Appendix A

FAX: 491-11-4360009

03-Jan-04 Thu

Ann IX

GOVERNMENT OF INDIA
MINISTRY OF SURFACE TRANSPORT
(ROADS WING)

No. RW/NH/12016/105/95/N/UP. New Delhi, dt. 13/3/96

The Director,
Ganga Project Directorate,
Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi 110 003.

ADM

Sub: Construction of bridge across Yamuna at at Naini (Allahabad) - Regarding carriage of sewage pipes over the bridge.

Sir,

You would kindly recall that there has been a proposal to carry two sewage pipes of 1.2m dia across Yamuna over the proposed new bridge at Naini and the cost of the bridge was to be shared between the Central Ganga Development Authority and this Ministry. Subsequent to the above decision, it has been observed that sewage and water pipes carried over the highway structures cause considerable damage to the bridge deck and in view of this, this Ministry has taken a policy decision not to allow any such pipe lines over highway bridges.

2. In view of the above, it will not be possible to carry the proposed main over the bridge across Yamuna at Naini and if required, a suitable independant structure may be constructed by you for the sewage mains to carry sewage across Yamuna and no sharing of cost would be necessary.

Yours faithfully,

Kailash Krishan

(KRISHAN KAILASH)
Superintending Engineer/P,
for Director General/RD.

Copy to:
1. The Chief Engineer(NH), UP PWD, Lucknow.
2. Shri G. Sharan, National Highway Authority of India, Eastern Avenue, Maharani Bagh, New Delhi 110 065.
3. CE(P)N, MOST, New Delhi.

(KRISHAN KAILASH)
Superintending Engineer/P,
for Director General/RD.

Sl. No. 228(I) Annexure-X

D.O. No. Nil/12016/105/

S.C. Sharma
Chief Engineer

Tele: 3710378

भारत सरकार
Government of India
जल, भूतल परिवहन मंत्रालय
MINISTRY OF SURFACE TRANSPORT
ट्रांसपोर्ट भवन, Transport Bhawan
१, संसद मार्ग, 1, Parliament Street
नई दिल्ली-११०००१
New Delhi - 110001

the 9th April, 1999.

Dear Mrs. Sinha,

I am to invite your kind attention to your D.O. letter No. J-14015/1/93-GPD dated 12th March, 1999 addressed to Shri R. Vasudevan, Secretary(SFT) regarding carriage of sewerage pipelines on either the proposed new cable stayed bridge or the existing rail-cum-road bridge across Yamuna at Naini/Allahabad.

It was communicated to Ganga Project Directorate vide this office letter dated 18.3.1996 that it will not be possible to carry the proposed two sewerage pipes of 1.2m diameter over the proposed new bridge across Yamuna at Naini because of the damage the sewage and the gas emitting therefrom are likely to cause to the structure including stay cables. Subsequently, a request was received seeking permission to carry the sewerage pipelines over the existing rail-cum-road bridge vide letter dated 5.12.1996 from General Manager, Ganga Pollution Control Unit, UP Jal Nigam. In reply to this it was mentioned that till the completion of new bridge, the NH traffic is using the existing rail-cum-road bridge and it will not be possible to accede to your request. After completion of the new cable stayed bridge, the existing rail-cum-road bridge will belong to the Ministry of Railways and UP PWD and permission will have to be sought from them.

It is, therefore, suggested that the above mentioned authorities may be approached for seeking permission for carrying sewerage pipelines over the existing rail-cum-road bridge across Yamuna at Naini/Allahabad.

With regards,

Yours sincerely,

(S.C. Sharma)

Mrs. Malti Sinha,
Additional Secretary & Project Director,
National River Conservation Directorate,
Ministry of Environment & Forests,
Paryavaran Bhawan,
NEW DELHI-110 003

Annexure - X

2382/435-यमुना ब्रिज /16

मुख्य पुल इंजीनियर
उत्तर रेलवे 18.12.98
बड़ौदा हाउस, नई दिल्ली
CHIEF BRIDGE ENGINEER
NORTHERN RAILWAY
BARODA HOUSE
NEW DELHI

No.32-W/46/Pt.II(L)W.BR.

Dt: 12.11.98
16

General Manager,
Ganga Pollution Control Unit,
UP, Jal Nigam,
Mahewa Patti,Purab Uparhar,
Naini, Allahabad.

Sub: Permission for laying of 2 pipes of 1.20m dia rising mains through existing rail cum road bridge constructed over river Yamuna at Allahabad.

Ref: 1. Your letter No.866/435/2 dt.6.7.1998

2. Chief Engineer(East) DO.letter No.3565/ Ganga Poll./Phase-I Allahabad/20 dt.17.9.9

..

Railway Bridge over River Yamuna at Allahabad is distressed one. There is appreciable loss of camber in almost all spans including corrosion on various members. For safety of the bridge, Ministry of Railways had been approaching the State Government since long for diversion of the road traffic through separate bridge. Hence, even after commissioning of the new highway bridge, existing Railway Bridge over River Yamuna will be just sufficient to cater for the rail traffic. Therefore, further loading of any kind cannot be allowed on this bridge.

CHIEF BRIDGE ENGINEER

Appendix B

Table B1 Cost Comparison of Alternatives for District C and D

	District		Alternative II	Alternative III	Remarks
Treatment Plant Capacity (mld)					
Salori STP	C		100	35	FAB
Rajapur STP	D		20	80	UASB++
Total			120	115	
Pumping Station Capacity (mld)					
Allopibagh PS	D		62	41	
Total			62	41	
Land Required (ha)					
Salori STP	C		6.0	2.1	
Rajapur STP	D		7.0	28.0	
			5.6	4.2	Land for banking (+80%, +15%)
Alopibagh PS	D		0.0	0.0	
Total			18.6	34.3	
Banking (m3)					
Rajapur STP			440,720	860,860	

	District		Alternative II	Alternative III	Remarks
Capital Cost (Rs. Million)					
Salori STP	C		460.0	161.0	
Rajapur STP	D		60.0	240.0	
			220.4	430.4	Banking
Alopibagh PS	D	M/E	20.3	15.1	
		Civil	30.7	0.0	
		RM	47.7	34.4	
Total			839.0	880.9	

	District		Alternative II	Alternative III	Remarks
Land Cost (Rs. Million)					
Salori STP	C		0.0	0.0	
Rajapur STP	D		50.4	128.8	
Alopibagh PS	D		0.0	0.0	
Total			50.4	128.8	

	District		Alternative II	Alternative III	Remarks
Annual O/M Cost (Rs. Million/year)					
Salori STP	C		59.0	20.7	
Rajapur STP	D		2.6	10.4	
Alopibagh PS	D		1.1	0.5	
Total			62.7	31.5	

	District		Alternative II	Alternative III	Remarks
Life Cycle Cost					
Land			48.0	122.7	
Capital			799.0	839.0	
O&M			963.4	484.3	
Total Present Value (Rs. Million)			**1,810.4**	**1,445.9**	

Table B2 Cost Comparison of Alternatives for District B and E

	District		Alternative IV	Alternative V	Remarks
Treatment Plant Capacity (mld)					
Numaya Dahi	B		0	45	WSP
Sulemsarai STP	E		85	40	UASB++
Total			85	85	
Pumping Station Capacity (mld)					
Lukerganj PS	B		41	23	
Ghaghar Nala PS	B		18	41	
Sasur Khaderi PS	B		5	5	
Total			64	69	
Land Required (ha)					
Numaya Dahi	B		0.0	56.3	
Sulemsarai STP	E		29.8	14.0	
Lukerganj PS	B		1.0	1.0	
Ghaghar Nala PS	B		1.0	1.0	
Sasur Khaderi PS	B		1.0	1.0	
Total			32.8	73.3	

	District		Alternative IV	Alternative V	Remarks
Capital Cost (Rs. Million)					
Numaya Dahi	B		0.0	72.0	
Sulemsarai STP	E		255.0	120.0	
Lukerganj PS	B	M/E	12.3	6.9	
		Civil	19.5	3.9	
		RM	43.3	0.3	
Ghaghar Nala PS	B	M/E	5.4	15.1	
		Civil	4.3	19.5	
		RM	52.6	138.0	
Sasur Khaderi PS	B	M/E	1.5	1.5	
		Civil	2.2	2.2	
		RM	26.8	26.8	
Total			423.0	406.2	

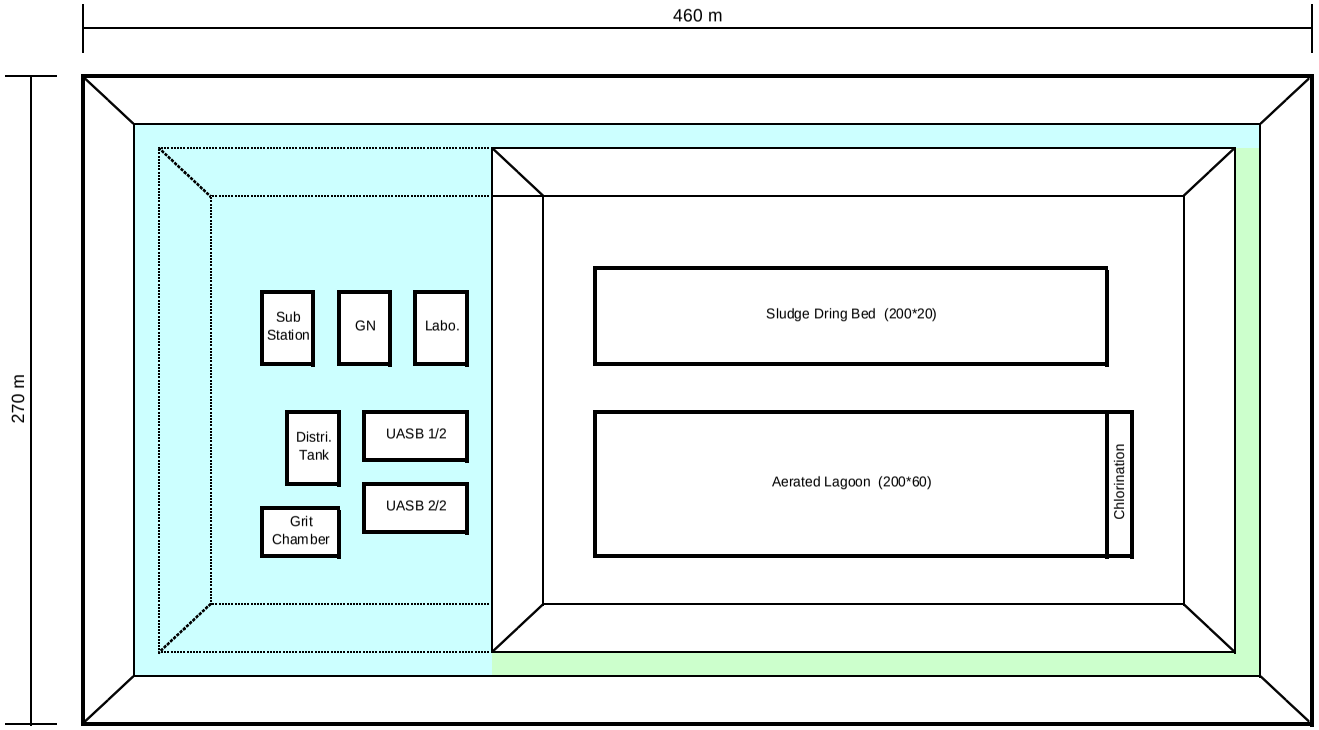
	District		Alternative IV	Alternative V	Remarks
Land Cost (Rs. Million)					
Numaya Dahi	B		0.0	225.0	
Sulemsarai STP	E		119.0	56.0	
Lukerganj PS	B		4.0	4.0	
Ghaghar Nala PS	B		4.0	4.0	
Sasur Khaderi PS	B		4.0	4.0	
Total			131.0	293.0	

	District		Alternative IV	Alternative V	Remarks
Annual O/M Cost (Rs. Million/year)					
Numaya Dahi	B		0.0	2.7	
Sulemsarai STP	E		11.1	5.2	
Lukerganj PS	B		0.7	0.3	
Ghaghar Nala PS	B		0.4	1.1	
Sasur Khaderi PS	B		0.1	0.1	
Total			12.2	9.4	

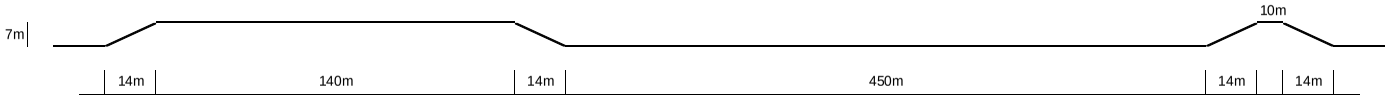
	District		Alternative IV	Alternative V	Remarks
Life Cycle Cost					
Land			124.8	279.0	
Capital			402.8	386.9	
O&M			187.8	143.8	
Total Present Value (Rs. Million)			**715.4**	**809.8**	

Rajapur STP 20 mld UASB+AL)

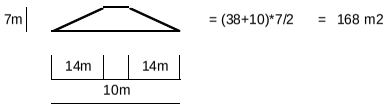
Design Capacity 20 mld
Land Acquisition
(270m x 460m) 12.4 ha



Long Section

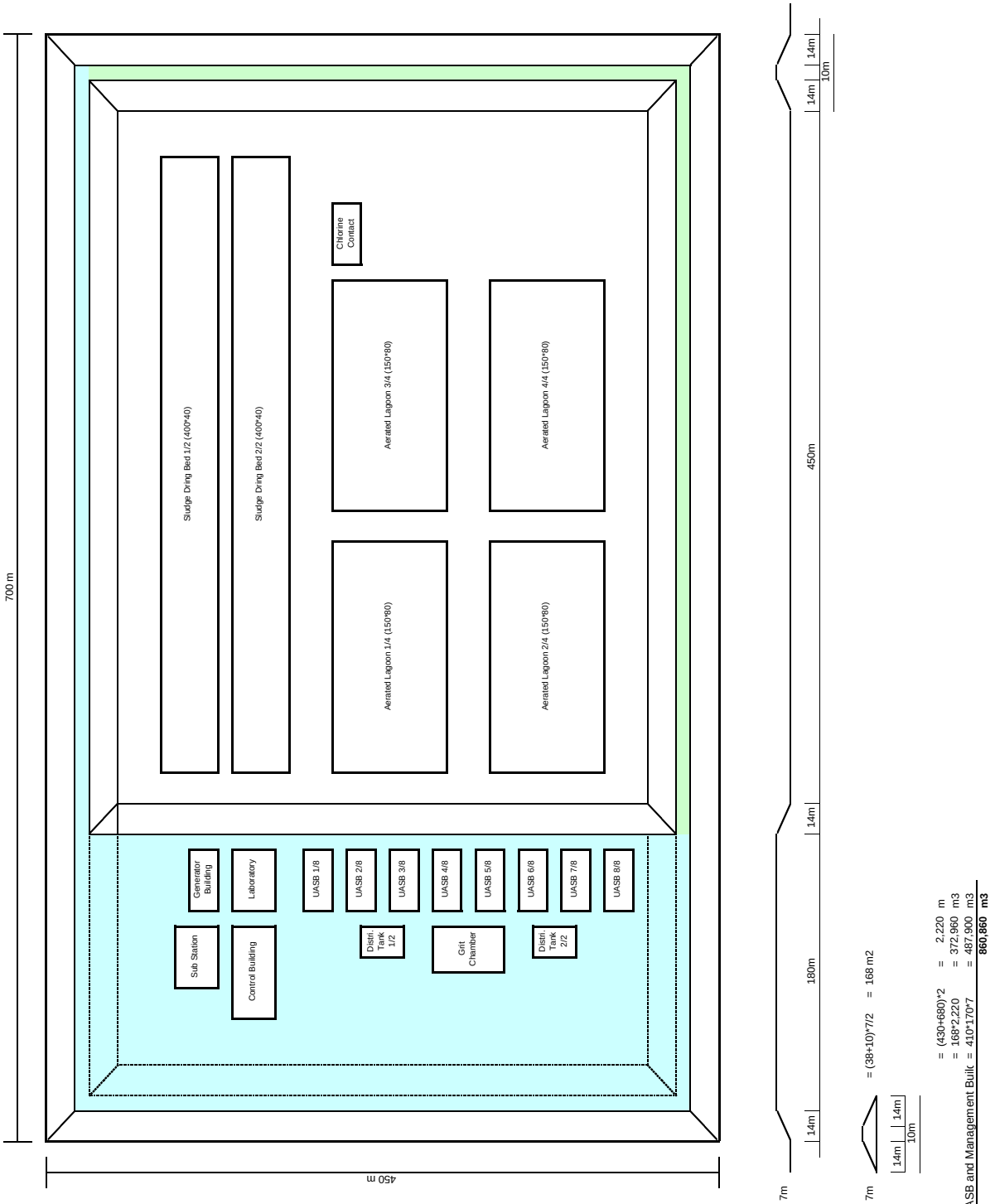


Cross Section of Bank

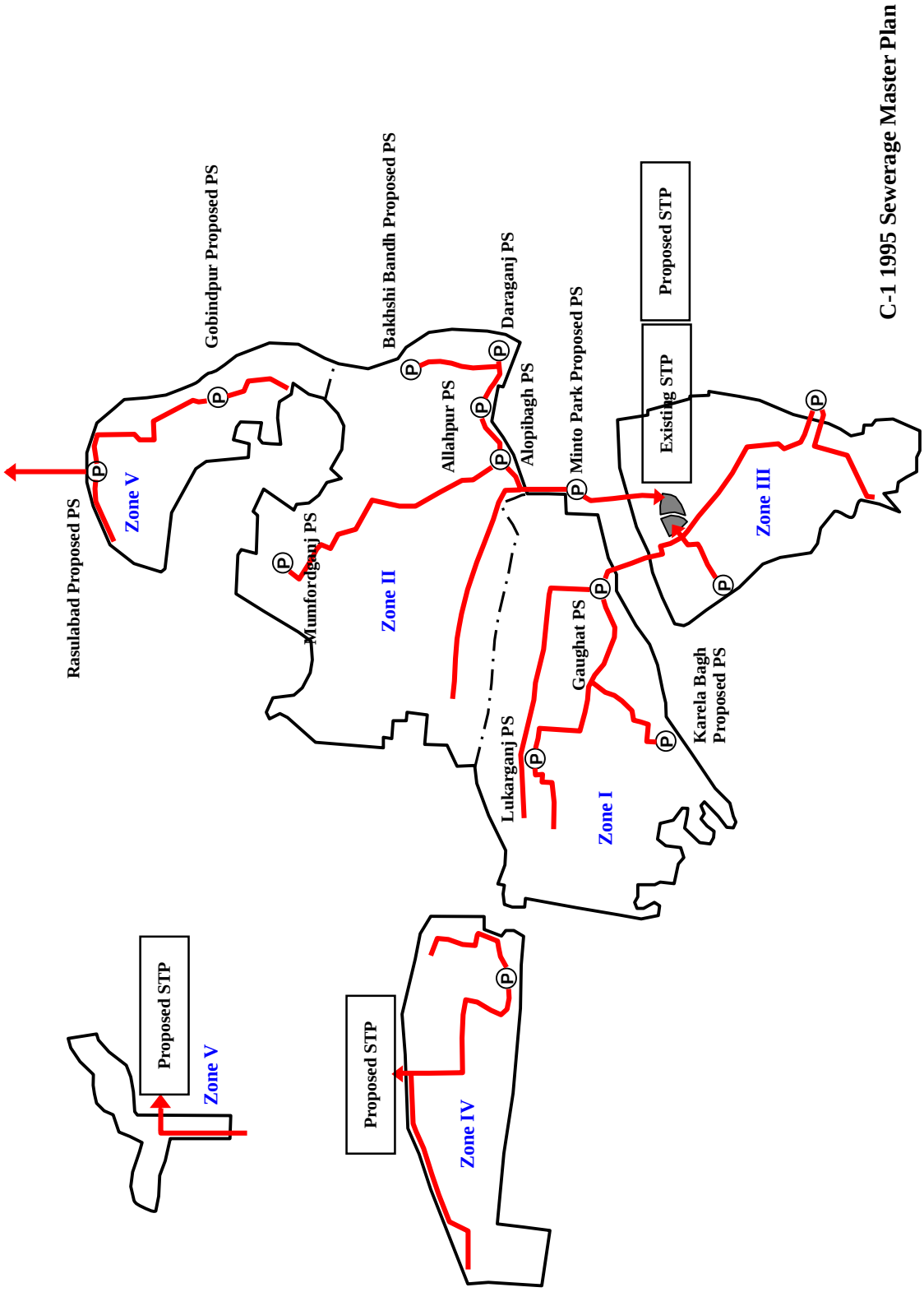


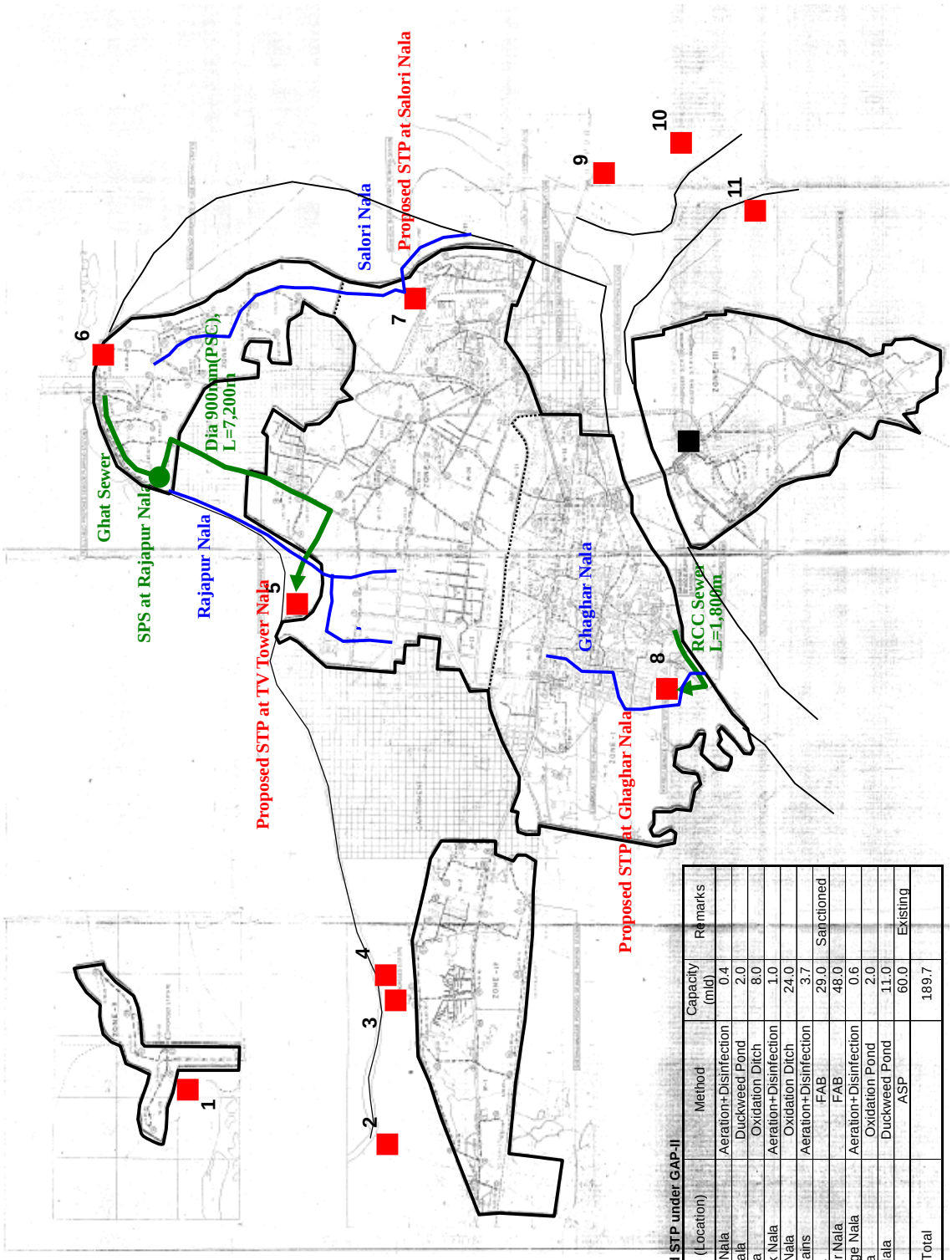
= (38+10)*7/2 = 168 m2

Length of bank	= (230+440)*2	=	1,340	m
Volume of bank	= 168*1,340	=	225,120	m3
Volume of reclamation for UASB and Management Building	= 220*140*7	=	215,600	m3
Total Volume			**440,720**	**m3**


Raiapur STP (80 mld UASB+AL)
Design Capacity 80 mld
Land Acquisition 31.5 ha
(450m x 700m)
700 m
450 m
Sludge Dring Bed 1/2 (400*40)
Sludge Dring Bed 2/2 (400*40)
Chlorine Contact
Aerated Lagoon 3/4 (150*80)
Aerated Lagoon 4/4 (150*80)
Aerated Lagoon 1/4 (150*80)
Aerated Lagoon 2/4 (150*80)
Generator Building
Laboratory
Sub Station
Control Building
UASB 1/8
UASB 2/8
UASB 3/8
UASB 4/8
UASB 5/8
UASB 6/8
UASB 7/8
UASB 8/8
Distri. Tank 1/2
Grit Chamber
Distri. Tank 2/2
Long Section
7m
14m
180m
14m
450m
14m
14m
10m
Cross Section of Bank
7m
= (38+10)*7/2 = 168 m2
14m
14m
10m
Length of bank = (430+680)*2 = 2,220 m
Volume of bank = 168*2,220 = 372,960 m3
Volume of reclamation for UASB and Management Buik = 410*170*7 = 487,900 m3
Total Volume 860,860 m3

Appendix C

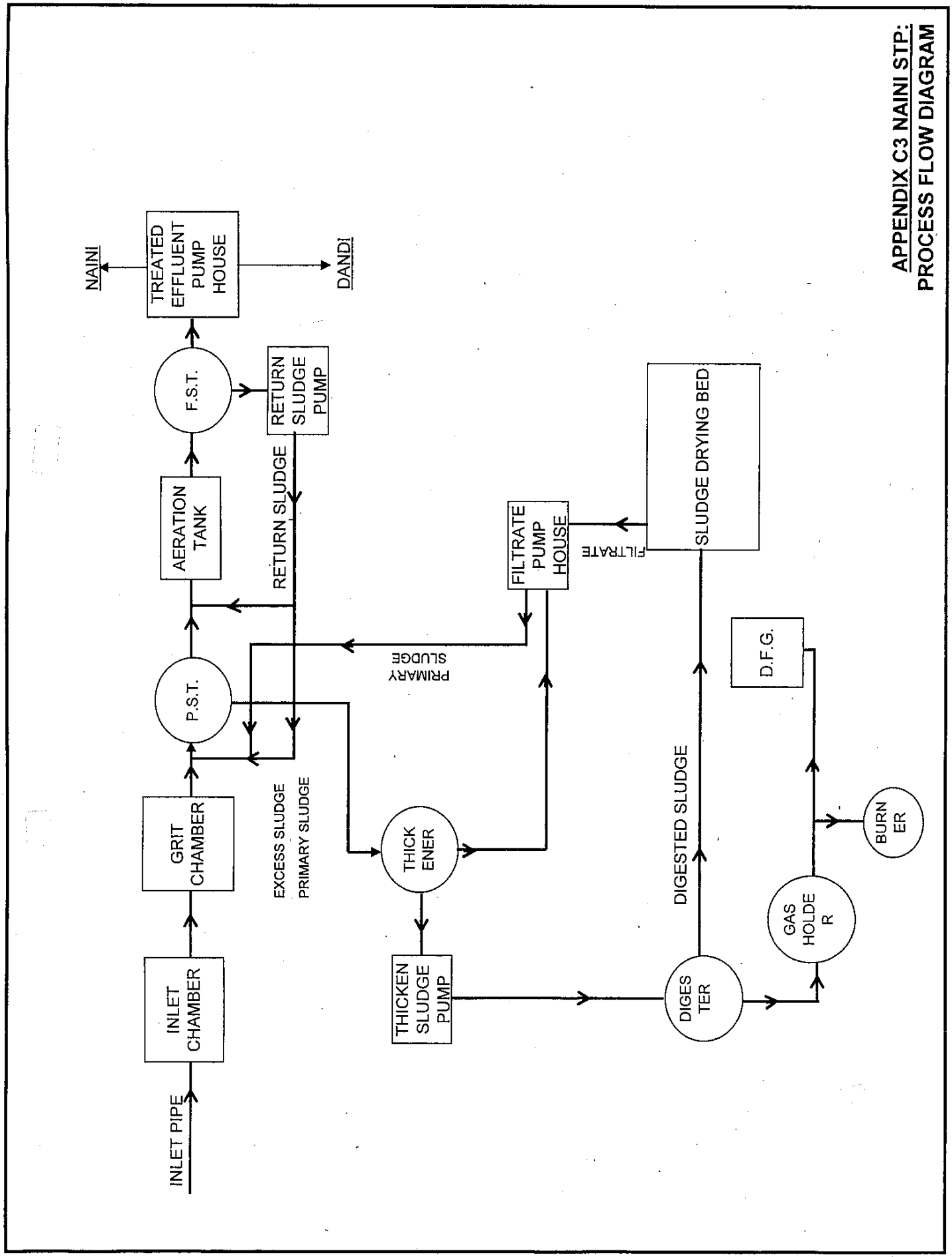

C-1 1995 Sewerage Master Plan
Rasulabad Proposed PS
Gobindpur Proposed PS
Bakhshi Bandh Proposed PS
Daraganj PS
Allahpur PS
Alopibagh PS
Minto Park Proposed PS
Proposed STP
Existing STP
Mumfordganj PS
Gaughat PS
Karela Bagh Proposed PS
Lukarganj PS
Zone V
Zone II
Zone III
Zone I
Zone IV
Zone V
Proposed STP
Proposed STP

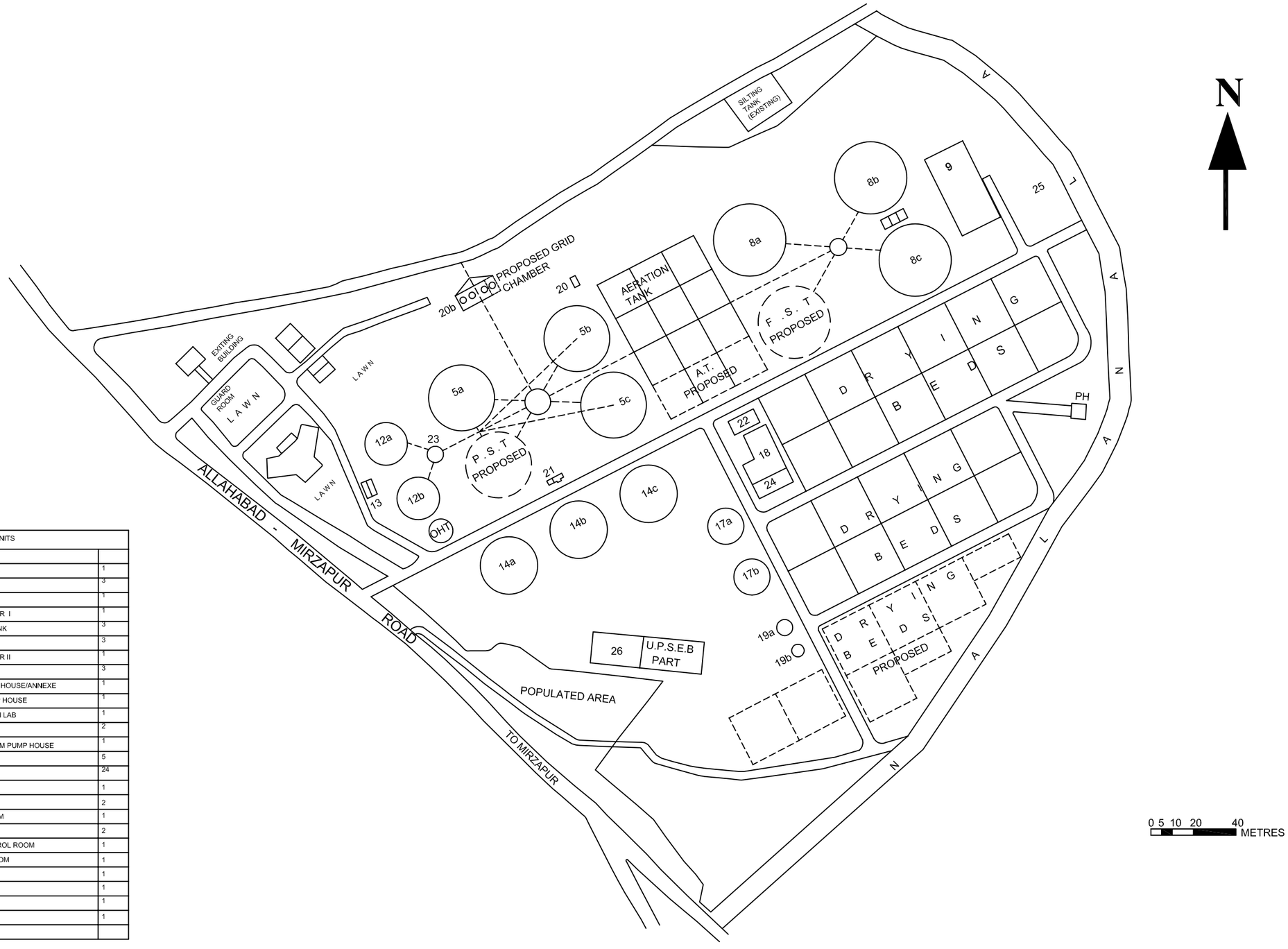


C-2 UPJN GAP-II Proposed STP and Nala Tapping

List of Proposed STP under GAP-II

No.	Name (Location)	Method	Capacity (mld)	Remarks
1	Indira Ava Nala	Aeration+Disinfection	0.4	
2	Ponghat Nala	Duckweed Pond	2.0	
3	Kofhar Nala	Oxidation Ditch	8.0	
4	Nehru Park Nala	Aeration+Disinfection	1.0	
5	TV Tower Nala	Oxidation Ditch	24.0	
6	Shivkuti Drains	Aeration+Disinfection	3.7	
7	Salori Nala	FAB	29.0	Sanctioned
8	Main Hagar Nala	FAB	48.0	
9	Shatri Bridge Nala	Aeration+Disinfection	0.6	
10	Lutere Nala	Oxidation Pond	2.0	
11	Mawaiya Nala	Duckweed Pond	11.0	
12	Naini	ASP	60.0	Existing
	Total		189.7	


APPENDIX C3 NAINI STP:
PROCESS FLOW DIAGRAM
NAINI
TREATED EFFLUENT PUMP HOUSE
DANDI
F.S.T.
RETURN SLUDGE PUMP
AERATION TANK
RETURN SLUDGE
FILTRATE PUMP HOUSE
FILTRATE
SLUDGE DRYING BED
P.S.T.
PRIMARY SLUDGE
D.F.G.
GRIT CHAMBER
EXCESS SLUDGE
PRIMARY SLUDGE
THICK ENER
DIGESTED SLUDGE
BURN ER
INLET CHAMBER
THICKEN SLUDGE PUMP
DIGES TER
GAS HOLDE R
INLET PIPE



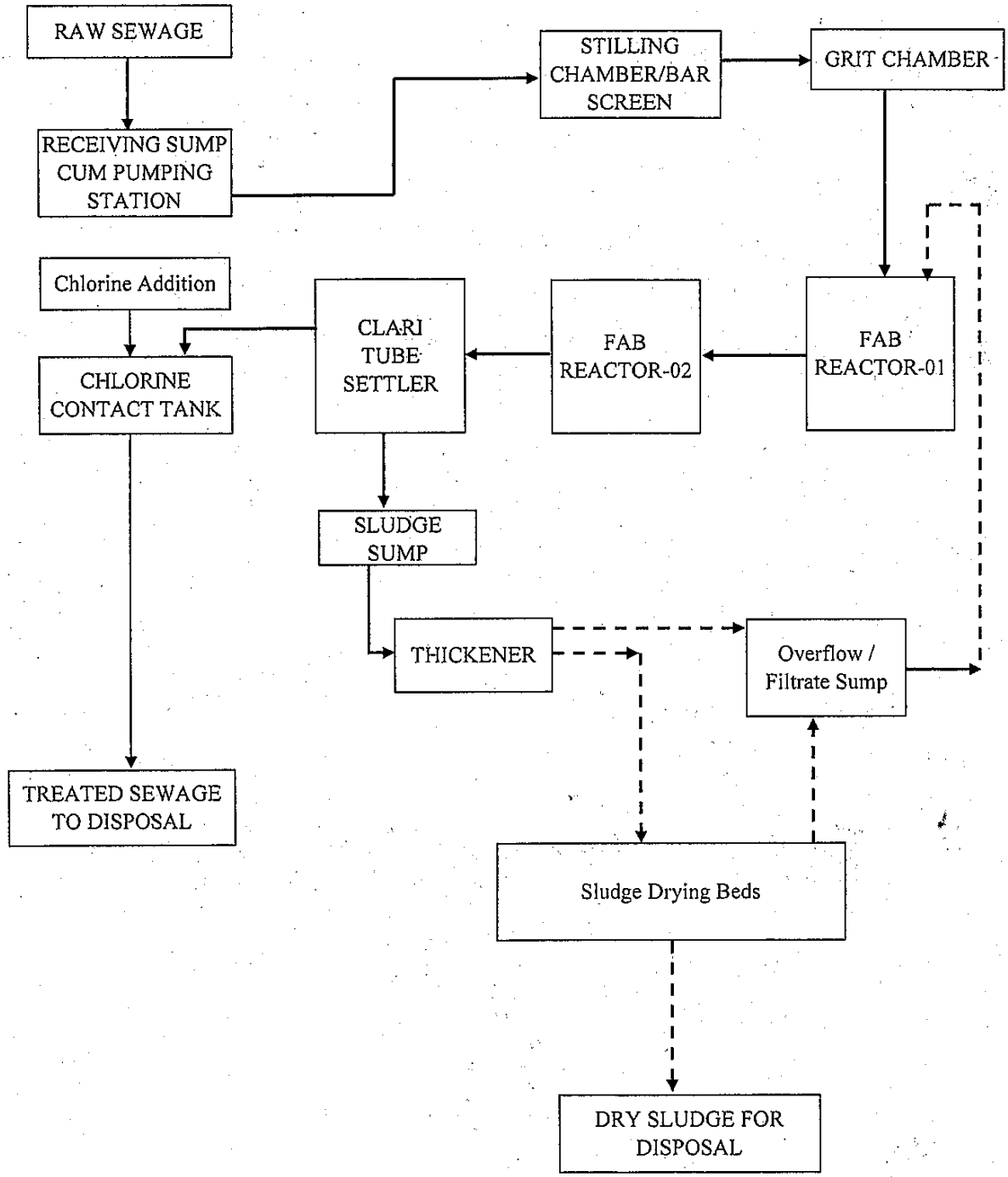
LIST OF UNITS		
MM NO.	DESCRIPTION	
1	COLLECTION CHAMBER	1
2abc	GRIT CHAMBER	3
3	PARSHALL FLUME	1
4	DISTRIBUTION CHAMBER I	1
5abc	PRIMARY SETTLING TANK	3
6abc	AERATION TANK	3
7	DISTRIBUTION CHAMBER II	1
8abc	FINAL SETTLING TANK	3
9	EFFLUENT SUMP PUMP HOUSE/ANNEXE	1
10	RETURN SLUDGE PUMP HOUSE	1
11	ADMINITRATION CUM LAB	1
12ab	SULDGE THICKNER	2
13	IRIC SLUDGE SUMP CUM PUMP HOUSE	1
14abc	SLUDGE DIGESTER	5
15	SLUDGE DRYING BED	24
16	FILTRATE PUMP HOUSE	1
17ab	GAS HOLDER	2
18	DUAL FULL ENGIN ROOM	1
19ab	GAS BURNER	2
20	AERATION TANK CONTROL ROOM	1
21	DIGSTER CONTROL ROOM	1
22	CONTROL ROOM	1
23	BLENDING TANK	1
24	H_2S SCRUBER	1
25	BYE PASS	1
26	SUB STATION	

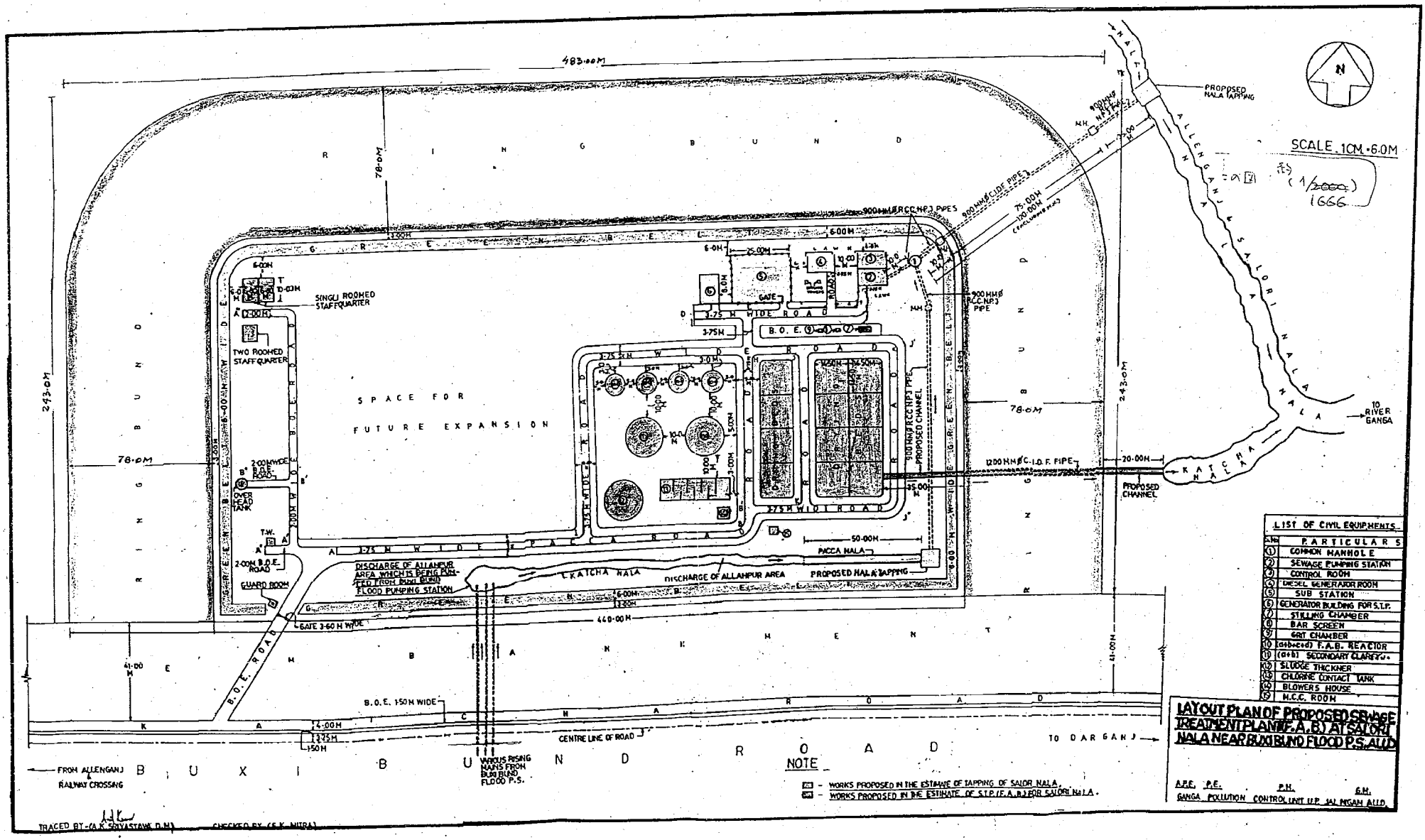
JAPAN INTERNATIONAL COOPERATION AGENCY

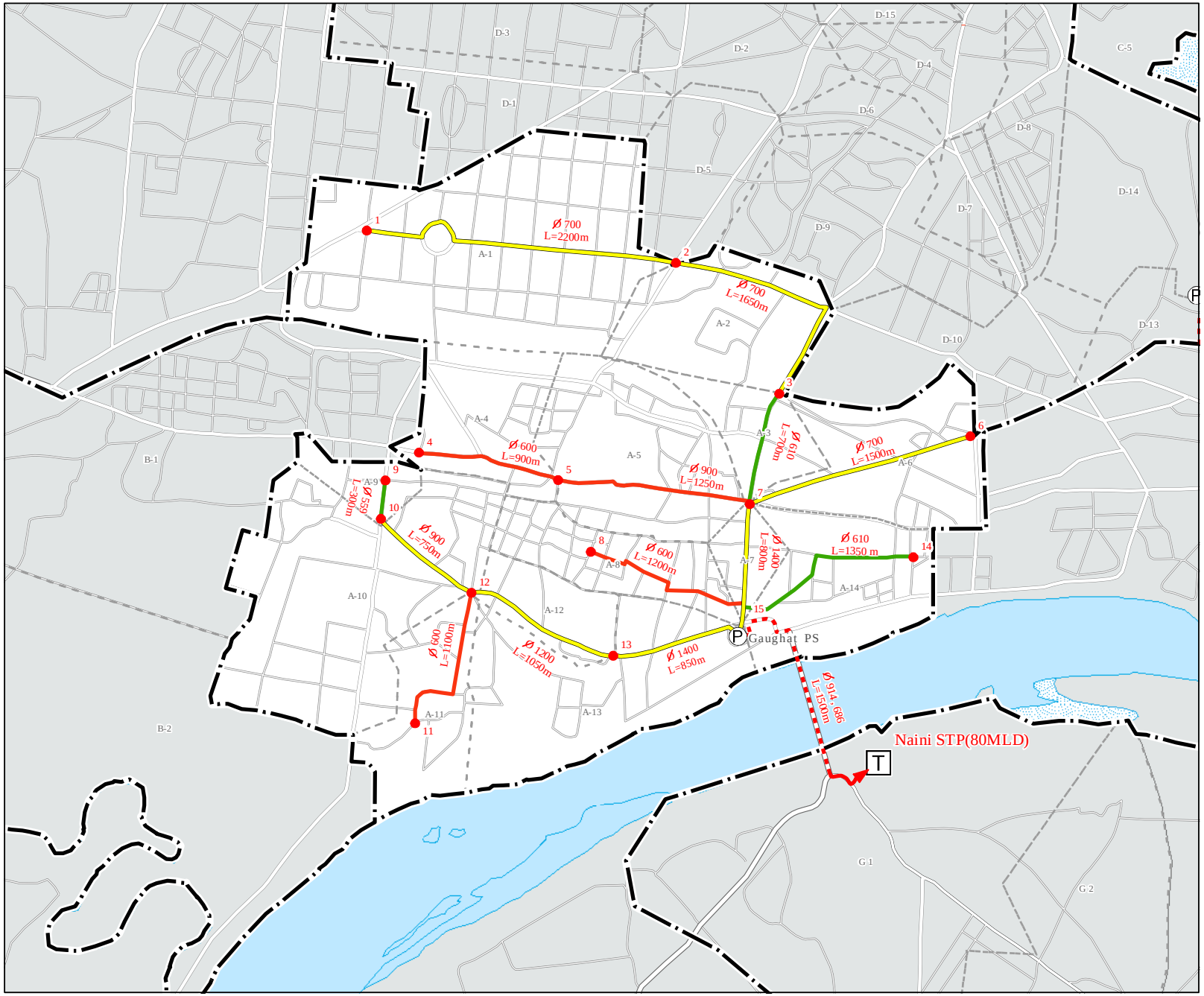
TOKYO ENGINEERING CONSULTANTS CO., LTD.
CTI ENGINEERING INTERNATIONAL CO., LTD.

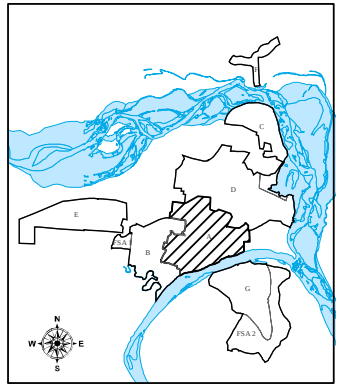
PROJECT	LOCATION	APPENDIX C4
THE STUDY ON WATER QUALITY MANAGEMENT PLAN FOR GANGA RIVER IN THE REPUBLIC OF INDIA	ALLAHABAD CITY	NAINI STP : SITE PLAN FOR AUGMENTED CAPACITY

APPENDIX C5 SALORI STP : PROCESS FLOW DIAGRAM




483·00M
78·00M
243·00M
SPACE FOR FUTURE EXPANSION
SINGLE ROOMED STAFFQUARTER
TWO ROOMED STAFF QUARTER
OVER HEAD TANK
GUARD ROOM
GATE
B.O.E. ROAD
DISCHARGE OF ALLAHPUR AREA WHICH IS BEING PUMPED FROM BUXI BUND FLOOD PUMPING STATION
KATCHA NALA
DISCHARGE OF ALLAHPUR AREA
PROPOSED NALA TAPPING
PACCA NALA
PROPOSED CHANNEL
900MMØ RCC NP3 PIPES
900MMØ CI/DI PIPES
1200MMØ C.I.D.F. PIPE
B.O.E. 150M WIDE
CENTRE LINE OF ROAD
TO DARGANJ
FROM ALLENGANJ & RAILWAY CROSSING
VARIOUS RISING MAINS FROM BUXI BUND FLOOD P.S.
ALLENGANJ SALORI NALA
TO RIVER GANGA
PROPOSED NALA TAPPING
SCALE 10M·6.0M
(1/2000)
1666
LIST OF CIVIL EQUIPMENTS
S.No | PARTICULARS
(1) COMMON MANHOLE
(2) SEWAGE PUMPING STATION
(3) CONTROL ROOM
(4) DIESEL GENERATOR ROOM
(5) SUB STATION
(6) GENERATOR BUILDING FOR S.T.P.
(7) STILLING CHAMBER
(8) BAR SCREEN
(9) GRIT CHAMBER
(10) (a+b+c+d) F.A.B. REACTOR
(11) (a+b) SECONDARY CLARIFIER
(12) SLUDGE THICKNER
(13) CHLORINE CONTACT TANK
(14) BLOWERS HOUSE
(15) M.C.C. ROOM
LAYOUT PLAN OF PROPOSED SEWAGE TREATMENT PLANT (F.A.B.) AT SALORI NALA NEAR BUXI BUND FLOOD P.S. ALLD.
NOTE
- WORKS PROPOSED IN THE ESTIMATE OF TAPPING OF SALORI NALA.
- WORKS PROPOSED IN THE ESTIMATE OF S.T.P. (F.A.B.) FOR SALORI NALA.
A.P.E. P.E. P.H. G.M.
GANGA POLLUTION CONTROL UNIT U.P. JAL NIGAM ALLD.
TRACED BY-(A.K. SRIVASTAVA D.M.)
CHECKED BY (S.K. MITRA)





INDEX MAP

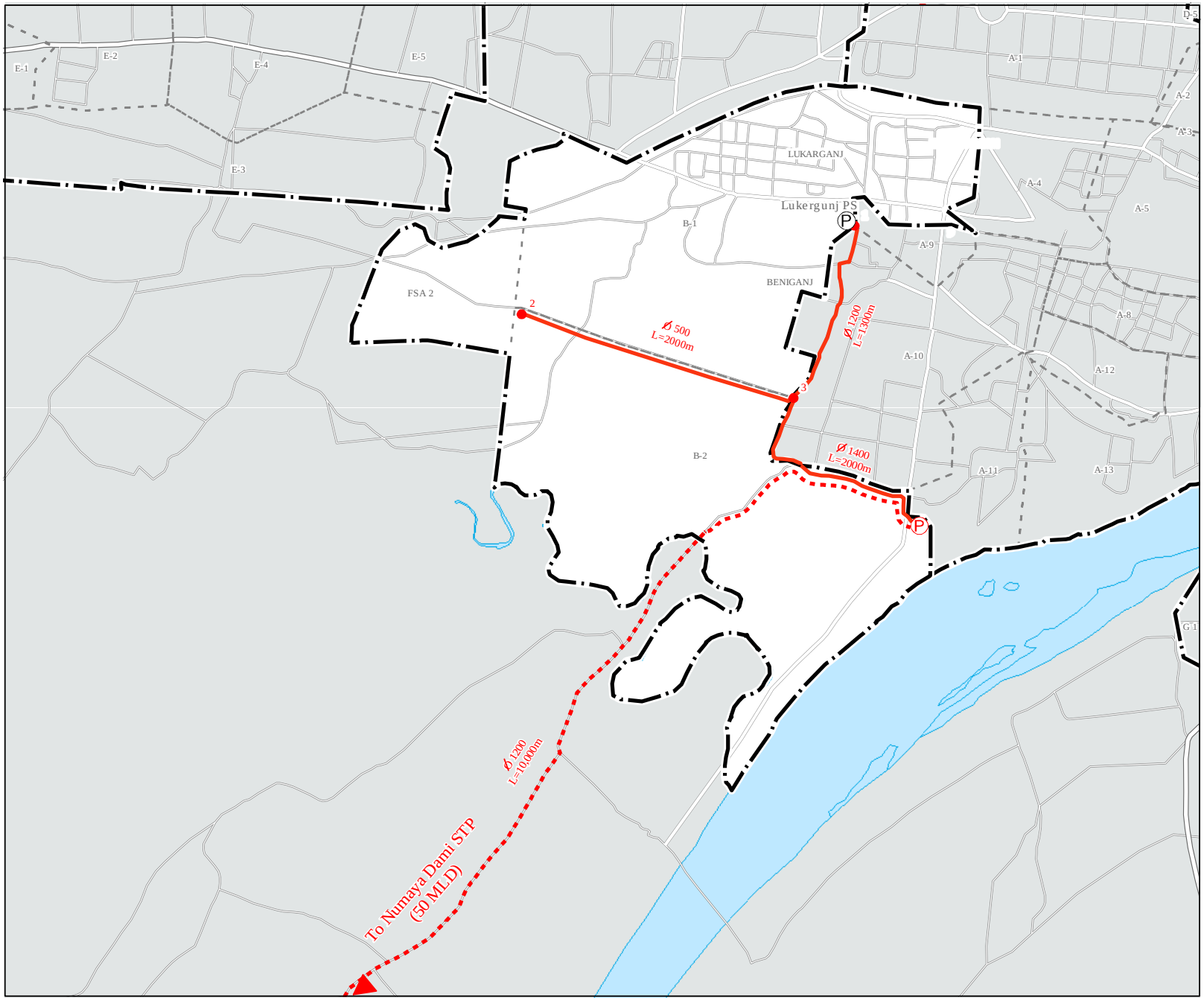
Legend

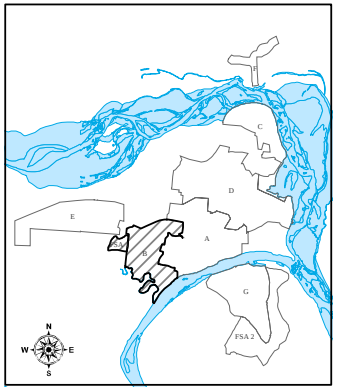
- Existing STP
- Proposed STP
- Proposed SPS
- Existing SPS
- Proposed Gravity Sewer
- Proposed Rising Main
- Replace Existing Pipe
- Rehabilitate Existing Pipe
- Sewerage Sub District Boundary
- Sewerage District Boundary
- E - 1 Sewerage Sub District
- 1 , 2 Node Number

N W E S

0 0.25 0.5 1 Kilometers

JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO ENGINEERING CONSULTANTS CO. LIMITED CTI ENGINEERING INTERNATIONAL CO. LIMITED	PROJECT THE STUDY ON WATER QUALITY MANAGEMENT PLAN FOR GANGA RIVER IN THE REPUBLIC OF INDIA	LOCATION ALLAHABAD CITY	DRAWING C 7 TRUNK SEWERS AND LATERALS DISTRICT A





INDEX MAP

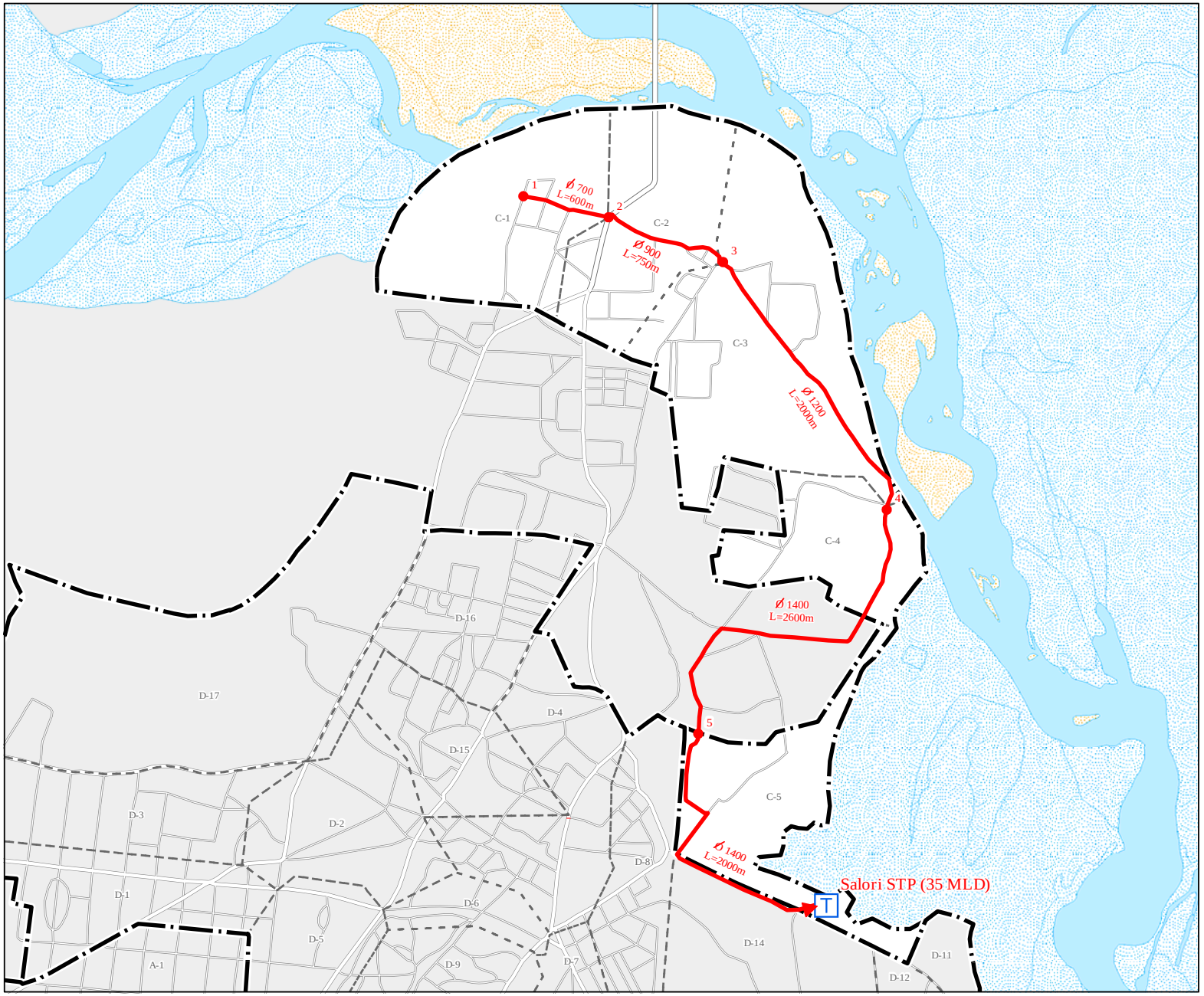
Legend

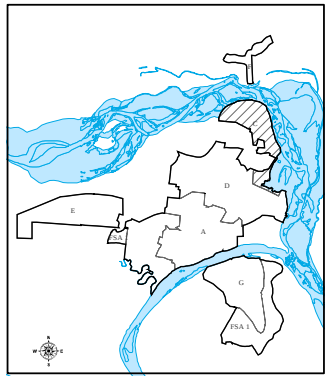
- Proposed STP
- Proposed SPS
- Existing SPS
- Gravity Sewer
- Rising Main
- Sewerage Sub District Boundary
- Sewerage District Boundary
- E - 1 Sewerage Sub District
- 1 , 2 Node Number

N
W E
S

0 0.25 0.5 1
Kilometers

JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO ENGINEERING CONSULTANTS CO. LIMITED CTI ENGINEERING INTERNATIONAL CO. LIMITED	PROJECT THE STUDY ON WATER QUALITY MANAGEMENT PLAN FOR GANGA RIVER IN THE REPUBLIC OF INDIA	LOCATION ALLAHABAD CITY	DRAWING C 8 TRUNK SEWERS AND LATERALS DISTRICT B & FSA 2





INDEX MAP

Legend

- STP(Sanctioned Under GAP II)
- Proposed Gravity Sewer
- Proposed Rising Main
- Sewerage Sub District Boundary
- Sewerage District Boundary
- E - 1 Sewerage Sub District
- 1 , 2 Node Number

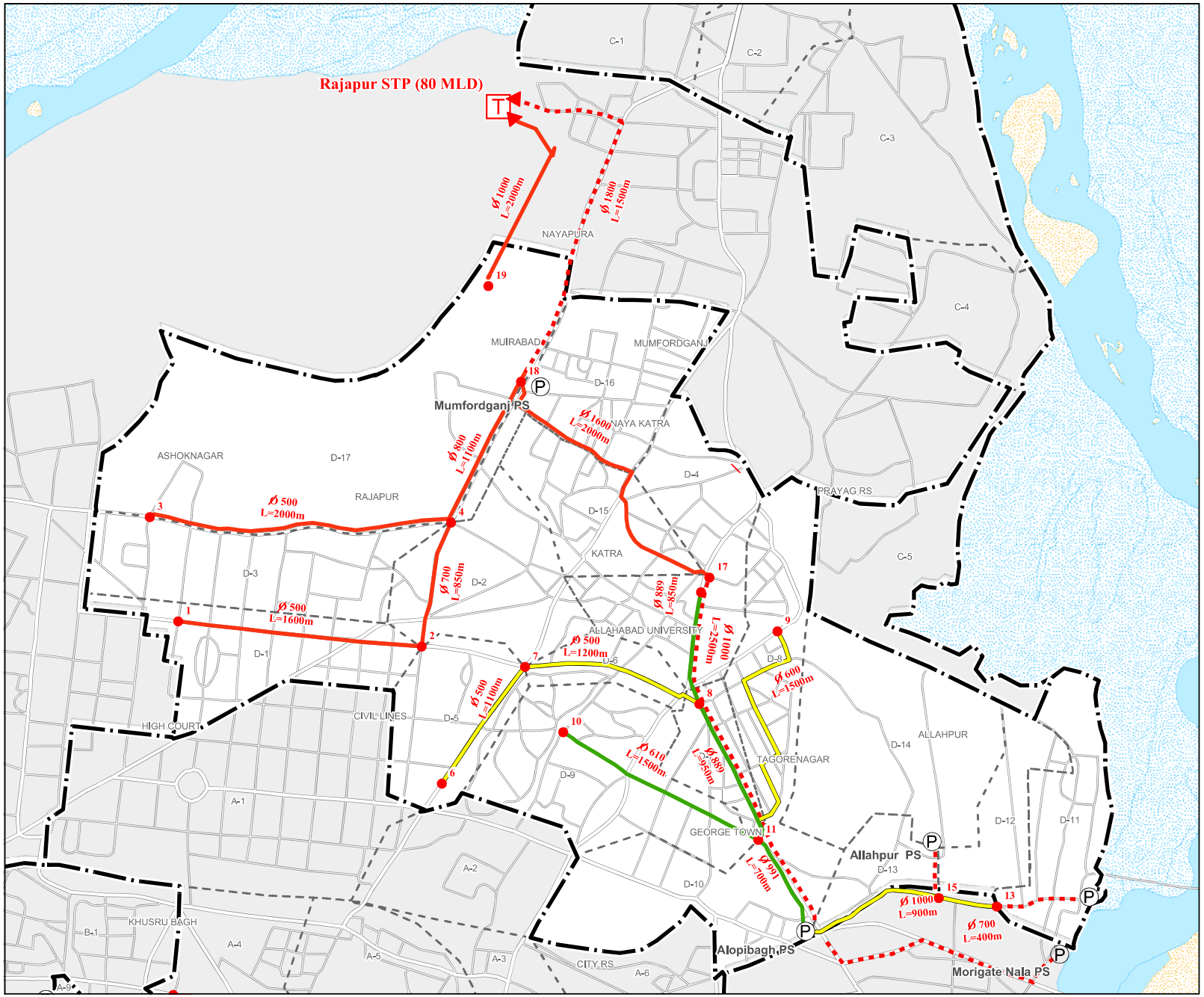
0 0.25 0.5 1 Kilometers

JAPAN INTERNATIONAL COOPERATION AGENCY

TOKYO ENGINEERING CONSULTANTS CO. LIMITED

CTI ENGINEERING INTERNATIONAL CO. LIMITED

PROJECT	LOCATION	DRAWING C 9
THE STUDY ON WATER QUALITY MANAGEMENT PLAN FOR GANGA RIVER IN THE REPUBLIC OF INDIA	ALLAHABAD CITY	TRUNK SEWERS AND LATERALS DISTRICT C



JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO ENGINEERING CONSULTANTS CO. LIMITED CTI ENGINEERING INTERNATIONAL CO. LIMITED	PROJECT	LOCATION	DRAWING C10
	THE STUDY ON WATER QUALITY MANAGEMENT PLAN FOR GANGA RIVER IN THE REPUBLIC OF INDIA	ALLAHABAD CITY	TRUNK SEWERS AND LATERALS DISTRICT D