REPUBLIC OF INDONESIA
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DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT

MASTER PLAN STUDY
ON
NORTH BANTEN
WATER RESOURCES DEVELOPMENT

COMMENT AND REPLY

JULY 1983

JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO, JAPAN

TABLE OF CONTENTS

1. Comment
(HL 01 01 - AP 17/01)

COMMENT ON MASTER PLAN STUDI ON

NORTH BANTEN WATER RESOURCES DEVELOPMENT

	Ref. No.
1. As the official village name is Cilawang all words Cirawang should be change to Cilawang.	E-1
2. It is very interesting to get Karian Multi Purpose Dam Plan which is consist of Karian Dam, Cilawang Dam and Gadeg Weir. But, it is seem more realistic to add alternative of combination Cilawang Dam and Gadeg weir only. Could consultant cover that alternative in the Final Report.	E-2
3. In the implementation of " case 3 " Consultant should consider stages development which will also consider water balance in each stage.	E-3
4. Common term in Directorate of River for urgent flood control is flood control without Dam. Therefore it is advisable to delete word urgent in the First stage Improvement for the Flood Control.	E-4
5. Instead of problem at Ciberang and Cisemeut confluence, Consultant should add problem at Ciberang and Ciujung confluence.	E-5

APPENDIXES · F. ENVIRONMENT
G. AGRICULTURE

Ref. No.

p. F.2

1. Word Reperita III should be Repelita III. E-6
2. What is the difference of Fishing Ground and Inland Fishery. E-7
   If it's same, better use one terminology:inland Fishery.
3. Explanation on the fishing Ground should cover running water E-8
   fishery.

p. F.5

4. Development plan for Inland Fishery didn't indicate time E-9
   schedule of the plan.
5. Word Reperita IV should be Repelita IV. E-10

p. F.11

6. Consultant are expected to give an illustration soil E-11
   Erosion formula (A = R.K.T.C.) in the study Area as all
   of the data are available.

p. F.22

7. On the Fig. F.1 there are some confusing legend. E-12
   Could the Consultant explain why legend of clearland is
   same with fallow land.

p. G.25

8. Wet Land Paddy production and Dry land Paddy production in E-13
   the table G.5 should be checked again For example.

Wet Land Paddy	Dry Land Paddy
- Serang 225.900 should be 222.890	14.300 should be 14.040
- Lebak 44.300 should be 44.800	9.800 should be 9.520
- Pandeglang 15.800 should be 15.840	2.100 should be 2.080

Ref. No.

p. G.26

9. The same mistakes also found in the table G.6. Consultant should check again all of the calculation. E-14

10. Same mistakes for table G.7. E-15

p. G.28

11. - why cassava seed and potatoes seed didn't mention in the table G.9. E-16
    - Source : Biro Pusat Statistik not Bird Pusat Statistik.

p. G.29

12. Calculation in the table G.10 for Average Unit/Ha should be checked again. E-17

p. G.36, G.40, G.41

13. North direction should be completed. E-18

Some comments on Karian Dam Plan

Ref. No.

Though relation between water level elevation and total storage capacity of the reservoir is not shown in the Master Plan Study Report, the dam height of 52 m in the total storage capacity curve shown in annex 8101 (2/3) is seemed equal to the elevation of 70 m from mean sea level. Then flood control capacity of 30,000,000 m^3 will occupy the part of above high water level (E.L.65.5 m), consequently it means the capacity above top of the crest of the spillway (non-gated). E-19

(1) If the design of the spillway is considered to equip the gate, flood control capacity of 30,000,000 m^3 will be able to change effective capacity, and it will be also possible to keep flood control capacity by regulating dam operation, that water elevation will not exceed above flood control capacity in the begining of the rainy season, and keep flood waterlevel at the end of rainy season. This operation will match with irrigation water useage of wet season paddy. E-20

(2) If the dam is planned at the same site for the purpose of storage only, and the necessary water capacity is 231.000,000 m^3 (includes dead water capacity of 43,000,000 m^3), reservoir water elevation must be 65,5 m and elevation of top of the dam must be 70 m above mean sea level respectively. Then the plan is exactly same to the plan of the multipurpose dam which includes flood control capacity. Because in the case of such a type of the dam with non-gated spillway as proposed in the M/P Report, water capacity between flood water level and high water level has function of regulating the flood discharge naturally. E-21

Ref. No.

However, function of flood control is much effected with such factors as pattern of rainfall intensity and time lag of flood discharge, catchment area, reservoir water area, length of non-gated spillway and overflow water depth and so on.
In this point of view, length of non-gated spillway is recommended to be studied carefully. E-22

Flood Control

Ref. No.

According to Fig. E 20 (page E 94), Flood discharge of 10 years return period is 1,000 m^3/s at Rangkasbitung. While, the standard project flood of 10 years return period (Annex 7142 (2/2) is 1,400 m^3/s at the same point, which is by 400 m^3/s bigger than the other. If 1,000 m^3/s instead of 1,400 m^3/s is applied as the project flood, even Karian Dam regulation is not necessary, because capacity of the river there will be, 1,100 m^3/s by means of river improvement. E-23

Also according to Fig. E 20 above, flood discharge of 50 years is read about 1,400 m^3/s there, which is by 400 m^3/s smaller than the standard project flood in Annex 7142 (1/2) on page 137 of the main report. The difference by 400 m^3/s is almost equivalent to proposed regulation quantity at the Karian Dam. That means flood control function of Karian Dam is not necessarily to be planned, because the project flood is estimated initially larger by its regulation capacity than actual probable flood. E-24

Therefore, flood control plan which includes Karian Dam and river improvement should be based on probable flood discharge, 1,000 m^3/s for 1/10 and 1,400 m^3/s for 1/50. E-25

2. Comment

(HL 01 01 - AP 17/03)

BEBERAPA TANGGAPAN ATAS
BUKU LAPORAN : MASTER PLAN STUDY
ON NORTH BANTEN

Ref. No.

1. Pada halaman 63 alinea kedua (Buku Main Report) tertulis : I-1
"Based on the standard project flood of 50 years return period, the flood regulation is planned for the possible reservoirs at Karian, Pasir Kopo and Bojong Manik as shown in Annex 7141".

Tanggapan : Standard project flood di negara mana yang dimaksud oleh kalimat tersebut?
Mengenai hal tersebut kiranya perlu dijelaskan didalam report, karena menurut pengamatan kami sampai saat ini Indonesia belum punya standard project flood.

2. Pada halaman 64 alinea pertama dinyatakan didalam report I-2
bahwa untuk the first stage improvement akan dibuat menurut design flood dengan return period 10 tahun dan selanjutnya tahapan tersebut disebut sebagai urgent purpose.

Pertanyaan : Apakah cukup layak apabila didalam pekerjaan yang bersifat urgent tersebut (Q_{10}) kita akan membangun Dam Karian?
Silahkan periksa Annex 7152 (3/3).

Menurut pendapat kami, apakah untuk pekerjaan yang bersifat urgent tersebut tidak lebin baik diturunkan saja design flood-nya, misalnya menjadi Q5 sehingga didalam tahapan yang bersifat urgent tersebut kita tidak perlu membangun sebuah bendungan.

3. Sehubungan dengan standard cross section dari tanggul I-3
sebagaimana yang tercantum pada halaman 65 item No. 2 kami ingin memperoleh penjelasan tentang kriteria-kriteria apa/mana

Ref. No.

saja yang dipakai untuk menetapkan lebar puncak tanggul. Didalam item tersebut disebutkan juga bahwa lebar puncak tanggul yang berfungsi sebagai jalan ditetapkan = 6,00 m. Menurut pendapat kami kata "a road" disini adalah terlalu bersifat umum.
Untuk itu seyogyanya didalam uraian tersebut dapat diterangkan mengenai kriteria ataupun standard yang dipakai dan dapat diterangkan pula tentang fungsi dari road yang dimaksud, apakah untuk jalan inspeksi, jalan umum seperti jalan pedesaan atau jalan kabupaten.

4. Pada halaman 65 item No. 4 dinyatakan bahwa untuk Low Water Channel direncanakan dengan memakai "Standard Design Depth = 4 m. sehubungan dengan existing channel depth". I-4

   Pertanyaan : apakah penetapan tentang standard kedalaman alur sungai yang bersifat seragam tersebut tidak merupakan design yang kaku?

   Menurut pendapat serta pengalaman kami, penetapan tentang stadard kedalaman yang bersifat seragam sepanjang alur sungai akan cukup banyak menimbulkan kesulitan teknis dan sosial yang berat didalam tahap pelaksanaannya nanti. Apakah penetapan standard kedalaman alur yang seragam tersebut sudah diperhitungkan terhadap stabilitas alur sungai secara keseluruhan?

5. Sehubungan dengan adanya rencana pengerukan dasar sungai yang terletak dibagian hulu Bendung Pamarayan (Periksa halaman 65 item No. 3.), kami berpendapat bahwa, apabila kemiringan dasar sungai yang telah terbentuk secara alamiah tersebut akan dirubah dengan jalan mengeruk dasar sungainya sampai pada elevasi mercu bendung yang ada, maka menurut pendapat lami hal tersebut tentunya secara berangsur angsur dasar sungai yang telah terkeruk akan kembali terisi oleh butiran I-5

Ref. No.

material yang terbawa oleh aliran sungai sampai mencapai pada kemiringan yang seimbang (stabil), karena jenis serta ukuran butiran yang lewat ditempat its sama sekali tidak terusik.
Berarti kemiringan dasar sungai tepat dihulu bendung Pamarayan akan kembali lagi pada keadaan semula (sebelum terkeruk).
Dengan demikian ditempat tersebut akan diperlukan pekerjaan pengerukan yang bersifat rutin dalam arti lain akan memerlukan biaya maintenance yang cukup mahal.

Jakarta, 31 M a r e t 1983.-

Direktorat Sungai

3. Reply

(H1 01 01 - AP 17/01)

Ref. No.

E-1 Solution

According to the comment, Cilawang will be employed instead of Cilawang in the Final Report.

E-2 Viewpoint

As pointed out in the Main Report, the storage capacity of the Cilawang dam was measured on general topographic map of 1/50,000 in scale. Hence, the storage capacity of the Cilawang dam given in the Final Report is subject to review upon completion of new map of 1/5,000 in scale. Through the experience for other reservoirs such as Karian, Pasir Kopo, etc., however, such storage capacity measured on the map of 1/50,000 in scale is usually reduced to about 80% when detailed measurement is done based on a map of 1/5,000 in scale. From this, the full use of stored water in the Cilawang reservoir could not meet the irrigation water demand for two cropping of rice in the K-C-C area of 8,000 ha.

Solution

Additional alternative plan comprising the Cilawang dam and the K-C-C area will not be taken up into the Final Report.

E-3 Viewpoint

It is considered that such detailed water balance study will be made at the feasibility study level.

Solution

No consideration will be given in the Final Report.

E-4 Solution

Main Report: In the paragraph 7151, the phrase "for the urgent purpose" will be changed to the phrase "for the first stage purposes".

Ref. No.

Appendix E: In 6 CONSTRUCTION PLAN, 6.1 "General", the phrase "the urgency of flood control" will be changed to the phrase "the pressing importance of flood control".

E-5 Solution

Main Report: In the paragraph 7161, explaining the river sections subject to the study, the phrase "including the confluence treatment of the Ciberang river" will be added to the item (1) "Ciujung river". Besides, the main points of the plan of confluence treatment are explained in the paragraph 7163, (4) (the master plan level) and the paragraph 7164, (2) (the first stage plan).

Appendix E: In 4.3 "River Improvement Plan", 4.3.1 "General", (1) "Section subject to the study", the phrase "including the confluence treatment of the Ciberang river" will be added to the explanation of study section on the Ciujung river. Besides, the main points of the plan of confluence treatment are explained in details in 4.3.1 "General", (6) "Short cut"; 4.3.3 "River improvement in the master plan level", (5) "Excavation of flood way with confluence treatment"; and in the beginning of 4.3.4 "River improvement in the first stage plan".

E-6 Solution

According to the comment, Repelita will be employed instead of Reperita in the Final Report.

E-7 Viewpoint

Fishing ground indicates fishing place such as pond, swamp, river, sea, etc., while inland fishery means fishing carried out on inland surface water.

Solution

No change in using terminology will be made in the Final Report.

Ref. No.

E-8 Solution

Additional explanation will be given in the Final Report.

E-9 Solution

Such explanation will be added in the Final Report that the forecasted area of freshwater fish pond will be attained by the target year 2000.

E-10 Solution

The same solution for E-6 will be taken into account in the Final Report.

E-11 Solution

R for rainfall factor is based on Fig. B-2 in Appendix B; K for soil erodibility factor is based on Fig. G-3 in Appendix G; T for topographic factor is based on Fig. F-2 in Appendix F; and C for cropping-management factor is based on Fig. G-1 in Appendix G.

E-12 Solution

According to the comment, the legend for Fig. F-1 will be revised in the Final Report.

E-13 Viewpoint

In Table G-5, the harvested area and the total production referred to the statistics and then the unit yield was obtained by dividing the total production by the harvested area. While, in the comment, calculation was made following such way that the total production was estimated by multiplying the harvested area by the unit yield.

Solution

As the difference in the figures becomes clear, no change will be made in the Final Report.

Ref. No.

E-14 & E-15 Solution

The same solution for E-13 will be taken into account in the Final Report.

E-16 Solution

Additional remarks in which seed cost is included into miscellaneous cost will be given in Table G-10 of the Appendix to the Final Report.

E-17 Solution

No mistake in the calculation made in the Draft Final Report was found.

E-18 Solution

According to the comment, north direction will be added in Figs. G-1, G-3 and G-4 of the Appendix to the Final Report.

E-19 Solution

For the reference, stage-area-storage curves for the Karian and Cilawang dams will be attached in the Final Report.

E-20 Viewpoint

The hydrological characteristics of the rainy season in the Study Area are very erratic about its beginning and ending times, and also its period (refer to Table B-7 (1/7)). Hence, it seems to be quite difficult to establish an optimum operation rule of the Karian dam, which is to guarantee the flood control storage during the rainy season, under the condition of keeping the flood control storage to be effective from the beginning of the rainy season and keeping the converted supplementary water resources storage to be effective from the beginning of off-rainy season.

Ref. No.

Taking into account the above-mentioned situation, the flood regulation at the Karian dam is planned with the flood control storage of 30 x 10^6 m^3, which is provided separately above the water resources storage of 188 x 10^6 m^3. Besides, for the simplicity of the dam and reservoir operation, the flood regulation is planned to be done through the overflow type spillway without gate. The crest of the spillway coincides with the normal high water level of the water resources storage.

Solution

Due to the hydrological uncertainties of the rainy season in the Study Area, it seems to be quite difficult to establish an optimum operation rule of the Karian dam and reservoir as proposed in the comment. It would be more realistic to plan the flood control storage to be provided separately above the water resources storage, as proposed in the M/P Study Report. And this arrangement can introduce the simple operation of flood regulation through the overflow type spillway without gate.

Hence, no further explanation or correction will be added to the Final Report.

E-21 & E-22

Viewpoint

The planning process of the spillway at the Karian dam is given in Appendix E, 4.2 "Flood Regulation by Dam", 4.2.2 (2) "Flood control plan of each dam"; and in Appendix K, 4.1 "Karian Dam", 4.1.3 Spillway.

On the basis of the plan of flood regulation by the overflow type spillway without gate, the storage for flood control and that for water resources are duly arranged, under the natural topographic conditions and the economic considerations, taking account of both the mitigation of flood damage and the effect of water resources development.

Ref. No.

Due to the topographic features of the right abutment at the Karian dam site, both the height of the dam and the length of the spillway are restricted within some extent. The length of the spillway is designed, within the above-mentioned topographic restriction, to enable the provision of necessary flood control storage above the overflow crest and to ensure the regulating function for the planned flood inflow.

To cope with the unexpected hydrological uncertainties, the flood control storage is determined by adding an allowance of 20% to the derived necessary storage by the calculation. In addition to the flood regulation spillway, a gated spillway is planned to pass the expected spillway design flood in an adjacent alignment.

Solution

Within the topographic restrictions at the dam site, the length of the spillway is designed to enable the provision of necessary flood control storage above the overflow crest and to enable the regulating function of the dam and reservoir. Besides, the flood control storage is planned with 20% allowance taking the hydrological uncertainties into consideration.

The general descriptions about the process of spillway design, including the above, are given in Appendix E and Appendix K. Hence, no further explanation will be added to the Report.

E-23, E-24 & E-25 Viewpoint

Some confusion about the nature of the probable flood derived from the flood peak data at the Rangkasbitung gauging station and that of the standard project flood on the river system would have to be cleared up in the first place.

Ref. No.

(1) The probable flood discharge in Fig. E-20 is derived from the observed peak discharge data for the purpose of estimating the probability of the flood damage under the present condition of the river. The derived probable flood discharge shows some smaller value than that of the standard project flood of the same probability. It is due to the fact that the flood peak data are affected by some peak reduction due to the natural flooding and inundation in the upstream reaches of the Rangkasbitung gauging station, where a part of the inundated area around Rangkasbitung is included to be subject to the study of the river improvement.

Hence, the probable flood derived from the observed flood discharge data, which are affected by the upstream flooding and inundation, will not be available as it is for planning the flood regulation and the river improvement of the M/P Study.

(2) The standard project flood is a basic standard hydrograph at the specific projected sites along the river, which is used as the basis for the flood control planning. Generally, the standard project flood is derived from the design storm rainfall of a probability of exceedance corresponding to the required safety of the flood control. The estimation of the standard project flood is supposed to be done under the condition of no flood regulation measures and no flooding or inundation along the river course.

Based upon the estimated standard project flood, the flood control plan will be established with the optimum distribution of the projected flood discharge into the river channel improvement and the flood regulation measures such as the dam, the retarding basin, the diversion channel and so on.

Ref. No.

(3) Explaining the above with numerical figures, it will be briefly summarized as below:

a) Master plan level (1/50)

i) The standard project flood (1/50) will be 740 m^3/s at Karian dam, and 1,800 m^3/s at Rangkasbitung (ref. Annex 7152 (2/3)).

ii) At Karian dam, the inflow of 740 m^3/s will be regulated by 440 m^3/s to the outflow of 300 m^3/s (ref. Annex 7141).

iii) The effect of flood regulation upon Rangkasbitung will be 300 m^3/s (ref. Annex 7142 (1/2)).

iv) The design flood for the river improvement at Rangkasbitung will be 1,500 m^3/s (= 1,800 - 300) (ref. Annex 7152 (2/3)).

b) First stage plan (1/10)

i) The standard project flood (1/10) will be 600 m^3/s at Karian dam, and 1,400 m^3/s at Rangkasbitung (ref. Annex 7152 (3/3)).

ii) At Karian dam, the inflow of 600 m^3/s will be regulated by 370 m^3/s to the outflow of 230 m^3/s (ref. Annex 7142 (2/2)).

iii) The effect of flood regulation upon Rangkasbitung will be 300 m^3/s (ref. Annex 7142 (2/2)).

iv) The design flood for the river improvement at Rangkasbitung will be 1,100 m^3/s (=1,400 - 300).

Ref. No.

c) Probable flood discharge derived from the observed discharge data at Rangkasbitung

The probable flood discharges at Rangkasbitung derived from the observed peak discharge data of the gauging station, which are obtained for the purpose of estimating the probability of the flood damage under the present condition of the river, are 1,000 m^3/s for the probability of 1/10; 1,150 m^3/s for the probability of 1/20; and 1,300 m^3/s /1 for the probability of 1/50.

/1: Written as 1,400 m^3/s in the comment.

Solution

The comment seems to be due to some confusion about the nature of the probable flood derived from the flood peak data at the Rangkasbitung gauging station and that of the standard project flood on the river system.

As mentioned in "Viewpoint", the probable flood derived from the observed flood peak data, which are affected by the upstream flooding and inundation, shows some smaller value than the standard project flood of the same probability and will not be available for planning the flood regulation and the river improvement of the M/P Study.

Taking account of the above, no further explanation or correction will be added to the Report except the explanation of the standard project flood as follows:

Main Report: The paragraphs 7143 and 7144 will be added to 7.1.4 "Flood regulation by dam", explaining the definition and the nature of the standard project flood and the difference of the standard project flood and the probable flood discharge derived from the observed flood peak data at the gauging station.

Ref. No.

Appendix E: The same explanation as above will be added in 4.2 "Flood Regulation by Dam", 4.2.2 "Design flood between dam and river", (1) "Standard project flood". Besides, a few remarks will be added to Fig. E-20 as "Derived from flood peak data at Rangkasbitung affected by flooding and inundation along upstream reaches, resulting in smaller peak values than those of standard project flood".

4. Reply
(HL 01 01 - AP 17/03)

Ref. No.

I-1 Solution

Main Report: In 7.1.4 "Flood regulation by dam", the paragraphs 7143 and 7144 will be added to explain the definition and the nature of the standard project flood, and the difference of the standard project flood and the probable flood discharge derived from the observed flood peak data at the gauging station.

Appendix E: The same explanation as above will be added in 4.2 "Flood Regulation by Dam", 4.2.2 "Design flood between dam and river", (1) "Standard project flood". Besides, some instances are given in 4.2.2 (1) referring to the usage of the term "standard project flood", in the report on "Jeneberang River Flood Control Project" (JICA) and the report on "Survey and Study for the Development of Sala River Basin" (OTCA).

Ref. No.

I-1 Solution

Main Report: In 7.1.4 "Flood regulation by dam", the paragraphs 7143 and 7144 will be added to explain the definition and the nature of the standard project flood, and the difference of the standard project flood and the probable flood discharge derived from the observed flood peak data at the gauging station. Besides, some instances are given in the paragraph 7143 referring to the usage of the term "standard project flood", in the report on "Jeneberang River Flood Control Project" (JICA) and the report on "Survey and Study for the Development of Sala River Basin" (OTCA).

Appendix E: The same explanation as above will be added in 4.2 "Flood Regulation by Dam", 4.2.2 "Design flood between dam and river", (1) "Standard project flood".

I-2 Summarizing the comment: The comment will be briefly summarized as below:

(1) A comment about the term "urgent" (ref. comment E 1-4).

(2) A question that the construction of Karian dam will not be suitable for the urgent works of Q_{10}.

(3) A suggestion that the design flood for the urgent works may be better reduced to Q_5, so as to do without dam in the urgent stage.

Viewpoint

With regard to the comment (1): The term "urgent" will be deleted as explained in the solution of the comment E 1-4.

Ref. No.

With regard to the comment (2): The comment seems to be somewhat related to the usage of the term "urgent", however, the planning approach of the flood control in the M/P Study will have to be explained in the first place as follows.

According to the main objectives of the M/P Study, which is to prepare a master plan of the water resources development including a study on the flood control in the Study Area of North Banten, the most effective development plan is formulated integrating the whole fields of the water resources and the flood control.

As the natural outflow of the surface water is almost exhausted for irrigation in the dry season, it is necessary, to achieve the main objectives of the M/P Study, to provide the storage reservoirs to meet the growing water demands for the irrigation, the domestic water supply and the industrial water supply, except in some area where it can depend upon the groundwater.

Taking account of the above, an integrated water resources development plan is proposed in the M/P Study to provide the storage reservoirs at Karian on the Ciberang river and at Cilawang on the Cibeureum river.

Bearing the important role of the Karian dam over the Study Area in mind, it is planned as a multipurpose dam with the function of flood regulation, for the flood control of the Ciujung river. The downstream river improvement is planned taking account of the effect of flood regulation by the Karian dam. Thus the combination of the flood regulation by the Karian dam and the downstream river improvement is proposed as the flood control plan of the M/P Study.

Ref. No.

The level of the flood control plan is decided, taking account of the results obtained by the field survey and the examples of other river improvement projects in Indonesia, with the design flood discharge of 50 years return period for the master plan level. Besides, the first stage river improvement is planned with the design flood discharge of 10 years return period, putting an emphasis on the mitigation of flood damage around Rangkasbitung.

However, the execution of the river improvement plan of the master plan level will require a vast investment, which might be excessively heavy when the present socio-economic condition in the Study Area is considered. While, the execution of the river improvement plan for the first stage will require a less investment and a shorter construction period.

In due consideration of the results of the comparative study, the alternative plan F-2 of the first stage, which consists of the flood regulation by the reservoir at Karian and the river improvement in the section upstream from the Pamarayan weir with a design flood of 10 years return period, is proposed as the flood control plan of the M/P Study. The alternative plan F-2 shows the most advantageous condition from the economic viewpoint as given in the paragraph 7191 of the Main Report.

With regard to the comment (3): As mentioned above, the basic concept of the M/P Study is that the most effective integrated development plan is to be formulated to achieve the main objectives of the M/P Study, covering the whole fields of the water resources development and the flood control.

Ref. No.

Hence, the Karian dam, which will play the most important role of development over the Study Area, is taken up in the flood control planning as a multipurpose dam with flood control storage, considering its advantageous condition from both the physical and the economic viewpoints.

The concept of the planning approach mentioned above might be taken as running counter to that of the comment, however, it should be noted that the design flood discharge of 1,100 m^3/s at Rangkasbitung, for the proposed river improvement in the first stage, corresponds to the flood discharge of 10 years return period after completion of the Karian dam and that of about 5 years return period before its completion. In other words, the scale of the proposed river improvement plan in the M/P Study will be almost the same as that of the suggestion in the comment.

Solution

With regard to the comment (1): The term "urgent" will be deleted as explained in the solution of the comment E 1-4.

With regard to the comments (2) and (3): The basic concept of the M/P Study is that the most effective integrated development is to be formulated to achieve the main objectives of the M/P Study, covering the whole fields of the water resources development and the flood control.

Hence, the Karian dam, which will play the most important role of development over the Study Area, is taken up in the flood control planning as a multipurpose dam with the flood control storage, considering its advantageous condition from both the physical and economic viewpoints.

In this connection, the suggestion by the comment, referring to the urgent flood control of Q_5 without dam, differs from the proposed flood control plan of the M/P Study in the basic concept of the planning approach.

Ref. No.

However, it should be noted that the proposed river improvement of the M/P Study will be of almost the same scale as suggested in the comment, as the proposed design flood discharge of 1,100 m^3/s at Rangkasbitung, in the M/P Report, corresponds to the flood discharge of 10 years return period after the completion of Karian dam and that of about 5 years return period before its completion.

Considering the above, an explanation of the scale of the proposed river improvement plan will be added to the Report as follows:

Main Report: In 7.1.9 "Proposed plan", the phrase "The proposed river improvement plan by itself will be effective to cope with a design flood of about 5 years return period before the completion of the Karian dam" will be added in the end of the paragraph 7193.

Appendix E: The same explanation as above will be added in the end of 9. "PROPOSED FLOOD CONTROL PLAN".

I-3 Solution

As the cross section of the dyke is planned in line with the design of the dyke which is under construction by PROSIDA in the lower reaches of the Ciujung river (ref. Appendix E, Fig. E-10), an explanation will be added to the Report as follows:

Main Report: An explanation as above will be added to the paragraph 7162, (2) in 7.1.6 "River improvement plan".

Appendix E: The same explanation as above will be added to 4.3 "River Improvement Plan", 4.3.1 "General", (3) "Standard cross section of dyke".

As the proposed first stage river improvement is planned with the crown width of 3 m as described in the paragraph 7162, (2), the details of the design according to the nature of the road, with regard to the dyke crown width of 6 m

Ref. No.

when used as a road, will be studied and given on and after the next step of the survey.

I-4 Viewpoint

For the planning of the Ciujung river improvement, the standard cross section of the river is decided, taking account of the present condition of the river, as shown in Fig. E-31 (the master plan level) and Fig. E-36 (The first stage plan) with the depth of 4 m from the highwater berm to the riverbed in general.

Applying the planned standard improvement cross section to the present cross sections of the river, which were surveyed by the Government of Indonesia, it will be seen that almost no major change in depth from the present condition is necessary as shown in Fig. E-32 (the master plan level) and in Fig. E-37 (the first stage plan).

In the case of implementation of the river improvement, the planning of the river cross section in details will have to be effectuated after due consideration of the topography and the socio-environmental condition of the river, however, they will be studied and given on and after the next step of the survey.

Solution

Considering the above, an explanation will be added to the Report as follows:

Main Report: An explanatory note "Ref. Appendix E, Fig. E-31, E-32 and Fig. E-36, E-37" will be added to the paragraph 7162, (4).

Appendix E: No further explanation will be added to the Appendix E, as the basic principles are explained that the cross section is planned with due consideration given to the existing river channel, in 4.3.3 "River improvement in the master plan level", (1) "Alignment" and (3) "Cross

Ref. No.

section and design highwater level"; and 4.3.4 "River improvement in the first stage plan", (1) "Alignment" and (3) "Cross section", referring to Fig. E-31, E-32 and Fig. E-36, E-37.

I-5 Viewpoint

The dredging is a commonly used method of construction in the river improvement works such as the short cut, the floodway and for the enlargement of the river channel and also in the river maintenance works to obtain the depth and the cross section of the river. However, as it belongs to an underwater execution, a series of investigations will have to be carried out on the water depth, the riverbed materials, the dredging depth and volume, the spoil banks, and also the relation of bottom materials and the tractive force of the river, to prepare an effective execution plan in the stage of implementation.

The dredging of the silted up riverbed upstream from the Pamarayan weir and the short cut of the meanderings downstream from Rangkasbitung are planned in the first place to reduce the highwater level at Rangkasbitung, which is necessary to effectuate the mitigation of flood damage around Rangkasbitung together with the embankment along the river and the flood regulation by the dam.

The proposed dredging is considered to be properly planned, taking account of the results of the hydraulic analysis and the field survey on the river condition, however, the purchase cost of a dredger and its related equipment is included in the construction cost, with a precaution that it will be useful in the future for the maintenance dredging, if necessary.

Ref. No.

Solution

The principles of the dredging plan of the M/P Report, as mentioned above, are explained in the Main Report, 7.1.6 "River improvement plan", the paragraph 7162; and in the Appendix E, 4.3 "River Improvement Plan", 4.3.1 "General", (7) "Dredging" and 7.2 "Construction Cost", (1) "Construction cost".

Hence, no further explanation or correction will be added to the Report, however, the riverbed materials and other necessary items will be studied and given on and after the next step of the survey.