

**THE PREPARATORY SURVEY
FOR
UPPER CITARUM BASIN TRIBUTARIES
FLOOD MANAGEMENT PROJECT
IN
INDONESIA**

FINAL REPORT

APPENDIX

OCTOBER 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS CO., LTD.

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Table of Contents on the Final Report of
The Preparatory Survey for
Upper Citarum Basin Tributaries Flood Management Project in Indonesia

Appendix

Table of Contents..... i

APPENDIX I: TERMS OF REFERENCE (CONSULTING SERVICES)

APPENDIX II: DRAWING OF TRIBUTARIES

APPENDIX II-1: PLAN OF TRIBUTARIES

- 1) Citarum Upstream (Modified by the Survey)
- 2) Cimande (Modified by the Survey)
- 3) Cikijing (Modified by the Survey)
- 4) Cikeruh (Modified by the Survey)
- 5) Cisangkuy Upstream (Modified by the Survey)
- 6) Citalugtug (Modified by the Survey)
- 7) Citarik Upstream (Same as 2007 D/D)
- 8) Cibeusi River (Same as 2007 D/D)
- 9) Ciputat River(Same as 2007 D/D)

APPENDIX II-2: LONGITUDINAL PROFILE OF TRIBUTARIES

- 1) Citarum Upstream (Modified by the Survey)
- 2) Cimande (Modified by the Survey)
- 3) Cikijing (Modified by the Survey)
- 4) Cikeruh (Modified by the Survey)
- 5) Cisangkuy Upstream (Modified by the Survey)
- 6) Citalugtug (Modified by the Survey)
- 7) Citarik Upstream (Same as 2007 D/D)
- 8) Cibeusi River (Same as 2007 D/D)
- 9) Ciputat River(Same as 2007 D/D)

APPENDIX II-3: STANDARD CROSS SECTION OF TRIBUTARIES

- 1) Citarum Upstream (Modified by the Survey)
- 2) Cimande (Modified by the Survey)
- 3) Cikijing (Modified by the Survey)
- 4) Cikeruh (Modified by the Survey)
- 5) Cisangkuy Upstream (Modified by the Survey)
- 6) Citalugtug (Modified by the Survey)

- 7) Citarik Upstream (Same as 2007 D/D)
- 8) Cibeusi River (Same as 2007 D/D)
- 9) Ciputat River(Same as 2007 D/D)

APPENDIX II-4: PLAN OF RESERVOIRS

- 1) Citarum River Reservoir – 1
- 2) Citarum River Reservoir – 2
- 3) Citarum River Reservoir – 3
- 4) Citarik River Reservoir

APPENDIX III: SUPPLEMENTAL REPORT FOR GEOLOGY AND LAND SUBSIDENCE

APPENDIX IV: ENVIRONMENTAL CONSIDERATION AND ENVIRONMENTAL PROTECTION

- 1) River Water Quality Standards in Japan
- 2) Result of Sediment and Water Quality Survey
- 3) Letters and Minutes of Meeting Concerning AMDAL

APPENDIX V: INVOLUNTARY RESETTLEMENT

- 1) Presidential Regulation Number 36/2005
- 2) Presidential Regulation Number 65/2006
- 3) Regulations of Head of National Land Board (BPN) Number 3/2007
- 4) Land Acquisition Cost (Stage (I) Citarum Project)
- 5) Land Acquisition Cost (Stage (II) Citarum Project)
- 6) Minutes of Meeting at MPW on Aug. 14th, 2010
- 7) Draft LARAP Framework
- 8) Draft TOR for LARAP

APPENDIX VI: DRAWINGS OF TRIBUTARIES (COUNTING OF RESETTLED HOUSES)

- 1) Citarum Upstream (Modified by the Survey)
- 2) Cimande (Modified by the Survey)
- 3) Cikijing (Modified by the Survey)
- 4) Cikeruh (Modified by the Survey)
- 5) Cisangkuy Upstream (Modified by the Survey)
- 6) Citalugtug (Modified by the Survey)

APPENDIX VII: ECONOMIC EVALUATIONS

APPENDIX VII-1: SUPPLEMENTAL REPORT FOR ECONOMIC EVALUATIONS

APPENDIX VII-2: DRAWINGS OF FLOOD ANALYSIS

- 1) Without Project
- 2) With Project

APPENDIX VIII: GIS MAPS

- 1) Administration Map (1:220,000)
- 2) Administration Map (Flood Prone Area) (1:125,000)
- 3) Administration Map (Kabupaten-Kota) (1:220,000)
- 4) Administration Map (Kabupaten-Kota) (1:125,000)
- 5) Administration Map (Kecamatan) (1:220,000)
- 6) Administration Map (Kecamatan) (Flood Prone Area) (1:125,000)
- 7) Administration Map (Desa) (1:220,000)
- 8) Administration Map (Desa) (Flood Prone Area) (1:125,000)
- 9) Population (1:220,000)
- 10) Population (Flood Prone Area) (1:125,000)
- 11) Population Density (1:220,000)
- 12) Population Density (Flood Prone Area) (1:125,000)
- 13) River Network (1:220,000)
- 14) River Network (Flood Prone Area) (1:125,000)
- 15) Land Use (1:220,000)
- 16) Land Use (Flood Prone Area) (1:125,000)
- 17) Elevation (1:220,000)
- 18) Elevation (Flood Prone Area) (1:125,000)
- 19) Flood Extent 1986 (Flood Prone Area) (1:125,000)
- 20) Flood Extent 2005 (Flood Prone Area) (1:125,000)
- 21) Flood Extent 2006 (Flood Prone Area) (1:125,000)
- 22) Flood Extent 2007 (Flood Prone Area) (1:125,000)
- 23) Flood Extent 2010 (Flood Prone Area) (1:125,000)
- 24) Observation Station (1:220,000)
- 25) Number of Houses (1:150,000)
- 26) Area of Paddy Field (1:150,000)
- 27) Area of Agriculture (1:150,000)
- 28) Catchment Area (1:220,000)
- 29) Catchment Area Segment Division (1:220,000)

APPENDIX IX: PRESENTATION FROM SURVEY TEAM

- 1) Presentation during 1st Workshop (May 17th, 2010)
- 2) Presentation during 1st JICA Fact Finding Mission (July 26th, 2010)
- 3) Presentation during 2nd JICA Fact Finding Mission (August 25th, 2010)
- 4) Presentation during 2nd Workshop (October 5th, 2010)

APPENDIX I:
TERMS OF REFERENCE
(CONSULTING SERVICES)

TERMS OF REFERENCE

CONSULTING SERVICES FOR REHABILITATION OF UPPER CITARUM

1. Description of Project

1.1 Background of the Project

In 1988, DGWR with the technical cooperation of JICA established the first overall plan of flood control for the Upper Citarum Basin of 1,829 km², which had persistently suffered recurrent damages from seasonal flooding, and conducted a feasibility study for an urgent project corresponding to the identified measures of the flood control plan. Subsequently, in 1991-1992, DGWR executed the detailed design for the urgent project with taking the financial assistance from Overseas Economic Cooperation Fund (OECF, currently JBIC) and implemented its construction works by dividing the project works into the following two (2) stages from 1994 to 2007.

As a consequence of the continuous efforts for implementation of river improvement projects, the Upper Citarum Basin has been significantly relieved from flood menace. However the recent floods in the last few years demonstrated that considerable flood damages still remain to a certain extent in the areas.

In February and April 2005, serious flooding occurred in the Upper Citarum Basin, inundating an area of 4,500 ha with flood depths of 0.5 to 2.0 m. It caused extensive damages to many houses as well as large areas of rice fields, along the stretches of the Citarum Main River and its tributaries. About 14,000 persons were forced to evacuate.

The most serious flood damages were reported along the major tributaries of the Citarum river (such as the Cikeruh, Cimande, Citarik upstream, Citarum upstream, Cirasea, Cisangkuy upstream rivers, etc.) have recently been suffering by recurrent seasonal floods. Therefore, it is desirable to extend flood control works to such tributaries urgently so they can become free from inundation damages.

1.2 Objective of the Project

The objective of the Project is to create a favorable environment and to promote socio-economic activities in the Upper Citarum Basin by means of materializing “the mitigation of flood damages by structure and non-structure measures.” Ultimately the flood control measures as well as flood plain management, sediment control under this Project will enhance the productive activities in the project area and will contribute to economic growth and improvement in the standard of living.

1.3 Project Area

The Project Area is 1,829 km² in area and bounded by mountain ridges with an altitude of about 2,000 m.

The Citarum River flows through the South Bandung plateau at an elevation of about 660 m which is the center of the Project Area.

The Project Area includes the areas of five (5) administrative authorities: the whole area of Bandung City, about two-third of Cimahi City, most part of Bandung Regency, a part of West Bandung Regency, and a small portion of Sumedang Regency.

2. Objective of Consulting Services

The consulting services are required for implementation of “Rehabilitation of Upper Citarum”. The objectives of the consulting services are to facilitate the implementation of the Project by assisting the Balai Busar Wilayah Sungai Citarum (BBWSC), Directorate General of Water Resources, Ministry of Public Works in review of detailed design, bidding, supervision of Structural Countermeasures (river improvement construction works), Non-Structural Countermeasures, and Sediment Control. The services comprise engineering and construction technical supervision and advisory instructions. The services will be performed at the field site and will be done in close cooperation with related agencies.

3. Scope of Services

The Engineering Services Consultant (hereinafter referred to as the Consultant) will carry out engineering services for designing, technical supervision for construction works, Flood Plain Management, and advisory instruction for appropriate community based watershed management (Sediment control activities) based on the social and economical situation in the project area.

The services that the Consultant is responsible for carrying out on behalf of and in collaboration with DGWR and BBWSC are outlined below. The Consultants will consult with other agencies and/or institutions concerned in order to reach a common ground for the implementation of the activities at every stage of the Project.

3.1 Structural Countermeasures

The scope of the services for the consulting services is itemized as follows:

- (1) Review of the existing study and detailed design
- (2) Review of pre-qualification and bid documents
- (3) Assistance of bidding and contracting
- (4) Assistance in construction supervision
- (5) Transfer of knowledge to counterpart personnel
- (6) Reporting

3.1.1 Review of Detailed Design

The services that the consultant shall perform on behalf of and in collaboration with the Government are as follows.

- (1) To review previous study and design
- (2) To prepare review of detailed design especially on the construction cost
- (3) To prepare review of pre-qualification and bidding documents

3.1.2 Assistance of Supervision of Construction Works

The Consultants shall perform the following services through the period from the preparation of construction works to the completion of all construction works of the Project.

- (1) To assist the Ministry in evaluation of pre-qualification, bids and awarding of contract for construction of the project works.
- (2) To check the detailed working drawings for construction of all the structures and facilities which are prepared and submitted by contractors
- (3) To execute revision of design, if it is deemed necessary in the case of construction
- (4) To check shop works and tests of contractors/suppliers in their factories before shipment and issue necessary certificates of inspection, if it is requested by the Ministry
- (5) To carry out additional investigation and surveys, if it is deemed necessary in the course of construction
- (6) To assist the Ministry in receiving and approval of working and shop drawing, construction program and schedule to be furnished by contractors/suppliers
- (7) To assist the Ministry in carrying out the inspection of the works during the construction
- (8) To assist the Ministry in keeping the progress of the work including checking modified working schedule that is proposed by the contractor in response to change of situation.
- (9) To assist the Ministry to evaluate progress and quality of the works and to certify the payment to contractors, if requested
- (10) To assist the Ministry in final inspection and completion test of completed works
- (11) To assist and advice Project Manager in preparing monthly construction schedule and works records
- (12) To assist the Ministry in monitoring the influence against environmental condition
- (13) To assist the Ministry in monitoring the river-mouth conditions
- (14) To prepare completion reports for all the construction works of the Project including completion drawings of the structures and facilities
- (15) To prepare report on Operation and Maintenance of the Project Facilities

3.2 Non-Structural Countermeasures

3.2.1 Institutional Strengthening for BBWSC

- (1) To review the existing institution and governmental, legal system, policies, regulations related with the identified needs in the course of the community disaster prevention activity
- (2) To propose the measures and procedures for the realization of the identified needs in terms of the institutional and legal aspects in the course of the community disaster prevention activity
- (3) To prepare and submit the report containing all the services the above tasks

3.2.2 Capacity Development for Communities against Flood Disaster

In order to cope effectively with further flood disaster, capacity against Flood Disaster will be strengthened or developed at community level.

- (1) To prepare the activity plan and schedule to hold discussion forum among community and local government
- (2) To confirm the activity plan with BBWSC
- (3) To support and facilitate the holding of discussion forum among community and local government (all the expenses for the logistics of the holding of discussion forums are Indonesian side responsibility)
- (4) To analyze the results of discussion forums
- (5) To identify the needs as the output of the discussion forum among community and local government
- (6) To prepare the project outline documents to reflect the identified needs among community and local government.
- (7) To support and facilitate the approved projects by the Indonesian side in the way of consulting services
- (8) To prepare and submit the report containing all the services the above tasks
- (9) Selection of NGO

3.3 Sediment Control

3.3.1 Detailed Design

The services that the consultant shall perform on behalf of and in collaboration with the Government are as follows.

- (1) Reviewing and identification of location of check dams and small check dams by Desa (village) unit
- (2) Topographic survey for check dams by Desa (village) unit
- (3) Topographic survey for small check dams by Desa (village) unit
- (4) Design for check dams and standard design for small check dams by Desa (village) unit
- (5) Reviewing of construction method and schedule of check dams and small check dams by Desa (village) unit
- (6) Preparation of work volume and construction cost by Desa (village) unit
- (7) Selection of NGO Firm

3.3.2 Assistance for Project dissemination at Desa

- (1) Ensure the NGO, by close working with PKL, assist the Desa GOI and LKMD to organize Musbangdes Forum I.
- (2) Facilitate and supervise the NGO for appropriate process and outcomes of project dissemination at Desa level.

3.3.3 Assistance for Local Project Planning and Financing

- (1) Facilitation of Group Proposal Making and Field Verification

Ensure the NGO to assist the Desa GOI by facilitating and supervising Desa PKL, DCC, and LKMD, as outlined in the respective proposal.

- (2) Project contract signing
 - 1) Facilitate Kabupaten Pimpro for proper preparation of project grant documents and related administration work.
 - 2) Ensure DCFs, by coordination of KCF and liaison with PKL and DCC, facilitate LKMD for a proper preparation of project grant contract signing.
- (3) Project funding for the approved activities

Ensure DCFs, by coordination of KCF and close working with PKL, LKMD and DCC:

- 1) Supervise on the spots target group leaders for proper uses of disbursed grant fund for implementation of approved civil work conservation, and proper distribution (and repayment schedule) of disbursed grant fund among group members of approved vegetation activities.
- 2) Supervise on the spots UPKD and target group leaders for correctly and timely administered/recorded fund allocation and distribution by respective groups' administration and book-keeping system.

3.3.4 Assistance for Yearly review of Activities

- (1) Reviewing the location of check dams and small check dams by village unit based on PRA result.
- (2) Topographic survey for check dams in each sub-sub-watershed by village unit if change the location after PRA
- (3) Topographic survey for small check dams by village unit if change the location after PRA
- (4) Preparation of detailed design for check dams and small check dams by village unit based on the above
- (5) Reviewing of construction method and schedule of check dams and small check dams by village unit based on the above
- (6) Preparation of work volume and construction cost by village unit based on reviewing above

3.3.5 Supervision of Participatory Sediment Control Activities

- (1) To strengthen Extension workers to be able to facilitate KKLD1 and LKMD in conducting Project activities
- (2) To assist PKL for obtaining proper Construction Materials
- (3) To assist PKL for evaluating Construction Materials from Suppliers / site
- (4) To assist PKL for distributing Construction Materials to each KKLD
- (5) To assist PKL for distributing Wage to each member of KKLD
- (6) To assist and advise Implementation Agencies to make clear procedures to KKLD for supply of materials and wages.
- (7) To assist Implementation Agencies for making integrated solution plan in various issues during implementation
- (8) To assist Implementation Agencies for improving of manuals for LRSC activities
- (9) Assist in strategy making for PKL in the target villages
- (10) Assist in supervising the implementation of training programs by NGO
- (11) Assist Implementation Agencies in confirming and reviewing the current routine works and schedule of extension workers by villages
- (12) Supervise the implementation of M&E indicator data collection

3.4 Feasibility Study of Dayeuh Kolot and its surroundings

Regarding Feasibility Study for Flood Damage Mitigation Measure for DK right bank area, following activities will be carried out.

¹ KWKP: *Kelompok Konservasi Lahan Desa, group moving for Desa land conservation*

- (1) To review the existing study for DK flooding issues.
- (2) To conduct topographical survey (river cross section including floodplain for Cicapundung, Cicapundung Kolot and Citeureup Basins)
- (3) To study the flooding mechanism including interview survey to local people, hydrological data collection and evaluation of existing river capacity
- (4) To set-up and calibration of hydrology and hydraulic model
- (5) To study alternatives for flood mitigation measures
- (6) To study the economic evaluation for main alternatives
- (7) To prepare definitive plan for Flood Damage Mitigation Measure for DK right bank area

4. Required Expertise

The required expertise for the consulting services is as shown below, but not limited to the following:

4.1 Foreign Consultants

- (1) Team Leader

For Review of Detailed Design and additional Design and Study:

Professional A with at least 10 years of experience in study and, detailed design of flood control/river improvement project. He / she shall have experiences as team leader and/or deputy team leader in similar detailed design at least five (5) years.

For Construction Stage:

Professional A with at least 10 years of experience in construction supervision, and operation and maintenance of flood control/river improvement project.

- (2) Construction/Structure Engineer (A)

Professional A with at least 15 years of experience in detailed design of flood control/river improvement works in similar project.

- (3) River Engineer (A)

Professional A with at least 15 years of experience in detailed design of flood control/ river improvement works in similar project.

- (4) Environmental Specialist (A)

Professional A with at least 10 years of experience in natural environmental analysis in similar project.

- (5) Institutional Specialist (A)

Professional A with at least 10 years experience in the field of Institutional issues such as governmental, legal system, policies, and regulations related with the identified needs. Having experiences in the

course of the community disaster prevention activity is needed.

(6) Watershed Management Specialist (A)

Professional A with at least 10 years experience in engineering services and 5 years' experience in project management of community based watershed management. He/She must have adequate knowledge of participatory project designing and implementation and must be at least a B.S. holder.

(7) Hydrologist (A)

Professional A with at least 10 years experience in hydraulic analysis of flood control/river improvement works in similar project. He / She should be familiar with the latest hydraulic model analysis.

4.2 Local Consultants

(1) Co-Team Leader

Professional B with at least 13 years of experience in study, detailed design and construction supervision of flood control/river improvement works in similar project.

(2) River Engineer (B)

Professional B with at least 10 years experience in study and detailed design of flood control/river improvement works in similar project.

(3) Design Engineer (B)

Professional B with at least 10 years of experience in detailed design of flood control/river improvement works in similar project.

(4) Construction Plan/Cost Estimate Eng. (B)

Professional B with at least 10 years of experience in detailed design, construction planning and cost estimate in similar project.

(5) Construction Engineer (B1-B4)

Professional B with at least at least 10 years experience in detailed design and construction supervision of control/river improvement works in similar project.

(6) Structural Engineer (B1-B4)

Professional B with at least 10 years of experience in detailed design and construction supervision of flood control/river improvement works in similar project.

(7) Quantity Surveyor Engineer (B1-B4)

Professional B with at least 10 years of experience in detailed design and construction supervision of flood control/river improvement works in similar project.

(8) Geodetic Engineer (B)

Professional B with at least 10 years of experience in social geodetic survey in similar project.

(9) PQ/Bid Documents Specialist (B)

Professional B with at least 10 years of experience in preparation of specifications for detailed design of flood control/river improvement works in similar project.

(10) Land Acquisition Monitoring Expert (B)

Professional B with at least 10 years of experience in coordination with local governments or construction supervision of project works with land acquisition

(11) Environmental Specialist (B)

Professional B with at least 10 years of experience in natural environmental analysis in similar project.

(12) Institutional Specialist (B)

Professional B with at least 10 years experience in the field of Institutional issues such as governmental, legal system, policies, and regulations related with the identified needs. Having experiences in the course of the community disaster prevention activity is needed.

(13) Rural/Community Development Specialist (B)

Professional B with at least 10 years' experience of similar works and B.S holder of related field. He/She must be familiar with empowering the community in term of organization, management and must have experience of work with NGO and familiar with planning the community development and able to find out workable options to develop NGO activities in the field.

(14) Soil and Water conservation Specialist (B)

Professional B with at least 7 years experience in supervision and design of civil work. He/She must be familiar with participatory ways of preparation and implementation and able to work with other Team Members by coordination of Team Leader, preferably has >5-year experience of participatory project designing / implementation. He/She must be at least a B.S holder of related field.

(15) Hydrologist (B)

Professional B with at least 10 years experience in hydraulic analysis of flood control/river improvement works in similar project. He / She should be familiar with the latest hydraulic model analysis.

(16) Socio-Economist (B)

Professional B with at least 10 years experience in economic analysis of project feasibility and at least 5 years experiences of cost and benefit analysis in similar flood disaster project.

5. Transfer of Knowledge

The consultant shall conduct the transfer of knowledge on the related field to the related government's personnel during the whole services period. Transfer of knowledge shall be conducted through on the job training.

6. Assignment of Consultants for the Services

The services period of the Consultants is estimated 51 months. The total man-months for the services are estimated 656 man-months comprising 94 man-months for Professional A and 562 man-months for Professional B.

Tentative assignment schedule is attached Appendix -1

7. Reporting

The metric system shall be used exclusively in all the reports, drawings and calculations. Reports and calculations shall be edited in English while drawings and O & M manual shall be edited in English and the Indonesian language.

(1) Review of Study and Detailed Design

- 1) Inception Report giving comment and/or suggestion based on review of previous studies and detailed design, summary of main findings and technical problem obtained through field survey, detailed work plan and program of the Consultant's Services, and recommendation of possible alternative plan, if any (10 copies).
- 2) Finalized Bid Documents for international competitive bidding.
- 3) Review of Design Report giving all the results of the reviewed design including tender drawings and all the activities of the Consultants (10 copies).

(2) Construction Supervision

- 1) Monthly and quarterly progress reports giving a summary of progress of the works during the reporting period including the Consultants' activities and the program and schedule of the works in next period (10 copies).
- 2) Annual report which gives the details of the works executed in the past twelve months and the program and schedule of the next twelve months including the budgetary schedule (10 copies).
- 3) Project completion report and drawings of all the aspects of construction of the Project at completion of services (10 copies).

8. Undertaking of the Government

In order to facilitate the smooth and effective implementation of the Services, the Government will undertake the following items.

(1) Exemption of tax and duties on:

- 1) Any equipment and vehicles purchased by the Consultant with reimbursement by the Government, which after the completion of the services, will be the property of the Government.
- 2) Any equipment and accessories brought into Indonesia for the purpose of carrying out the services and which will subsequently be withdrawn there from.

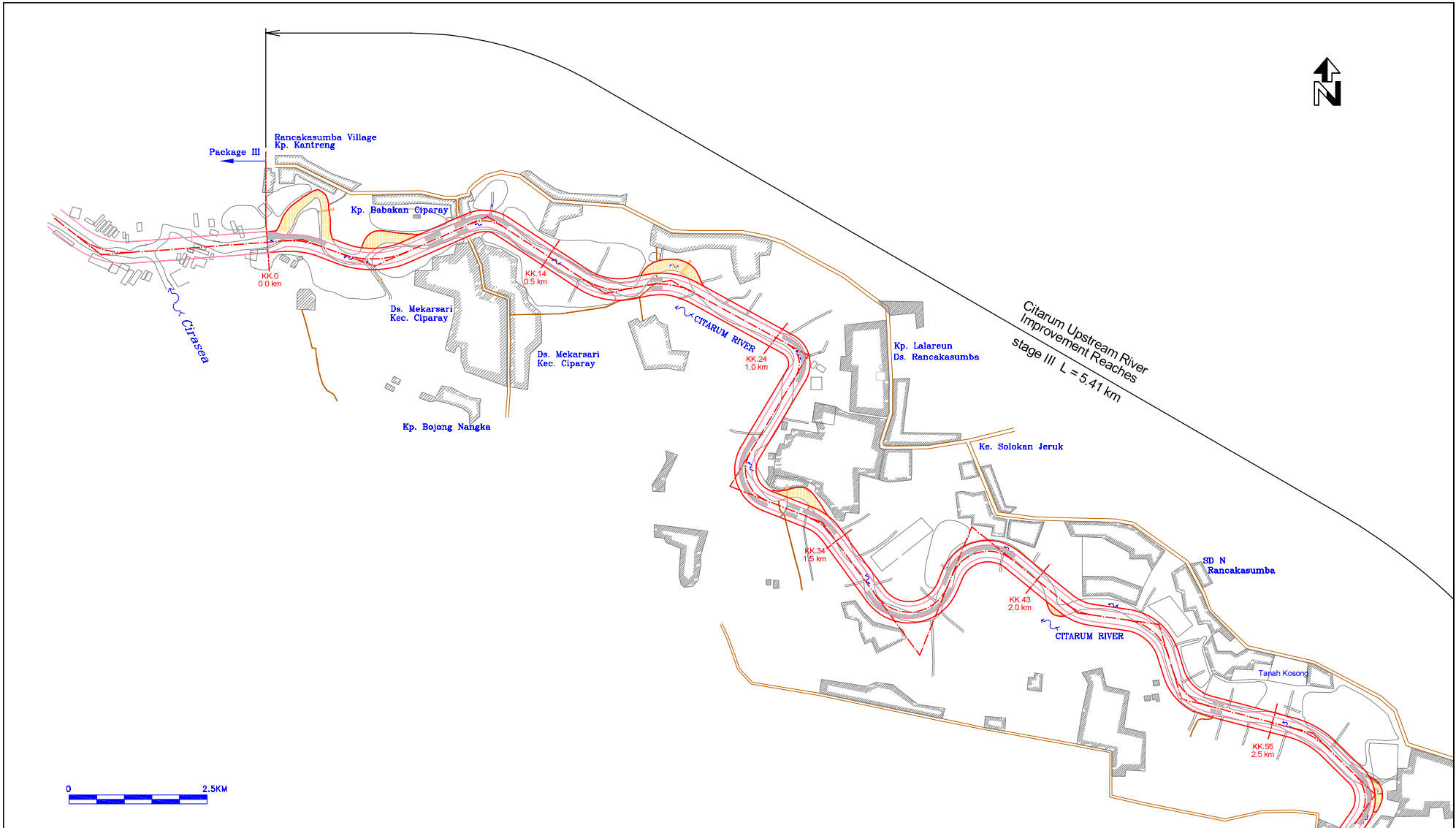
- (2) Provision of data, information and all available documents relevant to the Project
- (3) Coordination of the project construction with other flood control works and regional development plans in the Project Area.

APPENDIX II:

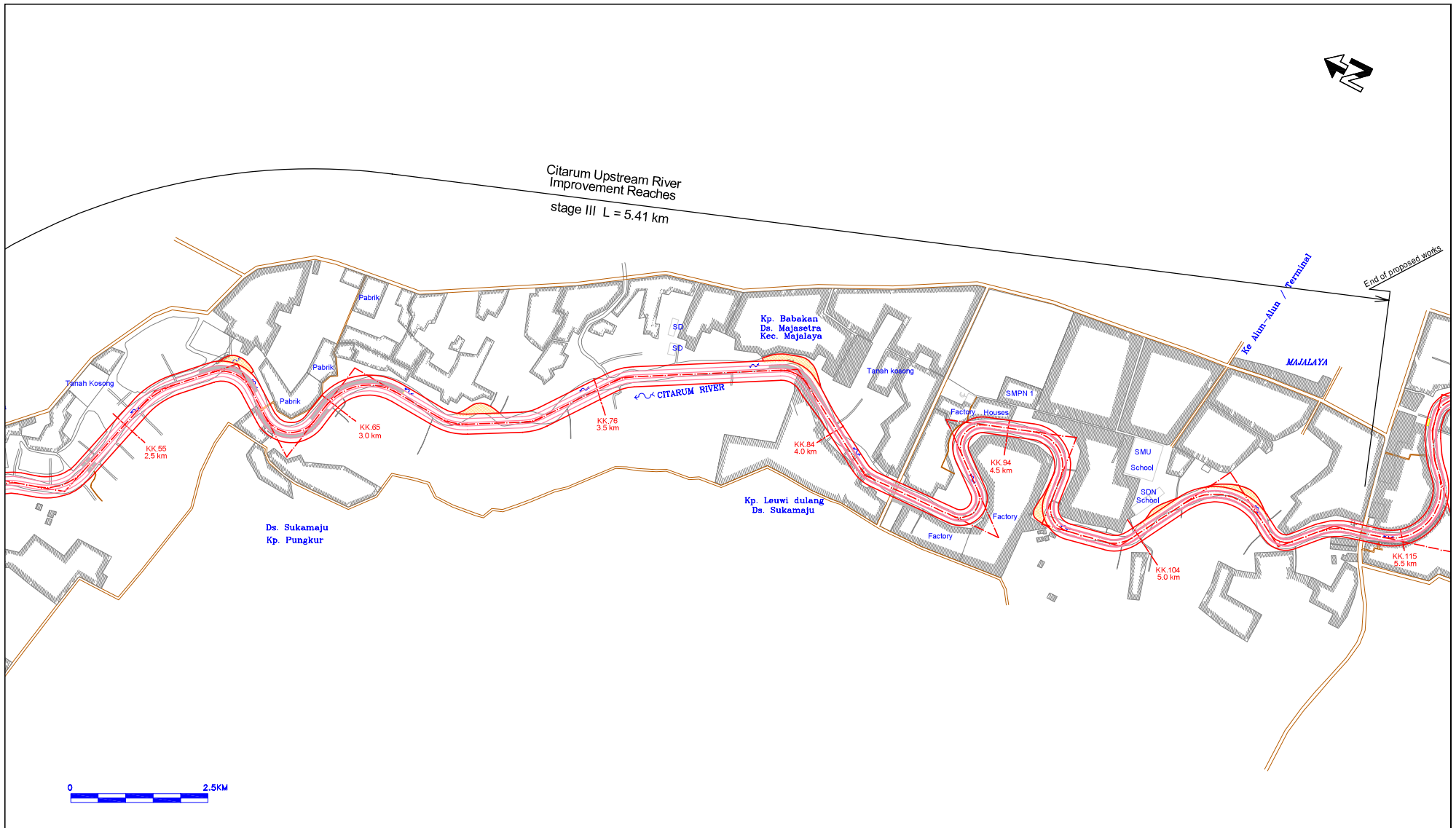
DRAWINGS OF TRIBUTARIES

APPENDIX II-1:

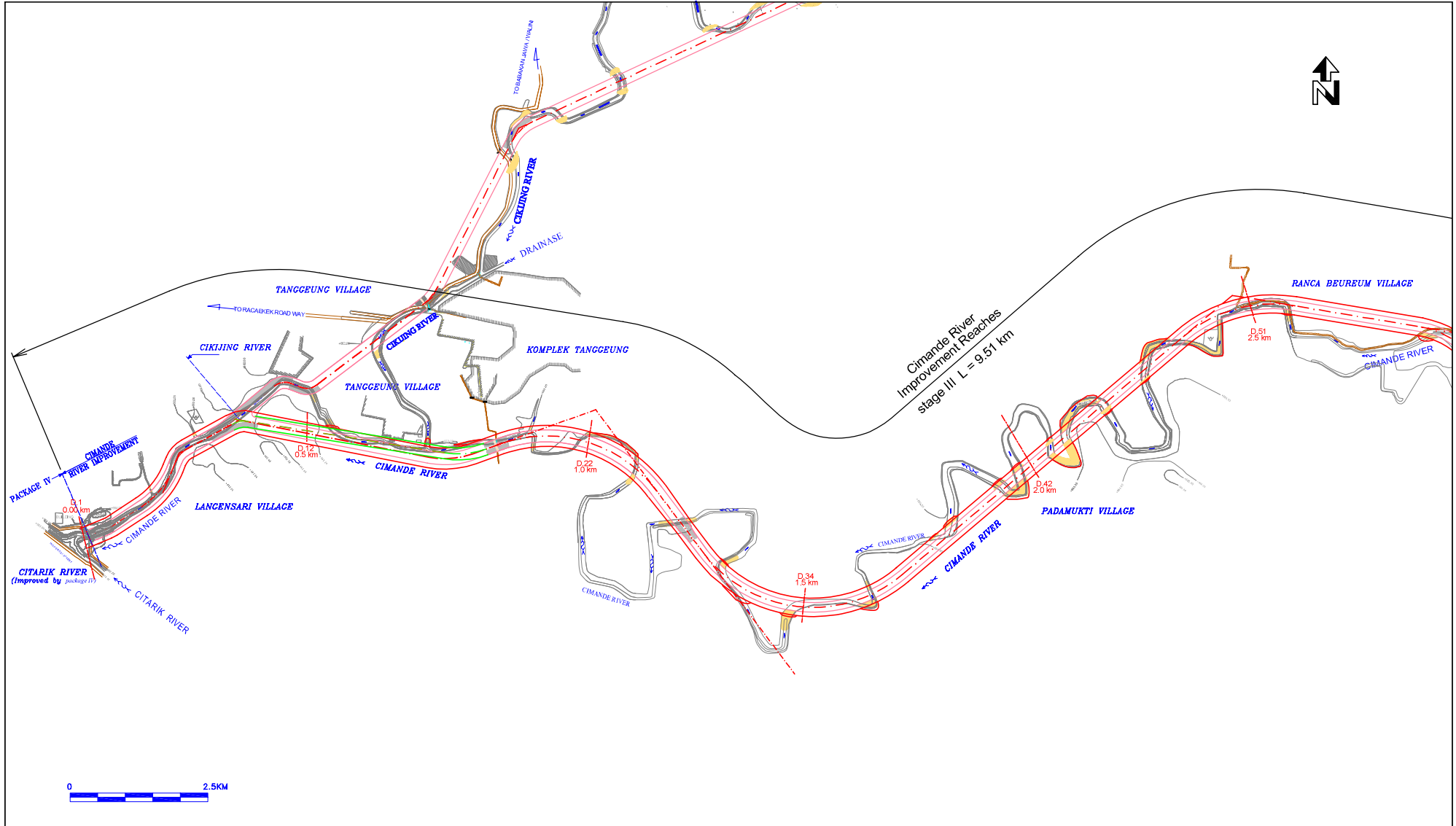
PLAN OF TRIBUTARIES



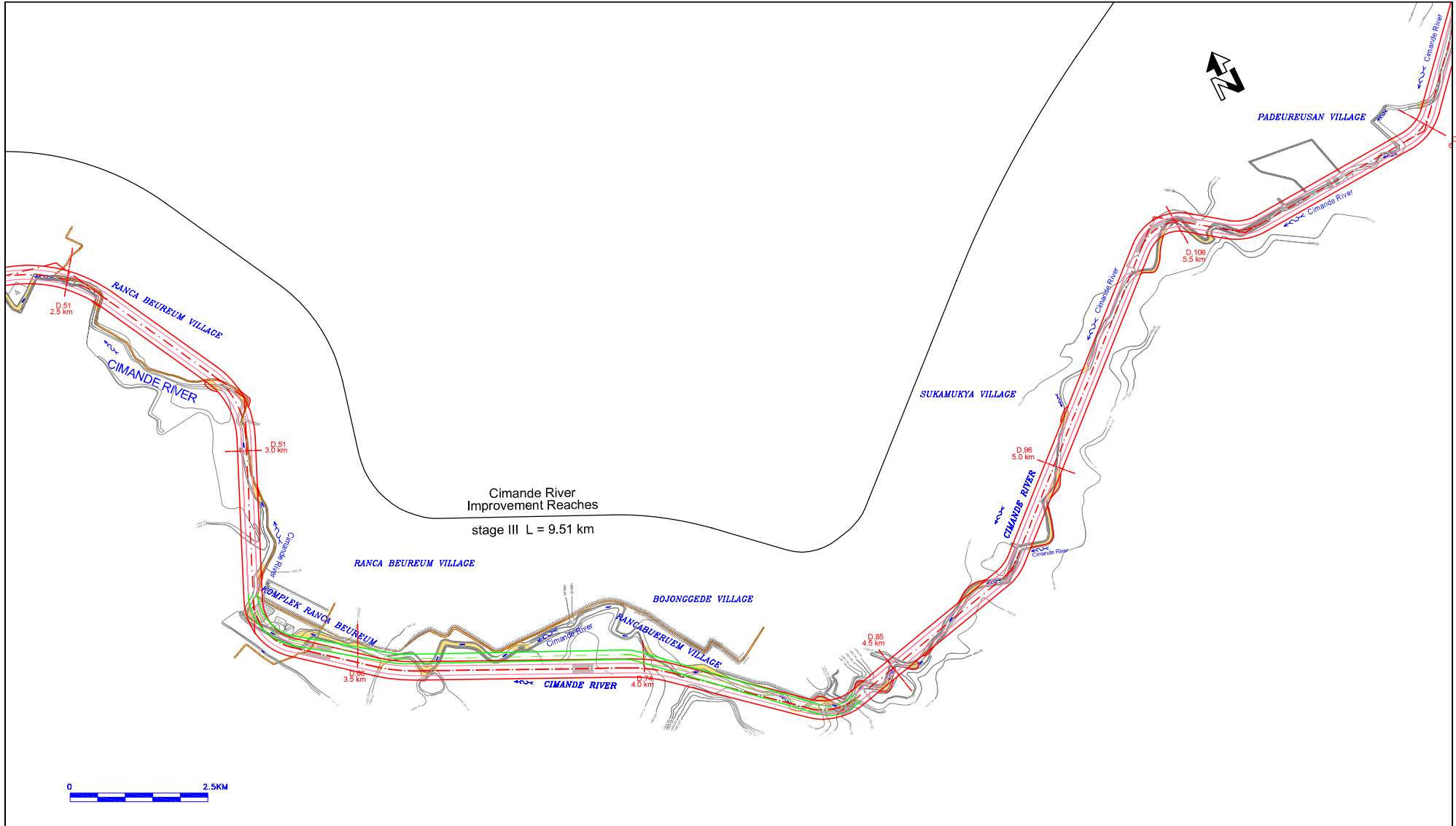
Plan of Citarum Upstream River (1/2)



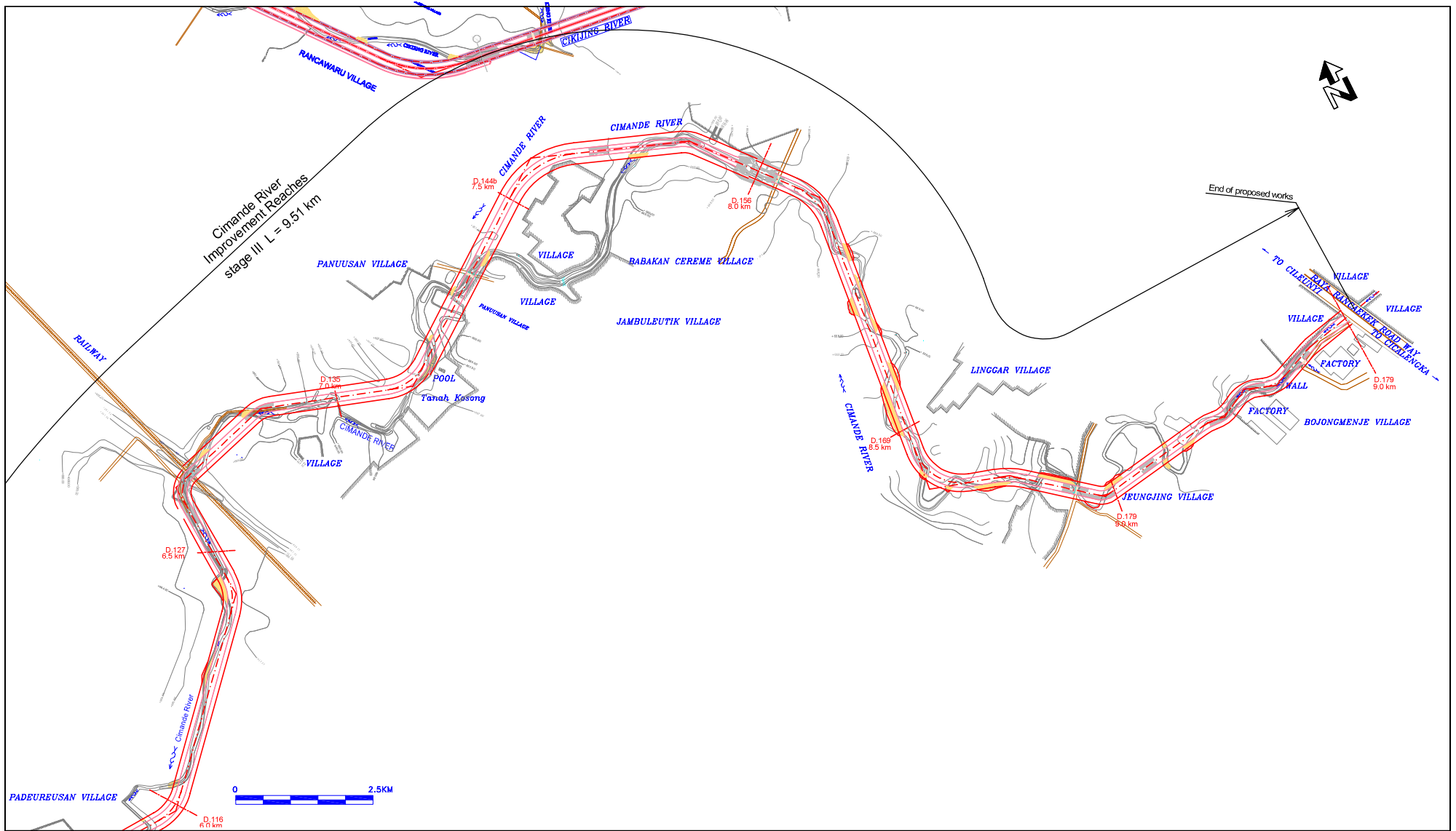
Plan of Citarum Upstream River (2/2)



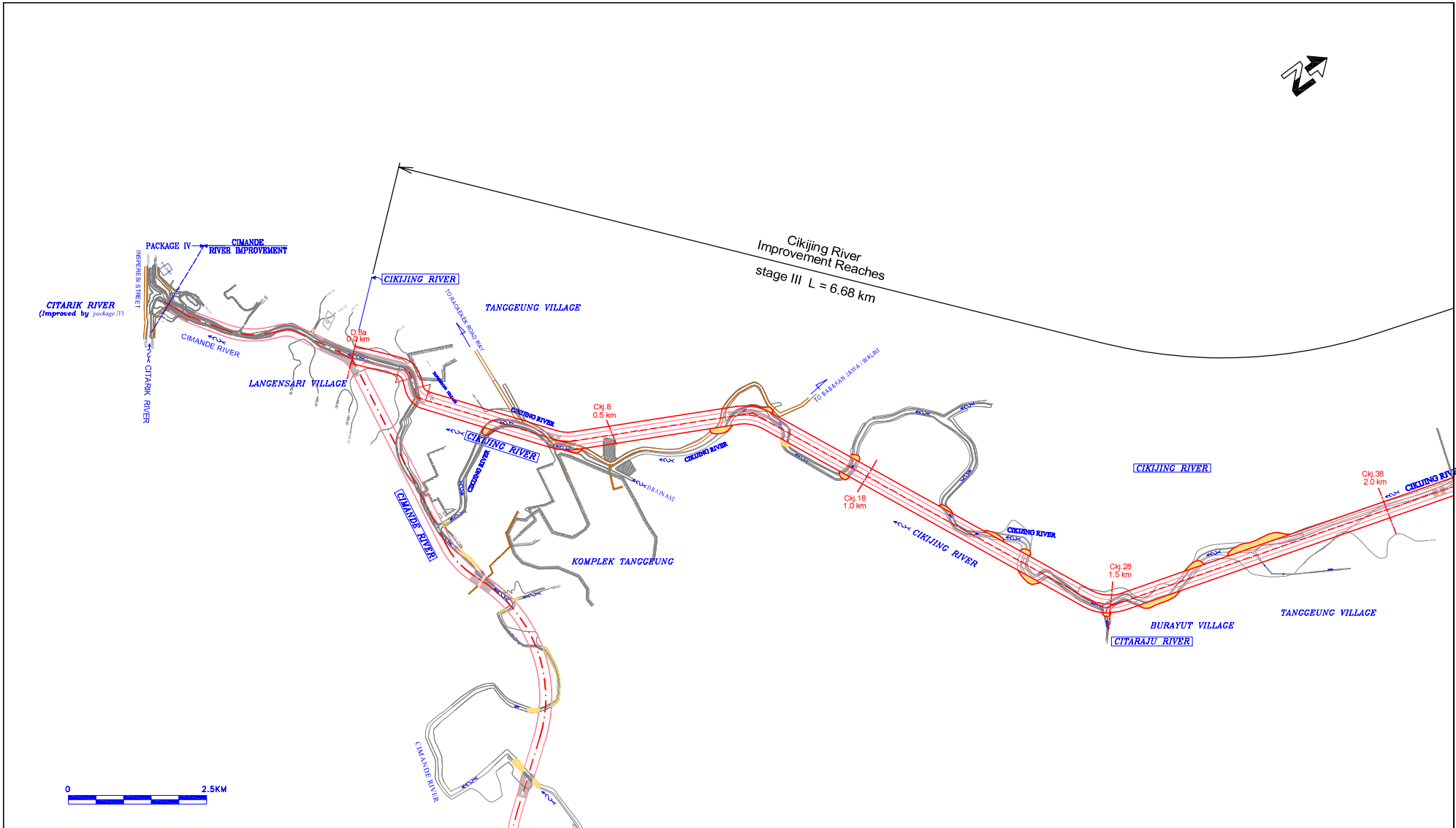
Plan of Cimande River (1/3)



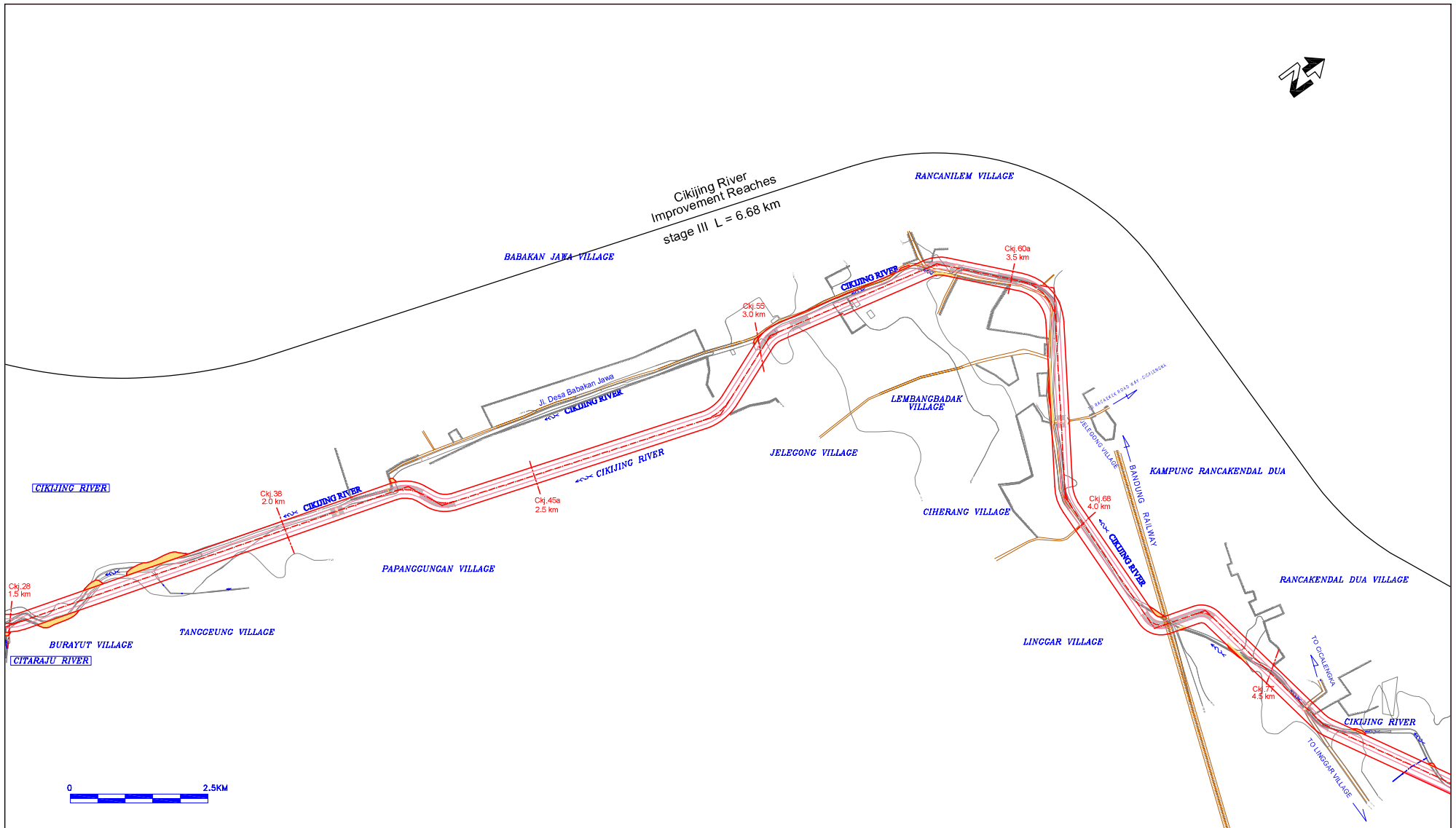
Plan of Cimande River (2/3)



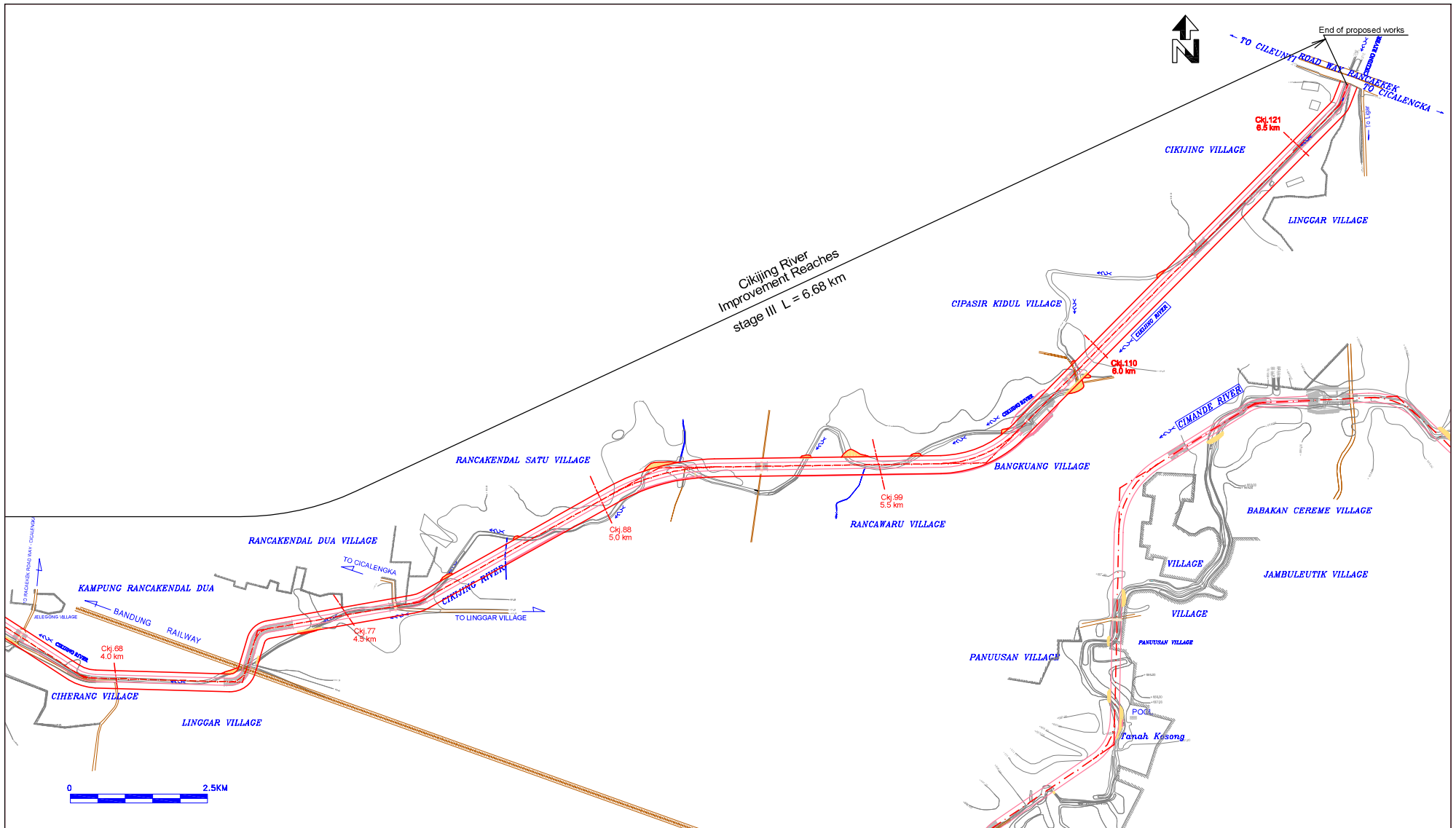
Plan of Cimande River (3/3)



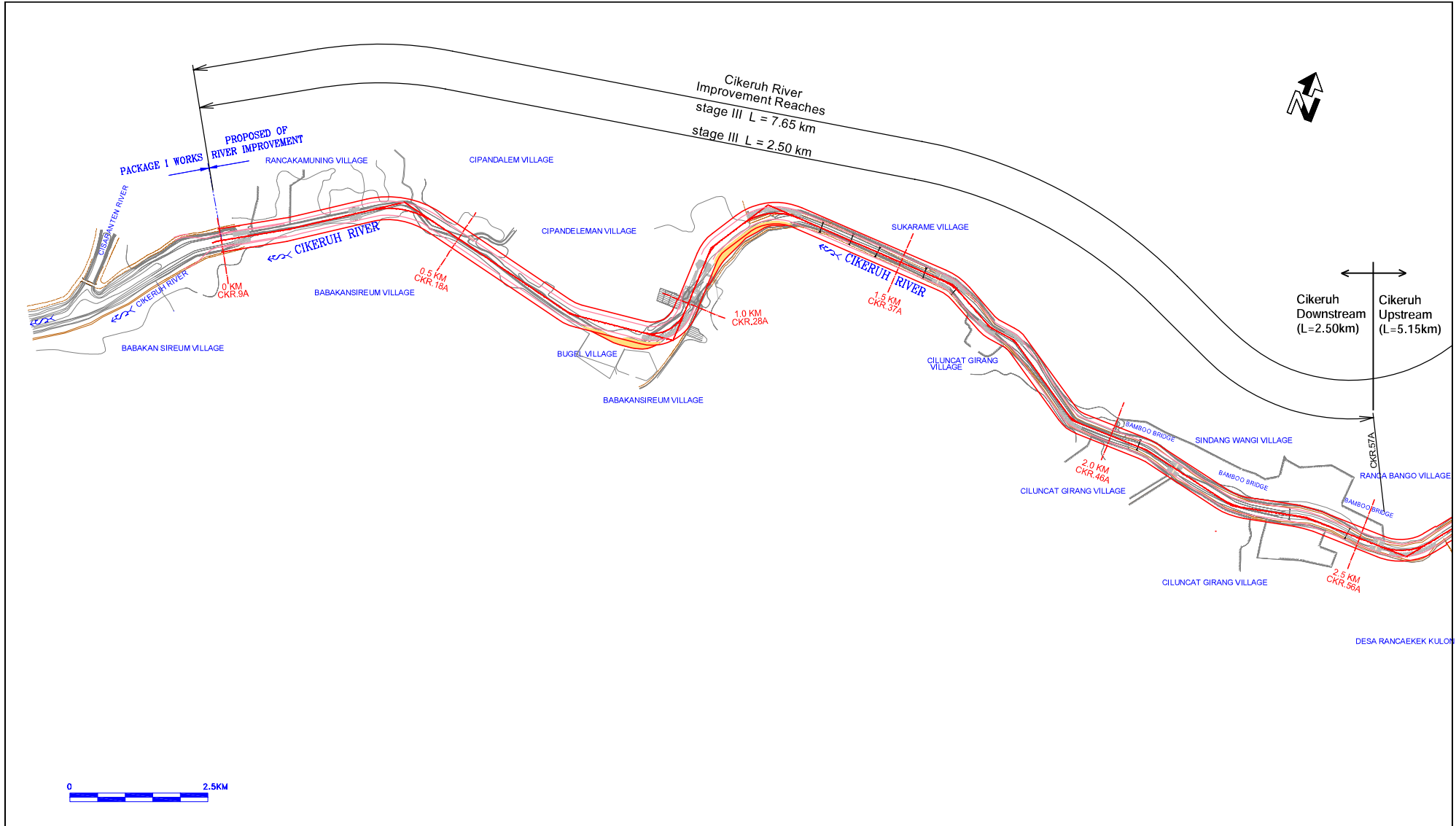
Plan of Cikijing River (1/3)



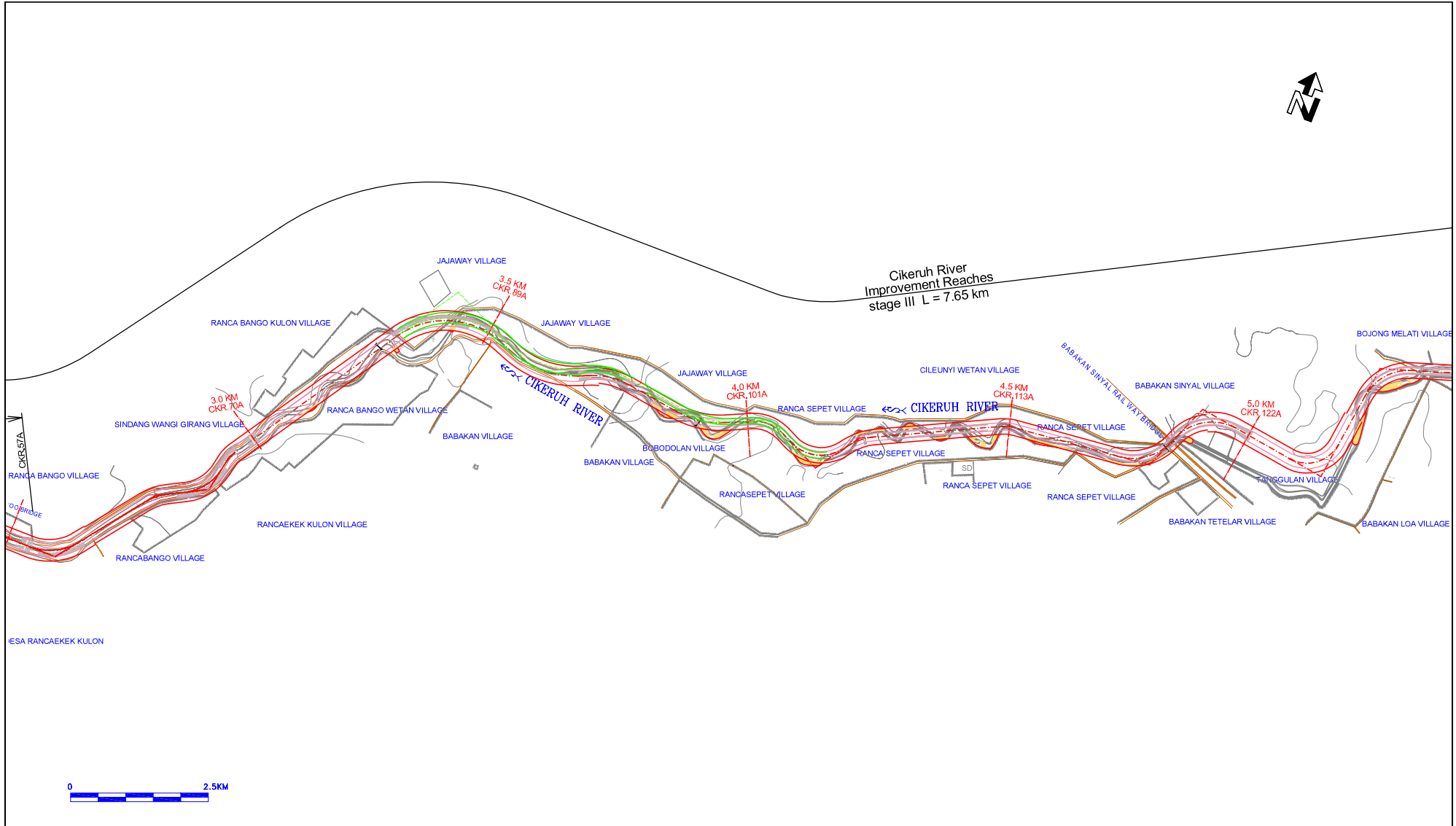
Plan of Cikijing River (2/3)



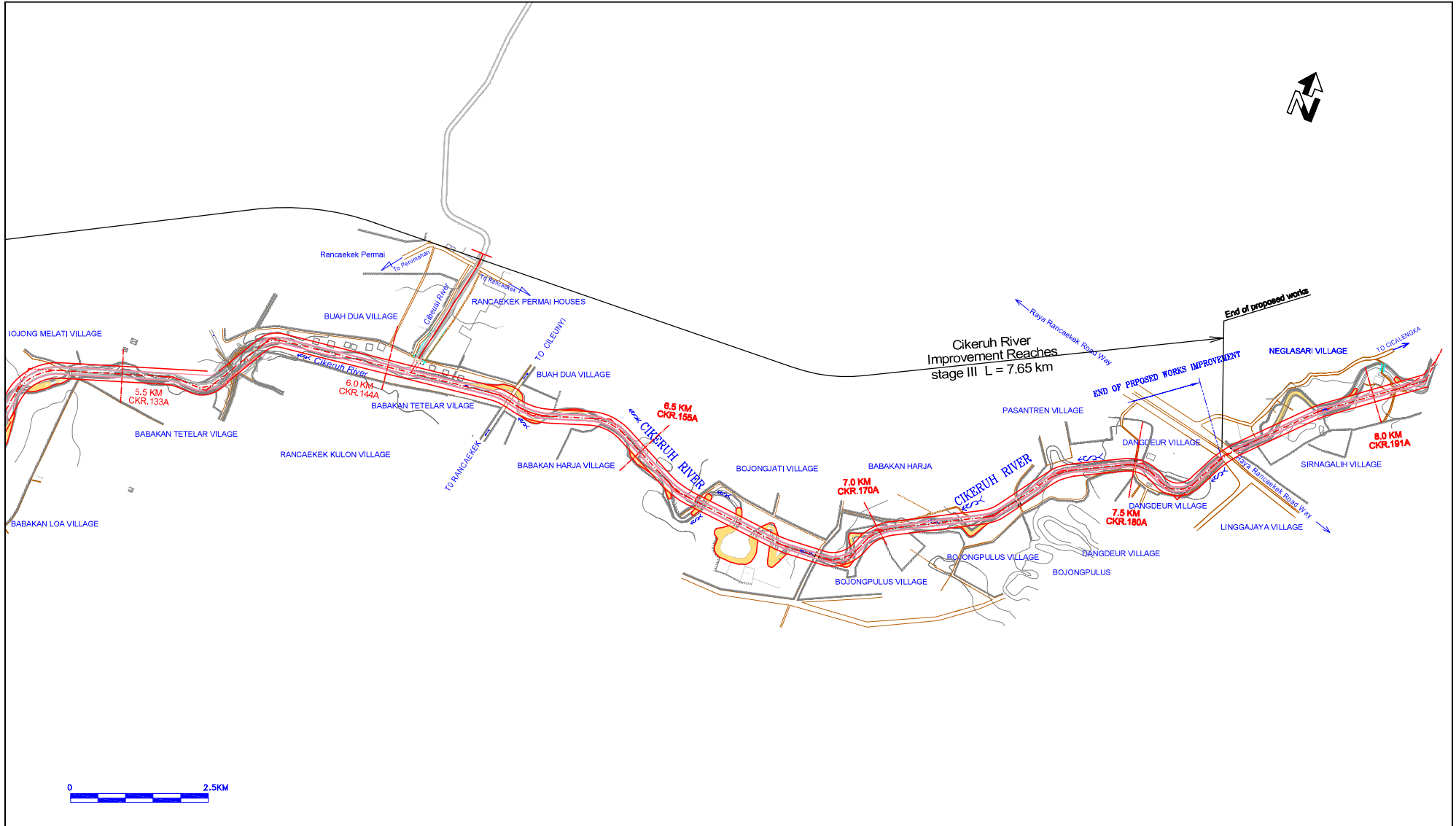
Plan of Cikijing River (3/3)



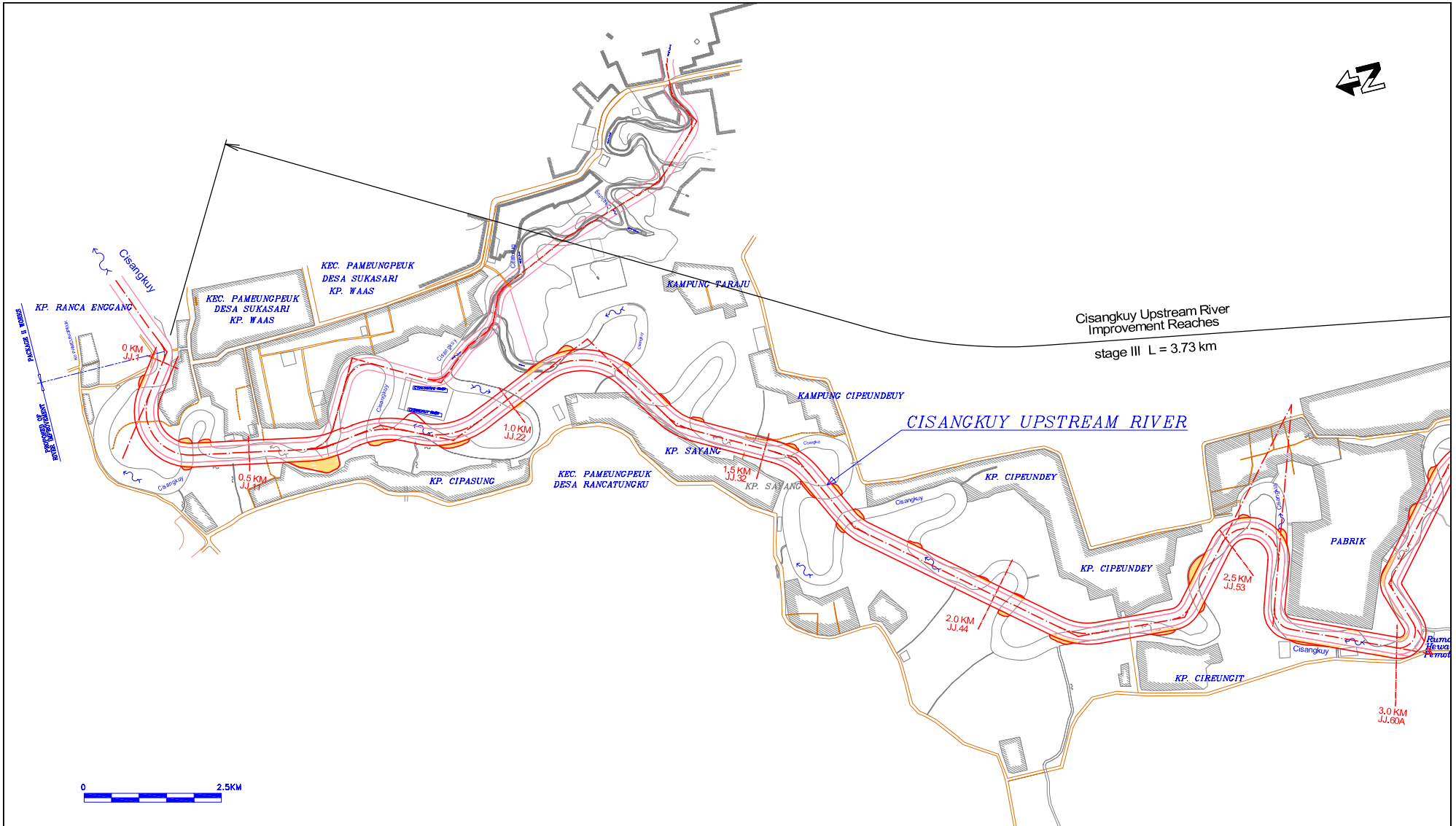
Plan of Cikeruh Upstream River (1/3)



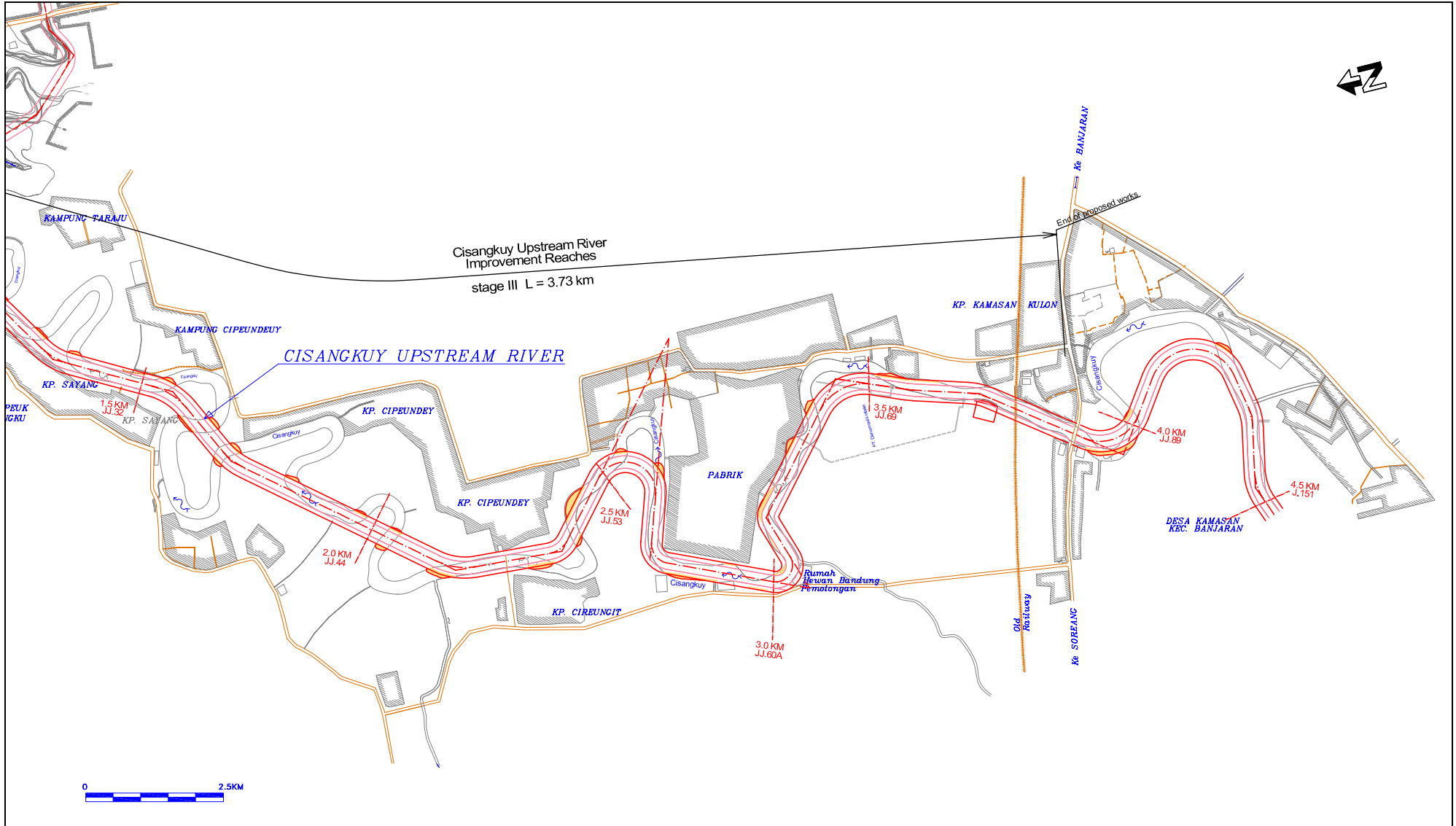
Plan of Cikeruh Upstream River (2/3)



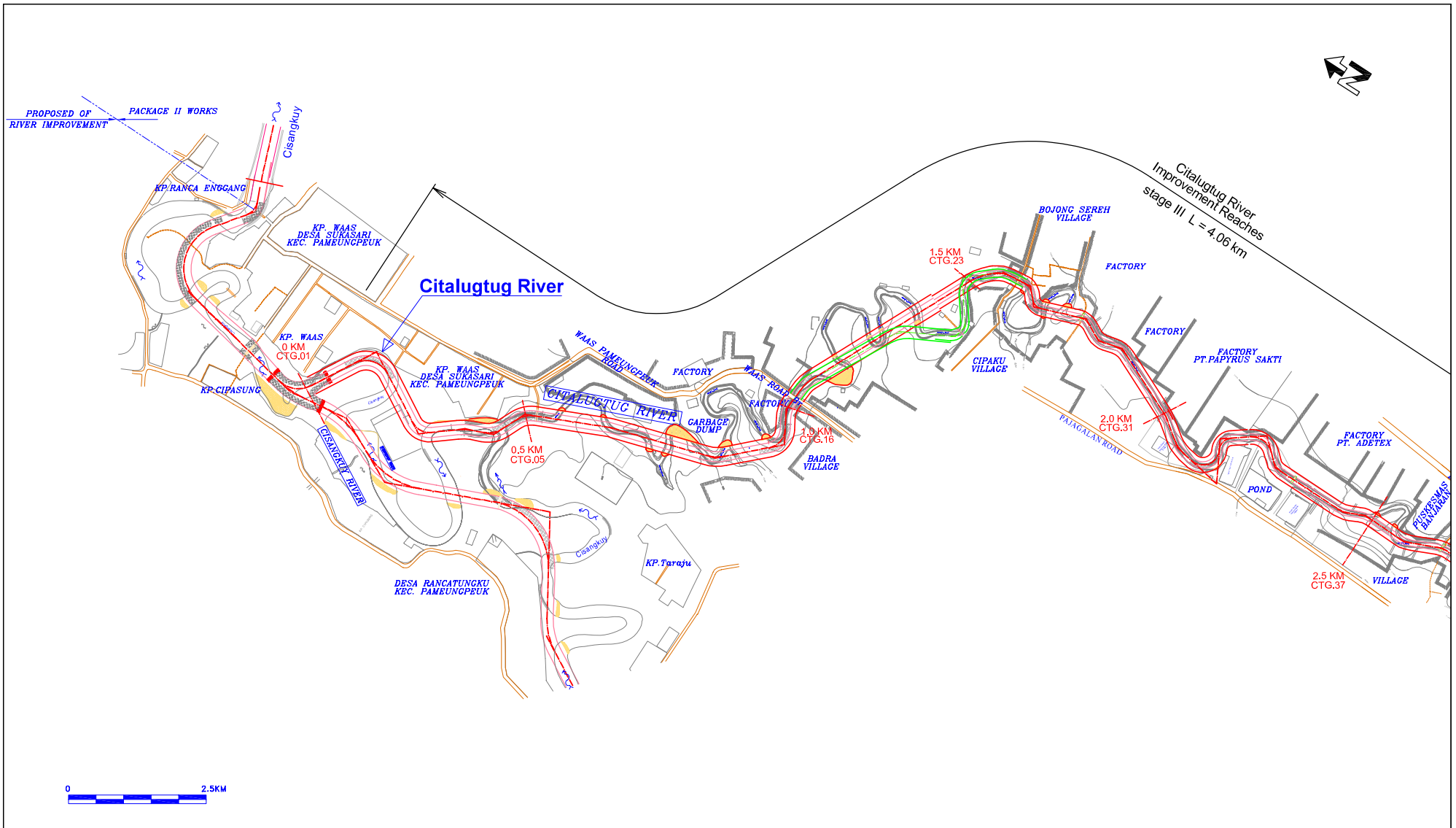
Plan of Cikeruh Upstream River (3/3)



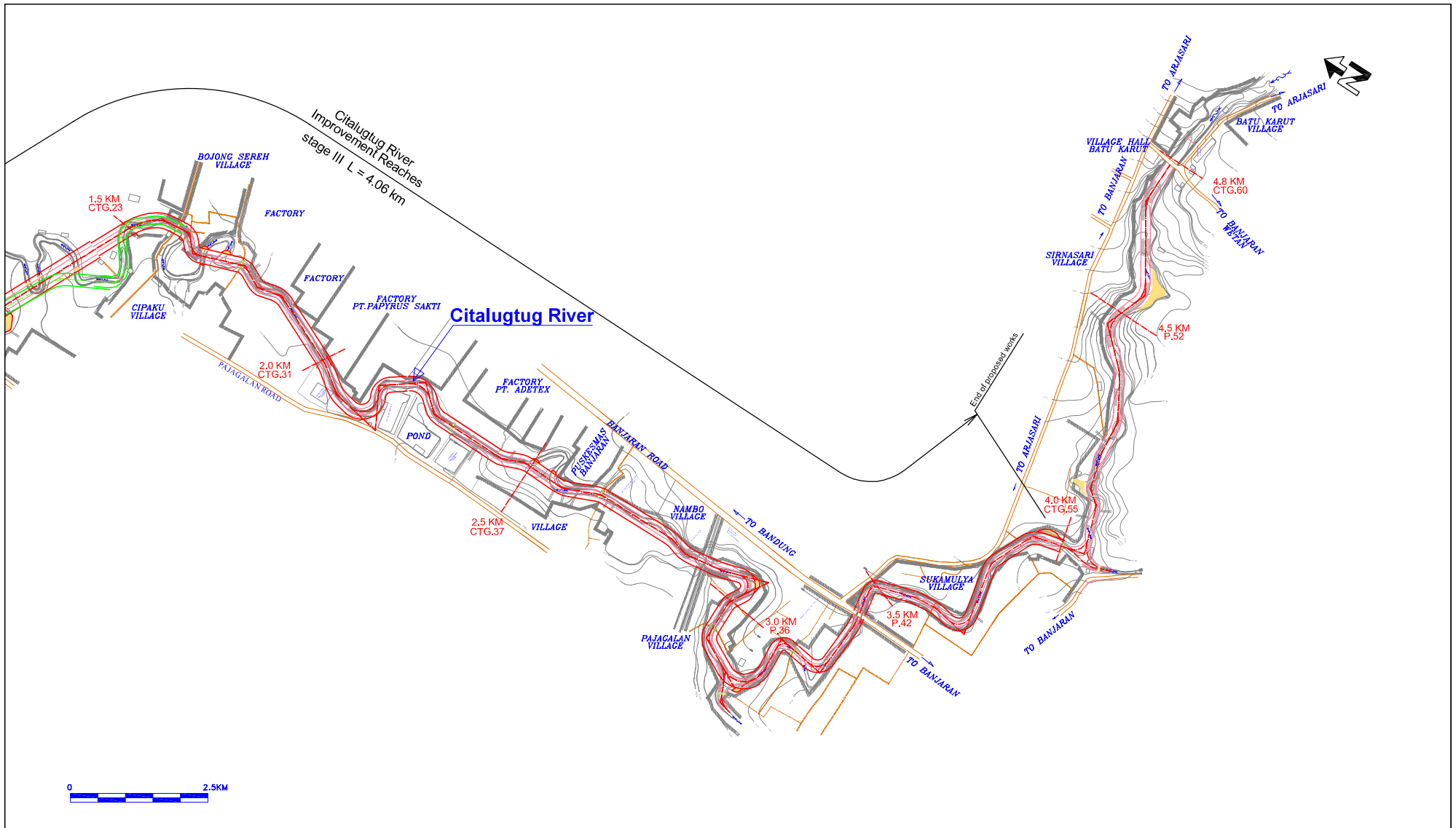
Plan of Cisangkuy Upstream River (1/2)



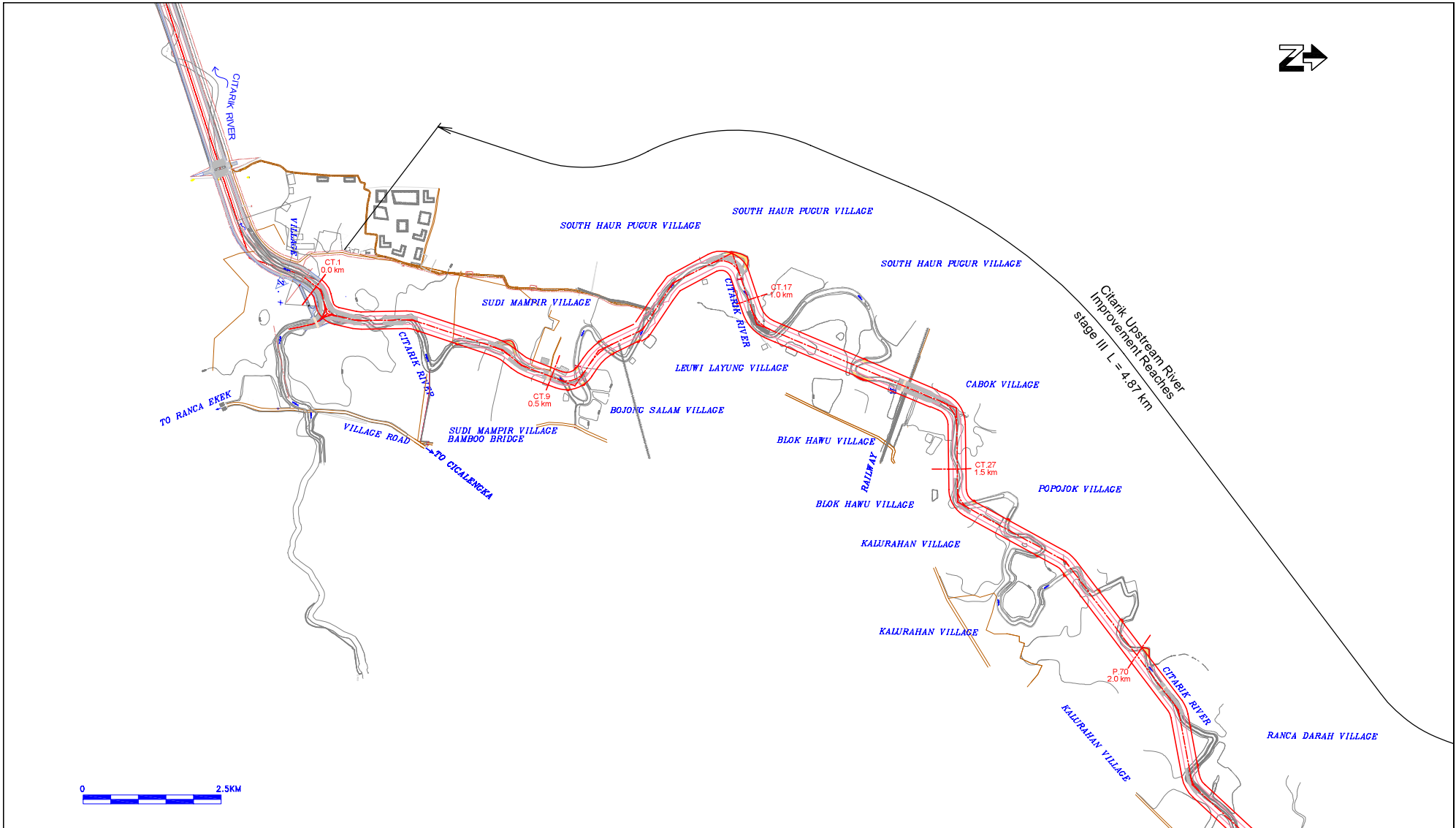
Plan of Cisangkuy Upstream River (2/2)



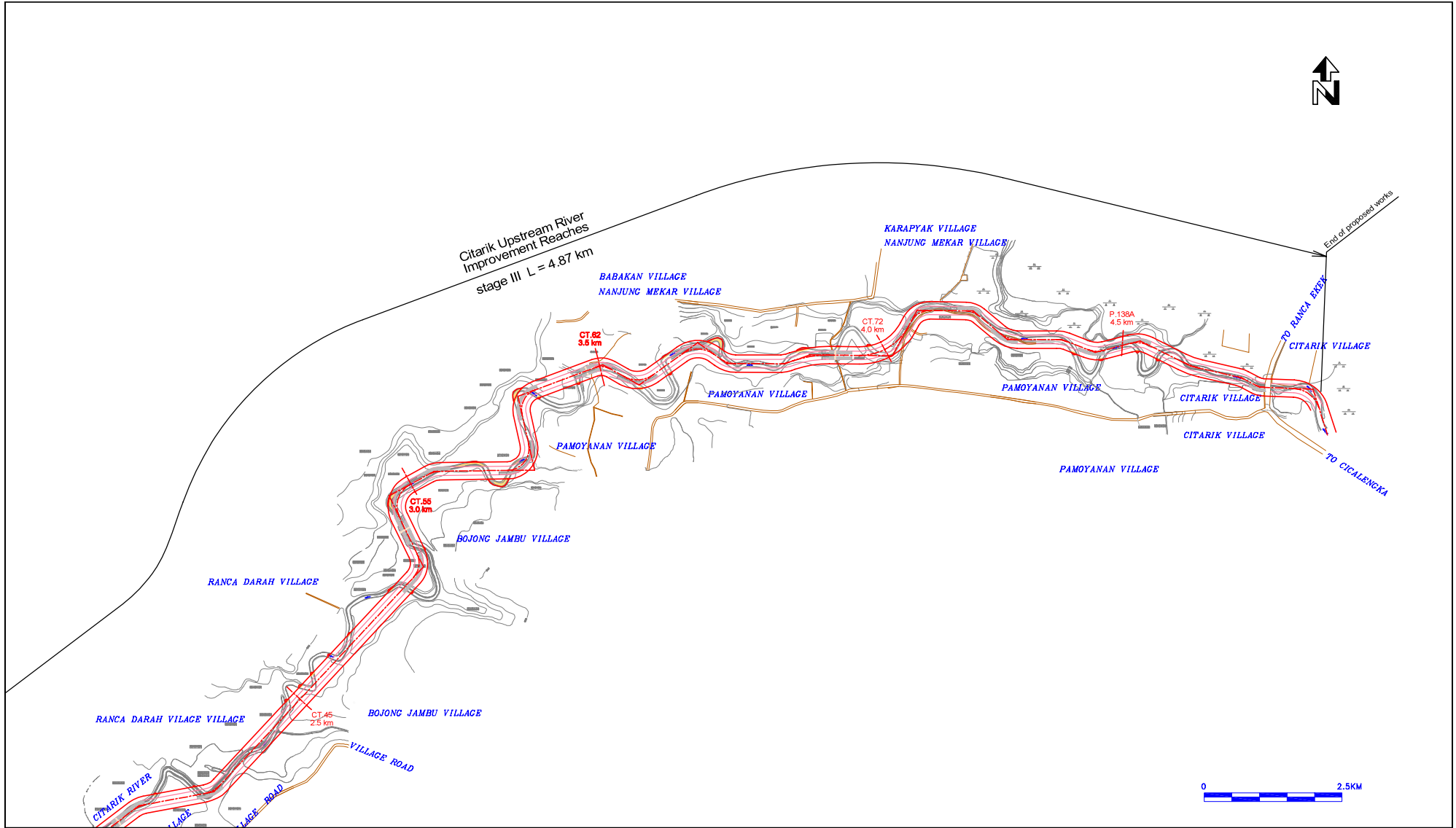
Plan of Citalugtung River (1/2)



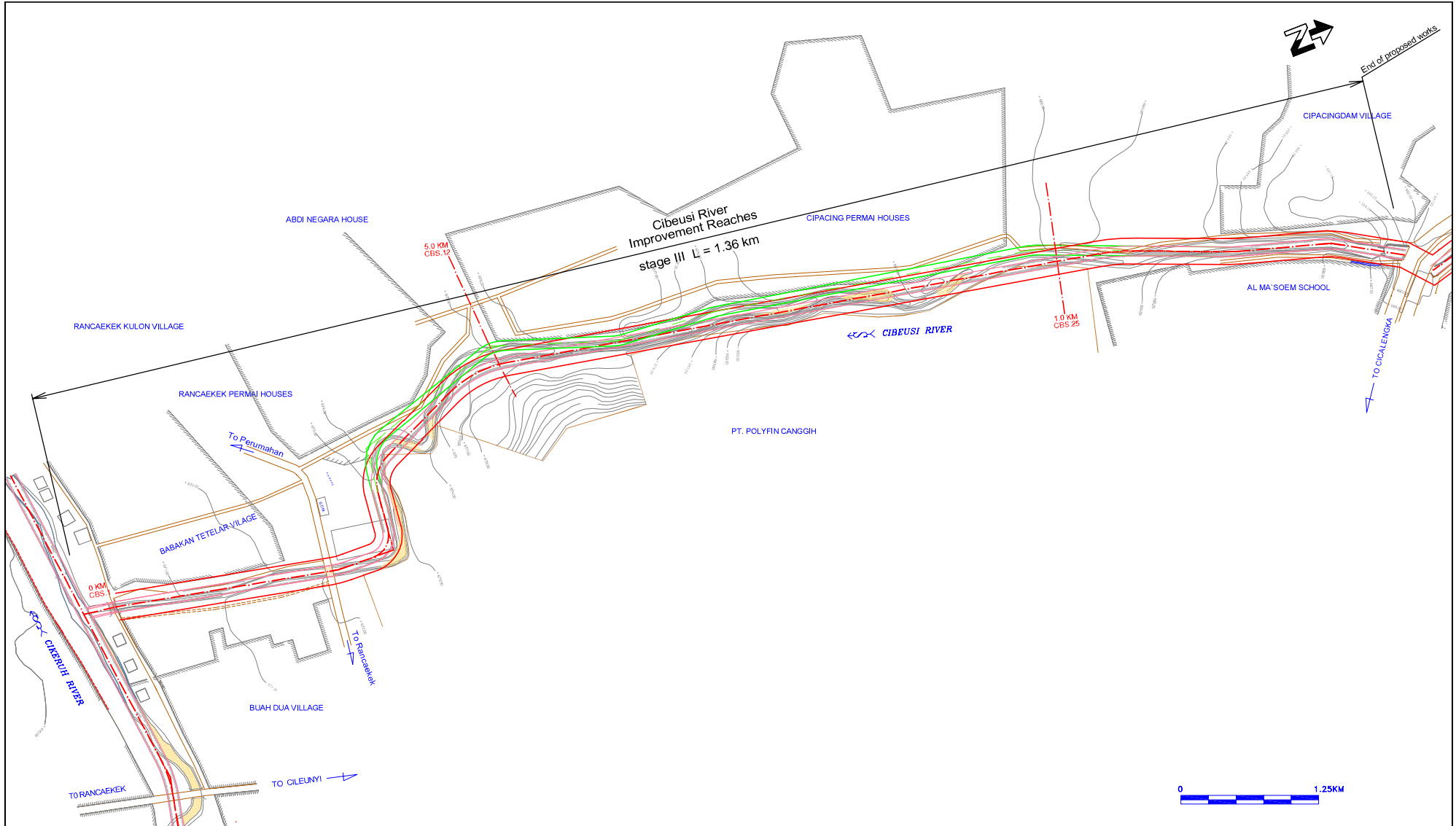
Plan of Citalugtung River (2/2)



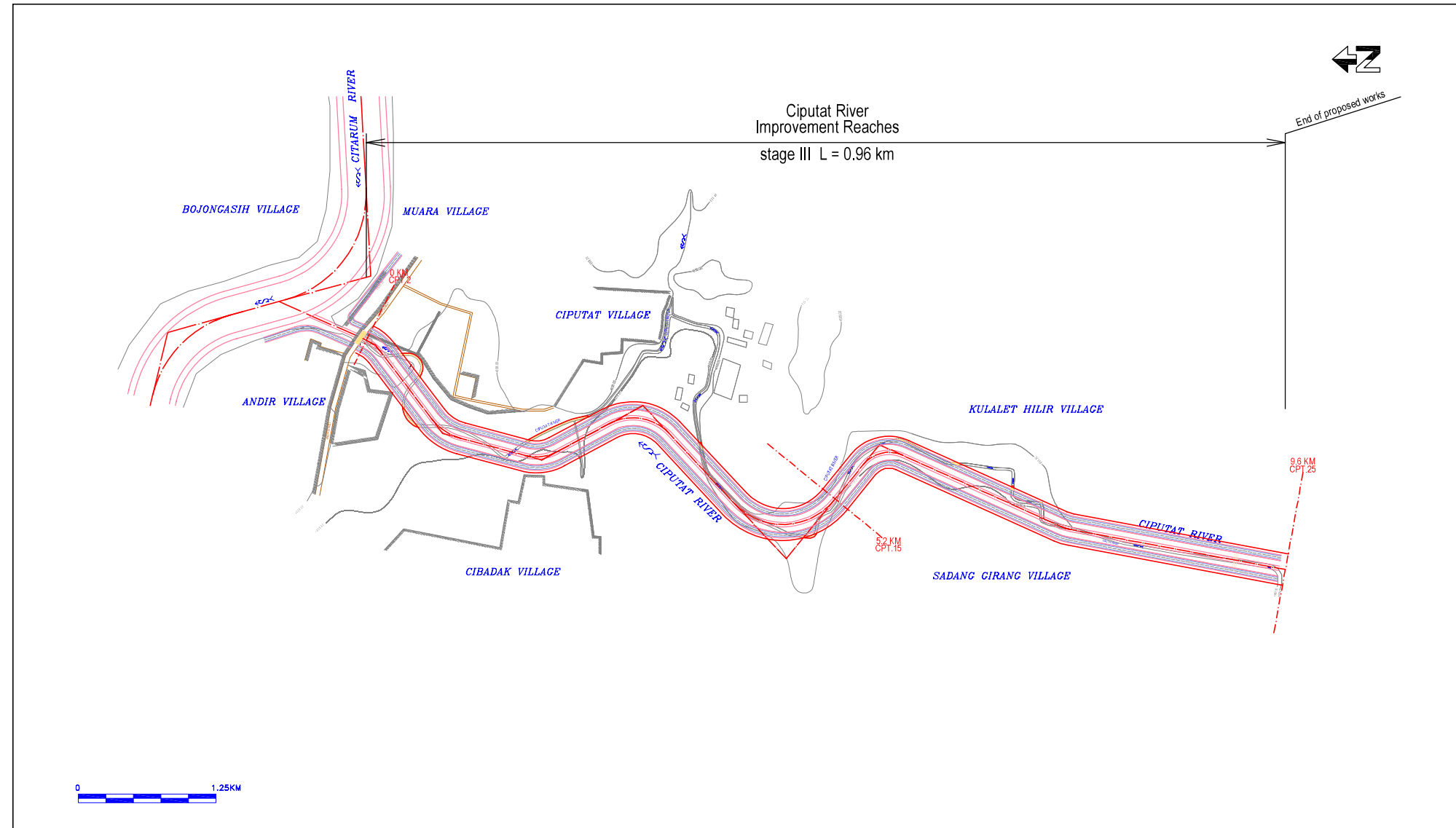
Plan of Citarik Upstream River (1/2)



Plan of Citarik Upstream River (2/2)





Plan of Cibeuasi River



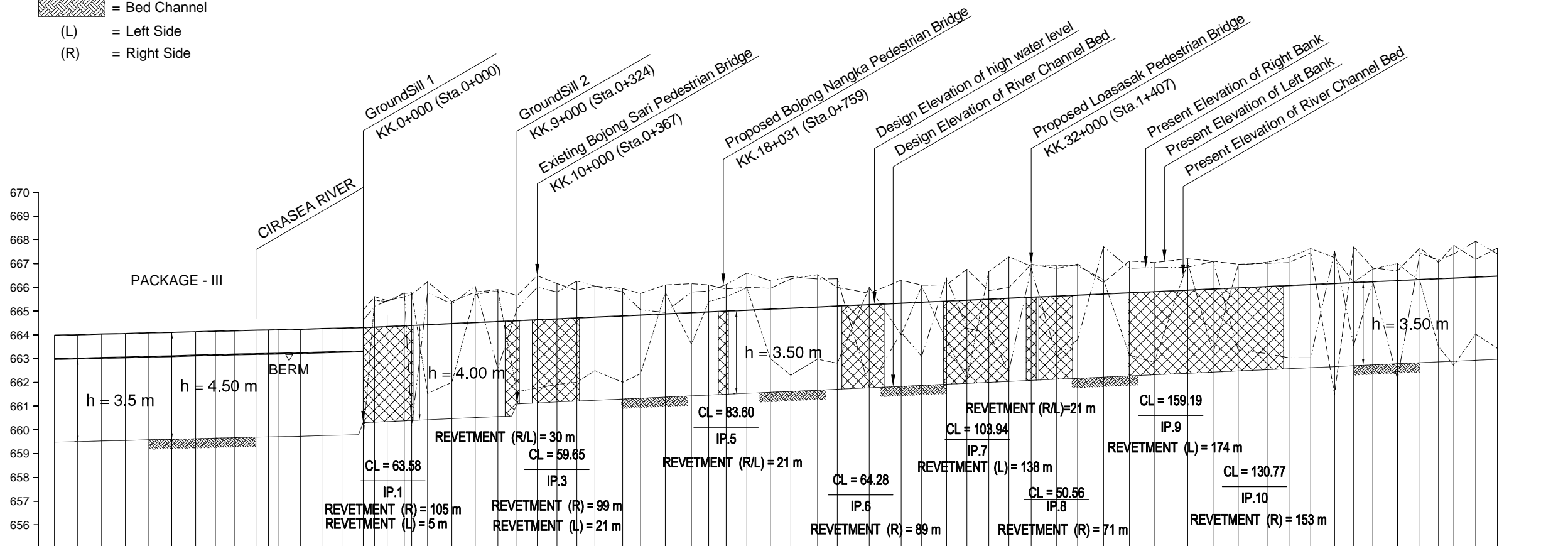
Plan of Ciputat River

APPENDIX II-2:

LONGITUDINAL PROFILE OF TRIBUTARIES

-  = Revetment
-  = Bed Channel
- (L) = Left Side
- (R) = Right Side

Vertical = 1:200
Horizontal = 1:10,000
Scale
Datum Chart. + 655 M

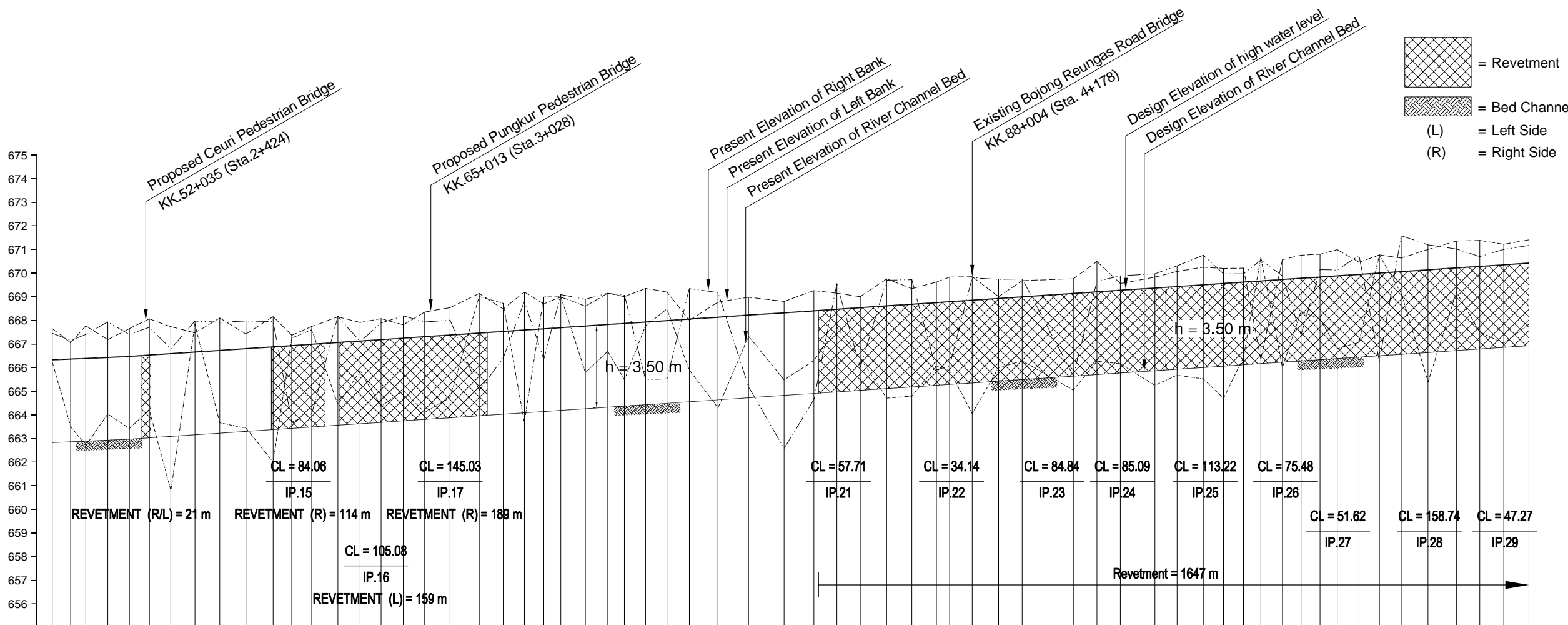


PRESENT ELEVATION	RIGHT BANK	(m)
		664.82
	665.20	667.51
	665.44	667.65
	665.76	667.77
	665.78	667.84
	665.30	667.94
	666.05	668.03
	662.57	668.13
	665.10	668.24
	666.00	668.36
	665.80	668.45
	666.16	668.56
	665.88	668.69
	666.05	668.82
	665.80	668.94
	665.74	669.09
	666.10	669.21
	663.81	669.36
	665.40	669.51
	665.80	669.65
	665.93	669.77
	666.00	669.84
	665.96	669.94
	666.35	670.09
	666.53	670.21
	666.00	670.36
	666.75	670.45
	664.00	670.56
	666.09	670.69
	666.10	670.82
	666.76	670.94
	665.86	671.09
	665.99	671.21
	666.97	671.36
	666.79	671.45
	666.98	671.56
	666.98	671.69
	666.32	671.82
	663.15	671.94
	662.84	672.09
	667.03	672.21
	663.24	672.36
	666.94	672.45
	667.05	672.56
	667.26	672.69
	667.63	672.82
	667.25	672.94
	666.21	673.09
	666.77	673.21
	667.00	673.36
	666.24	673.45
	663.50	673.56
	662.71	673.69
	664.03	673.82
	663.43	673.94
DESIGN ELEVATION	RIGHT BANK	(m)
LEFT BANK	(m)	
DESIGN HIGH WATER	(m)	663.98
RIVER CHANNEL BED	(m)	659.48
CHANNEL BED SLOPE	(m)	1/2050 0.000488
RIGHT BANK	(m)	
LEFT BANK	(m)	
ACCUMULATIVE DISTANCE	(m)	5+126.11
DISTANCE	(m)	56.65
STATION NO.	(m)	F.115

SCALE V 1 : 200
SCALE H 1 : 10000



LONGITUDINAL PROFILE OF CITARAM UPSTREAM RIVER (1/3)



- = Revetment
- = Bed Channel
- (L) = Left Side
- (R) = Right Side

PRESENT ELEVATION	RIGHT BANK	(m)																																																																		
	667.45	667.15	667.40	667.94	667.40	667.71	666.80	667.97	667.92	667.97	667.95	663.89	664.05	668.17	667.10	667.99	668.19	667.93	668.01	665.04	666.40	668.80	666.35	669.09	668.89	669.15	669.06	665.49	665.52	669.34	668.18	665.18	662.58	664.85	669.55	666.01	669.70	669.72	665.90	666.07	669.81	669.73	669.76	665.85	669.86	669.88	669.97	670.31	670.76	669.97	669.97	670.55	669.88	667.39	670.15	670.13	670.75	666.27	671.58	671.20	671.02	670.70	671.00	671.17				
LEFT BANK	667.05	667.77	667.18	667.65	668.06	667.73	667.47	668.10	667.42	668.16	667.37	667.74	668.15	667.91	668.07	667.81	668.35	668.54	669.14	668.48	669.20	668.70	668.99	668.60	669.15	669.00	669.35	669.20	668.00	668.77	668.98	668.80	669.26	669.15	669.00	669.76	669.34	669.62	669.83	669.85	669.00	669.68	669.76	669.76	670.49	669.56	669.83	670.07	670.25	670.20	669.97	670.21	669.97	670.55	670.57	667.39	670.80	670.99	670.13	670.75	670.77	670.64	671.00	671.36	671.38	671.22	671.00	671.41
RIVER CHANNEL BED	666.24	663.50	662.71	664.03	663.43	664.20	660.79	667.83	663.86	663.44	662.00	667.25	667.80	664.44	665.85	664.36	665.03	664.10	664.73	669.01	668.72	663.88	669.99	669.00	665.79	666.69	665.49	667.77	668.48	665.90	664.30	667.33	665.48	666.30	667.70	666.40	664.71	664.79	666.06	665.86	664.06	666.00	666.28	665.05	666.27	666.16	665.25	665.88	665.52	664.70	666.43	670.66	666.01	669.38	668.05	668.80	667.07	670.76	669.15	665.40	669.19	667.51	667.03	667.84				
CHANNEL BED SLOPE	1/750 0.001333																																																																			
DESIGN ELEVATION	RIGHT BANK	(m)																																																																		
LEFT BANK	(m)																																																																			
DESIGN HIGH WATER	(m)																																																																			
666.32	666.35	666.38	666.43	666.47	666.52	666.59	666.65	666.72	666.80	666.87	666.93	666.98	667.06	667.12	667.18	667.24	667.30	667.37	667.46	667.52	667.58	667.64	667.69	667.76	667.82	667.87	667.93	667.99	668.05	668.13	668.22	668.32	668.40	668.47	668.53	668.61	668.68	668.75	668.78	668.85	668.92	668.99	669.13	669.20	669.27	669.36	669.43	669.50	669.56	669.61	669.66	669.72	669.78	669.83	669.88	669.94	670.00	670.06	670.13	670.21	670.28	670.35	670.42					
RIVER CHANNEL BED	(m)																																																																			
662.82	662.85	662.88	662.93	662.97	663.02	663.09	663.15	663.22	663.30	663.37	663.43	663.48	663.56	663.62	663.68	663.74	663.80	663.87	663.96	664.02	664.08	664.14	664.19	664.26	664.32	664.37	664.43	664.49	664.55	664.63	664.72	664.82	664.90	664.97	665.03	665.11	665.18	665.25	665.28	665.35	665.42	665.49	665.56	665.63	665.70	665.77	665.86	665.93	666.00	666.06	666.11	666.16	666.22	666.28	666.33	666.38	666.44	666.50	666.56	666.63	666.71	666.78	666.85	666.92				
ACCUMULATIVE DISTANCE	(m)																																																																			
2+226.39	2+265.31	2+297.54	2+343.72	2+389.47	2+431.76	2+477.45	2+528.28	2+581.05	2+636.64	2+694.06	2+733.52	2+775.85	2+831.10	2+878.28	2+922.70	2+969.64	3+014.84	3+068.86	3+130.29	3+181.09	3+226.01	3+267.07	3+303.30	3+355.41	3+402.69	3+438.06	3+482.71	3+528.04	3+575.27	3+636.10	3+700.87	3+776.22	3+839.39	3+887.78	3+937.33	3+993.49	4+046.45	4+098.80	4+126.58	4+174.35	4+230.52	4+280.52	4+368.73	4+438.73	4+488.39	4+581.50	4+608.35	4+663.96	4+706.77	4+748.91	4+785.69	4+831.46	4+870.75	4+911.31	4+947.70	4+993.66	5+036.80	5+082.97	5+139.90	5+199.77	5+248.35	5+300.22	5+353.58					
DISTANCE	(m)																																																																			
47.40	38.92	32.23	46.18	45.75	42.29	45.69	50.83	52.77	55.59	57.42	38.46	42.33	55.25	47.18	44.42	46.94	45.20	54.02	61.43	50.80	44.92	41.06	38.23	52.11	47.28	35.37	44.55	45.33	47.23	60.83	64.77	75.35	63.17	48.39	49.55	56.16	52.96	52.35	27.78	47.77	55.17	50.00	108.21	50.00	48.66	73.11	46.85	55.61	42.81	42.14	38.78	45.77	38.29	40.56	38.39	45.96	43.14	46.17	56.93	59.87	49.58	50.87	53.36					
STATION NO.	(m)																																																																			
KK.48	KK.49	KK.50	KK.51	KK.52	KK.53	KK.54	KK.55	KK.56	KK.57	KK.58	KK.59	KK.60	KK.61	KK.62	KK.63	KK.64	KK.65	KK.66	KK.67	KK.68	KK.69	KK.70	KK.71	KK.72	KK.73	KK.74	KK.75	KK.76	KK.77	KK.78	KK.79	KK.80	KK.81	KK.82	KK.83	KK.84	KK.85	KK.86	KK.87	KK.88	KK.89	KK.90	KK.91	KK.92	KK.93	KK.94	KK.95	KK.96	KK.97	KK.98	KK.99	KK.100	KK.101	KK.102	KK.103	KK.104	KK.105	KK.106	KK.107	KK.108	KK.109	KK.110	KK.111					

SCALE V 1 : 200
SCALE H 1 : 10000





LONGITUDINAL PROFILE OF CITARUM UPSTREAM RIVER (2/3)

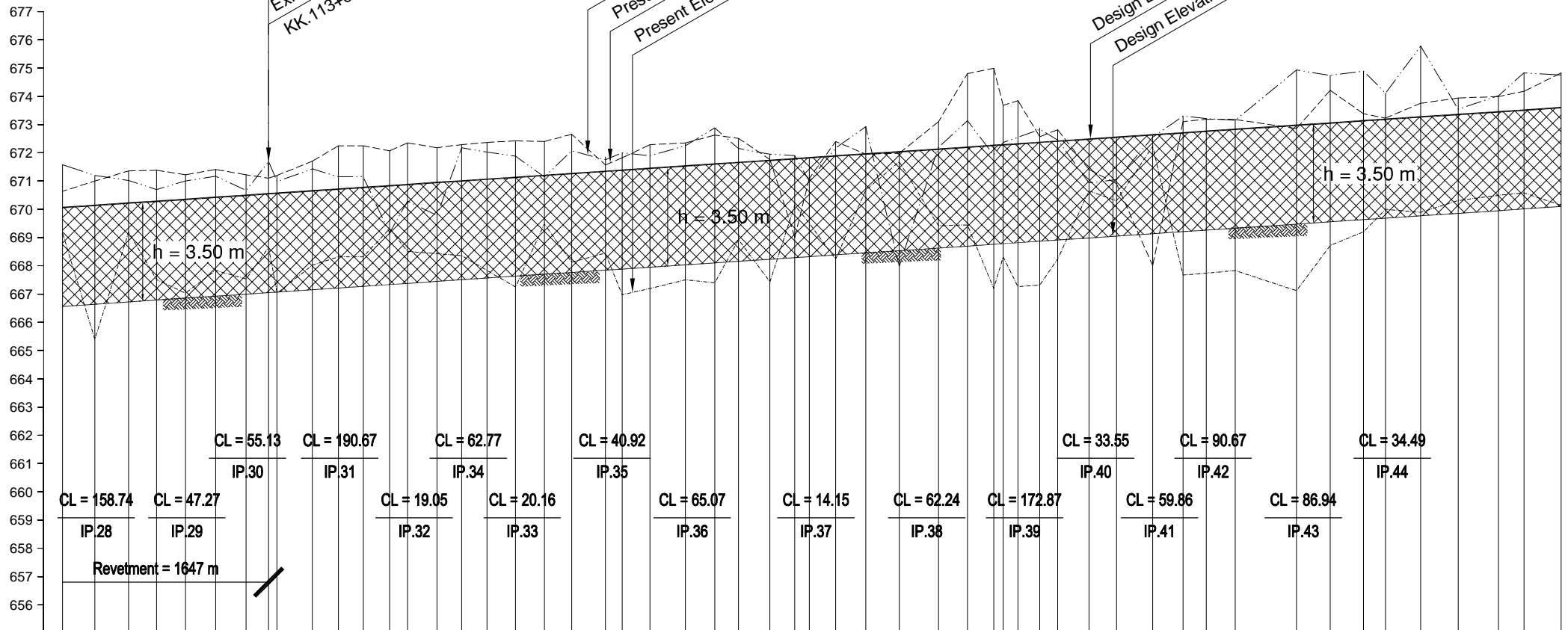
End of Proposed Works →

Existing Majalaya Road Bridge
KK.113+007 (Sta.5+454)

Present Elevation of Right Bank
Present Elevation of Left Bank
Present Elevation of River Channel Bed

Design Elevation of high water level
Design Elevation of River Channel Bed

-  = Revetment
-  = Bed Channel
- (L) = Left Side
- (R) = Right Side

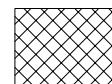



PRESENT ELEVATION	RIGHT BANK (m)		LEFT BANK (m)		RIVER CHANNEL BED (m)		CHANNEL BED SLOPE (m)	
	Station	Elevation	Station	Elevation	Station	Elevation	Station	Elevation
	5+000	671.58	5+000	670.64	5+000	669.15	5+000	
	5+010	671.20	5+010	671.00	5+010	665.40	5+010	
	5+020	671.02	5+020	671.36	5+020	669.19	5+020	
	5+030	670.70	5+030	671.38	5+030	667.51	5+030	
	5+040	671.00	5+040	671.22	5+040	667.03	5+040	
	5+050	671.17	5+050	671.41	5+050	667.84	5+050	
	5+060	670.87	5+060	671.22	5+060	667.53	5+060	
	5+070	670.98	5+070	671.20	5+070	669.65	5+070	
	5+080	671.43	5+080	671.70	5+080	668.02	5+080	
	5+090	671.15	5+090	672.25	5+090	668.32	5+090	
	5+100	671.15	5+100	672.25	5+100	668.32	5+100	
	5+110	669.16	5+110	672.07	5+110	669.31	5+110	
	5+120	670.29	5+120	672.35	5+120	668.51	5+120	
	5+130	669.78	5+130	672.18	5+130	668.43	5+130	
	5+140	672.18	5+140	672.29	5+140	668.36	5+140	
	5+150	672.02	5+150	672.36	5+150	667.83	5+150	
	5+160	671.88	5+160	672.42	5+160	667.25	5+160	
	5+170	671.14	5+170	672.40	5+170	669.48	5+170	
	5+180	672.06	5+180	672.65	5+180	668.13	5+180	
	5+190	671.75	5+190	671.57	5+190	668.44	5+190	
	5+200	672.00	5+200	671.82	5+200	666.97	5+200	
	5+210	671.89	5+210	672.29	5+210	667.19	5+210	
	5+220	672.24	5+220	672.34	5+220	667.50	5+220	
	5+230	672.88	5+230	672.62	5+230	667.39	5+230	
	5+240	672.15	5+240	672.50	5+240	668.92	5+240	
	5+250	671.95	5+250	671.76	5+250	667.43	5+250	
	5+260	671.89	5+260	669.00	5+260	670.14	5+260	
	5+270	670.99	5+270	671.09	5+270	669.50	5+270	
	5+280	672.16	5+280	672.40	5+280	668.23	5+280	
	5+290	672.92	5+290	671.95	5+290	670.67	5+290	
	5+300	667.98	5+300	671.98	5+300	671.68	5+300	
	5+310	672.18	5+310	673.10	5+310	669.41	5+310	
	5+320	673.13	5+320	674.80	5+320	669.44	5+320	
	5+330	672.92	5+330	674.88	5+330	668.19	5+330	
	5+340	672.55	5+340	672.96	5+340	667.26	5+340	
	5+350	672.83	5+350	673.84	5+350	667.32	5+350	
	5+360	672.45	5+360	672.57	5+360	668.24	5+360	
	5+370	670.93	5+370	672.81	5+370	668.24	5+370	
	5+380	671.05	5+380	671.40	5+380	670.65	5+380	
	5+390	672.55	5+390	670.91	5+390	670.30	5+390	
	5+400	673.30	5+400	668.01	5+400	672.23	5+400	
	5+410	673.21	5+410	673.10	5+410	667.87	5+410	
	5+420	673.15	5+420	673.19	5+420	667.74	5+420	
	5+430	674.93	5+430	673.18	5+430	667.83	5+430	
	5+440	674.74	5+440	672.86	5+440	667.12	5+440	
	5+450	674.89	5+450	674.21	5+450	668.72	5+450	
	5+460	674.11	5+460	673.38	5+460	669.20	5+460	
	5+470	675.78	5+470	673.23	5+470	670.00	5+470	
	5+480	673.54	5+480	673.75	5+480	669.89	5+480	
	5+490	674.02	5+490	673.94	5+490	670.31	5+490	
	5+500	674.83	5+500	673.99	5+500	670.49	5+500	
	5+510	674.83	5+510	674.17	5+510	670.58	5+510	
	5+520	674.75	5+520	674.83	5+520	670.14	5+520	

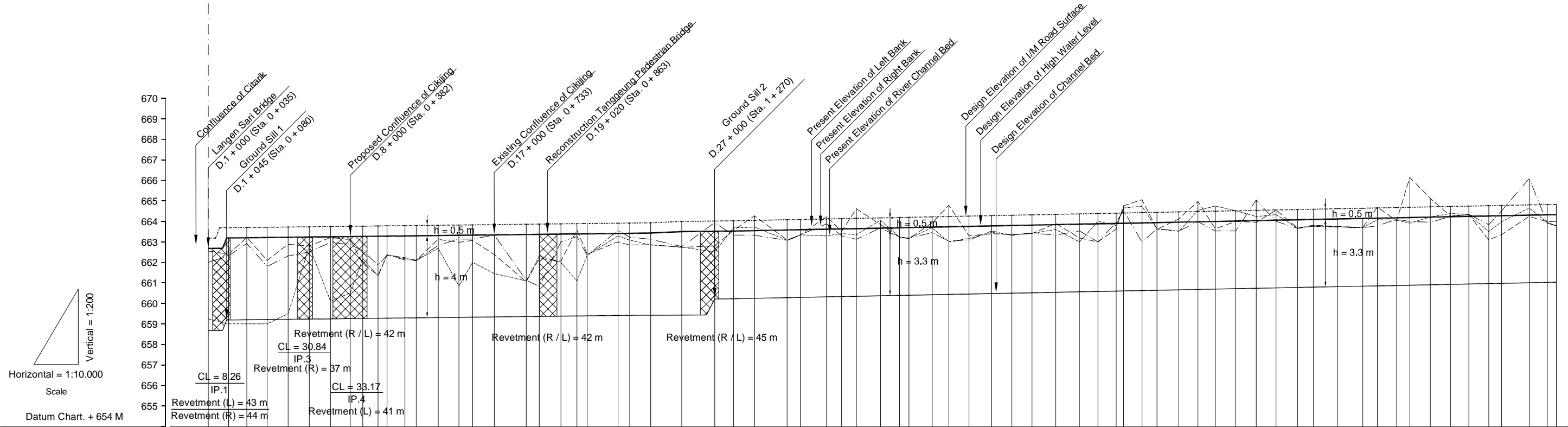
SCALE V 1 : 200
SCALE H 1 : 10000



LONGITUDINAL PROFILE OF CITARUM UPSTREAM RIVER (3/3)

-  = Revetment
-  = Bed Channel
- (L) = Left Side
- (R) = Right Side

PACKAGE V WORKS PROPOSED IMPROVEMENT WORKS

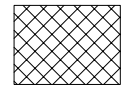
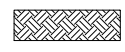


STATION NO.	PRESENT ELEVATION (m)		CHANNEL BED SLOPE	DESIGN ELEVATION (m)			ACCUMULATIVE DISTANCE (m)	DISTANCE (m)
	RIGHT BANK	LEFT BANK		1M ROAD SURFACE	DESIGN HIGH WATER	RIVER CHANNEL BED		
D.1	662.00	662.55		663.17	662.67	658.67	0+035.00	35.00
D.2	662.32	662.40		663.69	663.19	659.19	0+084.62	49.62
D.3	662.92	663.21		663.70	663.20	659.20	0+129.23	94.23
D.4	661.80	662.09		663.71	663.21	659.21	0+178.89	143.89
D.5	662.31	662.88		663.72	663.22	659.22	0+230.04	195.04
D.6	662.51	662.80		663.73	663.23	659.23	0+281.63	246.63
D.7	662.97	663.21		663.74	663.24	659.24	0+333.23	298.23
D.8	662.87	663.11		663.75	663.25	659.25	0+381.69	346.69
D.9	662.55	661.93		663.76	663.26	659.26	0+412.18	377.18
D.10	661.86	661.36		663.77	663.27	659.27	0+449.35	414.35
D.11	662.35	662.35		663.78	663.28	659.28	0+471.11	436.11
D.12	662.11	662.23		663.79	663.29	659.29	0+514.91	479.91
D.13	662.08	662.10		663.79	663.29	659.29	0+542.45	507.45
D.14	662.83	663.12		663.80	663.30	659.30	0+595.93	560.93
D.15	663.13	662.97		663.82	663.32	659.32	0+646.69	611.69
D.16	663.13	663.06		663.82	663.32	659.32	0+679.90	644.90
D.17	663.33	662.38		663.84	663.34	659.34	0+732.74	697.74
D.18	661.13	661.05		663.85	663.35	659.35	0+810.69	775.69
D.19	660.83	662.18		663.86	663.36	659.36	0+842.55	807.55
D.19a	663.00	662.06		663.87	663.37	659.37	0+895.34	860.34
D.20a	663.26	663.58		663.87	663.37	659.37	0+934.43	899.43
D.21a	662.34	662.40		663.87	663.37	659.37	0+959.57	924.57
D.22	663.56	663.00		663.91	663.41	659.41	1+034.67	1000.67
D.22a	663.22	662.84		663.91	663.41	659.41	1+063.30	1029.30
D.23	663.12	662.86		663.92	663.42	659.42	1+114.52	1080.52
D.23a	662.76	662.73		663.99	663.49	660.19	1+190.03	1156.03
D.27	663.94	662.80		664.01	663.51	660.21	1+270.43	1236.43
D.27a	663.33	663.55		664.02	663.52	660.22	1+316.15	1282.15
D.30	663.32	664.27		664.04	663.54	660.24	1+367.76	1333.76
D.32	663.06	663.06		664.07	663.57	660.27	1+447.22	1413.22
D.33	663.34	663.34		664.09	663.59	660.29	1+479.37	1445.37
D.34	663.88	664.23		664.11	663.61	660.31	1+543.37	1509.37
D.34a	663.29	663.50		664.13	663.63	660.33	1+590.15	1556.15
D.35	663.12	664.81		664.14	663.64	660.34	1+615.96	1581.96
D.35a	663.68	664.05		664.16	663.66	660.36	1+674.69	1640.69
D.36	663.22	663.22		664.18	663.68	660.38	1+721.50	1687.50
D.37	663.16	663.16		664.19	663.69	660.39	1+744.30	1710.30
D.38	663.45	663.92		664.22	663.72	660.42	1+800.80	1766.80
D.39	663.02	664.78		664.23	663.73	660.43	1+841.75	1807.75
D.39a	663.09	663.29		664.25	663.75	660.45	1+890.74	1856.74
D.40	663.52	663.39		664.27	663.77	660.47	1+946.32	1912.32
D.41	663.32	663.35		664.29	663.79	660.49	1+995.27	1961.27
D.42	663.42	663.40		664.31	663.81	660.51	2+044.45	2010.45
D.43	663.33	663.89		664.34	663.84	660.54	2+102.48	2068.48
D.44	663.53	663.18		664.36	663.86	660.56	2+160.17	2126.17
D.45a	663.00	663.00		664.38	663.88	660.58	2+205.44	2171.44
D.46	663.95	663.63		664.40	663.90	660.60	2+249.87	2215.87
D.47	663.00	665.05		664.42	663.92	660.62	2+312.66	2278.66
D.48	663.63	663.60		664.43	663.93	660.63	2+346.29	2312.29
D.49	663.52	664.12		664.46	663.96	660.66	2+402.54	2368.54
D.49a	663.98	664.54		664.47	663.97	660.67	2+449.22	2415.22
D.50	663.53	663.64		664.49	663.99	660.69	2+491.55	2457.55
D.51	663.53	664.00		664.51	664.01	660.71	2+541.26	2508.26
D.52	665.04	663.95		664.53	664.03	660.73	2+591.29	2558.29
D.52a	663.99	664.54		664.55	664.05	660.75	2+639.86	2606.86
D.53	663.65	663.67		664.57	664.07	660.77	2+692.19	2659.19
D.54	663.75	663.81		664.59	664.09	660.79	2+731.02	2698.02
D.54a	663.72	663.75		664.61	664.11	660.81	2+789.72	2756.72
D.55	663.69	663.70		664.64	664.14	660.84	2+851.29	2818.29
D.56	663.78	664.68		664.65	664.15	660.85	2+886.73	2853.73
D.57	664.10	664.03		664.67	664.17	660.87	2+933.77	2900.77
D.58	663.99	666.14		664.68	664.18	660.88	2+966.05	2933.05
D.59	663.96	665.12		664.70	664.20	660.90	3+016.07	2984.07
D.60	664.23	664.38		664.72	664.22	660.92	3+065.15	3033.15
D.61	664.34	664.32		664.74	664.24	660.94	3+110.14	3078.14
D.62	663.84	663.50		664.76	664.26	660.96	3+158.54	3126.54
D.62a	664.51	663.98		664.77	664.27	660.97	3+189.50	3157.50
D.63	666.08	664.24		664.80	664.30	661.00	3+257.23	3225.23
D.63a	663.91	663.96		664.82	664.32	661.02	3+301.56	3269.56
D.64	663.78	664.00		664.82	664.32	661.02	3+323.42	3291.42

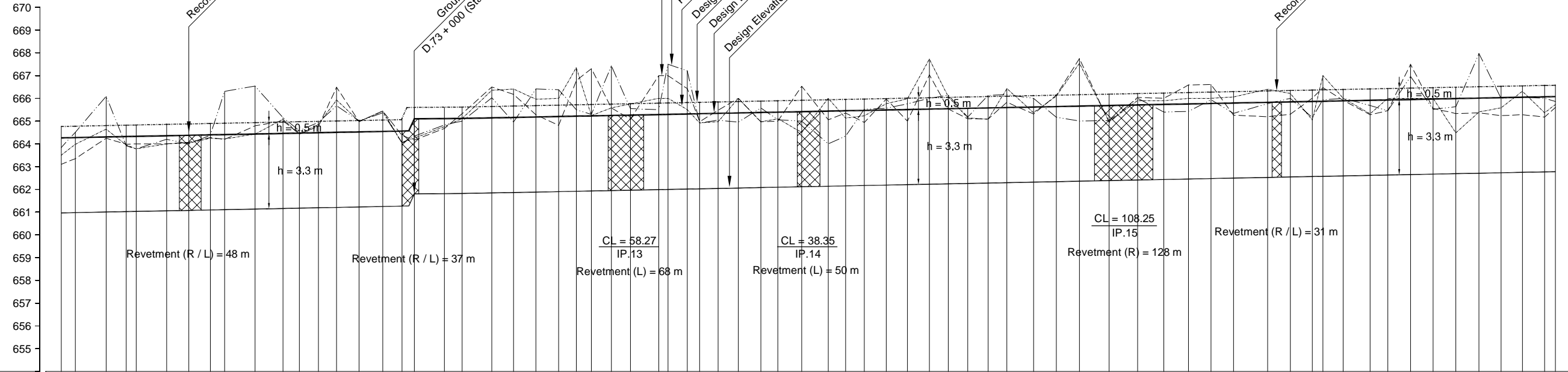
SCALE V 1 : 200
SCALE H 1 : 10000



LONGITUDINAL PROFILE OF CIMANDE RIVER (1/3)

-  = Revetment
-  = Bed Channel
- (L) = Left Side
- (R) = Right Side

Vertical = 1:200
Horizontal = 1:10.000
Scale
Datum Chart. + 654 M





STATION NO.	DISTANCE (m)	ACCUMULATIVE DISTANCE (m)	DESIGN ELEVATION (m)			PRESENT ELEVATION (m)	
			RIVER CHANNEL BED	DESIGN HIGH WATER	IM ROAD SURFACE	RIVER CHANNEL BED	LEFT BANK
D.62	48.40	3+158.54	660.96	664.26	664.76	663.50	663.84
D.62a	30.98	3+189.50	660.97	664.27	664.77	663.98	664.51
D.63	67.3	3+257.23	661.00	664.30	664.80	664.64	666.08
D.63a	44.33	3+301.56	661.02	664.32	664.82	663.98	663.91
D.64	21.06	3+323.42	661.02	664.32	664.82	663.78	663.78
D.64a	67.00	3+390.43	661.05	664.35	664.85	664.00	664.20
D.64b	48.47	3+438.90	661.07	664.37	664.87	664.03	664.00
D.65	47.36	3+486.26	661.09	664.39	664.89	664.24	664.38
D.66	31.39	3+517.65	661.10	664.40	664.90	664.21	666.30
D.67	66.90	3+584.55	661.13	664.43	664.93	664.43	666.54
D.68	61.45	3+646.00	661.15	664.45	664.95	665.07	665.14
D.69	35.97	3+681.97	661.17	664.47	664.97	664.44	664.58
D.69a	41.89	3+723.85	661.18	664.48	664.98	664.85	664.94
D.70	39.91	3+763.76	661.20	664.50	665.00	665.93	665.67
D.70a	49.61	3+813.37	661.22	664.52	665.02	664.98	664.99
D.71	51.78	3+865.15	661.24	664.54	665.04	665.43	665.36
D.72	42.23	3+907.39	661.26	664.56	665.06	664.04	664.04
D.73	26.99	3+934.38	661.80	665.10	665.60	664.25	664.33
D.73a	66.13	4+000.71	661.80	665.10	665.60	664.75	664.83
D.74	39.14	4+039.85	661.81	665.11	665.61	665.11	665.00
D.75	65.12	4+104.97	661.84	665.14	665.64	666.35	666.02
D.76	47.93	4+152.90	661.86	665.16	665.66	666.40	664.96
D.77	49.08	4+201.98	661.88	665.18	665.68	665.96	666.41
D.78	49.86	4+251.83	661.90	665.20	665.70	666.00	666.38
D.79	38.75	4+290.58	661.91	665.21	665.71	667.34	665.50
D.80	33.24	4+323.82	661.92	665.22	665.72	667.30	665.29
D.81	43.92	4+367.74	661.94	665.24	665.74	665.58	667.43
D.82	41.78	4+409.52	661.96	665.26	665.76	665.75	665.54
D.83	62.44	4+471.96	661.98	665.28	665.78	665.00	665.50
D.83a	20.28	4+492.22	661.99	665.29	665.79	667.00	667.50
D.85	42.25	4+534.47	662.01	665.31	665.81	666.50	666.42
D.86	27.39	4+561.86	662.02	665.32	665.82	664.92	664.91
D.87	40.50	4+602.36	662.04	665.34	665.84	664.97	665.04
D.88	44.49	4+646.85	662.05	665.35	665.85	666.00	664.95
D.89	49.41	4+696.26	662.07	665.37	665.87	664.96	665.58
D.90	37.45	4+733.71	662.09	665.39	665.89	665.10	665.06
D.91	52.43	4+786.14	662.11	665.41	665.91	664.50	665.00
D.92	38.28	4+844.40	662.13	665.43	665.93	666.00	664.00
D.93	38.20	4+882.60	662.15	665.45	665.95	665.13	664.34
D.94	41.10	4+923.70	662.16	665.46	665.96	665.23	665.52
D.95	48.25	4+971.94	662.18	665.48	665.98	665.76	665.56
D.96	46.44	5+016.38	662.20	665.50	666.00	665.97	665.75
D.97	48.30	5+066.68	662.22	665.52	666.02	667.72	666.00
D.98	41.70	5+108.39	662.24	665.54	666.04	665.53	666.13
D.99	42.61	5+151.00	662.26	665.56	666.06	665.14	665.17
D.100	44.86	5+195.86	662.27	665.57	666.07	665.08	666.13
D.101	41.27	5+237.13	662.29	665.59	666.09	666.43	666.16
D.102	38.50	5+295.63	662.31	665.61	666.11	665.37	666.00
D.103	50.05	5+345.68	662.33	665.63	666.13	666.10	665.17
D.104	50.88	5+396.57	662.35	665.65	666.15	667.54	665.00
D.105	65.23	5+461.80	662.38	665.68	666.18	664.98	665.02
D.106	62.46	5+524.26	662.40	665.70	666.20	665.90	666.00
D.107	57.92	5+582.18	662.43	665.73	666.23	665.89	665.39
D.108	54.03	5+636.21	662.45	665.75	666.25	666.00	665.42
D.109	49.69	5+685.90	662.47	665.77	666.27	666.00	665.93
D.110	49.22	5+735.12	662.49	665.79	666.29	666.06	665.34
D.111	75.17	5+810.28	662.52	665.82	666.32	666.40	665.76
D.112	49.82	5+860.10	662.54	665.84	666.34	666.21	666.00
D.113	48.39	5+908.48	662.56	665.86	666.36	665.04	665.15
D.114	23.23	5+931.71	662.57	665.87	666.37	667.00	665.93
D.115	44.64	5+976.35	662.59	665.89	666.39	666.00	666.00
D.116	59.98	6+035.33	662.61	665.91	666.41	665.31	665.68
D.117	39.13	6+074.46	662.62	665.92	666.42	666.00	665.46
D.118	49.86	6+124.32	662.64	665.94	666.44	666.00	666.96
D.119	49.49	6+173.82	662.66	665.96	666.46	666.00	665.51
D.120	50.04	6+223.85	662.68	665.98	666.48	664.48	665.63
D.121	50.92	6+274.77	662.71	666.01	666.51	665.40	667.97
D.122	48.65	6+323.42	662.72	666.02	666.52	665.58	666.00
D.123	46.89	6+370.11	662.74	666.04	666.54	666.31	666.05
D.124	48.80	6+418.91	662.76	666.06	666.56	665.36	666.00
D.125	23.94	6+442.86	662.77	666.07	666.57	665.72	665.86

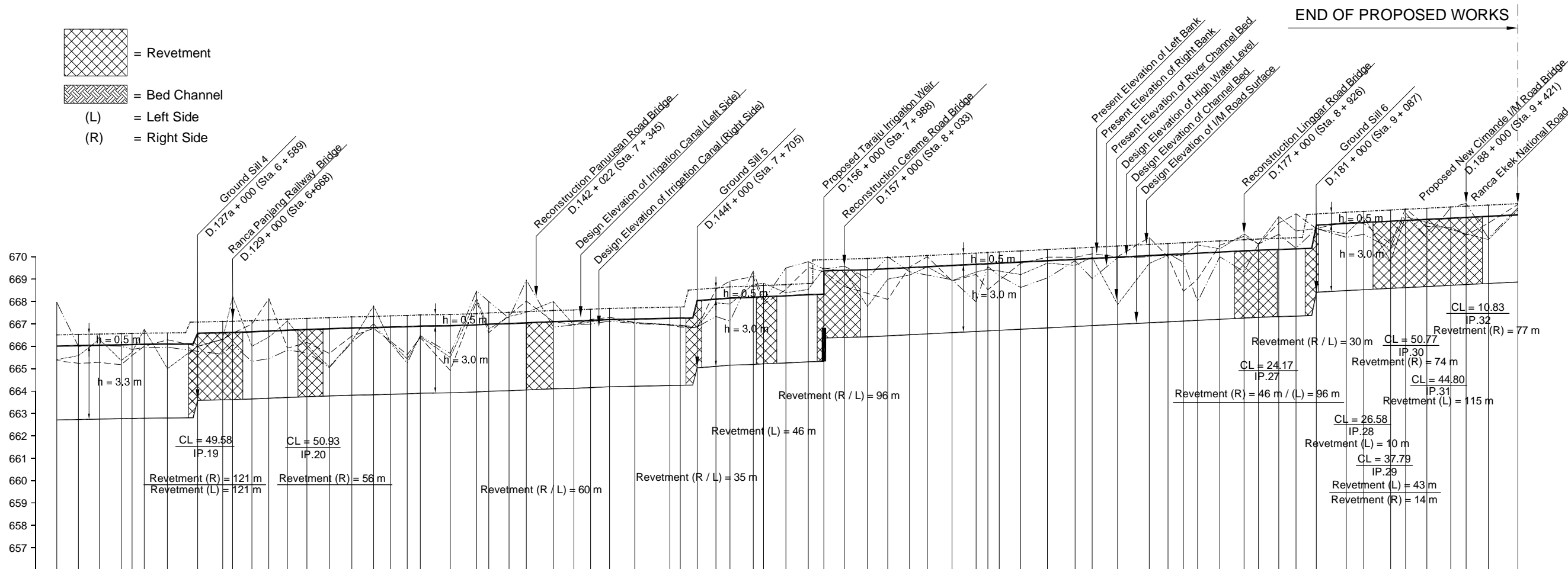
SCALE V 1 : 200
SCALE H 1 : 10000



LONGITUDINAL PROFILE OF CIMANDE RIVER (2/3)

-  = Revetment
-  = Bed Channel
- (L) = Left Side
- (R) = Right Side

Vertical = 1:200
Horizontal = 1:10,000
Scale
Datum Chart. + 656 M



PRESENT ELEVATION	RIGHT BANK (m)		LEFT BANK (m)		RIVER CHANNEL BED (m)		CHANNEL BED SLOPE (m)	DESIGN ELEVATION		ACCUMULATIVE DISTANCE (m)	DISTANCE (m)	STATION NO. (m)
	Present	Design	Present	Design	Present	Design		High Water	Channel Bed			
	667.97	666.00	665.36	666.01	665.40	666.01	666.51	666.01	6+274.77	50.82	D.121	
	666.00	666.05	665.24	666.02	665.58	666.02	666.52	666.02	6+323.42	48.65	D.122	
	666.05	666.06	665.28	666.04	666.31	666.04	666.54	666.04	6+370.11	46.89	D.123	
	666.06	666.07	665.36	666.05	666.36	666.05	666.56	666.05	6+418.91	46.80	D.124	
	666.07	666.08	665.59	666.07	666.57	666.07	666.57	666.07	6+442.86	23.94	D.125	
	666.08	666.09	666.00	666.08	666.76	666.08	666.58	666.08	6+470.13	27.27	D.126	
	666.09	666.10	666.28	666.10	666.00	666.10	666.60	666.10	6+521.89	51.77	D.127	
	666.10	666.11	666.00	666.08	666.00	666.08	667.08	666.08	6+589.32	67.43	D.127a	
	666.11	666.12	666.30	666.10	666.22	666.10	667.10	666.10	6+646.35	56.03	D.128	
	666.12	666.13	666.58	666.11	666.32	666.11	667.36	666.11	6+667.81	22.25	D.128a	
	666.13	666.14	667.00	666.12	666.00	666.12	667.39	666.12	6+710.86	43.05	D.129	
	666.14	666.15	668.12	666.13	666.41	666.13	667.42	666.13	6+748.40	37.74	D.130	
	666.15	666.16	668.91	666.14	667.13	666.14	667.45	666.14	6+789.82	41.42	D.131	
	666.16	666.17	668.17	666.15	666.04	666.15	667.49	666.15	6+833.56	43.74	D.132	
	666.17	666.18	668.68	666.16	666.08	666.16	667.52	666.16	6+883.34	48.78	D.133	
	666.18	666.19	668.46	666.17	666.22	666.17	667.55	666.17	6+933.85	50.30	D.134	
	666.19	666.20	668.80	666.18	667.81	666.18	667.58	666.18	6+982.40	48.56	D.135	
	666.20	666.21	668.22	666.19	668.15	666.19	667.60	666.19	7+020.26	37.86	D.135a	
	666.21	666.22	668.62	666.20	668.44	666.20	667.61	666.20	7+057.38	37.12	D.137	
	666.22	666.23	668.39	666.21	668.43	666.21	667.64	666.21	7+088.47	20.89	D.138	
	666.23	666.24	668.50	666.22	668.50	666.22	667.66	666.22	7+153.33	66.88	D.138a	
	666.24	666.25	668.13	666.23	668.13	666.23	667.70	666.23	7+212.38	58.05	D.140	
	666.25	666.26	668.60	666.24	668.77	666.24	667.73	666.24	7+238.51	27.13	D.141	
	666.26	666.27	667.39	666.25	667.32	666.25	667.75	666.25	7+284.81	45.29	D.141a	
	666.27	666.28	668.01	666.26	667.51	666.26	667.79	666.26	7+323.34	36.54	D.142	
	666.28	666.29	667.10	666.27	668.00	666.27	667.84	666.27	7+383.50	60.16	D.143	
	666.29	666.30	668.96	666.28	668.95	666.28	667.86	666.28	7+429.27	45.77	D.144	
	666.30	666.31	668.19	666.29	667.09	666.29	667.90	666.29	7+468.67	37.40	D.144a	
	666.31	666.32	668.29	666.30	667.21	666.30	667.93	666.30	7+509.23	42.56	D.144b	
	666.32	666.33	667.06	666.31	667.05	666.31	667.96	666.31	7+565.43	56.20	D.144c	
	666.33	666.34	666.94	666.32	666.97	666.32	667.99	666.32	7+643.69	76.26	D.144d	
	666.34	666.35	666.85	666.33	666.94	666.33	668.00	666.33	7+668.96	23.27	D.144e	
	666.35	666.36	666.82	666.34	666.84	666.34	668.01	666.34	7+704.71	37.75	D.144f	
	666.36	666.37	668.55	666.35	667.94	666.35	668.04	666.35	7+746.53	41.82	D.150	
	666.37	666.38	668.92	666.36	667.89	666.36	668.05	666.36	7+777.99	31.46	D.151	
	666.38	666.39	669.52	666.37	668.76	666.37	668.08	666.37	7+829.72	51.73	D.152	
	666.39	666.40	669.81	666.38	669.81	666.38	668.11	666.38	7+862.75	23.02	D.153	
	666.40	666.41	668.53	666.39	668.39	666.39	668.15	666.39	7+902.55	48.80	D.154	
	666.41	666.42	669.05	666.40	668.53	666.40	668.18	666.40	7+952.50	49.95	D.155	
	666.42	666.43	669.33	666.41	669.49	666.41	668.21	666.41	7+987.58	35.08	D.156	
	666.43	666.44	668.67	666.42	669.35	666.42	668.25	666.42	8+033.33	45.75	D.157	
	666.44	666.45	668.37	666.43	667.78	666.43	668.28	666.43	8+084.97	51.63	D.158	
	666.45	666.46	668.09	666.44	669.00	666.44	668.31	666.44	8+130.15	45.18	D.159	
	666.46	666.47	668.53	666.45	669.18	666.45	668.35	666.45	8+178.86	48.71	D.160	
	666.47	666.48	670.00	666.46	669.54	666.46	668.38	666.46	8+218.42	38.56	D.161	
	666.48	666.49	668.91	666.47	669.94	666.47	668.41	666.47	8+273.57	55.15	D.161a	
	666.49	666.50	669.21	666.48	669.44	666.48	668.45	666.48	8+327.25	53.88	D.163	
	666.50	666.51	669.56	666.49	669.44	666.49	668.48	666.49	8+353.50	26.25	D.164	
	666.51	666.52	669.35	666.50	669.35	666.50	668.51	666.50	8+376.99	25.49	D.165	
	666.52	666.53	669.71	666.51	669.20	666.51	668.54	666.51	8+427.03	48.04	D.166	
	666.53	666.54	669.98	666.52	669.71	666.52	668.57	666.52	8+486.57	58.55	D.167	
	666.54	666.55	669.82	666.53	669.61	666.53	668.60	666.53	8+548.46	61.89	D.168	
	666.55	666.56	670.13	666.54	669.98	666.54	668.63	666.54	8+586.50	38.04	D.170	
	666.56	666.57	670.00	666.55	669.87	666.55	668.66	666.55	8+643.33	58.83	D.171	
	666.57	670.00	670.86	666.56	669.70	666.56	668.69	666.56	8+713.81	70.48	D.172	
	666.58	670.14	670.00	666.57	670.07	666.57	668.72	666.57	8+755.84	42.03	D.173	
	666.59	669.76	668.46	666.58	670.05	666.58	668.75	666.58	8+789.99	34.15	D.174	
	666.60	668.00	669.00	666.59	670.53	666.59	668.78	666.59	8+821.96	31.97	D.175	
	666.61	670.00	670.51	666.60	670.35	666.60	668.81	666.60	8+871.56	48.61	D.176	
	666.62	666.33	670.91	666.61	671.02	666.61	668.84	666.61	8+925.77	54.21	D.177	
	666.63	670.57	670.57	666.62	670.57	666.62	668.87	666.62	8+957.79	32.02	D.178	
	666.64	671.00	671.50	666.63	671.79	666.63	668.90	666.63	9+003.17	45.38	D.179	
	666.65	670.38	671.92	666.64	671.15	666.64	668.93	666.64	9+041.75	38.38	D.180	
	666.66	671.26	671.26	666.65	671.26	666.65	668.96	666.65	9+086.77	45.02	D.181	
	666.67	670.87	671.56	666.66	671.02	666.66	668.99	666.66	9+153.60	66.83	D.182	
	666.68	671.00	671.49	666.67	671.80	666.67	669.02	666.67	9+192.70	38.10	D.183	
	666.69	670.38	669.80	666.68	671.79	666.68	669.05	666.68	9+252.69	58.98	D.184	
	666.70	671.96	672.14	666.69	671.79	666.69	669.08	666.69	9+286.08	33.39	D.185	
	666.71	670.84	671.35	666.70	671.53	666.70	669.11	666.70	9+333.74	47.66	D.186	
	666.72	672.20	671.30	666.71	671.22	666.71	669.14	666.71	9+387.17	53.43	D.187	
	666.73	672.38	670.97	666.72	671.02	666.72	669.17	666.72	9+421.39	34.22	D.188	
	666.74	670.83	671.50	666.73	670.76	666.73	669.20	666.73	9+471.00	46.61	D.189	
	666.75	672.10	672.34	666.74	670.76	666.74	669.23	666.74	9+536.80	65.80	D.190	

SCALE V 1 : 200
SCALE H 1 : 10000



LONGITUDINAL PROFILE OF CIMANDE RIVER (3/3)