7.18	48,965	6,820	
		Cengkareng Tim	4.18	43,568	10,423	
		Cengareng Barat	4.26	41,481	9,737	
	Kalideres	Kalideres	4.93	30,366	6,159	
		Pegadungan	5.95	19,163	3,221	
		Tegal Alur	7.78	33,348	4,286	
		Kamal*	2.76	16,568	6,003	
	Total		52.33	261,894	5,806	

Note: \* - Not directly affected by the Project

# Table 15 CHARACTERISTICS OF THE POPULATION IN THE PROJECT AREA(2/2)

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Kotamadya					Age						
Kecamatan	0.	14	15 - 19		20 -	49	50 -	59	60 •	<	
	No.	%	No.	%	No.	%	No.	%	No.	%	Total
) Jakarta Utara 1) Penjaringan	10,913	4.2	3,638	1.4	17,784	6.8	4,285	1.6	3,880	1.5	40,500
<ol> <li>Jakarta Barat</li> <li>Cengkareng</li> </ol>	26,410	10.1	16,694	6.4	72,794	27.8	9,881	3.8	7,676	2.9	133,454
3) Kalideres	17,259	6.6	4,600	1.8	19,930		2,927	1.1	2,201	0.8	46,917
4) Kembangan	11,101	4.2	3,682	1.4	18,022	6.9	4,311	1.6	3,908	1.5	41,023
Total	65,683	25.1	28,618	10.9	128,529	49.1	21,407	8.2	17,664	6.7	261,894

### c. Occupation

NAMES OF TAXABLE PARTY OF TAXABLE PARTY.		· · · · ·	Jakarta	Barat			Jakarta U	tara		
Occupation	Kemba	ngan	Kalide	res	Cengkar	eng	Penjarin	ngan	Tota	1
	No.	%	No.	%	No.	%	No.	%	No.	%
Agriculture	2,143	0.8	2,757	1.1	1,958	0.7	2,819	1.1	9,678	3.1
Industry	1,654	0.6	10,302	3.9	86,738	33.1	8,596	3.3	107,290	41.
Artisan/Technici	7,464	2.9	2,535	° 1.0	5,509	2.1	2,323	0.9	17,830	6.
Trading	1,908	0.7	4,313	1.6	27,018	10.3	2,628	1.0	35,868	13.
Commerce	1.642	0.6	379	0.1	2,641	1.0	614	0.2	5,275	2.
Government	5,994	2.3	2,682	1.0	15,371	÷\$.9	2,501	1,0	26,548	10,
Transportation	2,174	0.8	1.795	0.7	9,478	3,6	1,684	0.6	15,131	<b>¦</b> 5.
Others	5,200	2.0	6,905	2.6	26,161	10.0	6,007	2.3	44,273	16
Totai	28,180	10.8	31,668	12.1	174,874	66.8	27,172	10.4	261,894	100

d. Level of Income						(Rp.Thousa	nd/month)
Kelurahan	<100	100-300	300-400	400-600	600-800	>800	Total
Kamal Muara*		•	•	•		•	0.0
Cengkareng Tim	-	9.0	2.7	-	0.9	0.9	13.5
Cengkareng Bara		0.9	3.6	-		1.8	6.3
Kapuk	-	1.8	0.9	4.5	0.9	•	8.1
Pegadungan	1.8	1.8			1.8	-	5.4
Tegal Alur	2.7	13.5	10.8	9.0	4.5	3.6	44.1
Meruya Utara	3.6	9.0		4.5	2.8	2.7	22.6
Total	8.1	36.0	18.0	18.0	10.9	9.0	100.0

Table 16 OPINION ON THE RELOCATION OF THE LOCAL RESIDENTS WITHOUT LAND CERTIFICATE

(**]**)

	Cases of the Degree of	Contents of the Demands of the Resettlement Areas	Responce (%)
	Development	Health Facility. Local Market, Primary School and High School,	
	Social Facilities	Convention Centre, Mosque or Church, Postal Services, Public	
		Transportation, Electricity and Library.	14.29
		Access Road and Local Road, General Public Facilities, Potable	
2	2 Intrastructure	Water Supply and Sanitation System	10.20
		Job Opportunity, Granting Land Certificate, Cooperation	
က	3 Non-physical Development	Between Incumbent Residents and Non-moslem Community	6.12
	Social Facilities and	Job Opportunity, Granting Land certificate, Cooperation	
4	Infrastructure	Between Incumbent Residents and the Non-moslem Community	22.45
ļ	Social facilities +	Job Opportunity, Ganting Land Certificate, Cooperation Between	
∩ 	evelopment	Incumbent Residents and the Non-moslem Community	16.33
	Infrastructure +	Job Opportunity, Ganting Land Certificate, Cooperation Between	noch Suit
0	Non-physical Needs	Incumbent Residents and the Non-moslem Community	6.12
L	Social Facilities +	Job Opportunity. Ganting Land Certificate, Cooperation Between	
<u></u>	7 Infrastructure+	Incrimbent Residents and the Non-moslem Community	Č
	Non-physical Needs		24.42
		Total	100.00

**(**)

Table 17 MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(1/9)

				Attocted Administrative Area
	Source of Imnact	Affected	Classification	Kotamadia
Item of Works	(Project Activity)	Environment	of Impact	Kocamatan Kelurahan
Site Investigation	* Core borng for geological investigation	<ul> <li>Physico-chemical Environment</li> </ul>	* Light disturbance: Trace of bore holes left on site	As listed below
			<ul> <li>Slight Social Unrest: General public would be cager to obtain the reason of conducting site investigation</li> </ul>	
2 Topographic Survey	<ul> <li>General map making activity</li> </ul>	* Socio-economic Environment	<ul> <li>Slight Social Unrest: General public would be cager to obtain the reason of conducting site investigation</li> </ul>	As listed below
3 EIA Study	* Environmental study for physico-chemical environment	* Socio-economic Environment	<ul> <li>Slight Social Unrest: General public would be eager to obtain the reason of conducting site investigation</li> </ul>	<ol> <li>Jakarta Utara Penjaringan</li> <li>Xamal Muara</li> <li>Jakarta Utara</li> </ol>
	* Environmental study for biological environment	<ul> <li>Socio-sconomic Environment</li> </ul>	<ul> <li>Slight Social Unrest: General public would be eager to obtain the reason of conducting site investigation</li> </ul>	Congkareng 2) Congkareng Timur 3) Congkareng Barat 4) Kapuk Kalderes 5) Poondimeen*
	* Socio-economic Survey and survey for relocation of the local residents	<ul> <li>Socio-economic Environment</li> </ul>	<ul> <li>Social Unrest: General public begin warrying on the potential relocation</li> </ul>	<ul> <li>c) Togal Alur</li> <li>f) Xalideres*</li> <li>8) Karnal*</li> <li>Kernbangan</li> <li>9) Meruya Utara</li> </ul>
4 Relocation Operation 1) Packago I Artea: (Kamal Drainago Channel - Main and Branch)	<ul> <li>Land acquisition and demolition of the houses, mosque, factory, school and government offices</li> </ul>	<ul> <li>Socio-economic</li> <li>Environment</li> </ul>	* Very Significant: Arrangemont for relocation, assessment of the rate of compensation, and negotiation of compensation	<ol> <li>Jakarta Utara</li> <li>Penjaringan</li> <li>Yamal Muara</li> <li>Kamal Muara</li> <li>Jakarta Barat</li> <li>Congkareng</li> <li>Congkareng Timur</li> </ol>
				3) Tegal Alur

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Table 17

MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(2/9)

÷	
	ro-construction Period

Affected Classification
pent
Socio-economic * Very Significant: Arrangement
Environment for relocation, assessment of
the rate of compensation, and
negonation of compensation
- - -
nic +
Environment for relocation, assessment of
the rate of compensation, and
negotiation of compensation
Socio-economic * Significant: Rearrangement of
Environment
-
<ul> <li>Slight social dis</li> </ul>
<u> </u>

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Table 17 MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(3/9)

b. Construction Preparation Period				Attorned Administrative Area
	Source of Impact (Project Activity)	Affected Environment	Classification of Impact	Kotarnadia Kocarnatan Kelurahan
<ol> <li>Mobilization of Work Force,</li> <li>Equipment and Matchals to:</li> <li>Paukago I Arcu: (Xamal Drainage Channel - Main and Branch)</li> </ol>	<ul> <li>Creation of workers camp and storage areas</li> </ul>	<ul> <li>Socio-conomic Environment</li> </ul>	<ul> <li>Slight Social Unrest: General public would fool that they have to stay alort</li> </ul>	Jakarta Utara Penjaringan 1) Karnal Muara
			with the advant of outsiders. Traffic Congestion is expected.	Jakarta Barat Cengkareng 2) Cengkareng Timur Kalideres 3) Tegal Alur
<ol> <li>Package II Arrea: (Tanjungan and PIK junction Drainage Channel)</li> </ol>	<ul> <li>Creation of workers camp and storage areas</li> </ul>	<ul> <li>Socio-conomic</li> <li>Environment</li> </ul>	<ul> <li>Slight Social Unrest: General public would feel that they have to stay alert with the advent of out-siders.</li> <li>Traffic Congestion is expected.</li> </ul>	Jakarta Utara Penjaringan 1) Kamal Muara Jakarta Barat Cengkareng 2) Kapuk
<ol> <li>Package III Area:</li> <li>(Saluran Congkareng, Gode' Bor and Meruya D/Channel)</li> </ol>	<ul> <li>Creation of workers camp and storage areas</li> </ul>	<ul> <li>Socio-conomic</li> <li>Environemat</li> </ul>	<ul> <li>Slight Social Unrest:</li> <li>Singht Social Unrest:</li> <li>General public would feel that they have to stay alert with the advent of out-siders.</li> <li>Traffic Congestion is expected.</li> </ul>	Kalideres 3) Tegal Alur Jakarta Barat Cengkareng 2) Cengkareng Barat 4) Kapuk Kembangan 9) Menuya Utara
4) Proparation of Water and Electricity Supply for Construction Works	<ul> <li>Connection of water and electricity supply system] to the ensting systems</li> </ul>	<ul> <li>Socio-conomic Environment</li> </ul>	<ul> <li>Temporary/Occasional disruption to the utility sysptem</li> </ul>	To be determined.
2 Clearing the Construction Area	• Demolition of houses	* Socio-economic Environment	<ul> <li>Slight social unrest, dust and noise pollution as well as the disruption of traffic</li> </ul>	As above listed
	<ul> <li>Excevation and Hauling</li> <li>of construction debris</li> </ul>	<ul> <li>Physico-chemical</li> <li>Environemnt</li> </ul>	<ul> <li>Slight change on the land use</li> </ul>	As above listed
			• • • •	

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Table 17 MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(4/9)

**]**;

Attected Administrative Area	Kotamadia	Kecamatan Kelurahan	As above listed	Jakarta Utara Penjaringan	<ol> <li>Kamal Muara Jakarta Barat</li> </ol>	Cengkareng 2) Cengkareng Timur Kalideres						Jakarta Utara Penjaringan	I) Kamal Muara Jakarta Barat	Cengkareng 2) Kapuk	Kalidoros 3) Tegal Alur				
	Classification	of Impact	Slight change on the local vegetation	<ul> <li>Slight social unrest, dust and noise pollution as well as the</li> </ul>	disruption of traffic		<ul> <li>Slight damages made to</li> </ul>	the mangrove forest	<ul> <li>Temporary increase on the turbidity of the water</li> </ul>	in the drainage channel * Permanent changes on the	natural drainage system	<ul> <li>Slight social unrest, dust and noise pollution as well as the</li> </ul>	disruption of traffic			<ul> <li>Slight damages made to</li> </ul>	Termovaru iterrandon	the turbidity of the water in the dreinage channel	Permanent changes on the natural drainage system
	Affected	Eavironment	Bological     Environment	Socio-economic     Favionment			<ul> <li>Biological</li> </ul>	Environment	<ul> <li>Physico-chemical</li> <li>Environment</li> </ul>	· · · · · · · · · · · · · · · · · · ·		* Socio-economic Environment			· .	<ul> <li>Biological</li> </ul>	- Dhurion chamical	Environment	
	Source of Impact	(Project Activity)	Removal of Vegetation	<ul> <li>Excavation and Filling</li> </ul>								<ul> <li>Excavation and Filling</li> <li>operation</li> </ul>							
b. Construction Preparation Period (continued)		Item of Works	<ol> <li>Clearing the Construction Area (continued)</li> </ol>	cess Road	1) Fackage I Arca (Kamal Drainage Channel - Main and Branch)							2) Package II Aroa: Taniinoan and PIK	Junction Drainage Channel)			2) Package II Area	(Tanjungan and P.IK Junction Drainage Channel:	continued)	

Table 17 MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(5/9)

Source of Impact     Affected     Classification       (Project Activity)     Environment     of Impact       (Project Activity)     Environment     of Impact       ng. Gede/     • Slight social unrest, dust and       ng. Gede/     operation     • Socio-economic       D/Channel)     invironment     disruption of traffic			-		Atlected Administrative Area
Revision     Environment     of Impact       ng. Gede/     * Excavation and Filling     * Socio-economic     * Slight social unrest, dust and lake       ng. Gede/     operation     * Socio-economic     * Slight social unrest, dust and lake       D/Channel)     operation     fairuption of traffic     * F		rce of impact	Affected	Classification	Kotamadia
ng. Gede/     * Excavation and Filing     * Socio-economic     • Slight social unrest, dust and lake operation       ng. Gede/     operation     Environment     noise pollution as well as the disruption of traffic		vject Activity)	Environment	of Impact	Kecamatan
accord       * Excavation and Filling       * Socio-economic       * Slight social unrest dust and lake operation       Jake         ng. Gede/       operation       Environment       noise pollution as well as the disruption of traffic       6         D/Channel)       disruption of traffic       * K       K					Kelurahan
operation Environment noise pollution as well as the disruption of traffic	*	on and Filling	* Socio-economic	<ul> <li>Slight social unrest, dust and</li> </ul>	Jakarta barat
			Environment	noise pollution as well as the	Cengkareng
3) Cengkareng Barat 4) Kapuk Kembangan	Bor and Meruya D/Channel)			disruption of traffic	2) Cengkarong Timur
4) Kapuk Kembangan 9) Meruya Utara					3) Cengkareng Barat
Kernbangau. 9). Meruya Utara					4) Kapuk
9). Meruya Utara					Kembangan
					9) Meruya Utara

				Affected Administrative Area
	Source of Impact	Affoctod	Classification	Kotamadia
Item of Works	(Project Activity)	Environment	of Impact	Kocamatan
Everyotion of Divinede Channel				Kelurahan
				;
:	Excavation works	Socio-economic	Constant disturbance to the	Jakarta Utara
(Kamal Drainage Channel -	<ul> <li>Haulage of silt materials</li> </ul>	Environment	general public during	Penjaringan
Main and Branch)	Noise, odor and dust		the construction period	1) Kamal Muara
	emanated from the		<ul> <li>Slight change on the</li> </ul>	Jakarta Barat
	construction site		land use scheme	Cengkareng
				2) Censkarone Timur
		<ul> <li>Biological</li> </ul>	<ul> <li>Very light disturbane to</li> </ul>	Kalideres
		Environment	the local vegetation	3) Tecal Alur
			· · · · · · · · · · · · · · · · · · ·	
- <del></del>		* Physico-chemical	Temporary increase on	
		Freimanent	the turbudity of the sustan	
· · · ·				
-			in the cremage channel	
  - -			remanent changes on the	
			natural drainage system	

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MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(6/9)

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Table 17

				Affected Administrative Arca
	Source of Impact	Affected	Classification of Impact	Kotamadia Kecamatan
				Kelurahan
	<ul> <li>Excavation works</li> </ul>	* Socio-economic	<ul> <li>Constant disturbance to the</li> </ul>	Jakarta Utara
	* Matiage of suff materials	FUNITODINGIN	general public during the construction renod	1) Kamal Muara
Junction LTainago Channel	emanated from the		* Slight change on the	Jakarta Parat
	construction site		land use scheme	Cengkareng
				2) Kapuk
		* Biological	<ul> <li>Slight damages made to</li> </ul>	Kalideres -
		Environment	the mangrove forest	3) legal Aur
		Disconcerentia	* Temevers' increase on	
		Environment	the turbidity of the water	
			in the drainage channel	4 
			* Permanent changes on the	
			natural drainage system	
				•
	" Excavation works	<ul> <li>Socio-economic</li> </ul>	<ul> <li>Constant disturbance to the</li> </ul>	Jakarta Barat
(Saluran Cenekarone, Gode)	<ul> <li>Haulage of silt materials</li> </ul>	Environment	general public during	Cengkareng
Bor and Meruva D/Channel)	* Noise, odor and dust		the construction period	2) Cengleareng Timur
	emanated from the		* Slight change on the	3). Cengkareng Barat
	construction site		land use scheme	4) Kapuk
				Kembangan
		<ul> <li>Biological</li> </ul>	<ul> <li>Very light disturbane to</li> </ul>	y) Menya Utara
		Environment	the local vegetation	:
	· · · · · · · · · · · · · · · · · · ·	* Directo Activity		
rackage III Area:		к мужительние Сахионатель	the hishidity of the water	· · ·
			in the decinents of the manual	
			* Demonstr channes on the	-
		· · ·	retries frances extern	
		-	wink to semicin remient	-
3 Mills Standard Constantion Works		· ·		
	Haulage of filling materials	<ul> <li>Socio-economic</li> </ul>	* Constant disturbance to the	Jakarta Utara
(Kamal Drainace Channel -	<ul> <li>Noise, odor, vibration and</li> </ul>	Environment	general public during	Penjaringan
	dust emanated from the		the construction period	I) Kamal Muara
	construction site			Jakarta Barat
				Cengkareng
				2) Cengkareng Timur
•		· · ·		Kalideres
				3) Teval Alur

 Table 17
 MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(7/9)

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	Source of Impact	Affected	Classification	Kotamadi	Kotamadia
	(Deniart Articity)	Environment	of Impact	Kecamatan	atan
				Kelu	Kolurahan
D1 11 A	<ul> <li>Henlace of filling materials</li> </ul>	* Socio-economic	<ul> <li>Constant disturbance to the</li> </ul>	aran Utara	
2) Fackage II ALCAL	Name of a structure of a struct	Fromment	ceneral public during	Penjaringan	5
(lanjungan and riv	Live annoticed from the		the construction period	I) Kamal Muara	al Muara
Junction Dramage Channel				Jakarta Barat	
				Canalyseene	
					20 20
				Yndery (7	
				Kalideres	
		<ul> <li>Biolorical</li> </ul>	<ul> <li>Occasional and temporary</li> </ul>	and a set of the set o	l Alur
•			disturbance to monorrow		•
		Cuvironment		· · · · · · · · · · · · · · · · · · ·	
•			forest on the coastal area	•	
					-
		· Corio attornio	<ul> <li>Constant disturbance to the</li> </ul>	Jakarta Utara	
3) Package III. Aron:	Flaulage of Lining materials				·
(Suluran Cenekarene, Gede/	<ul> <li>Noise, odor, vibration and</li> </ul>	Environment	general public during	Cengvareng	20 20
Dar and Manual Michaely	dust emanated from the		the construction period	2) Ceng	<ol><li>Cengkareng Timur</li></ol>
DOT ADG IVIGINYA L/CUMUNCI		-		3) Cenz	<ol><li>Cenekarone Barat</li></ol>
	construction site			Arrest C	
		· · ·		nderví (*	4
				Kembangan	at)
		-		9) Meru	<ol><li>Meruya Utara</li></ol>
				ł	4
3 Ancillary Structure	+ Haulage of filling matorials	Socio-economic	- Constant disturbance to the	TO DE DEDININA	2
	* Noice odor vibration and	Environment	general public during		
COLSUCCOUL WOLLS			the construction monor		
	CUST CHIMBICO LOT LOC				
	construction site				
			· · · · · · · · · · · · · · · · · · ·		
4 Bridge Construction works			· Constant disturbance to the	Jakaria Ultara	
1) Package I Area:	Noise, odor, vibrauon and	20010-000IUII			1
Wamel Drainage Channel	dust emanated from the	Envronment	general public during	renjanngan	UT
	construction wite		the construction period	1) Kam	<ol> <li>Kamal Muara</li> </ol>
Main and Branch)				Jakarta Barat	
		· .	· · ·	Congkareng	80
				2) Cent	2) Congkareng Timur
				Validaras	•
	<ul> <li>Disruption to the trathc</li> </ul>		-		
	· ·			3) Tegal Aur	L Alur

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# MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(8/9) Table 17

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c. Construction Implementation Period (continued)

		•	-	Allocted Administrative Arca
	Source of Impact	Affected	Classification	Kotamadia
Item of Works	(Project Activity)	Environment	ofImpact	Kocamatan
O. BInc. II Acces	* Noice office whether and	<ul> <li>Socio-economic</li> </ul>	* Constant disturbance to the	Jakarta Utara
<ul> <li>Latingen and PIK</li> </ul>	dust emanated from the	Environment	general public during	Penjaringan
Junction Drainage Channel)	construction site		the construction period	1) Kamal Muara
				Jakarta Barat
				OughArcug
	5 - - - -			Volidans
	- Disciption to the traine	·		3) Tegal Alur
		· · · · · · · · · · · · · · · · · · ·		ş
3) Packaro III Arca:	* Noise, odor, vibration and	* Socio-economic	<ul> <li>Constant disturbance to the</li> </ul>	Jakarta Barat
(Saluran Cenokareno, Gede/	dust emanated from the	Environment	general public during	Cengkareng
For and Mentys D/Channel)	construction site		the construction period	2) Congkareng Timur
				3) Cengkareng Barat
	-			4) Kapuk
			· ·	Kembangan
	* Demotion to the traffic			9) Mcruya Utara
		· · ·		

Note 1) PANTURA is an Indonesian abbreviation for "Jakarta Waterfront Implementation Board" that is responsible for the north coast reclamation and present coastal area revitalization projects.

MATRIX OF ENVIRONMENTAL IMPACT ASSESSMENT(9/9)

Table 17

Post-construction Period

			2	Vaturation Authinity and Mea
Team At Months	Dource of Impact	Fewronment	Classification	Kocamatan
				Kelurahan
Operation and Maintenance	<ul> <li>Use of the structures of</li> </ul>	* Socio-economic	<ul> <li>Positive impact as the</li> </ul>	1 Jakarta Utara
	the drainage channels	Environment	inspection road along	Penjaringan
· · ·	, . , .		the drainage channels	1) Kamal Muara
		· · ·	are made available	2 Jakarta Barat
		-	to the general public	Cengleareng
	-	:	<ul> <li>Positive impact as</li> </ul>	2) Conglareng Timur
			flood events are	3) Cengicareng Barat
			reduced	4) Kapuk
			<ul> <li>Positive impact as</li> </ul>	Kalideres
		-	amenity in the Project	5) Pegadungan*
			Area is increased	6) Tegal Alur
		· · · · · · · · · · · · · · · · · · ·	<ul> <li>Land use and the price</li> </ul>	7) Kalideres
			of land are changed	8) Kamal*
	· · · · · · · · · · · · · · · · · · ·		* Public health scheme	Kombangan
			is changed	9) Meruya Utara
		<ul> <li>Physico-chemical</li> </ul>	<ul> <li>Water quality in the</li> </ul>	As above listed
		Environment	drainage channels	
			improved	
		-	Permanent changes	As above listed
· · · · · · · · · · · · · · · · · · ·			on the natural drainage	
		- - -	system is ensured	· ·
· · · · · · · · · · · · · · · · · · ·	·	<ul> <li>Biological</li> </ul>	<ul> <li>Slow growth of</li> </ul>	As above insted
		Environment	vogetation upon completion	
			of the Project	
		· · · ·		
			<ul> <li>Temporaniy damaged</li> </ul>	I Jakarta Utara
			mangrove forest	Penjaringan
				I) KAIIAI MUATA

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 Table 18
 ENVIRONMENTAL MANAGEMENT PLAN(1/6)

1

a Pre-construction Period									
	C					Affected Administrative Area	Covenment Agencies Related to	ncies Related to	
Itom of Works	OPPRIATE ACTIVITION	Because of Lanvironment		Cojectives of the	Ferences and	Notamedia	the Environmental Management Plan	Manazemont Plan	Cost of the
	Comment and for a	THE NEW PROVIDENCE		Management Plan	Manayoment Plan	Kelurahan	Executing Areney	Supervisor	Manacoment Plan*
1 Site investigation	<ul> <li>Core borng for</li> </ul>	Physico-chemical	· Light disturbance: Trace of	,		As listed below	Local Gov. Level I	5	<ul> <li>Contractor's cost to</li> </ul>
	geological investigation	Environment	bore holes left on site				Kotamadya Office of		reinstate the boring site
		:					Jakafta Barat and   Jobara Them	DIG Julcarta	· · ·
			<ul> <li>Slight Social Unrest: General</li> </ul>	Reduce the social	<ul> <li>Exclanation to the</li> </ul>	As listed below	ditto	ditto	<ul> <li>Contractor's cost to</li> </ul>
		:	public would be eager to obtain	untrest	local residents				disseminate information
			the reason of conducting site		-				
			mycstigation						
	•			1		•		:	
2 Topographic Survey	* General map making	Socio-economic	Slight Social Unvert General	* Reduce the social	<ul> <li>Explanation to the</li> </ul>	As listed below	ditto	ditto	- ditto
	ectivity.	Environment	public would be eager to obtain	untest	local residents				
			the reason of conducting aito						
	τ		investigation					:	-
ADMIC MITT C	KUNNTORIBORINE SOUCH	utc ·	- Slight Social Unrest: General	•	Explanation to the	As listed below	diffo	ditto	* Contractor's cost to
	tor physico-chemical	himminent	public would be cager to obtain		local residents				disseminate information
			the reason of conducting site						
			າມາຈະເບຼີຍແຈກ						
	* Environmental study for	Soria companie	Clicht Conol I Insee, Career		<ul> <li>Final and the state</li> </ul>				1
	biological environment	Envronment	tublic wraild be report to obtain	:	inclumination to use	AOTEO DOISTI SA		3	
	9		the reson of conducting site						
	-		investication						
				•					
-									, ,
	<ul> <li>Socio-economic Survey</li> </ul>	anc.	* Social Unrest: General public	"Reduce the social	<ul> <li>Explanation to the</li> </ul>	As listed below	ditto	ditto	- ditto
	and survey for relocation	Environment	begin wanying on the potential	LURGEL	local residents and				<ul> <li>Volutary effort made</li> </ul>
	of the local residents		relocation		cooperation by the				by the local government
									offices would also be
. :							•		made
4 Palamitan Constant	T and mornington and								
	demolition of the bourses		for a lowing and a second of	- comparisonou	L/INSCRIMATION OF	JAKANTA UKARA	CTITO CTITO	ontro	
			the rate of conventation and						
		- - -	montistion of concernent on			() restrict invests			
				-	Timeservinion	Centerens			
-	<ul> <li>Construction of the low</li> </ul>	Socio-economic	<ul> <li>Significant: Reammement of</li> </ul>	Reduce the social	Preparation of the	2) Cenebarene Timur	ditto	ditto	
	cost apartment and	Environment	commuting to work, school, and	untest	resottlement areas	3) Congleareng Barat			Jakarta and
	resettlement		family life as well as the job		with infrestructure	4) Kapuk			Dept of Housing
					and social services	Kalideres			(Rp.34,676.1 million)
		-	<ul> <li>Slight social disturbance as</li> </ul>			5) Pegudungun*			
			reactling residents and the	"Reduce the social	•	6) Tegal Ahr	ditto	ditto	
			incurbent residents in the	wrest -		7) Kalideres"			
			feet the remode of educations			a Muthal		-	
			to the new living environment			O) Menus (Tare			

 Table 18
 ENVIRONMENTAL MANAGEMENT PLAN(2/6)

	Source of Superior	Sector of Environment	Clearification	Objectives of the	Adversy of the	Kotemedia	the Barrysmental Management Plan	Astronom Plan	Cost of the
lum of Works	(Project Activity)	Received the impact	a a continuente a	Managemental	Environmental Management Plan	Kennen Keineban	Executing	Puporvisor	Euvernmental Memorynon Plan
Medinizations of Wark Parts. Equipment and Maternals to:								:	
	· Crucion of workers camp	Sectomente	· Slight Seriel Unwell	* Auduce Une mociel	* Dimminution of infar-	Jelenta (Vera	· Each Kacamutan	· buperer of Loral	Contracts reponsibility
Marine Contraction of the second s		100010000000077			· Conductions the second	1) Kund Man			
			with the short of outsider.		derive the "Off peel"	Juitaria Bara	- Office of Taleton,		
		•	· Thillie Compation a superind		hour.	Cendering	Water Supply and		
• •					Coordination with the	2) Conditioner Timer	State Electricity		
-				:	local gov. organization.	A State of the second s			
				-					
	· Creation of workers camp	Secto-etonomic	* Slight Social Verset:	· Reduce the social	<ul> <li>Dimensional infat-</li> </ul>	Value Union	1	ditte a	Contractor's responsibility
(Tablements and PDK	serve alonge anne	Environment	Onversi public would feet	Ĭ	mation to the general public.	Peopernum			
American Drumpes Chernel)	and the second		· that they have to any alor.		<ul> <li>Conducting the works</li> </ul>	1) Zamal Munn	:		
	:		with the sheet of out-sider.	-	during the TOE park?	Juluarta Barne			
			The Congestion is superted.		-hours	Conditioned			
:					<ul> <li>Coordination with the</li> </ul>	2) Kinok			
					local gove or generation.	Kalidarua			
		•				2) Trank Aler			• -
3 Puckage III Area:	Creation of workers camp	Socio-sconomic	- Slight Social Unnet	· Radics the social	<ul> <li>Discrimition of infor-</li> </ul>	Jakana Bane	3	datto	Contracts resemblies
3	and domes the	Envernment	<b>Central public would foul</b>		mation to the general public.	Canadraman			
Bernd Miny Dilling			the they have to environ		Conducting the works	2) Conditioning Timur			
			with the advent of out-aidert,		during the "Off-peak"	3) Conditioner Barrie			
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2 Clearing the Construction Area	<ul> <li>Demolition of house</li> </ul>	Socio-economic	* Slight social terrar, dast and	<ul> <li>Reducing the social</li> </ul>	- Continuion with the	As shows listed		ditto	Contractors responsibility
-		Ectrational Contract	none polition is well in the	- under das and	local gov. or gundarion.				
			demonian of the fire	-	<ul> <li>Discrimition of infor-</li> </ul>	Ad above listed			
					metion to the general public.				
	<ul> <li>Excension and Hawling</li> </ul>	Physice-changed	a Slight change on the land une	•	Conducting the works	Au shows limited			
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					، <u>اسواحممدندازم</u> من ع	As above listed	•		
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Table 18 ENVIRONMENTAL MANAGEMENT PLAN(3/6)

	Searce of Import (Project Activity)	Suttor of Darivoorner Receiving On Input	Clamification	Objectives of the Environmental Manatemperi Plan	Activity of the Environmental Merseconosi, 21an	Kotermeden Konsensten Koteralien	the Furnismunicity Management (Management) Enversion Manachisot	Supervisor	Revieweed Memory Plan	
	- Excention and Filling	Socio-actoriane Zerovaniani	<ul> <li>Sjugit social virtes, dual and noise pollution as well as the derivation of traffic</li> </ul>	• Mathcong Ula social uprane, dust and notes	Conceptuation with the conceptuation with the Discontration of affice matrices to the growed public. Conceptuation the works change the works channed the works channed the works channed the conceptuation of some conceptuation of the conceptuation of conceptuation of concept	Paulina Usan Paulina Usan 1) Kamal Maan Cangdarang 2) Cangdarang Timu 3) Tagal Ada	Each Koomman     wold Kohenhan     wold Kohenhan     Office     Office     Waar Supply and     Waar Supply and     Supely and	<ul> <li>Importor of Local</li> <li>Orot, Loral E</li> <li>DVU Jalanta</li> </ul>	Contructor's responsibility	
					proper commencer a proper commencer party water to apprese base, invati alforese base, invati alforese properties			1. .*		
:		Backagead Barramana Physics characa Enverses	<ul> <li>Stight derregen mode to the measure formation</li> <li>Tampoor for water on thirding of the water in the diminipe channel in the diminipe channel in the diminipe roward</li> </ul>							
2 Predsaye II. Aver. (Throughs and PC Austrian Draway (There)	· Burrowskien med Pilling	Socio-at-at-at-at-at-at-at-at-at-at-at-at-at-	<ul> <li>Slight eachd umum, dwa md news polyteian ar well an de darwyluun o'r welle</li> </ul>	- Xuthring Uns social untrik, dust and social	Coordination with the local percentation with the Example recommission matures to be a served a percent and the served a served and the served proper comparison of a proper comparison of a served and a served and a served as a served and a served as a served and a served as a served as a percentation of a served as a served as a served as a served as a served as a data mature as a served as a served as a served as a data mature as a served as a served as a data mature as a served a	Admun Mane Preprinter 1) Kamal Maan Admin Maan Cangan 2) Kapak 2) Kapak 2) Tagal Mar 3) Tagal Mar	8	8		
		Biological Editoria	<ul> <li>Skight damagne (tech to the tempere forest</li> </ul>	- Manuar derages					· · · · ·	
<ol> <li>Photose III. Aver.</li> <li>Photose III. Aver.</li> <li>Castions Castionaria, Gadar</li> </ol>	Excernition and <sup>4</sup> Mire     sportuluin	Physics demand Enverse	<ul> <li>Temporary increases on the conversion of the water on the dimension channels and the second channels of the manual channels with an Single neural untrary, dust and mouse plateness well as the emergeneithous as the emergeneithous as well as the emergeneithous as well as the emergeneithous as well as the emergeneithous as well as the emergeneithous as well as the emergeneithous as well as the emergeneithous as the emergeneithous as well as the emergeneithous as the emergeneithous as the emergeneithous as the emergeneithous as the emergeneithous as the eme</li></ul>	<ul> <li>Reducing Up to the second state</li> <li>Reducing Up to the second state</li> </ul>	<ul> <li>Coordination with the local processing.</li> <li>Coordination of the local processing of the local procesing of the local processing</li></ul>	Jahana Burn Jahana Burn Combaros 20 Conglaresa Tanar			Contractors responsibility	
Der mit Menun Dichmenen	6 6				entarian to the grand Jobikk a Conducting the works during the "Chick-set" hum. Proper conditioning proper conditioning proper conditioning and, and all allenge on the conditioning properties	<ul> <li>3) Contract Benk</li> <li>4) Kopike</li> <li>5) Marrys Univ</li> </ul>				

Table 18 ENVIRONMENTAL MANAGEMENT PLAN(4/6)

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 Table 18
 ENVIRONMENTAL MANAGEMENT PLAN(5/6)

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Ber und Marys D'Ommely		-	and an and an and a second		and service on the service of the se	2) Cryster Ta	- Thefe Pains Day.		
					representation and subject	3) Committee Bern	DICIPATION		
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 Table 18
 ENVIRONMENTAL MANAGEMENT PLAN(6/6)

						Affected Administrative Area	Government Ag	Covennent Agency implementing	
Item of Works	Source of Impect (Project Activity)	Sector of Environment Receiving the Impect	of Impact	Objectives of the Environmental	Activity of the Environmental	Kecamatan Kecamatan	Executing	Electring	Environmental
				Management Plan	Management Plan	Kelurahan	Agency	MIDELWING	Management Management
Operation and Mannenance	<ul> <li>Use of the structures of</li> </ul>	<ul> <li>Secto-sconomic</li> </ul>	* Positive impact as the	•	•	1 Juliante Utarra	•	Impector of Local	•
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			to the ensemi cublic			Cencharters			
			Ponitive intract es			2) Constanting Timer	· ,	ditto	
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			DOOD SVELIDE STOR						
			reduced			Andrek (*			
			<ul> <li>Positive impact as</li> </ul>		÷	X	•	CILLO	•
			amonity in the Project	 	•	5) Pegadungun"			
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			* Land use and the price			7) Kalideree		ditto	
	:	· · · ·	of land are changed	:		R) Kamal		•	
		:	Public health scheme			Kembenzen		difto	
						or Manual Parts			
			the contraction						_
				-				-	
		<ul> <li>Physico-chamical</li> </ul>	<ul> <li>Water quality in the</li> </ul>	•					•
		Eenvironment	drainage channels						
		· · · · · · · · · · · · · · · · · · ·	mproved						
			<ul> <li>Permanent changes</li> </ul>				•	2000	,
-			on the natural drainage						
-		:	system is ensured				•		
		· Richerical Provintianent	. Show anoth of	Enhancement of the <sup>1</sup>	<ul> <li>Planting trees on the</li> </ul>		DPU DKI Jabarta	ditto	DPU DKI Morre
		The second se			Trivertadas attes				
				Prince Arms					
		•	" Tennoniv demond	<ul> <li>Enhancement of the</li> </ul>	<ul> <li>Planting selected</li> </ul>	1. Jakara Utara	PANTURA	diffo	PANTURA
			manatione forest		manarow species	Pergeringan			
			•	Project Area	on the constal area	1) Kamal Muara	•		
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<ul> <li>A sea for a first contraction of the contr</li></ul>		
A solution of the contraction of		
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<ul> <li>A set is indication of the contraction of</li></ul>		
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