



**GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)**

Water Sector Capacity Building and Advisory
Services Project (WCAP)

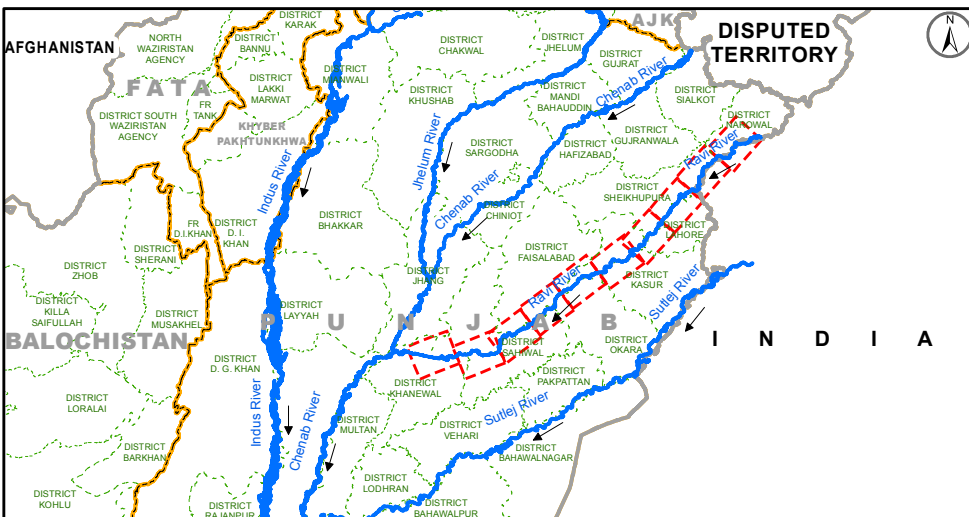
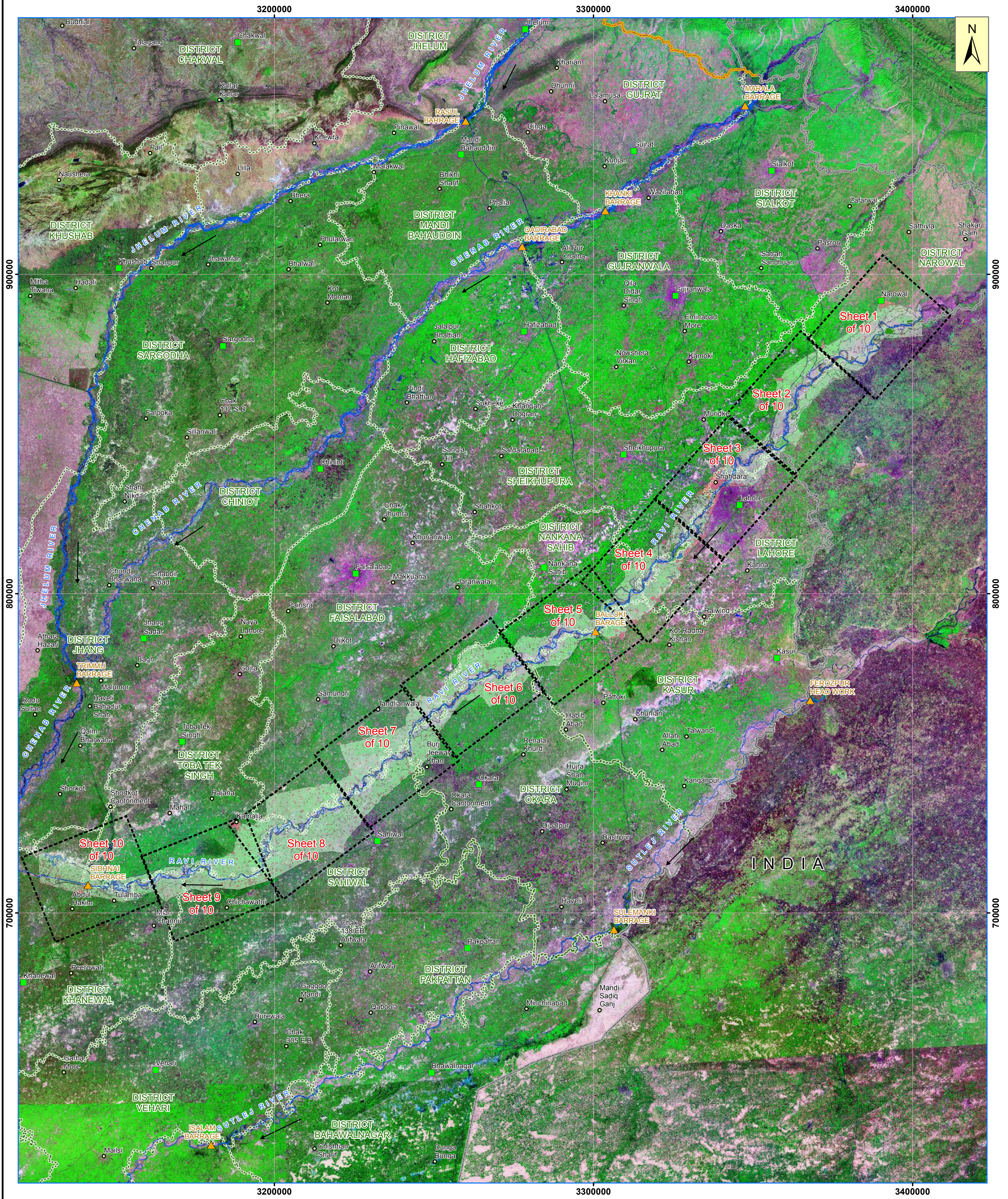
Development of National Flood Protection Plan-IV (NFPP-IV)
and Related Studies to Enhance the Capacity of
Federal Flood Commission-FFC

FLOOD PLAIN AND FLOOD RISK MAPPING

RIVER RAVI

JANUARY 2016

RAVI RIVER INDEX MAP



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FCC

RAVI RIVER INDEX MAP

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
WATER SECTOR CAPACITY
BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

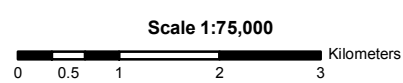
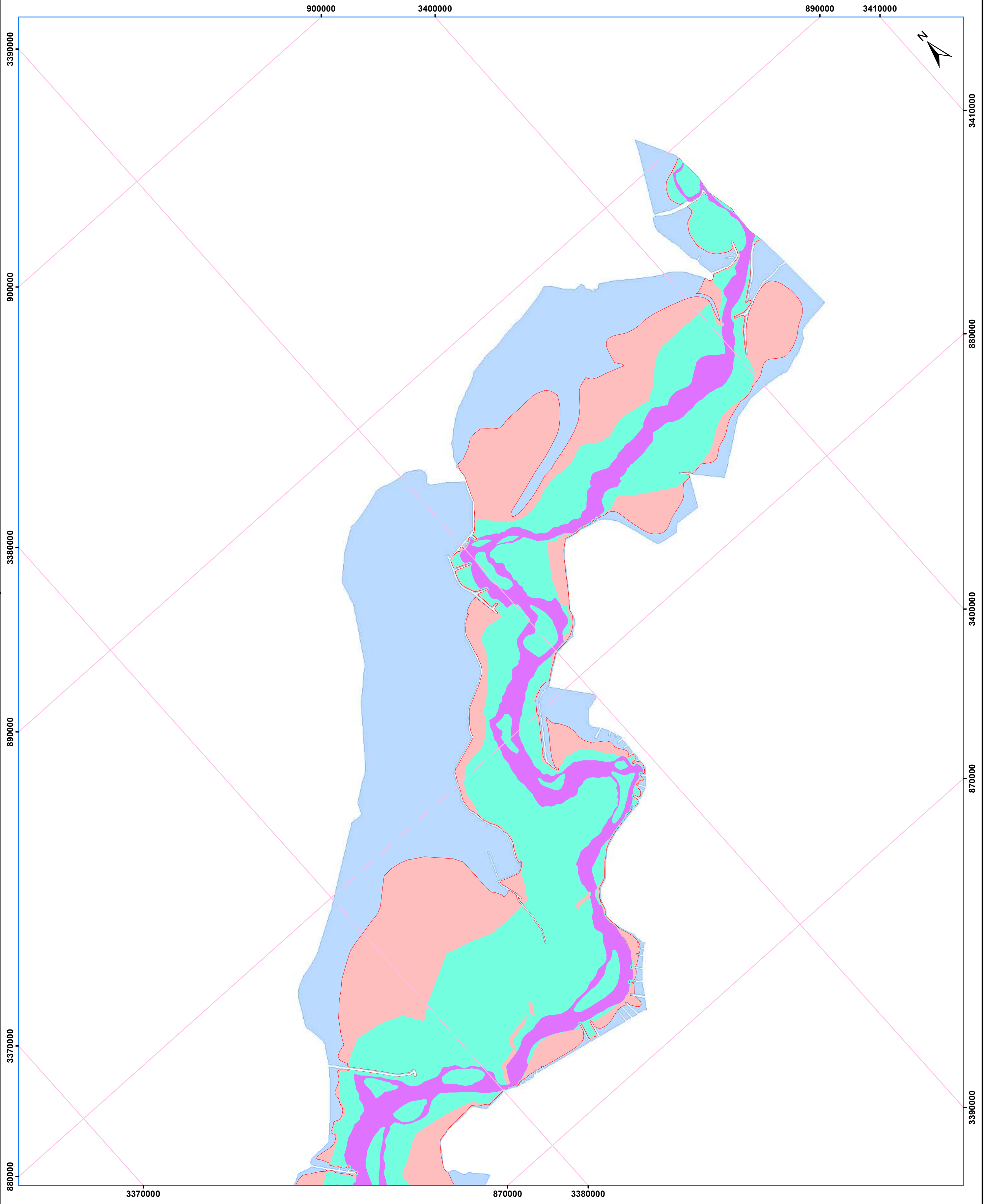
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension,
Lahore - Pakistan.

in association with
Deltares DELTARES, THE NETHERLANDS

Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-II),
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016



LEGEND

(Flood Risk Zones)

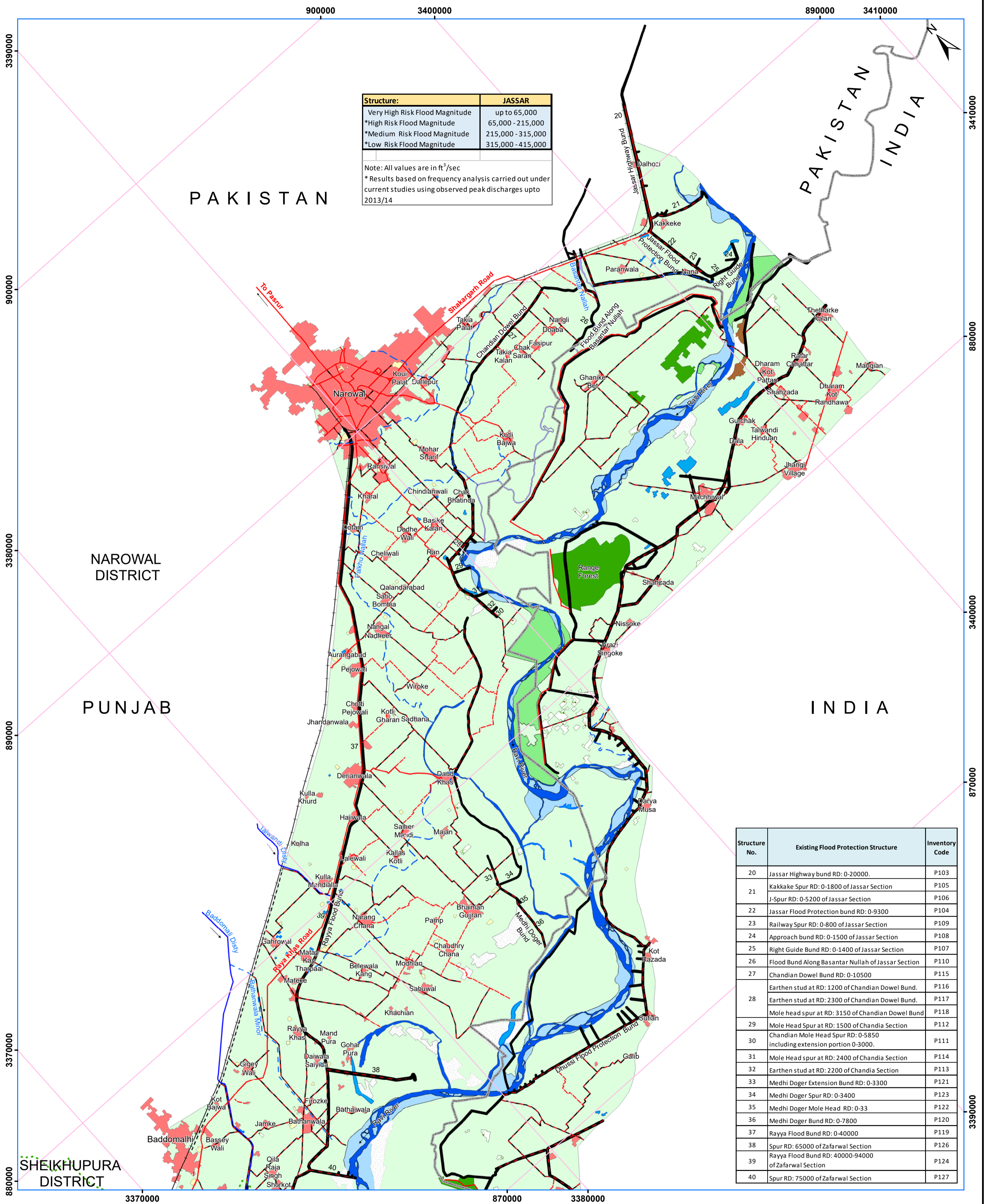
- High Risk Zone (Inundation Extent corresponding to discharge from 65,000 to 215,000 cusecs in Jassar-Balloki reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 215,000 to 315,000 cusecs in Jassar-Balloki reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 315,000 to 415,000 cusecs in Jassar-Balloki reach)

LEGEND

(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Jassar-Balloki reach

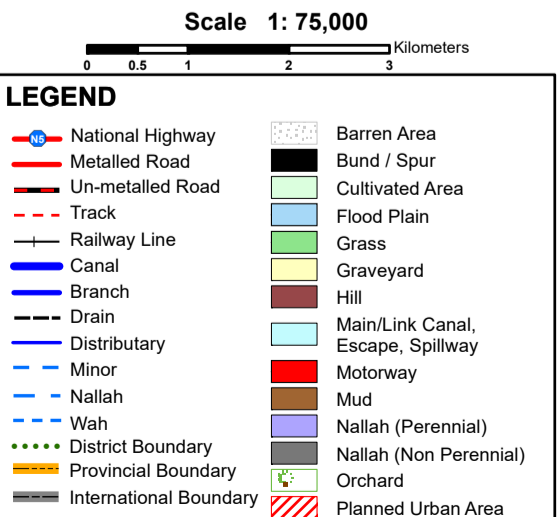
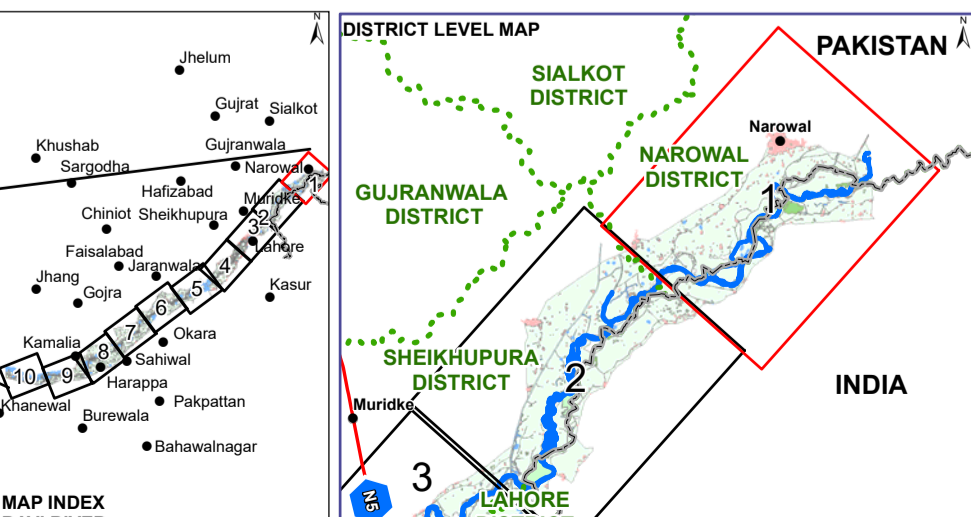
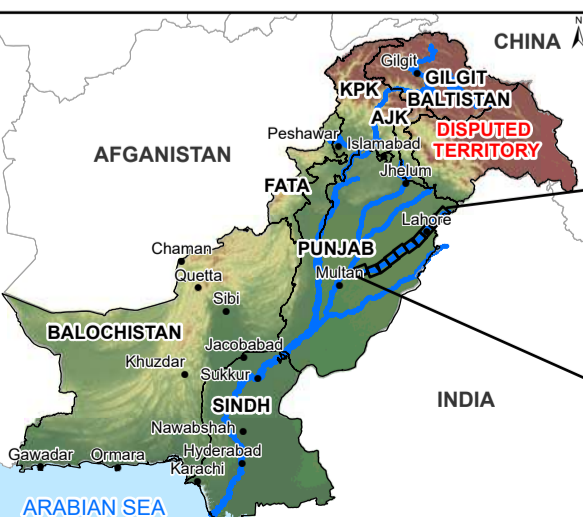
Note: All flood extents are based on breachless conditions



Structure:	JASSAR
Very High Risk Flood Magnitude	up to 65,000
*High Risk Flood Magnitude	65,000 - 215,000
*Medium Risk Flood Magnitude	215,000 - 315,000
*Low Risk Flood Magnitude	315,000 - 415,000

Note: All values are in ft³/sec
 *Results based on frequency analysis carried out under current studies using observed peak discharges upto 2013/14

Structure No.	Existing Flood Protection Structure	Inventory Code
20	Jassar Highway bund RD: 0-20000.	P103
21	Kakkeke Spur RD: 0-1800 of Jassar Section	P105
	J-Spur RD: 0-5200 of Jassar Section	P106
22	Jassar Flood Protection bund RD: 0-9300	P104
23	Railway Spur RD: 0-800 of Jassar Section	P109
24	Approach bund RD: 0-1500 of Jassar Section	P108
25	Right Guide Bund RD: 0-1400 of Jassar Section	P107
26	Flood Bund Along Basantar Nullah of Jassar Section	P110
27	Chandian Dowel Bund RD: 0-10500	P115
	Earthen stud at RD: 1200 of Chandian Dowel Bund.	P116
	Earthen stud at RD: 2300 of Chandian Dowel Bund.	P117
29	Mole head spur at RD: 3150 of Chandian Dowel Bund	P118
	Mole Head Spur at RD: 1500 of Chandian Section	P112
30	Chandian Mole Head Spur RD: 0-5850 including extension portion 0-3000.	P111
31	Mole Head spur at RD: 2400 of Chandian Section	P114
32	Earthen stud at RD: 2200 of Chandian Section	P113
33	Medhi Doger Extension Bund RD: 0-3300	P121
34	Medhi Doger Spur RD: 0-3400	P123
35	Medhi Doger Mole Head RD: 0-33	P122
36	Medhi Doger Bund RD: 0-7800	P120
37	Rayya Flood Bund RD: 0-40000	P119
38	Spur RD: 65000 of Zafarwal Section	P126
39	Rayya Flood Bund RD: 40000-94000 of Zafarwal Section	P124
40	Spur RD: 75000 of Zafarwal Section	P127



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
 MINISTRY OF WATER AND POWER
 PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
 WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

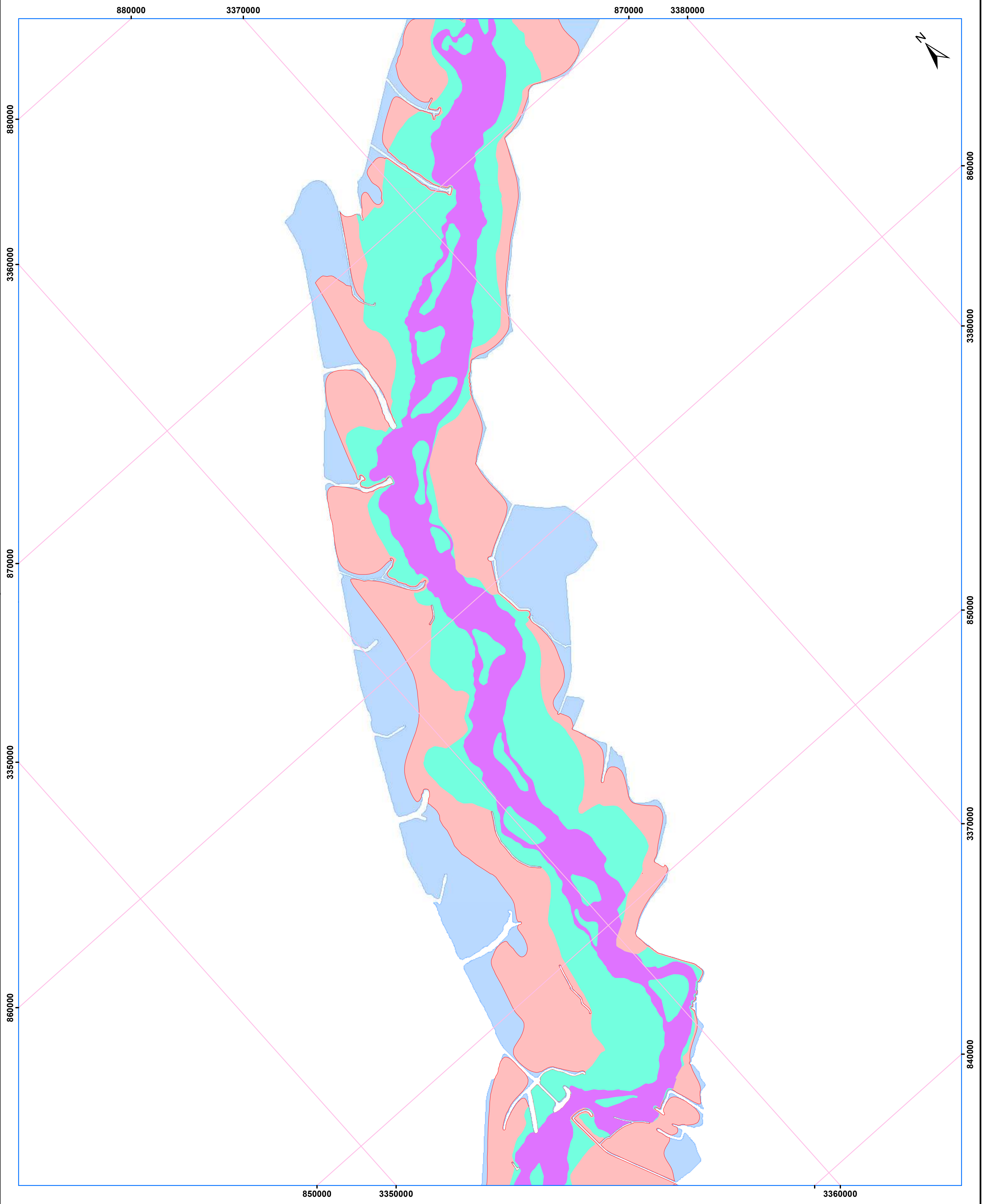
Consultants:
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 1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
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Source of Information:
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 2. Freely available satellite imagery
 3. FPSP-II GIS data
 4. Shuttle Radar Topographic Mission Data (Resolution:90 m)
 5. Survey data of Flood protection embankments and structures

Coordinate System
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 DATUM: WGS84
 Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Scale 1:75,000
 0 0.5 1 2 3 Kilometers

LEGEND

(Flood Risk Zones)

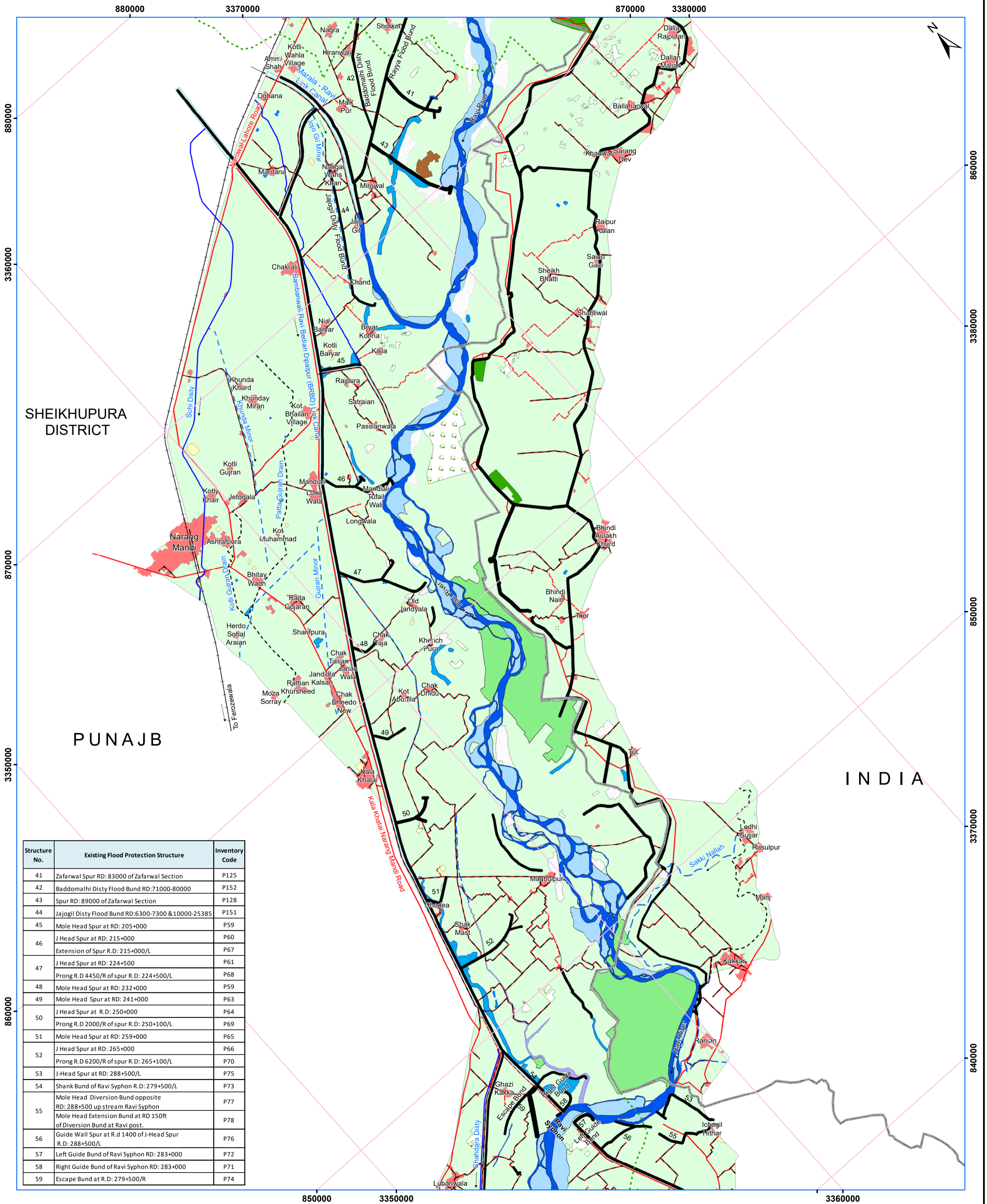
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LEGEND

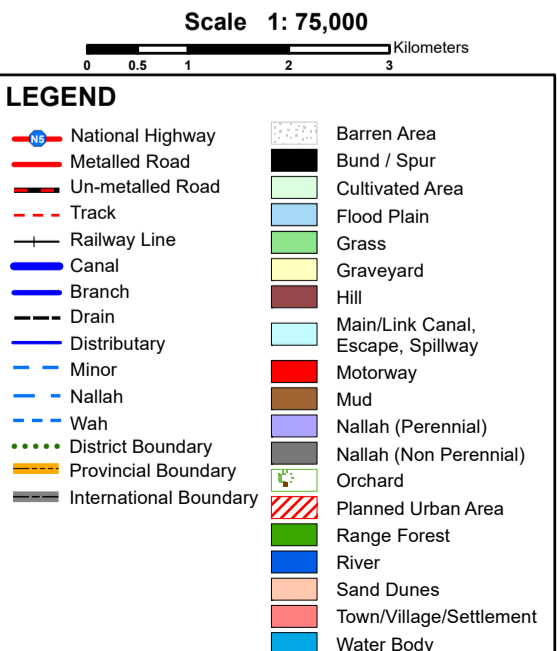
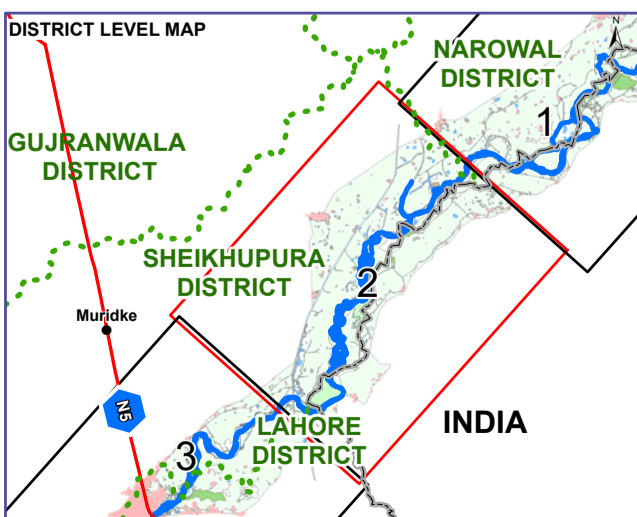
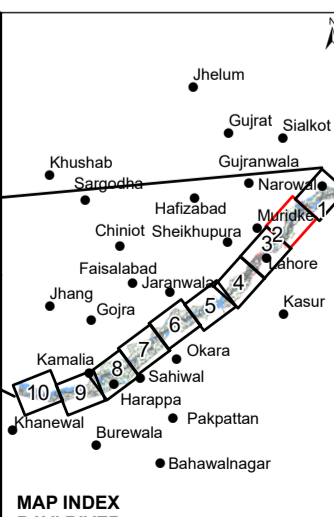
(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Jassar-Balloki reach

Note: All flood extents are based on breachless conditions



Structure No.	Existing Flood Protection Structure	Inventory Code
41	Zafarwal Spur RD: 83000 of Zafarwal Section	P125
42	Baddomathi Disty Flood Bund RD:71000-80000	P152
43	Spur RD: 89000 of Zafarwal Section	P128
44	Jajogil Disty Flood Bund RD:6300-7300 & 10000-25385	P151
45	Mole Head Spur at RD: 205+000	P59
46	J Head Spur at RD: 215+000 Extension of Spur R.D: 215+000/L	P67
47	J Head Spur at RD: 224+500 Prong R.D 4450/R of spur R.D: 224+500/L	P61
48	Mole Head Spur at RD: 232+000	P59
49	Mole Head Spur at RD: 241+000	P63
50	J Head Spur at R.D: 250+000 Prong R.D 2000/R of spur R.D: 250+100/L	P64
51	Mole Head Spur at RD: 259+000	P65
52	J Head Spur at RD: 265+000 Prong R.D 6200/R of spur R.D: 265+100/L	P70
53	J-Head Spur at RD: 288+500/L	P75
54	Shank Bund of Ravi Syphon R.D: 279+500/L	P73
55	Mole Head Diversion Bund opposite RD: 288+500 up stream Ravi Syphon Mole Head Extension Bund at RD 150ft of Diversion Bund at Ravi post.	P77
56	Guide Wall Spur at R.d 1400 of J-Head Spur R.D: 288+500/L	P76
57	Left Guide Bund of Ravi Syphon RD: 283+000	P72
58	Right Guide Bund of Ravi Syphon RD: 283+000	P71
59	Escape Bund at R.D: 279+500/R	P74



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
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WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

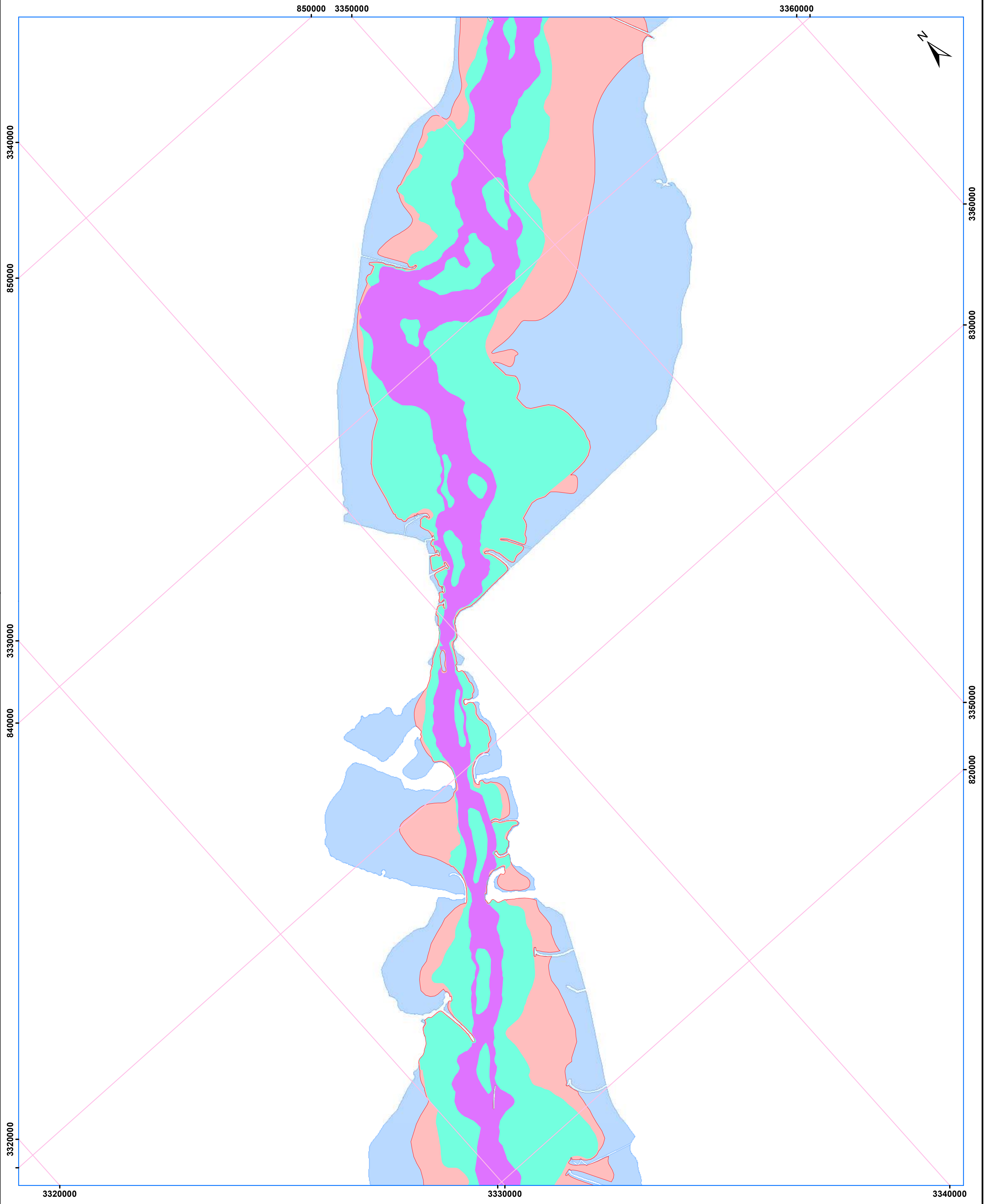
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Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Scale 1:75,000
 0 0.5 1 2 3 Kilometers

LEGEND

(Flood Risk Zones)

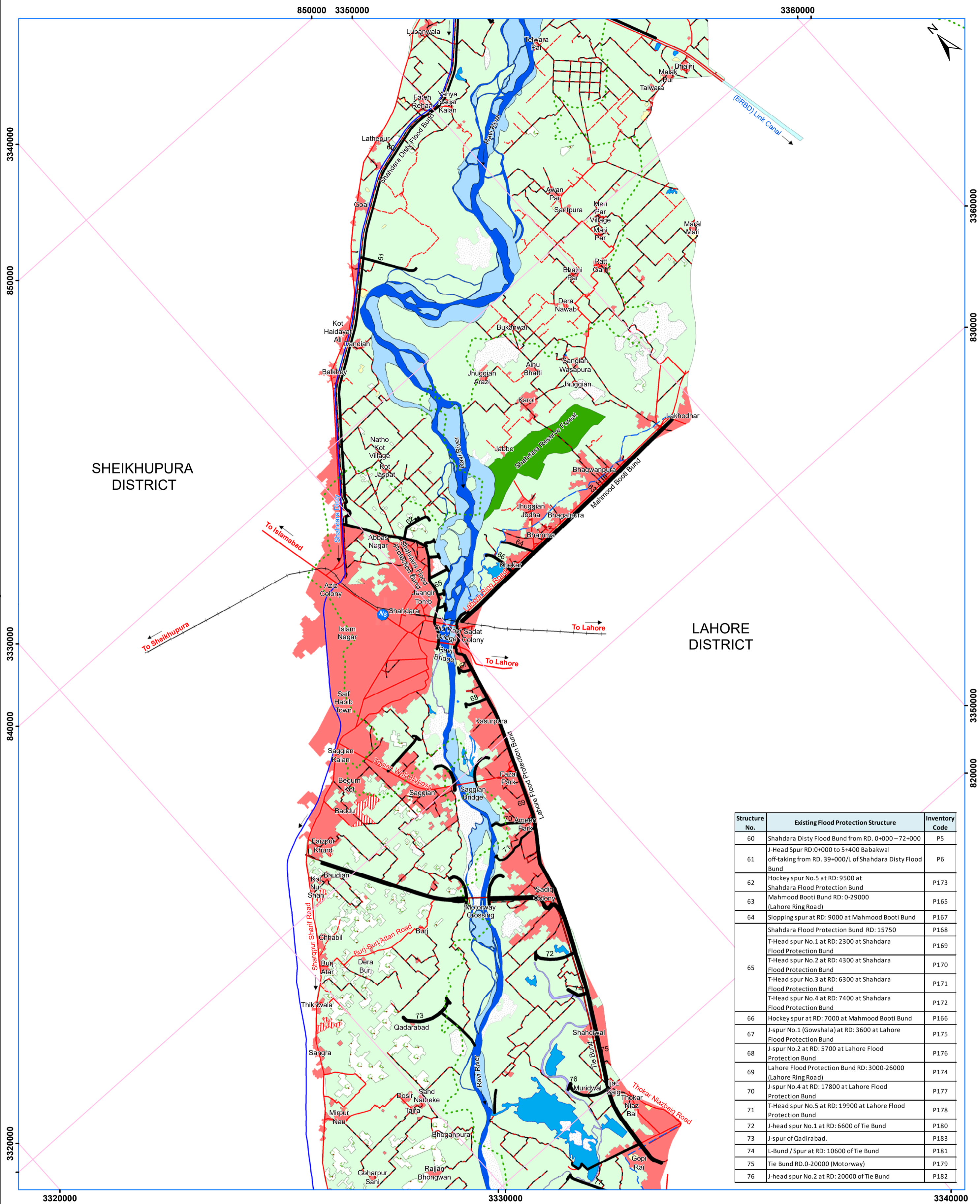
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LEGEND

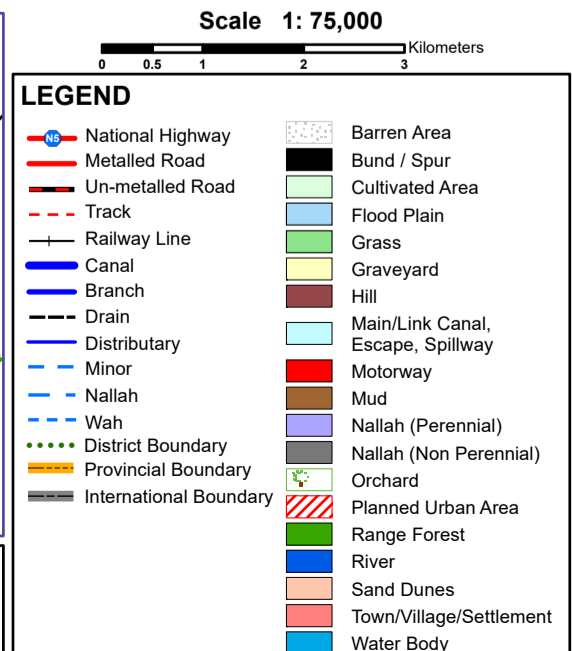
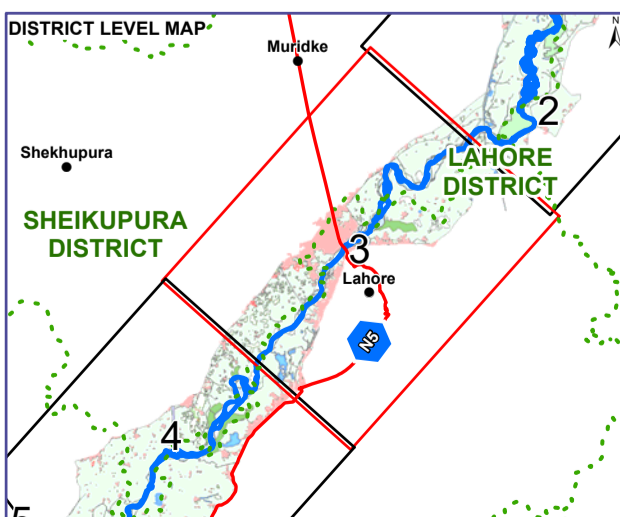
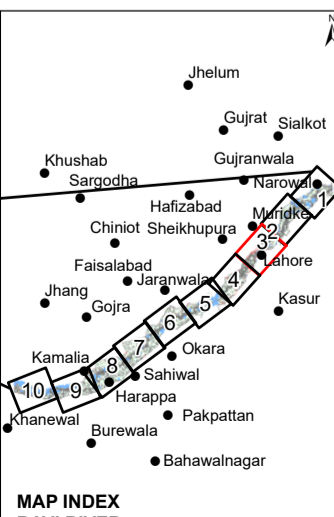
(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Jassar-Balloki reach

Note: All flood extents are based on breachless conditions



Structure No.	Existing Flood Protection Structure	Inventory Code
60	Shahdara Disty Flood Bund from RD. 0+000 – 72+000	P5
61	J-Head Spur RD:0+000 to 5+400 Babakwal off-taking from RD. 39+000/L of Shahdara Disty Flood Bund	P6
62	Hockey spur No.5 at RD: 9500 at Shahdara Flood Protection Bund	P173
63	Mahmood Booti Bund RD: 0-29000 (Lahore Ring Road)	P165
64	Slopping spur at RD: 9000 at Mahmood Booti Bund	P167
65	Shahdara Flood Protection Bund RD: 15750	P168
	T-Head spur No.1 at RD: 2300 at Shahdara Flood Protection Bund	P169
	T-Head spur No.2 at RD: 4300 at Shahdara Flood Protection Bund	P170
	T-Head spur No.3 at RD: 6300 at Shahdara Flood Protection Bund	P171
	T-Head spur No.4 at RD: 7400 at Shahdara Flood Protection Bund	P172
66	Hockey spur at RD: 7000 at Mahmood Booti Bund	P166
67	J-spur No.1 (Gowshala) at RD: 3600 at Lahore Flood Protection Bund	P175
68	J-spur No.2 at RD: 5700 at Lahore Flood Protection Bund	P176
69	Lahore Flood Protection Bund RD: 3000-26000 (Lahore Ring Road)	P174
70	J-spur No.4 at RD: 17800 at Lahore Flood Protection Bund	P177
71	T-Head spur No.5 at RD: 19900 at Lahore Flood Protection Bund	P178
72	J-head spur No.1 at RD: 6600 of Tie Bund	P180
73	J-spur of Qadirabad.	P183
74	L-Bund / Spur at RD: 10600 of Tie Bund	P181
75	Tie Bund RD:0-20000 (Motorway)	P179
76	J-head spur No.2 at RD: 20000 of Tie Bund	P182



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LAND USE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
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WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

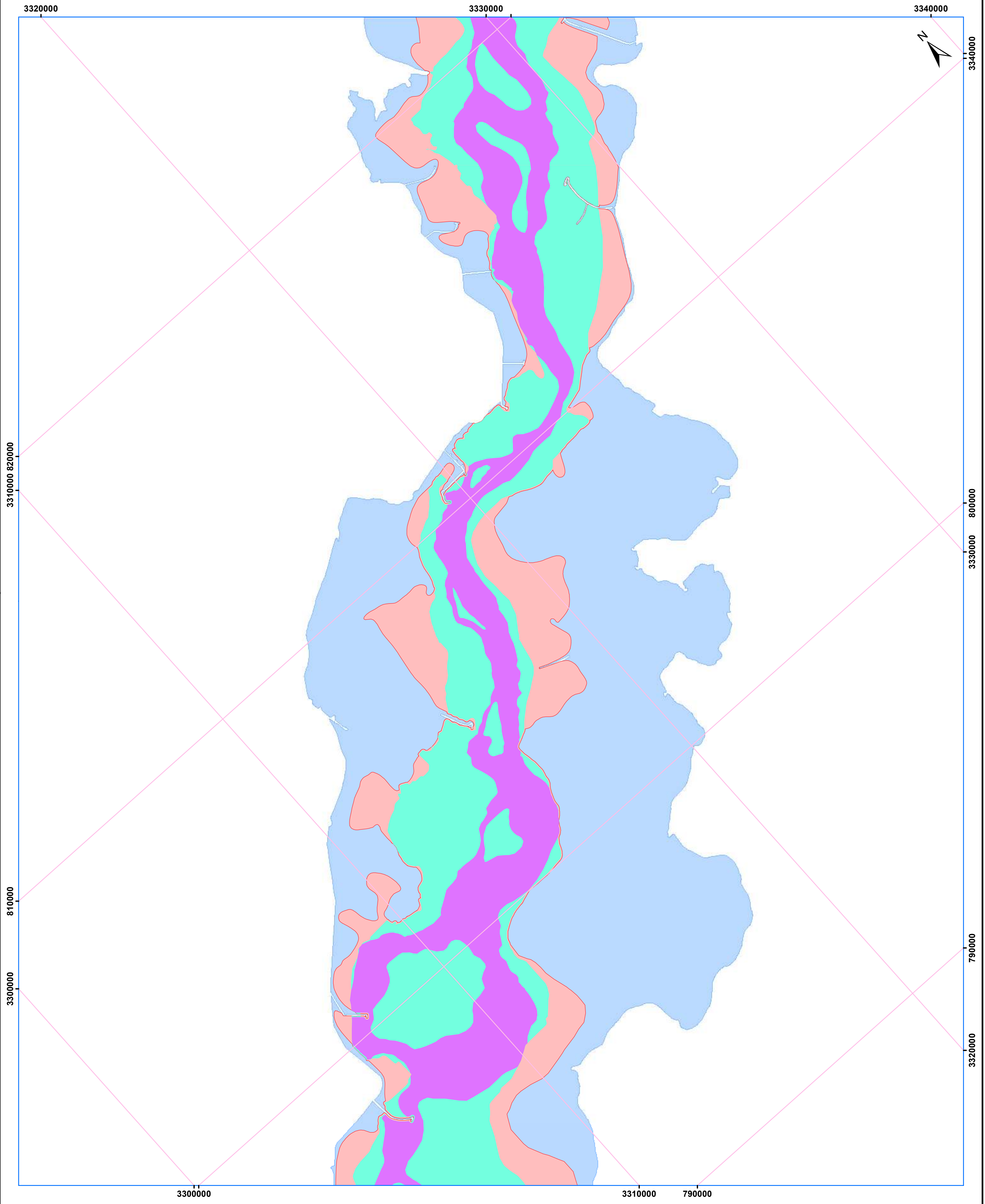
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
DELTA RESOURCES CONSULTANTS (PVT) LIMITED
DELTA RESOURCES CONSULTANTS, THE NETHERLANDS

Source of Information:
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Coordinate System
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DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



LEGEND

(Flood Risk Zones)

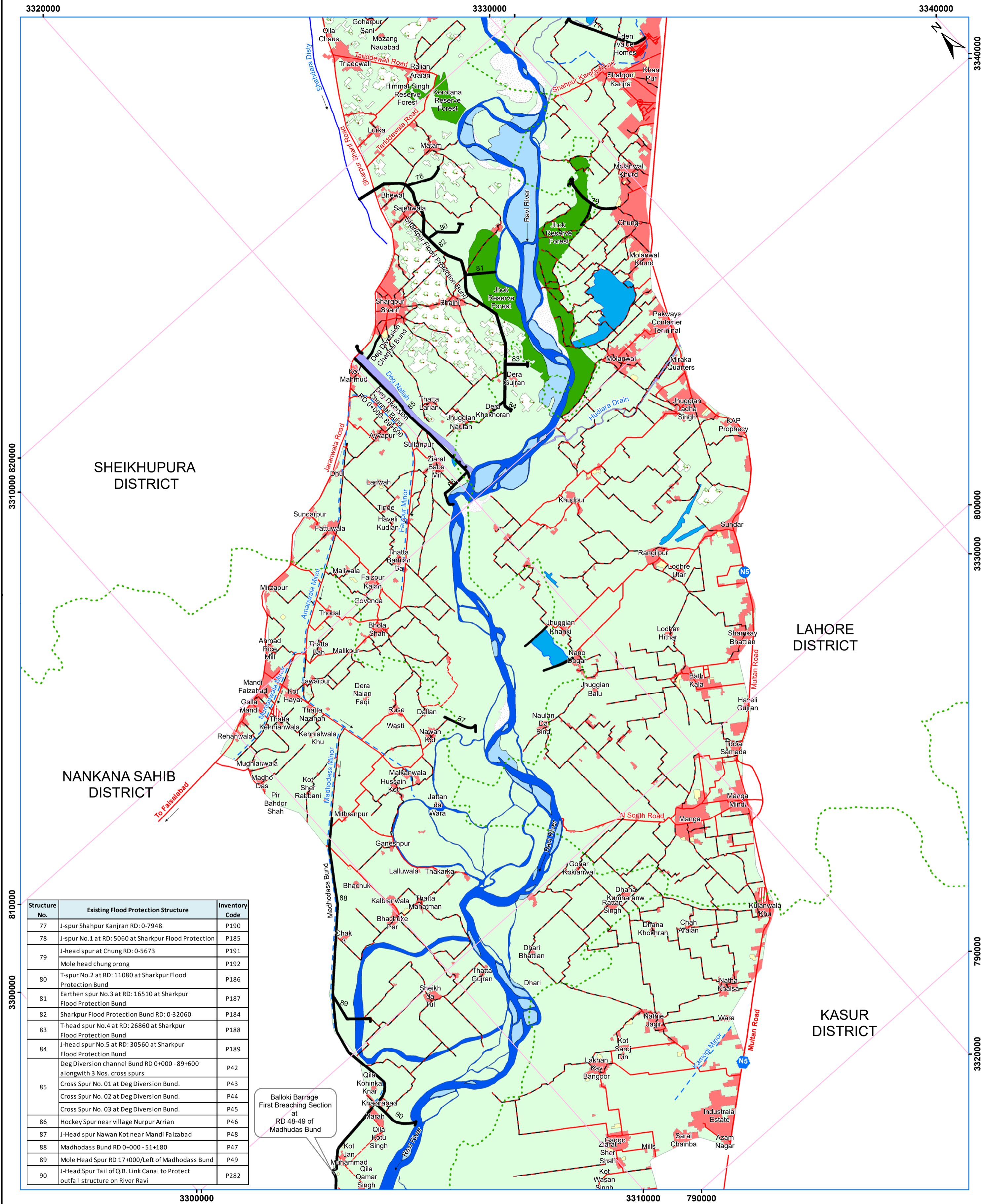
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- Low Risk Zone (Inundation Extent corresponding to discharge from 315,000 to 415,000 cusecs in Jassar-Balloki reach)

LEGEND

(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

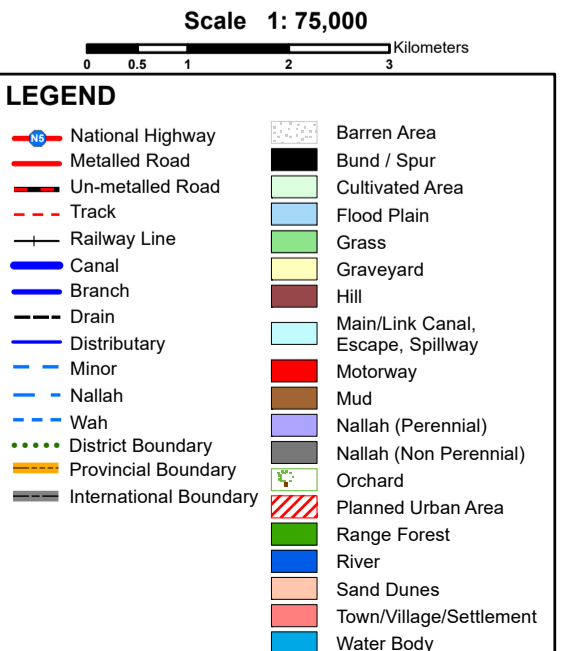
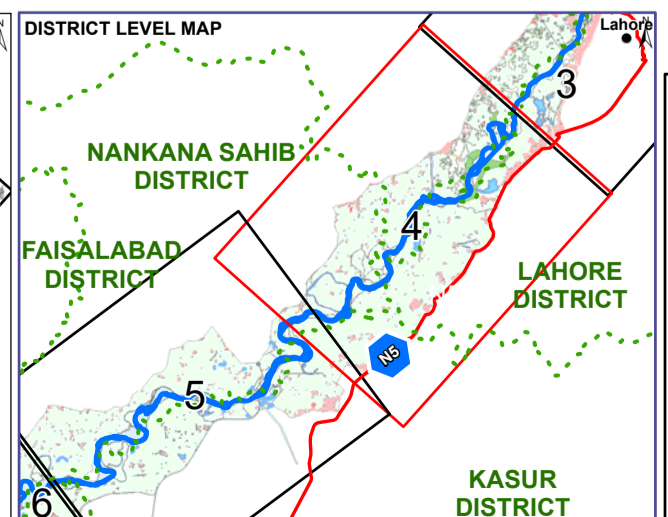
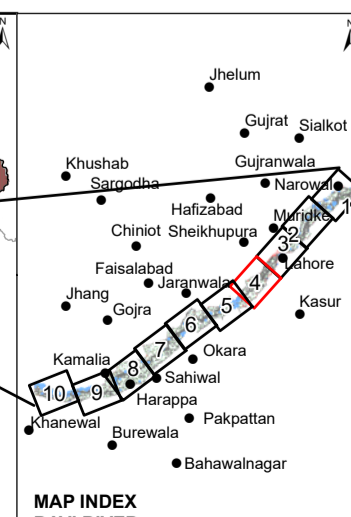
- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Jassar-Balloki reach

Note: All flood extents are based on breachless conditions



Structure No.	Existing Flood Protection Structure	Inventory Code
77	J-spur Shahpur Kanjran RD: 0-7948	P190
78	J-spur No.1 at RD: 5060 at Sharkpur Flood Protection	P185
79	J-head spur at Chung RD: 0-5673	P191
	Mole head chung prong	P192
80	T-spur No.2 at RD: 11080 at Sharkpur Flood Protection Bund	P186
81	Earthen spur No.3 at RD: 16510 at Sharkpur Flood Protection Bund	P187
82	Sharkpur Flood Protection Bund RD: 0-32060	P184
83	T-head spur No.4 at RD: 26860 at Sharkpur Flood Protection Bund	P188
84	J-head spur No.5 at RD: 30560 at Sharkpur Flood Protection Bund	P189
	Deg Diversion channel Bund RD 0+000 - 89+600 alongwith 3 Nos. cross spurs	P42
	Cross Spur No. 01 at Deg Diversion Bund.	P43
	Cross Spur No. 02 at Deg Diversion Bund.	P44
	Cross Spur No. 03 at Deg Diversion Bund.	P45
86	Hockey Spur near village Nurpur Arrian	P46
87	J-Head spur Nawan Kot near Mandi Faizabad	P48
88	Madhodass Bund RD 0+000 - 51+180	P47
89	Mole Head Spur RD 17+000/Left of Madhodass Bund	P49
90	J-Head Spur Tail of Q.B. Link Canal to Protect outfall structure on River Ravi	P282

Balloki Barrage First Breaching Section at RD 48-49 of Madhudass Bund



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
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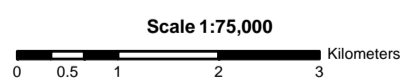
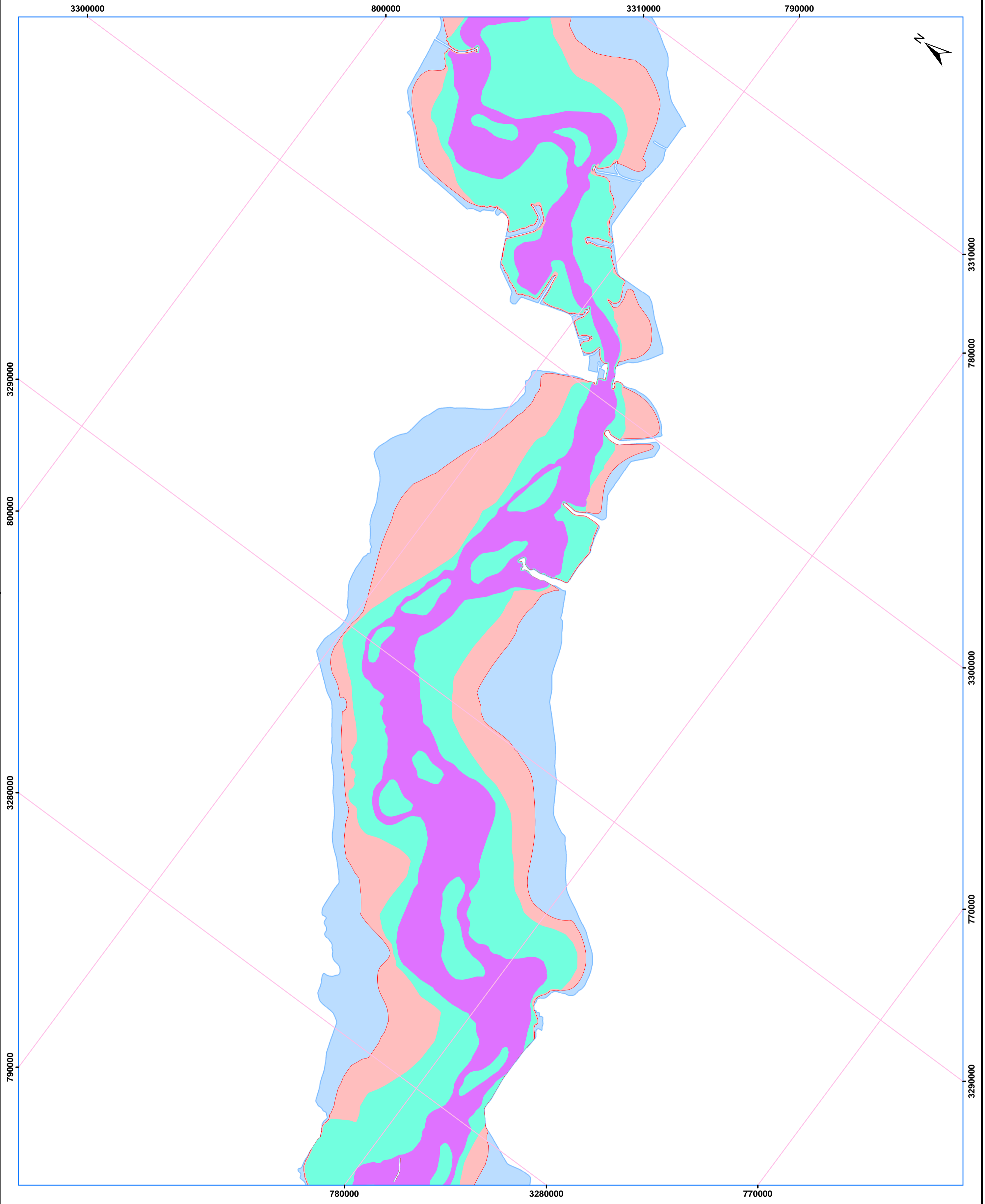
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Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-I)
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



LEGEND

(Flood Risk Zones)

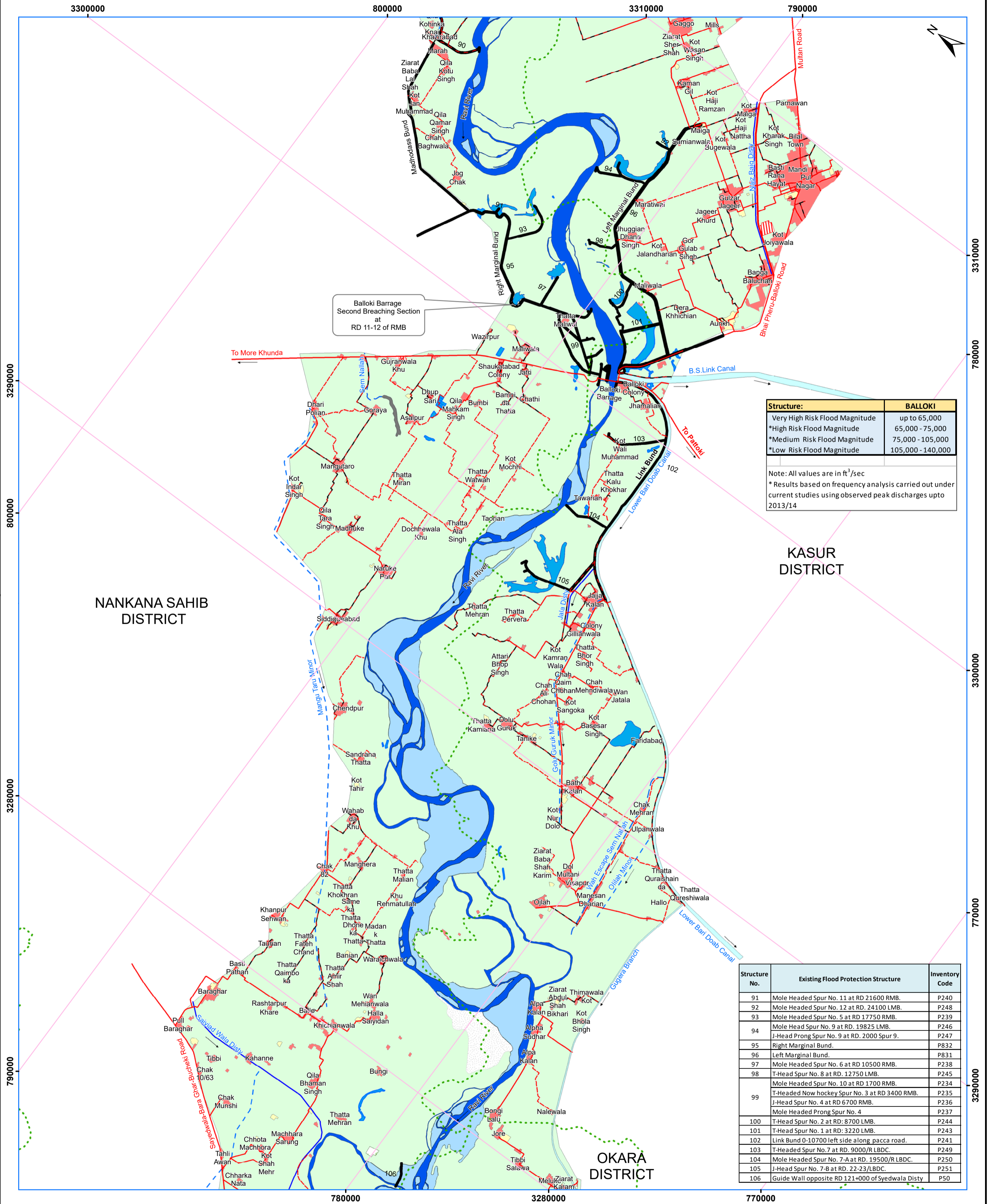
- High Risk Zone (Inundation Extent corresponding to discharge from 65,000 to 75,000 cusecs in Balloki-Sidhni reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 75,000 to 105,000 cusecs in Balloki-Sidhni reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 105,000 to 140,000 cusecs in Balloki-Sidhni reach)

LEGEND

(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Balloki-Sidhni reach

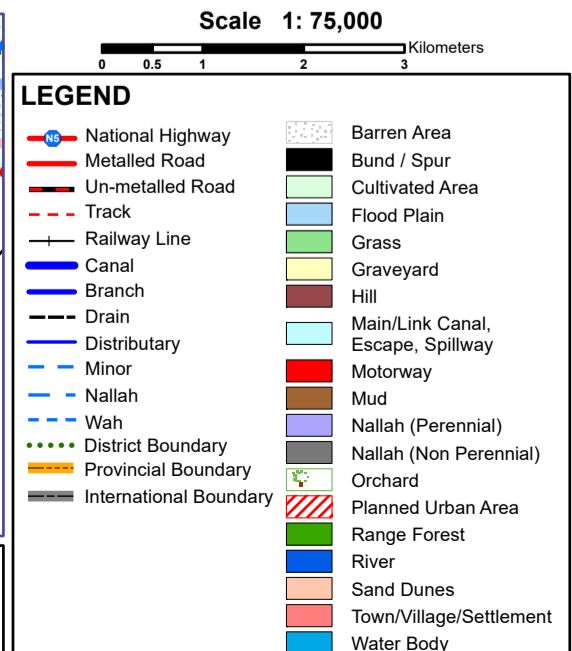
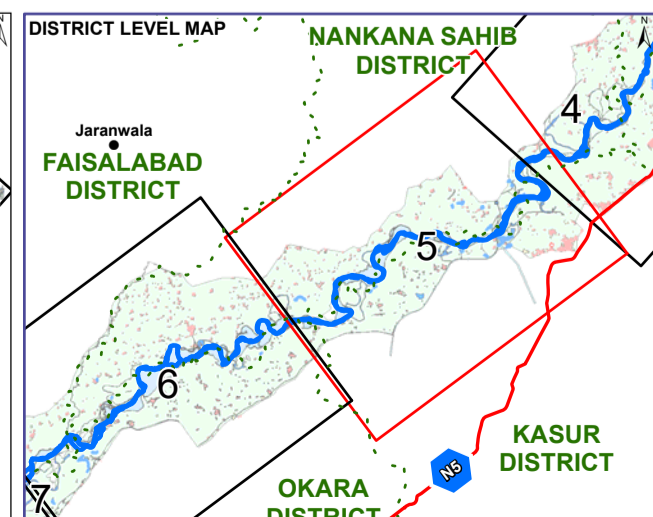
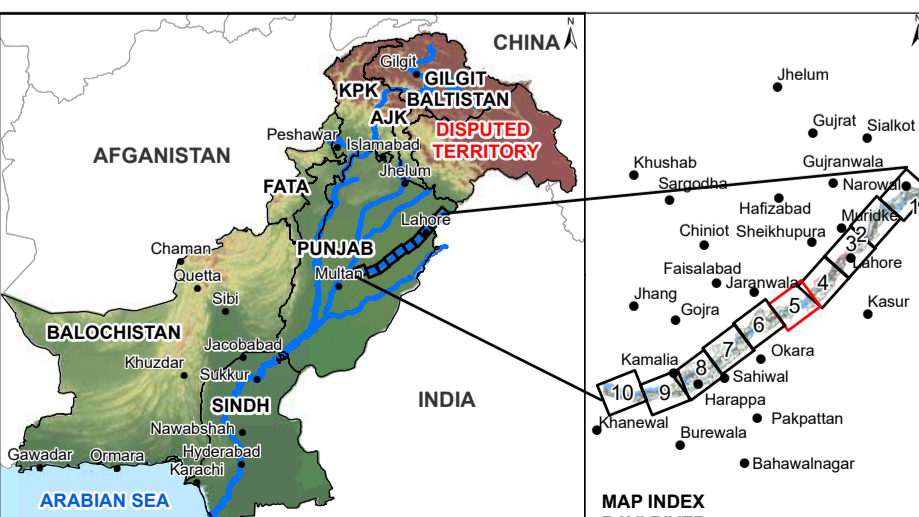
Note: All flood extents are based on breachless conditions



Structure:	BALLOKI
Very High Risk Flood Magnitude	up to 65,000
*High Risk Flood Magnitude	65,000 - 75,000
*Medium Risk Flood Magnitude	75,000 - 105,000
*Low Risk Flood Magnitude	105,000 - 140,000

Note: All values are in ft³/sec
 * Results based on frequency analysis carried out under current studies using observed peak discharges upto 2013/14

Structure No.	Existing Flood Protection Structure	Inventory Code
91	Mole Headed Spur No. 11 at RD 21600 RMB.	P240
92	Mole Headed Spur No. 12 at RD. 24100 LMB.	P248
93	Mole Headed Spur No. 5 at RD 17750 RMB.	P239
94	Mole Head Spur No. 9 at RD. 19825 LMB.	P246
95	J-Head Prong Spur No. 9 at RD. 2000 Spur 9.	P247
96	Right Marginal Bund.	P832
97	Left Marginal Bund.	P831
98	Mole Headed Spur No. 6 at RD 10500 RMB.	P238
99	T-Head Spur No. 8 at RD. 12750 LMB.	P245
	Mole Headed Spur No. 10 at RD 1700 RMB.	P234
	T-Head Now hockey Spur No. 3 at RD 3400 RMB.	P235
	J-Head Spur No. 4 at RD 6700 RMB.	P236
	Mole Headed Prong Spur No. 4	P237
100	T-Head Spur No. 2 at RD: 8700 LMB.	P244
101	T-Head Spur No. 1 at RD: 3220 LMB.	P243
102	Link Bund 0-10700 left side along pacca road.	P241
103	T-Headed Spur No. 7 at RD. 9000/R LBDC.	P249
104	Mole Headed Spur No. 7-A at RD. 19500/R LBDC.	P250
105	J-Head Spur No. 7-B at RD. 22-23/LBDC.	P251
106	Guide Wall opposite RD 121+000 of Syedwala Disty	P50



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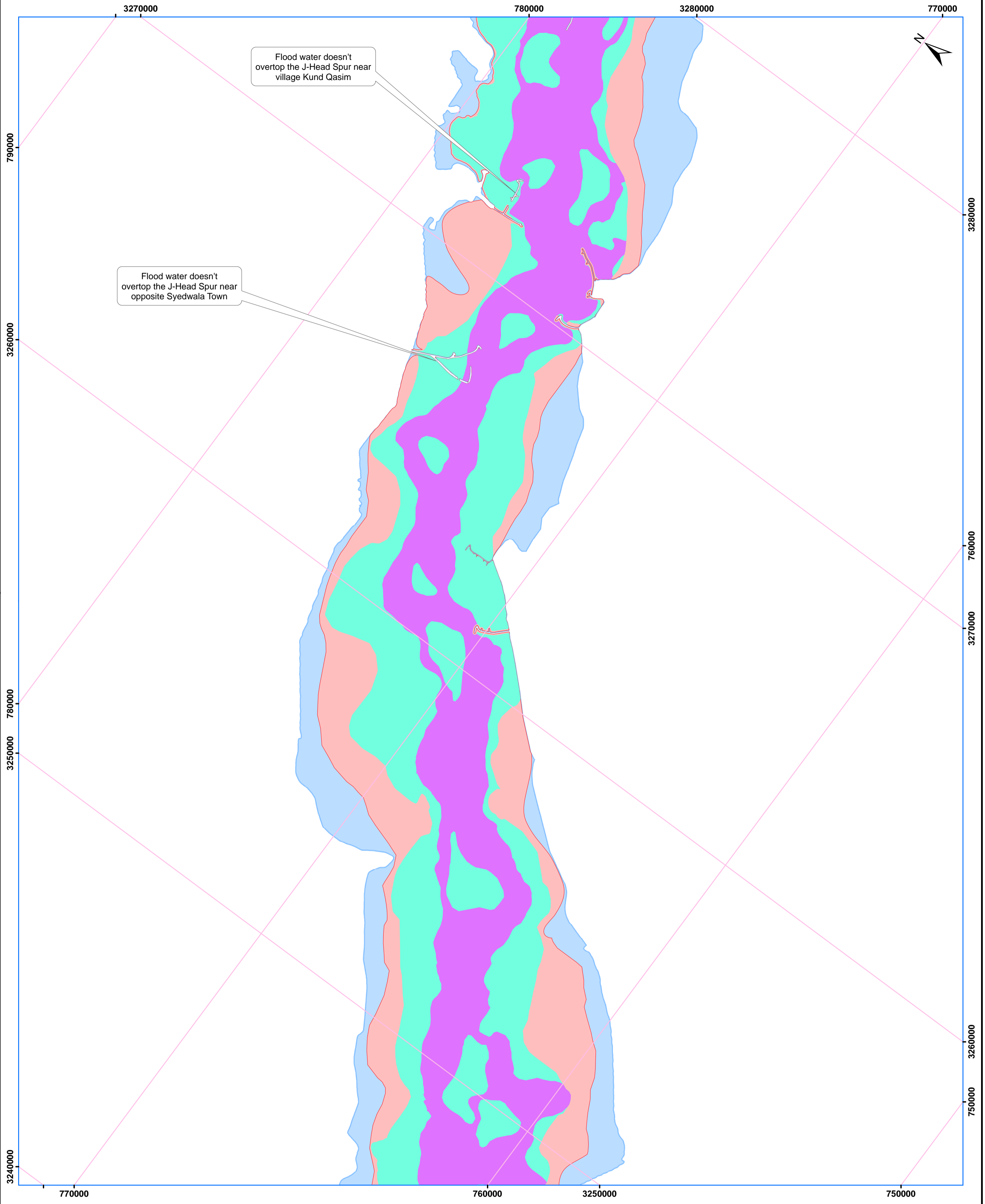
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 DATUM: WGS84
 Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Scale 1:75,000
0 0.5 1 2 3 Kilometers

LEGEND

(Flood Risk Zones)

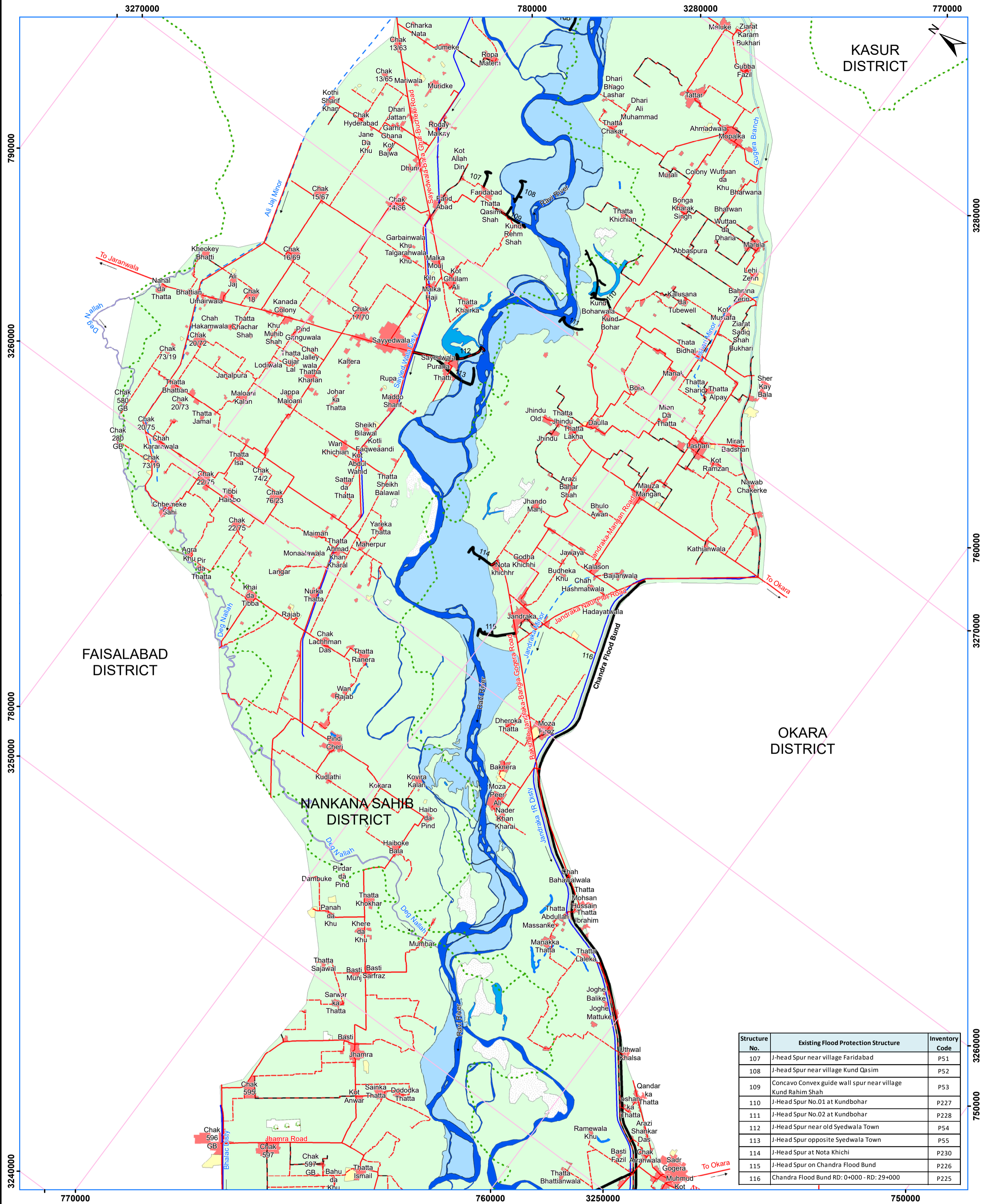
- High Risk Zone (Inundation Extent corresponding to discharge from 65,000 to 75,000 cusecs in Balloki-Sidhnai reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 75,000 to 105,000 cusecs in Ballok-Sidhnai reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 105,000 to 140,000 cusecs in Balloki-Sidhnai reach)

LEGEND

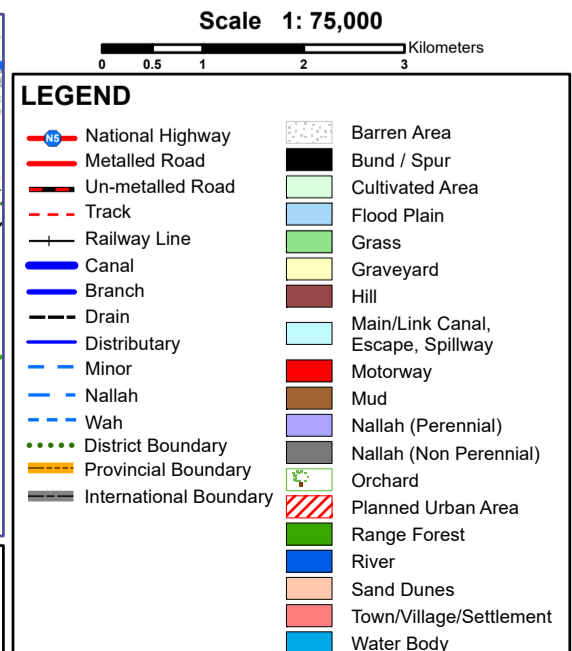
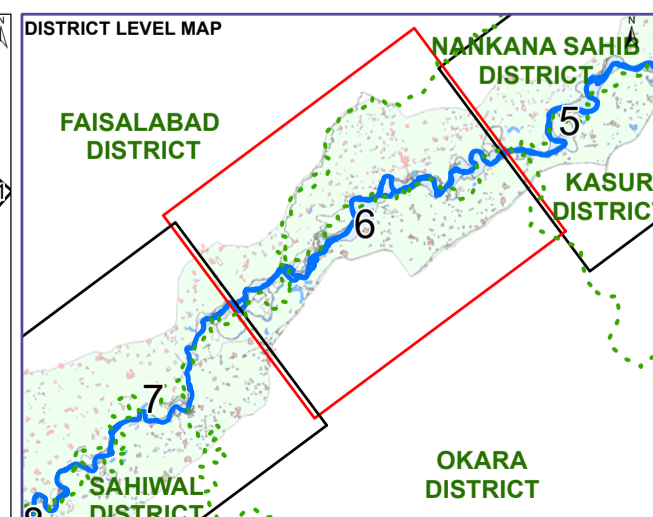
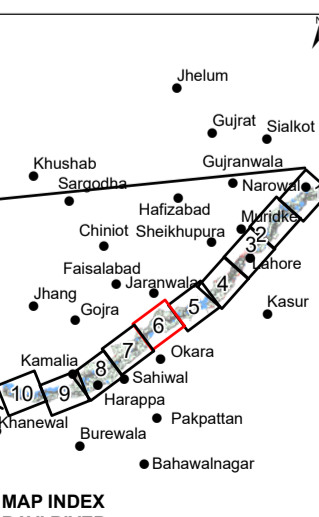
(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Balloki-Sidhnai reach

Note: All flood extents are based on breachless conditions



Structure No.	Existing Flood Protection Structure	Inventory Code
107	J-head Spur near village Faridabad	P51
108	J-head Spur near village Kund Qasim	P52
109	Concavo Convex guide wall spur near village Kund Rahim Shah	P53
110	J-Head Spur No.01 at Kundbohar	P227
111	J-Head Spur No.02 at Kundbohar	P228
112	J-Head Spur near old Syedwala Town	P54
113	J-Head Spur opposite Syedwala Town	P55
114	J-Head Spur at Nota Khichi	P230
115	J-Head Spur on Chandra Flood Bund	P226
116	Chandra Flood Bund RD: 0+000 - RD: 29+000	P225



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

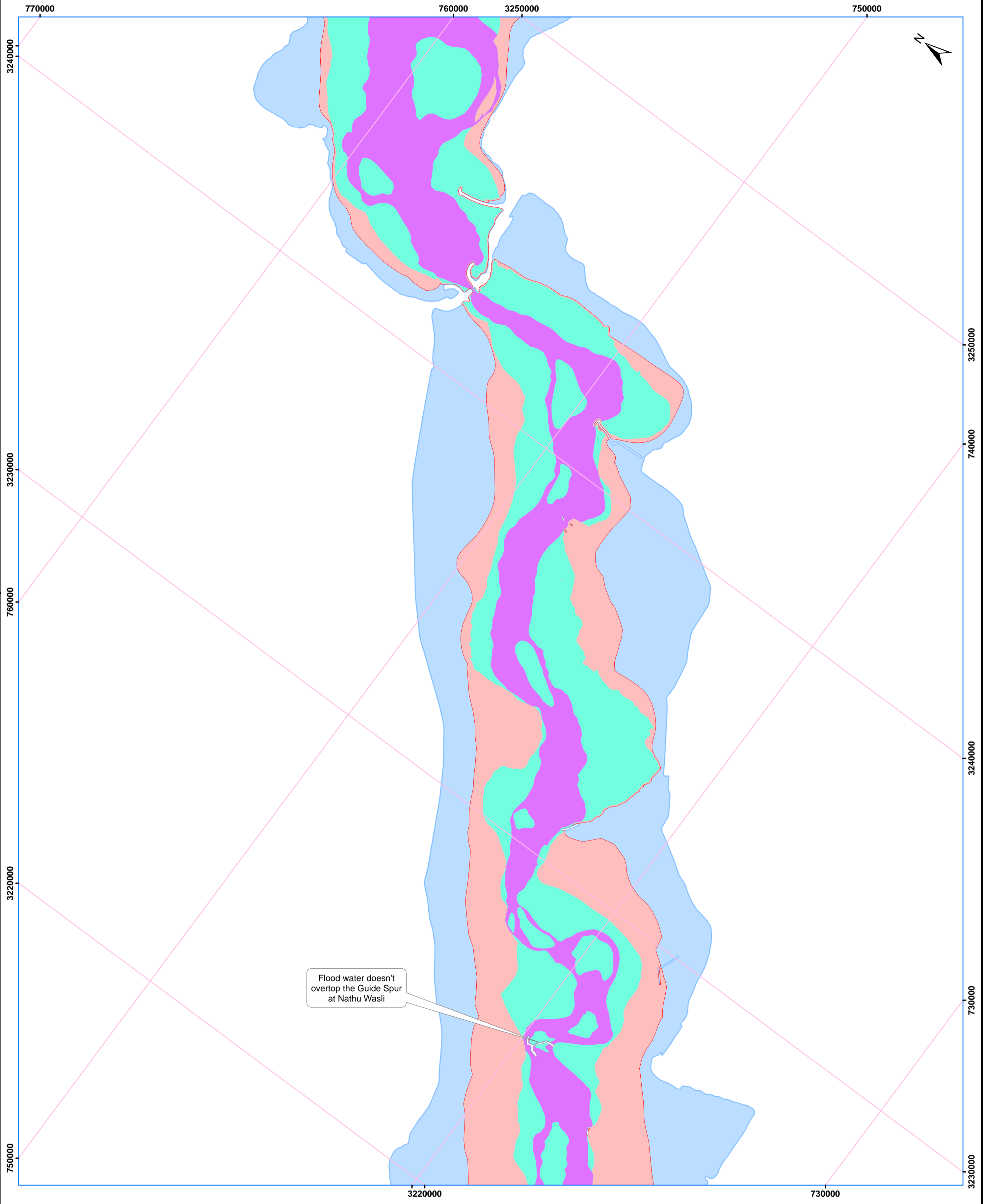
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
DELTA RESOURCES CONSULTANTS (PVT) LIMITED
DELTA RESOURCES, THE NETHERLANDS

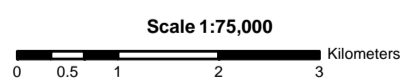
Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery
3. FPPS-II GIS data
4. Shuttle Radar Topographic Mission Data (Resolution:90 m)
5. Survey data of Flood protection embankments and structures

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-I),
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Flood water doesn't overtop the Guide Spur at Nathu Wasli



LEGEND

(Flood Risk Zones)

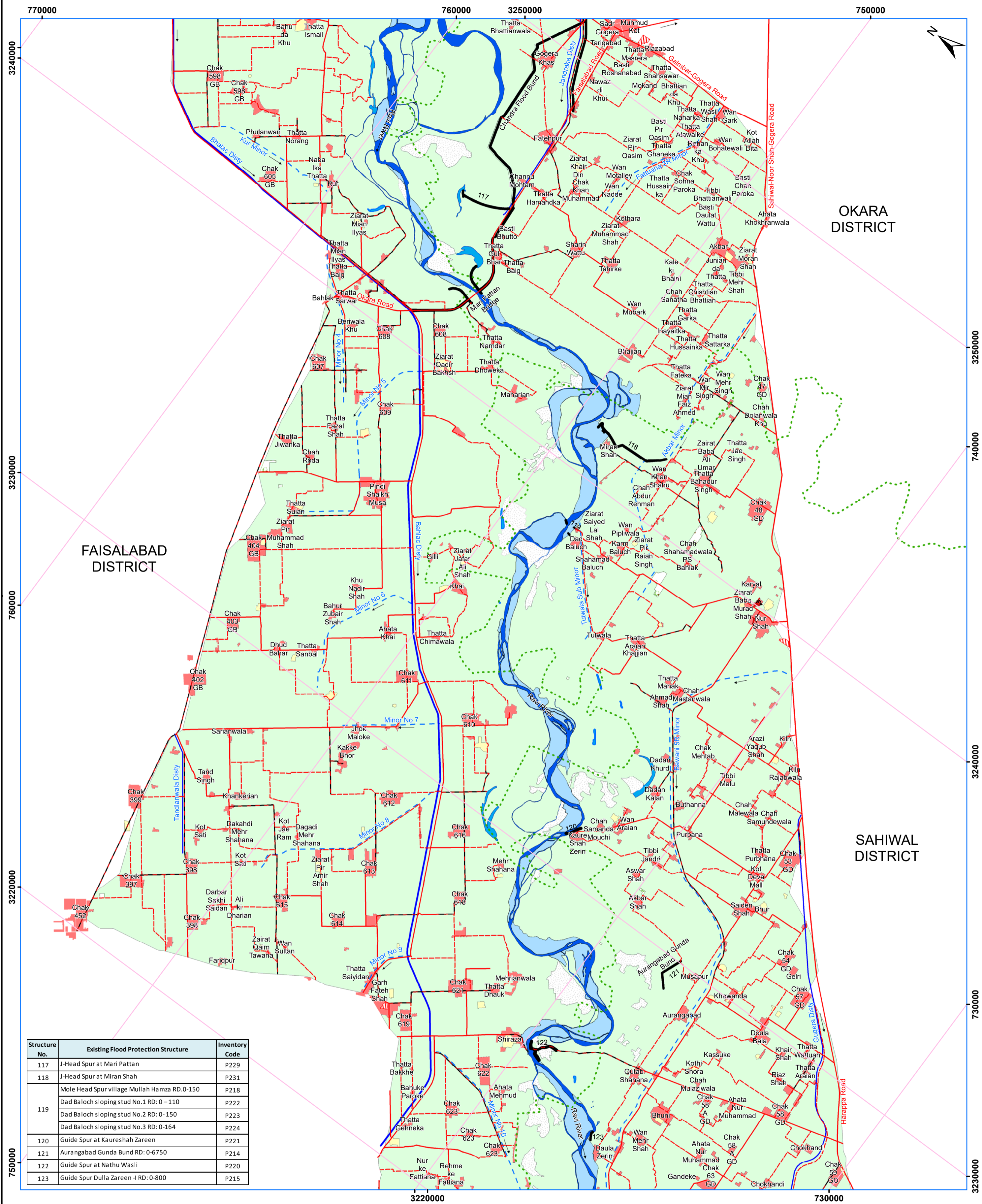
- High Risk Zone (Inundation Extent corresponding to discharge from 65,000 to 75,000 cusecs in Balloki-Sidhnai reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 75,000 to 105,000 cusecs in Ballok-Sidhnai reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 105,000 to 140,000 cusecs in Balloki-Sidhnai reach)

LEGEND

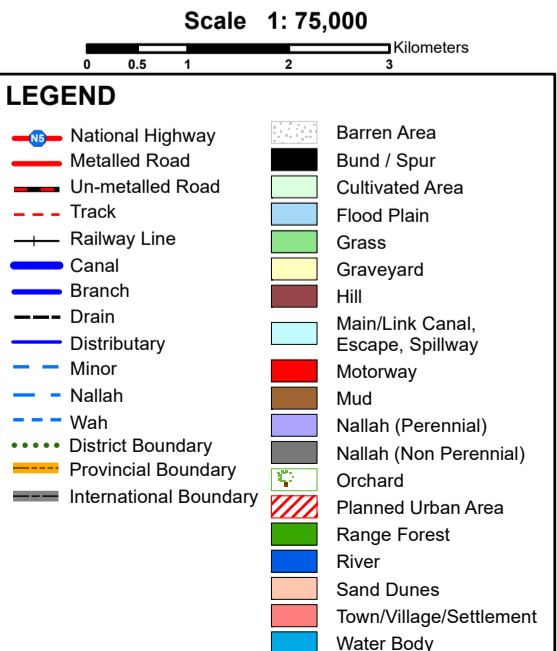
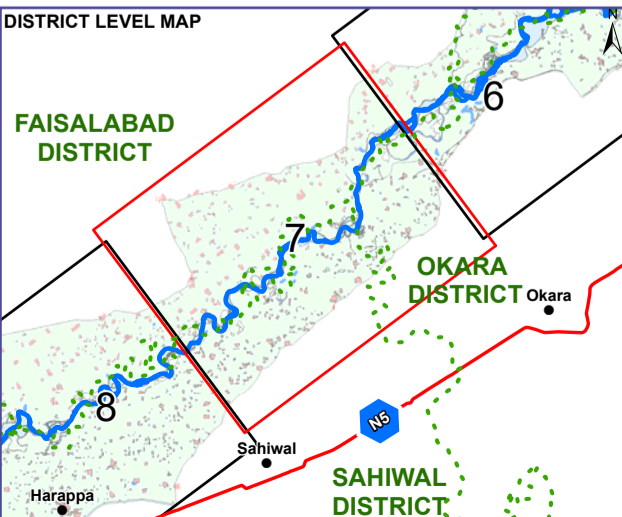
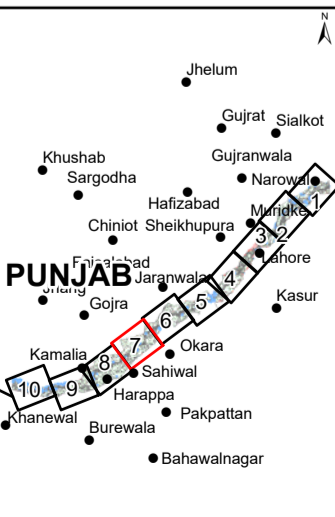
(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Balloki-Sidhnai reach

Note: All flood extents are based on breachless conditions



Structure No.	Existing Flood Protection Structure	Inventory Code
117	J-Head Spur at Mari Pattan	P229
118	J-Head Spur at Miran Shah	P231
119	Mole Head Spur village Mullah Hamza RD.0-150	P218
	Dad Baloch sloping stud No.1 RD: 0-110	P222
	Dad Baloch sloping stud No.2 RD: 0-150	P223
	Dad Baloch sloping stud No.3 RD: 0-164	P224
120	Guide Spur at Kaureshah Zareen	P221
121	Aurangabad Gunda Bund RD: 0-6750	P214
122	Guide Spur at Nathu Wasli	P220
123	Guide Spur Dulla Zareen -I RD: 0-800	P215



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

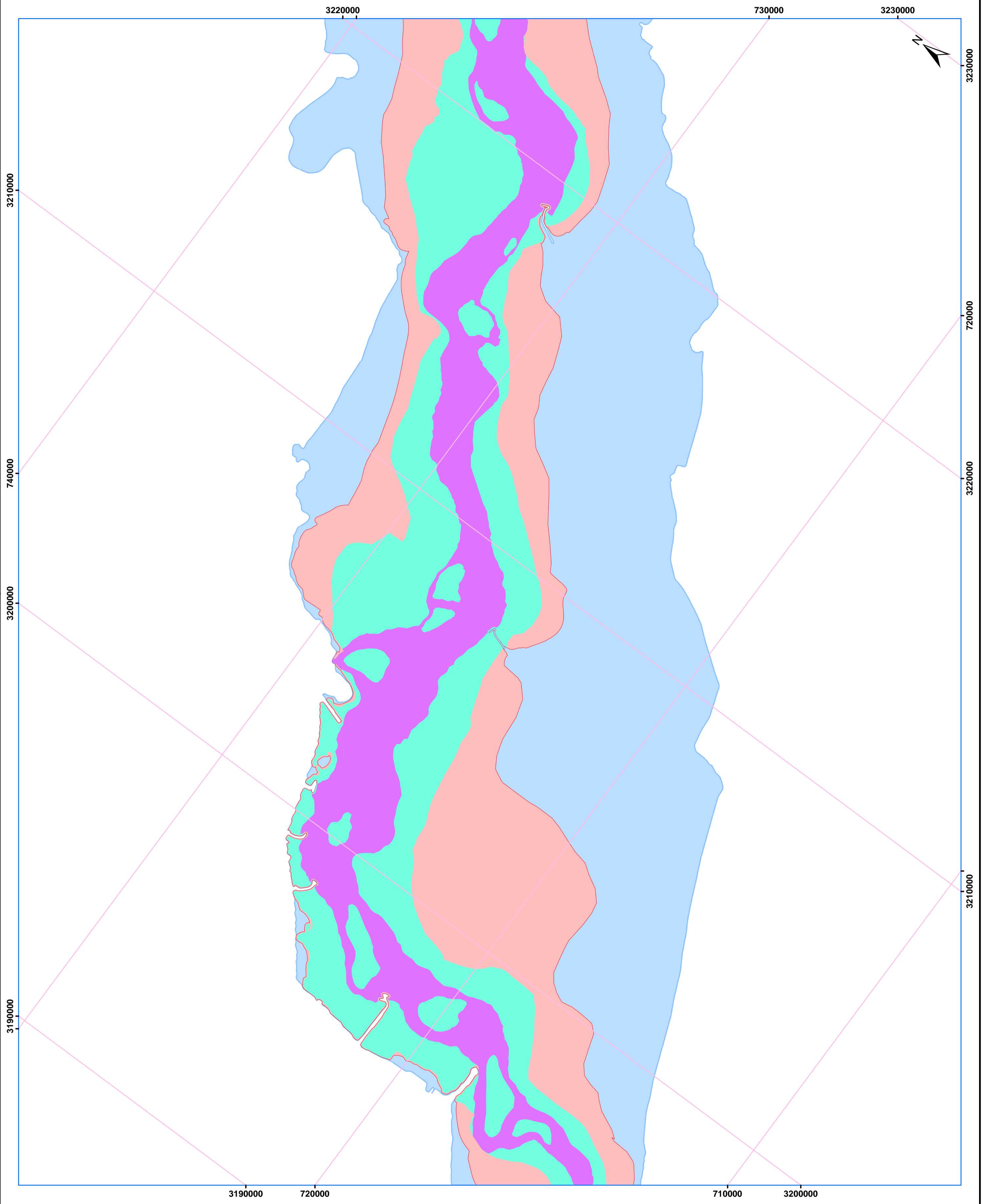
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
Deltares DELTARES, THE NETHERLANDS

Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery
3. FPSP-II GIS data
4. Shuttle Radar Topographic Mission Data (Resolution:90m)
5. Survey data of Flood protection embankments and structures

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-I)
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Scale 1:75,000
 0 0.5 1 2 3 Kilometers

LEGEND

(Flood Risk Zones)

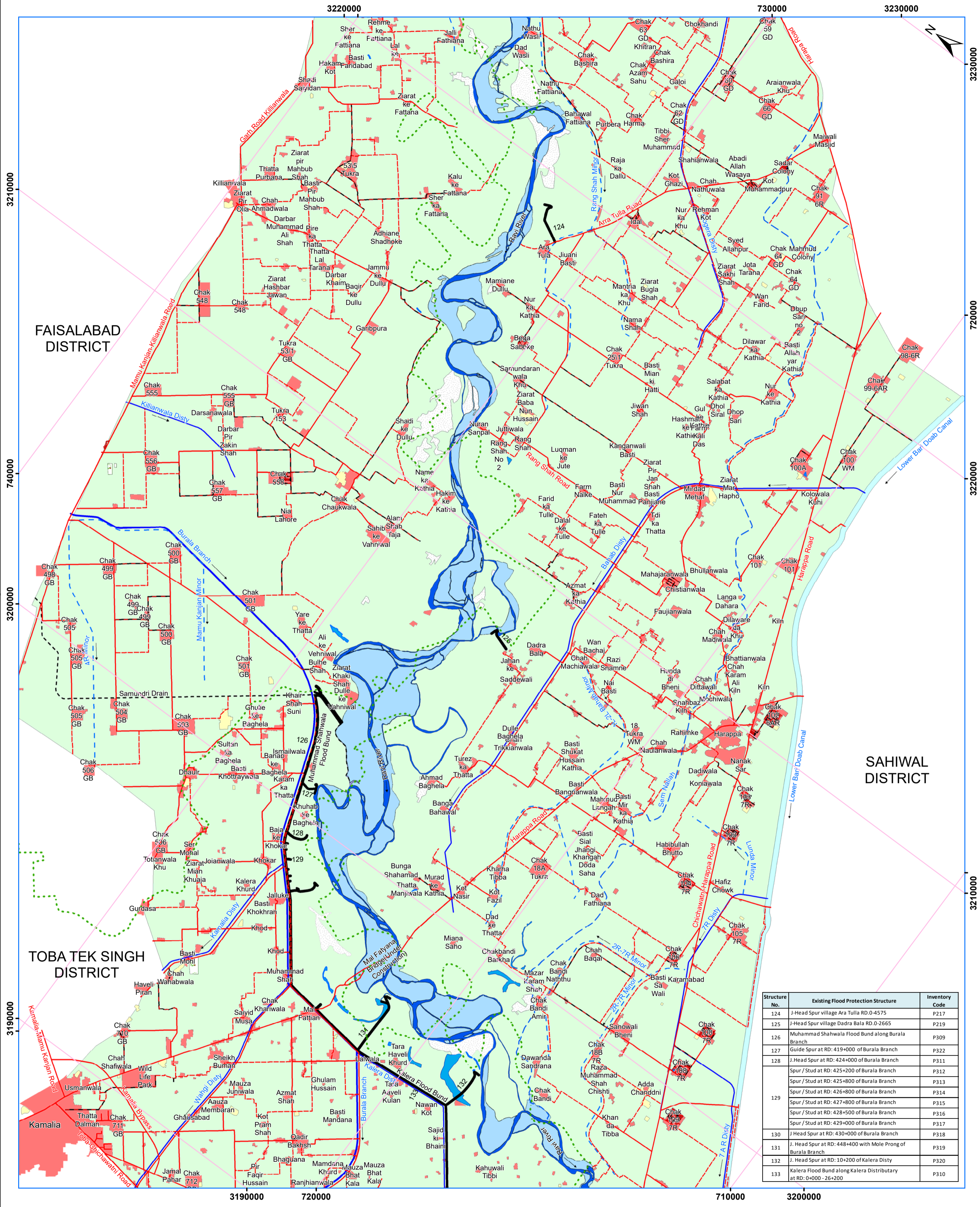
- High Risk Zone (Inundation Extent corresponding to discharge from 65,000 to 75,000 cusecs in Balloki-Sidhnai reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 75,000 to 105,000 cusecs in Ballok-Sidhnai reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 105,000 to 140,000 cusecs in Balloki-Sidhnai reach)

LEGEND

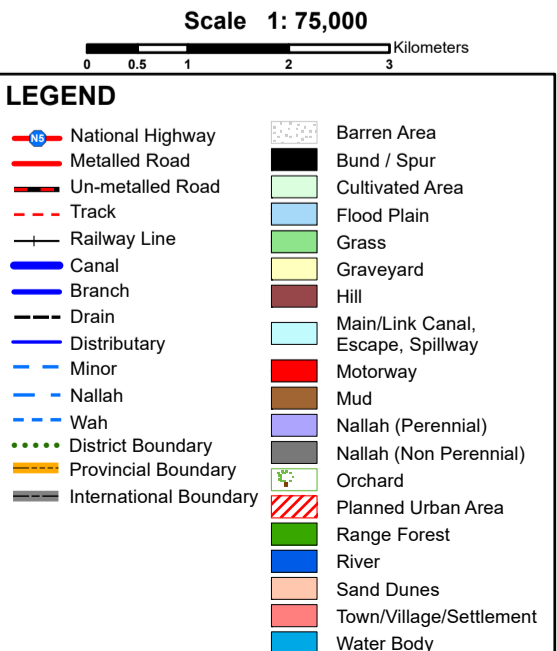
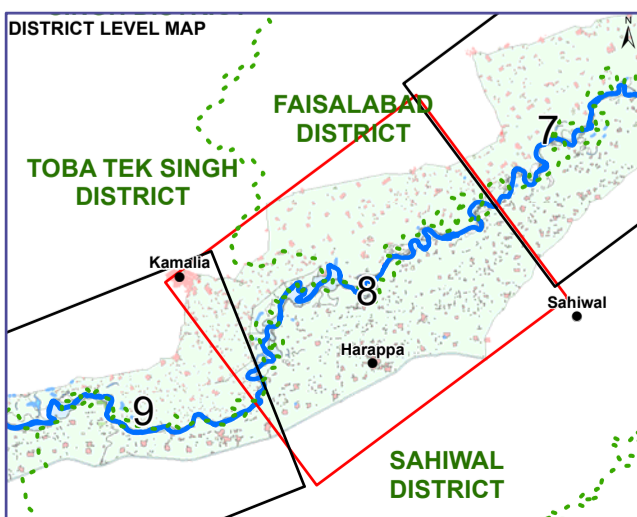
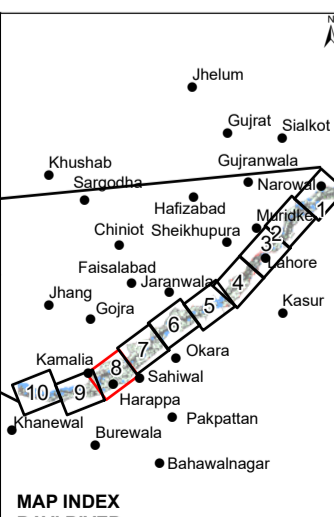
(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Balloki-Sidhnai reach

Note: All flood extents are based on breachless conditions



Structure No.	Existing Flood Protection Structure	Inventory Code
124	J-Head Spur village Ara Tulla RD.0-4575	P217
125	J-Head Spur village Dadra Bala RD.0-2665	P219
126	Muhammad Shahwala Flood Bund along Burala Branch	P309
127	Guide Spur at RD: 419+000 of Burala Branch	P322
128	J-Head Spur at RD: 424+000 of Burala Branch	P311
129	Spur / Stud at RD: 425+200 of Burala Branch	P312
	Spur / Stud at RD: 425+800 of Burala Branch	P313
	Spur / Stud at RD: 426+800 of Burala Branch	P314
	Spur / Stud at RD: 427+800 of Burala Branch	P315
	Spur / Stud at RD: 428+500 of Burala Branch	P316
130	Spur / Stud at RD: 429+000 of Burala Branch	P317
	J-Head Spur at RD: 430+000 of Burala Branch	P318
131	J-Head Spur at RD: 448+400 with Mole Prong of Burala Branch	P319
132	J-Head Spur at RD: 10+200 of Kalera Disty	P320
133	Kalera Flood Bund along Kalera Distributary at RD: 0+000 - 26+200	P310



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP
RAVI RIVER

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

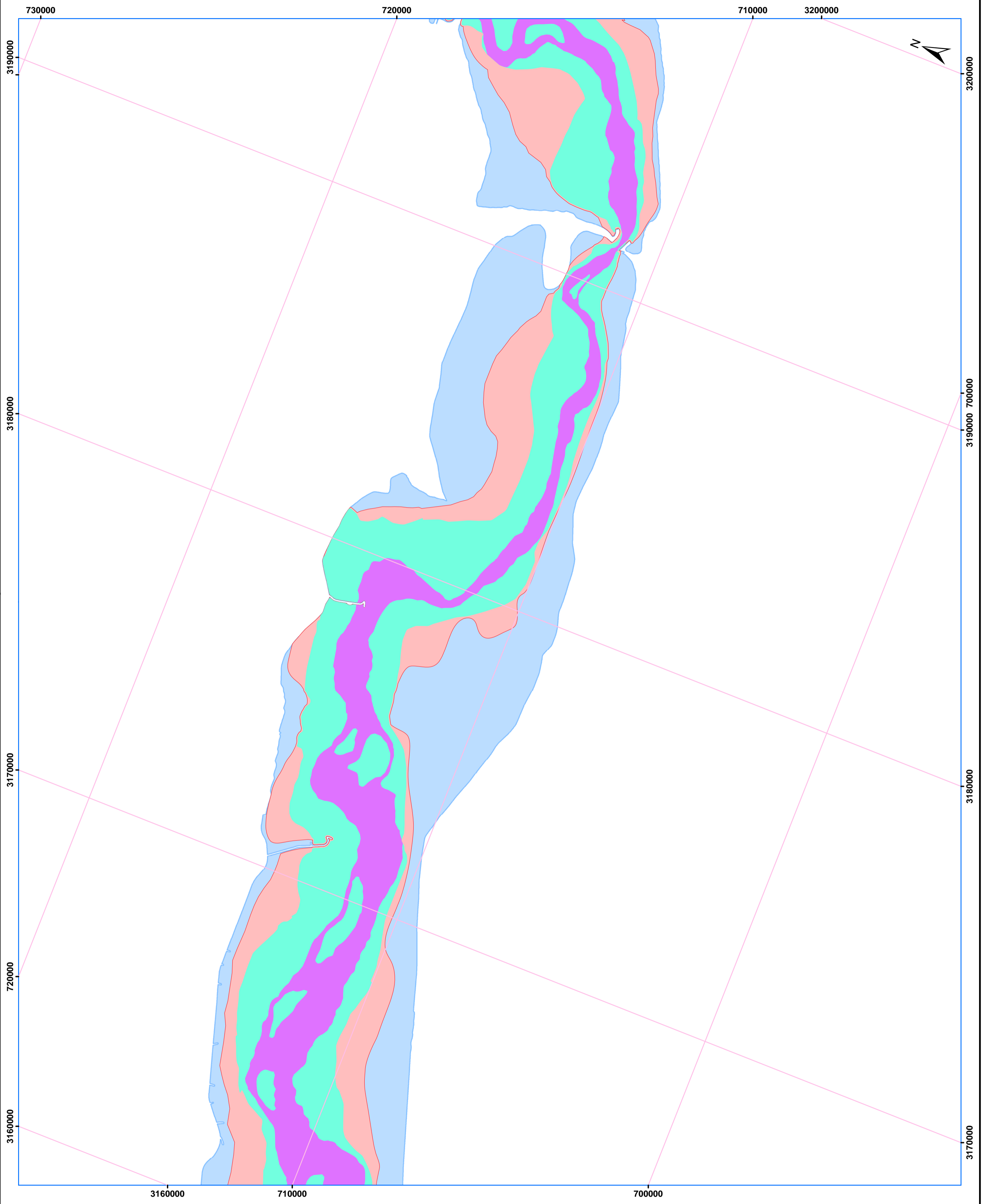
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
DELTAES, THE NETHERLANDS

Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery
3. FPSP-II GIS data
4. Shuttle Radar Topographic Mission Data (Resolution:90 m)
5. Survey data of Flood protection embankments and structures

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-I)
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Scale 1:75,000
 0 0.5 1 2 3 Kilometers

LEGEND

(Flood Risk Zones)

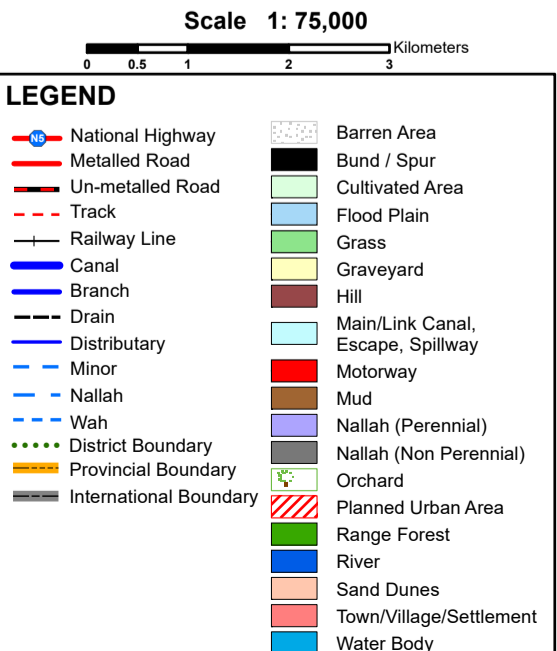
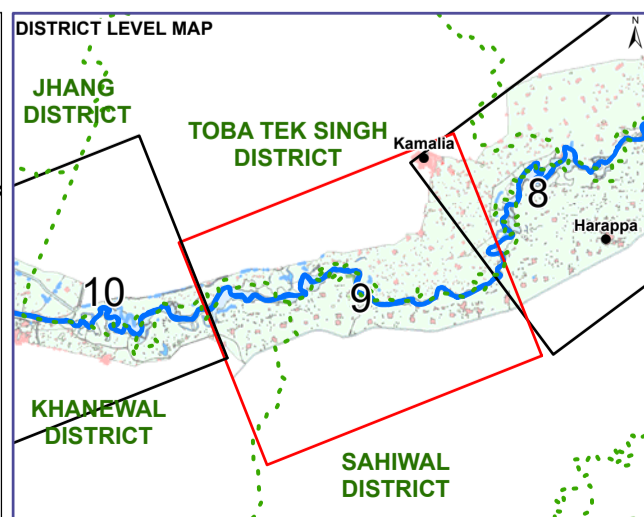
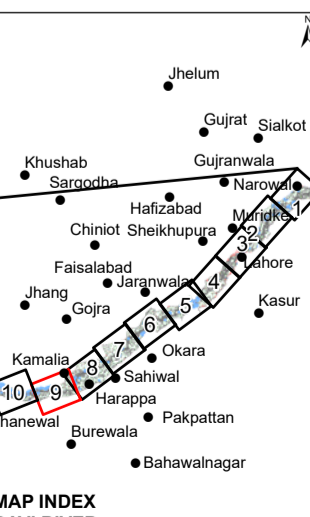
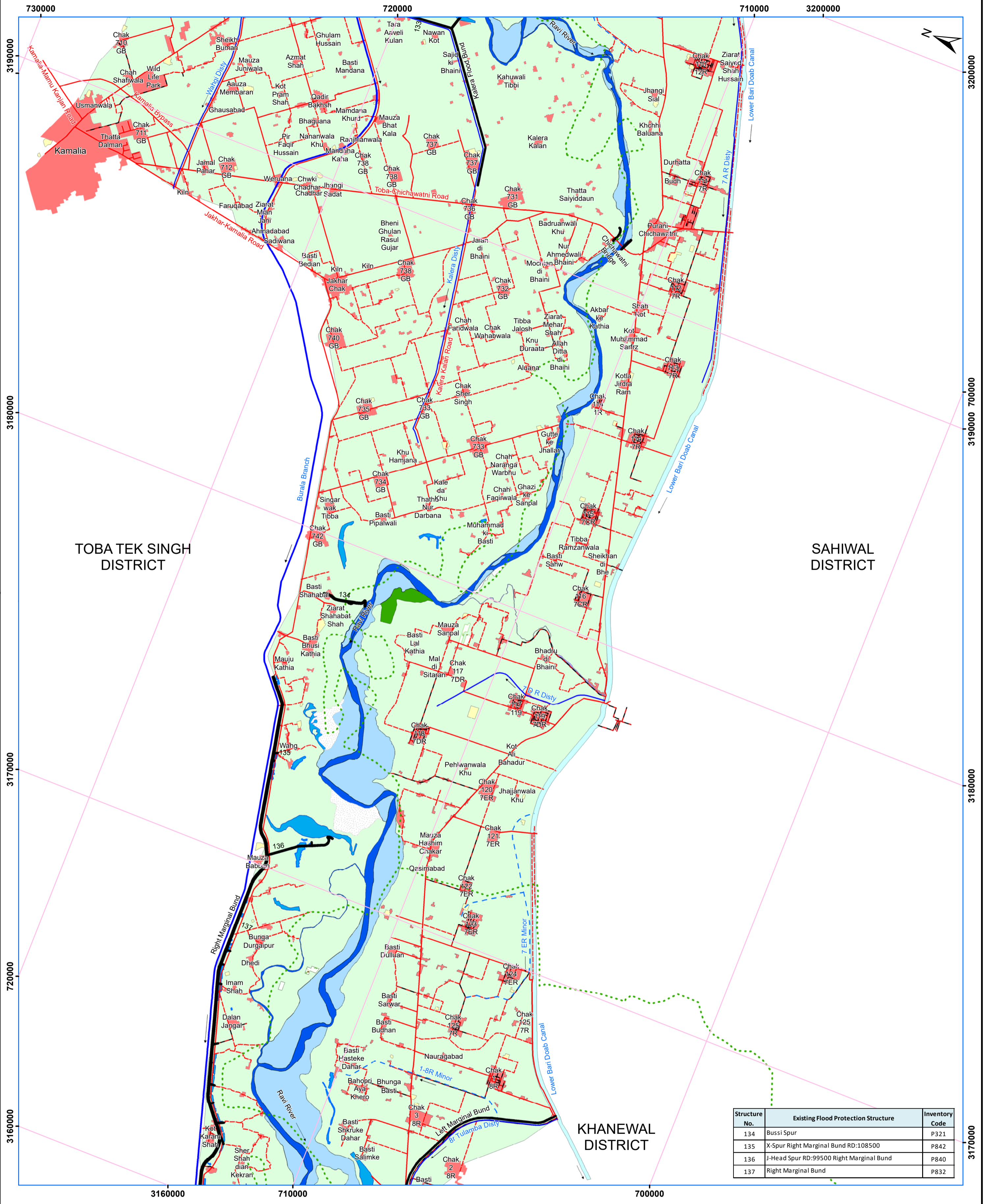
- High Risk Zone (Inundation Extent corresponding to discharge from 65,000 to 75,000 cusecs in Balloki-Sidhnai reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 75,000 to 105,000 cusecs in Ballok-Sidhnai reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 105,000 to 140,000 cusecs in Balloki-Sidhnai reach)

LEGEND

(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 65,000 cusecs in Balloki-Sidhnai reach

Note: All flood extents are based on breachless conditions



DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

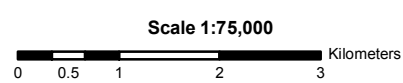
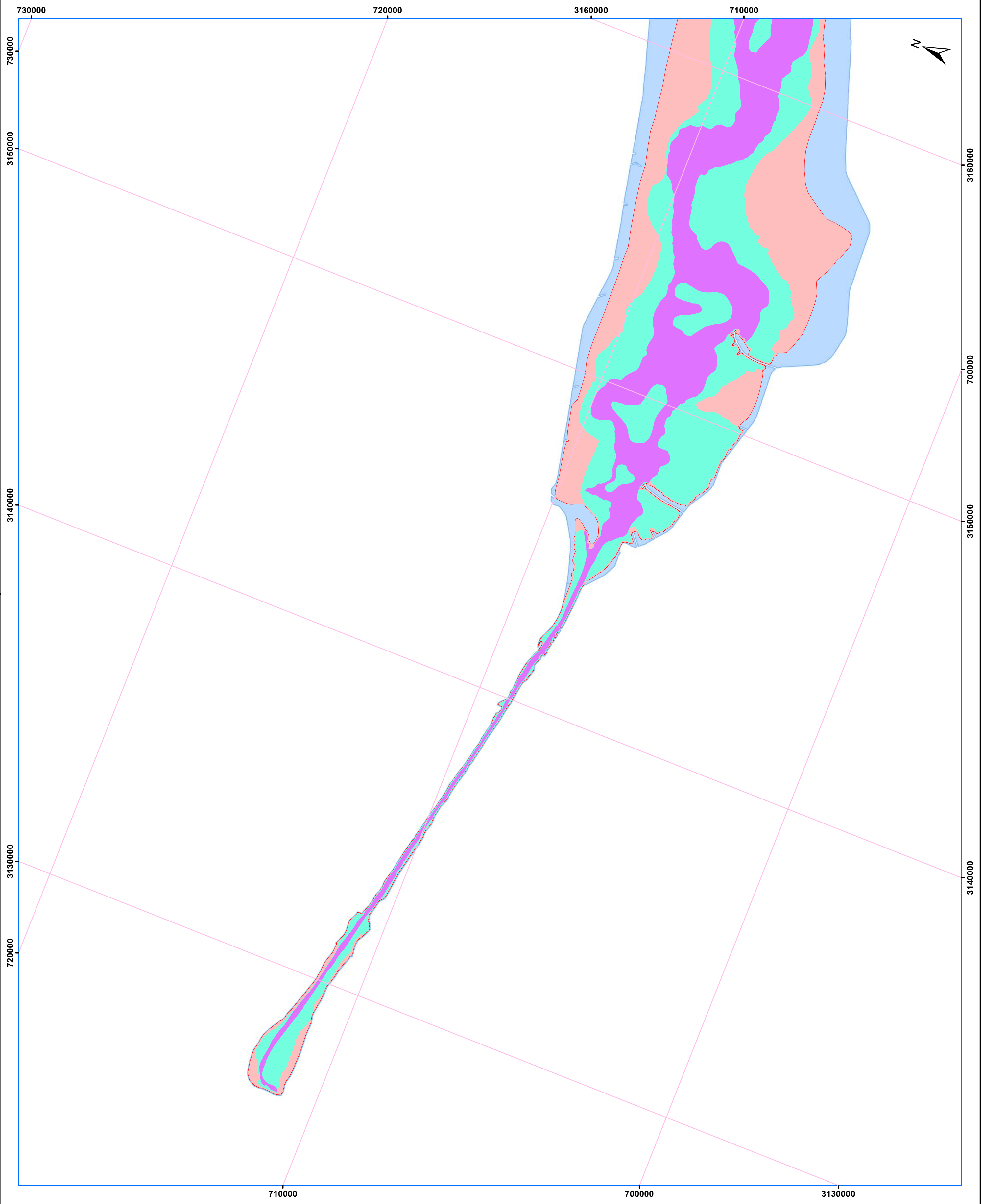
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
Deltares DELTARES, THE NETHERLANDS

Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery
3. FPSP-II GIS data
4. Shuttle Radar Topographic Mission Data (Resolution:90m)
5. Survey data of Flood protection embankments and structures

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAC-I)
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



LEGEND

(Flood Risk Zones)

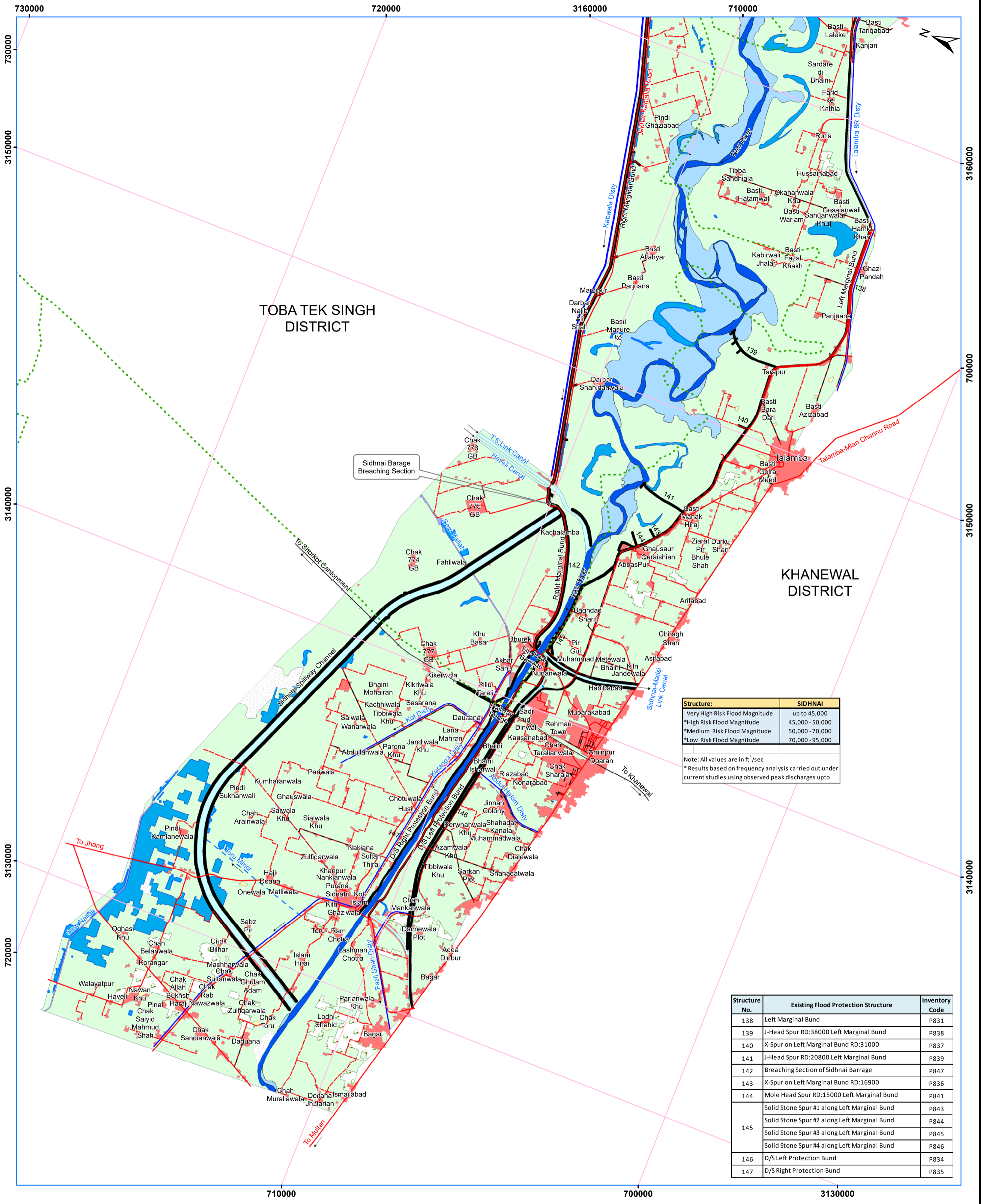
- High Risk Zone (Inundation Extent corresponding to discharge from 45,000 to 50,000 cusecs in Sidhnai-Confluence with Chenab reach)
- Medium Risk Zone (Inundation Extent corresponding to discharge from 50,000 to 70,000 cusecs in Sidhnai-Confluence with Chenab reach)
- Low Risk Zone (Inundation Extent corresponding to discharge from 70,000 to 95,000 cusecs in Sidhnai-Confluence with Chenab reach)

LEGEND

(Inundation extent corresponding to Provincial Irrigation Department's Flood Limit)

- Medium Flood Extent corresponding to discharge upto 45,000 cusecs in Sidhnai-Confluence with Chenab reach

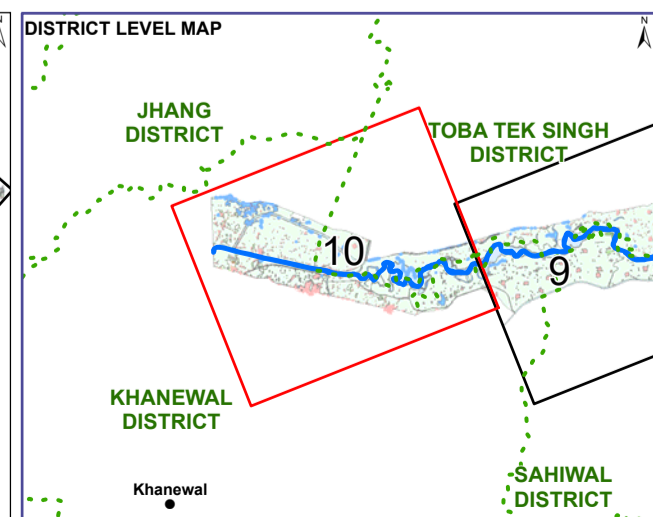
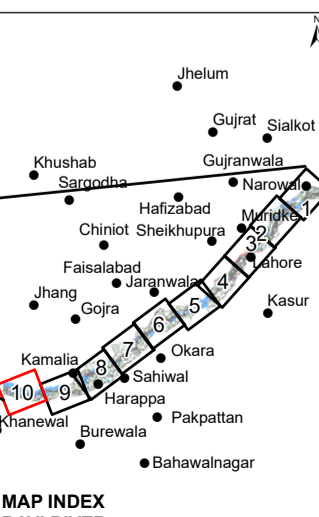
Note: All flood extents are based on breachless conditions



Structure:	SIDHNAI
*Very High Risk Flood Magnitude	up to 45,000
*High Risk Flood Magnitude	45,000 - 50,000
*Medium Risk Flood Magnitude	50,000 - 70,000
*Low Risk Flood Magnitude	70,000 - 95,000

Note: All values are in ft³/sec
*Results based on frequency analysis carried out under current studies using observed peak discharges upto

Structure No.	Existing Flood Protection Structure	Inventory Code
138	Left Marginal Bund	P831
139	J-Head Spur RD:38000 Left Marginal Bund	P838
140	X-Spur on Left Marginal Bund RD:31000	P837
141	J-Head Spur RD:20800 Left Marginal Bund	P839
142	Breaching Section of Sidhni Barage	P847
143	X-Spur on Left Marginal Bund RD:16900	P836
144	Mole Head Spur RD:15000 Left Marginal Bund	P841
145	Solid Stone Spur #1 along Left Marginal Bund	P843
	Solid Stone Spur #2 along Left Marginal Bund	P844
	Solid Stone Spur #3 along Left Marginal Bund	P845
	Solid Stone Spur #4 along Left Marginal Bund	P846
146	D/S Left Protection Bund	P834
147	D/S Right Protection Bund	P835



Scale 1: 75,000

0 0.5 1 2 3 Kilometers

LEGEND

- National Highway
- Metalled Road
- Un-metalled Road
- Track
- Railway Line
- Branch
- Drain
- Distributary
- Minor
- Nallah
- Wah
- District Boundary
- Provincial Boundary
- International Boundary
- Barren Area
- Bund / Spur
- Cultivated Area
- Flood Plain
- Grass
- Graveyard
- Hill
- Main/Link Canal, Escape, Spillway
- Motorway
- Mud
- Nallah (Perennial)
- Nallah (Non Perennial)
- Orchard
- Planned Urban Area
- Range Forest
- River
- Sand Dunes
- Town/Village/Settlement
- Water Body

DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

LANDUSE MAP RAVI RIVER

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)

WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

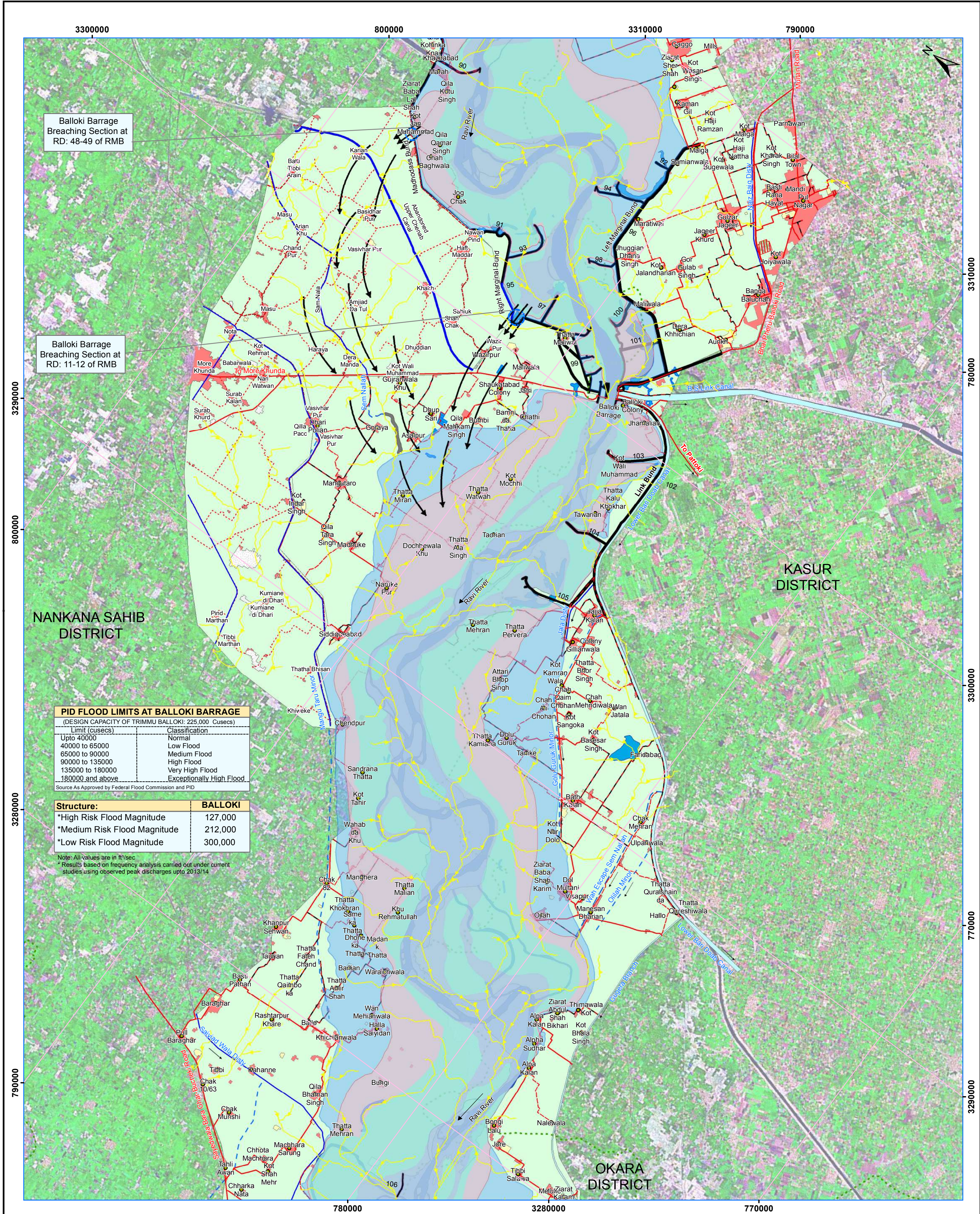
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
Deltares DELTARES, THE NETHERLANDS

Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery
3. FPSP-II GIS data
4. Shuttle Radar Topographic Mission Data (Resolution:90 m)
5. Survey data of Flood protection embankments and structures

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-I)
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016 by Faraz Aslam



Balloki Barrage Breaching Section at RD: 48-49 of RMB

Balloki Barrage Breaching Section at RD: 11-12 of RMB

PID FLOOD LIMITS AT BALLOKI BARRAGE
(DESIGN CAPACITY OF TRIMMU BALLOKI: 225,000 Cusecs)

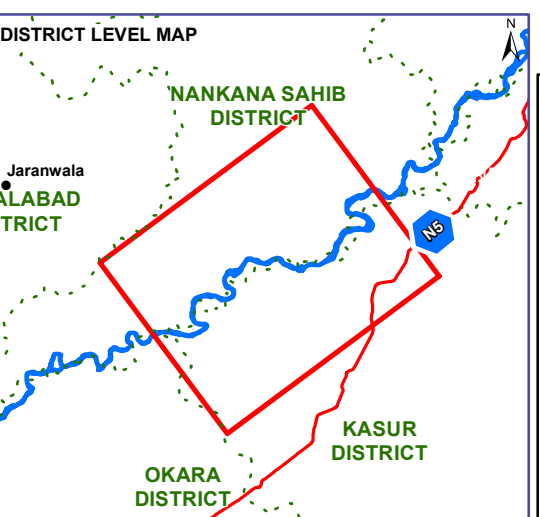
Limit (cusecs)	Classification
Upto 40000	Normal
40000 to 65000	Low Flood
65000 to 90000	Medium Flood
90000 to 135000	High Flood
135000 to 180000	Very High Flood
180000 and above	Exceptionally High Flood

Source As Approved by Federal Flood Commission and PID

Structure: BALLOKI

*High Risk Flood Magnitude	127,000
*Medium Risk Flood Magnitude	212,000
*Low Risk Flood Magnitude	300,000

Note: All values are in ft³/sec
*Results based on frequency analysis carried out under current studies using observed peak discharges upto 2013/14



Scale 1: 75,000
0 0.5 1 2 3 Kilometers

LEGEND

- Designated Breaching Section (Blue circle)
- Designated Breach Location at Canal/Minor (Pink circle)
- Flood Water Flow Direction (Black arrow)
- Drainage (Based on SRTM Data) (Yellow arrow)
- Inundation Extent corresponding to Provincial Irrigation Department (Purple, Pink, Red)
- Risk Zones (Green, Orange, Red)
- National Highway (Red line with 'H')
- Mettled Road (Red line)
- Un-mettled Road (Black line)
- Track (Black dashed line)
- Railway Line (Black line with cross-ticks)
- Canal (Blue line)
- Branch (Blue dashed line)
- Distributary (Blue dotted line)
- Minor (Blue dash-dot line)
- Nallah (Blue line with wavy pattern)
- Wah (Blue line with wavy pattern)
- District Boundary (Red dashed line)
- Provincial Boundary (Black dashed line)
- International Boundary (Black solid line)
- Barren Area (Light blue)
- Bund / Spur (Black)
- Cultivated Area (Light green)
- Flood Plain (Light blue)
- Grass (Light green)
- Graveyard (Light green)
- Hill (Brown)
- Main/Link Canal, Escape, Spillway (Blue)
- Motorway (Red)
- Mud (Brown)
- Nallah (Perennial) (Blue)
- Nallah (Non Perennial) (Blue)
- Orchard (Light green)
- Planned Urban Area (Light blue)
- Range Forest (Light green)
- River (Blue)
- Sand Dunes (Light brown)
- Town/Village/Settlement (Light blue)
- Water Body (Blue)

DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

BALLOKI BARRAGE BREACHING SECTION MAP

GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

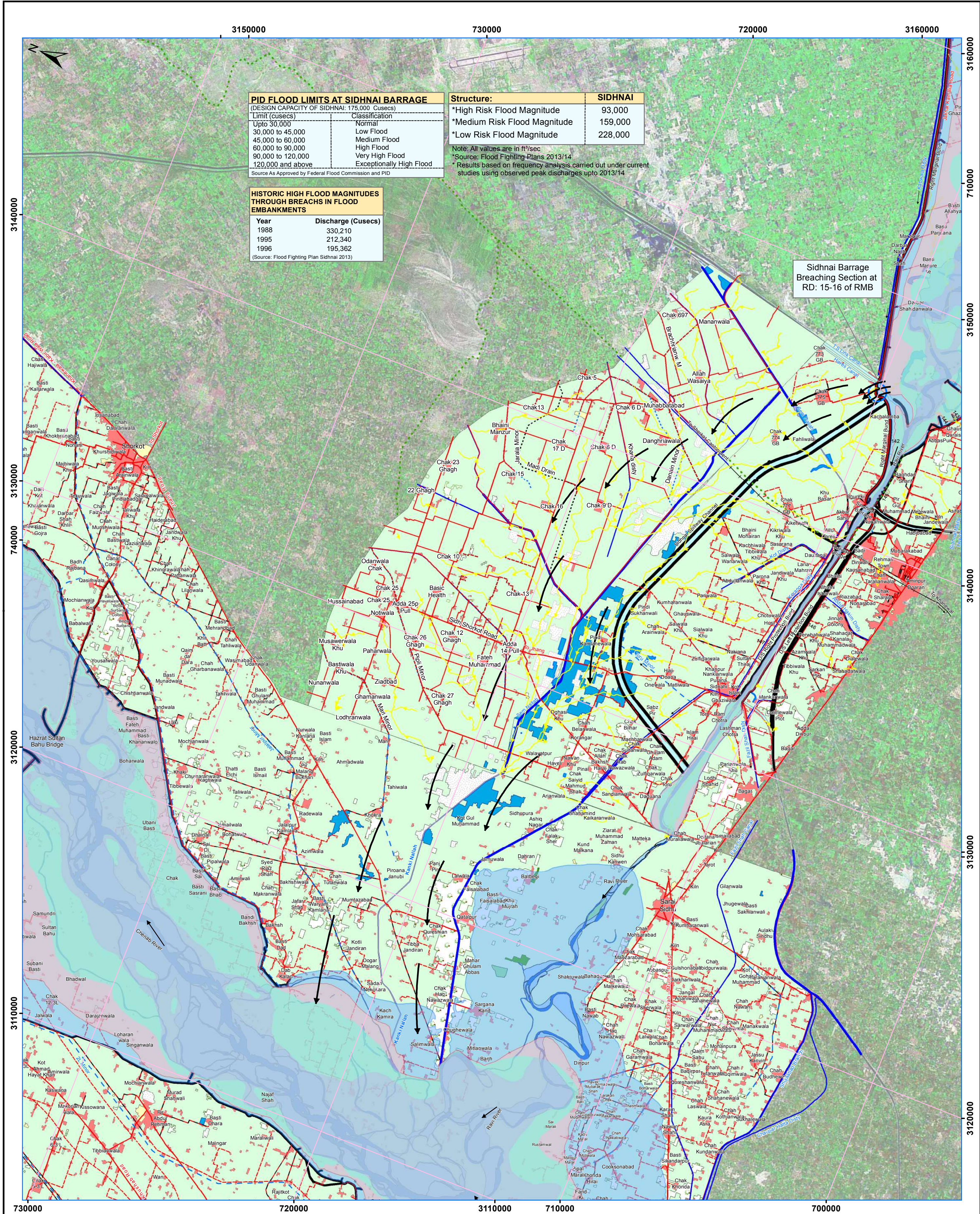
Consultants:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
1-C, Block-N, Model Town Extension, Lahore - Pakistan.

in association with
DELTAIRES DELTARES, THE NETHERLANDS

Source of Information:
1. Topographic sheets of Survey of Pakistan
2. Freely available satellite imagery
3. FPSP-II GIS data
4. Shuttle Radar Topographic Mission Data (Resolution:90 m)
5. Survey data of Flood protection embankments and structures

Coordinate System
PROJECTION: Lambert Conformal Conic (LMPAK-I)
DATUM: WGS84
Grid Reference is in meters

Date: Jan 29, 2016
By Maria Yameen



PID FLOOD LIMITS AT SIDHNAI BARRAGE	
(DESIGN CAPACITY OF SIDHNAI: 175,000 Cusecs)	
Limit (cusecs)	Classification
Upto 30,000	Normal
30,000 to 45,000	Low Flood
45,000 to 60,000	Medium Flood
60,000 to 90,000	High Flood
90,000 to 120,000	Very High Flood
120,000 and above	Exceptionally High Flood

Source: As Approved by Federal Flood Commission and PID

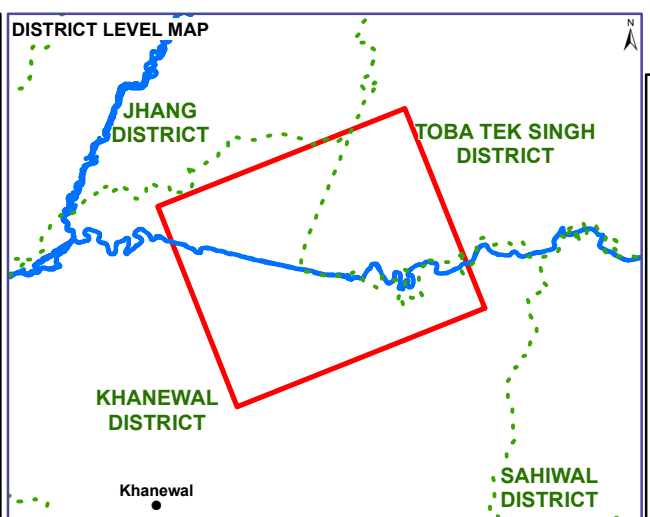
Structure:	SIDHNAI
*High Risk Flood Magnitude	93,000
*Medium Risk Flood Magnitude	159,000
*Low Risk Flood Magnitude	228,000

Note: All values are in ft³/sec
 *Source: Flood Fighting Plans 2013/14
 *Results based on frequency analysis carried out under current studies using observed peak discharges upto 2013/14

HISTORIC HIGH FLOOD MAGNITUDES THROUGH BREACHES IN FLOOD EMBANKMENTS	
Year	Discharge (Cusecs)
1988	330,210
1995	212,340
1996	195,362

(Source: Flood Fighting Plan Sidhni 2013)

Sidhni Barrage Breaching Section at RD: 15-16 of RMB



Scale 1: 75,000

0 0.5 1 2 3 Kilometers

LEGEND

- Designated Breaching Section
- Designated Breach Location at Canal/Minor
- Flood Water Flow Direction
- Drainage (Based on SRTM Data)
- Inundation Extent corresponding to Provincial Irrigation Department
 - Medium Flood Limit at discharge of 65,000 cusec in Balokki-Sidhni Reach
 - High Risk Zone (Inundation Extent Corresponding to discharge from 65,000 to 75,000 in Balokki-Sidhni Reach)
 - Medium Risk Zone (Inundation Extent Corresponding to discharge from 75,000 to 105,000 in Balokki-Sidhni Reach)
 - Low Risk Zone (Inundation Extent Corresponding to discharge from 105,000 to 140,000 in Balokki-Sidhni Reach)
- Risk Zones
- National Highway
- Metalled Road
- Un-metalled Road
- Track
- Railway Line
- Canal
- Branch
- Drain
- Distributary
- Minor
- Nallah
- Wah
- District Boundary
- Provincial Boundary
- International Boundary
- Barren Area
- Bund / Spur
- Cultivated Area
- Flood Plain
- Grass
- Graveyard
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- Main/Link Canal, Escape, Spillway
- Motorway
- Mud
- Nallah (Perennial)
- Nallah (Non Perennial)
- Orchard
- Planned Urban Area
- Range Forest
- River
- Sand Dunes
- Town/Village/Settlement
- Water Body

DEVELOPMENT OF NATIONAL FLOOD PROTECTION PLAN-IV (NFPP-IV) AND RELATED STUDIES TO ENHANCE THE CAPACITY OF FEDERAL FLOOD COMMISSION-FFC

SIDHNAI BARRAGE BREACHING SECTION MAP

GOVERNMENT OF PAKISTAN
 MINISTRY OF WATER AND POWER
 PROJECT MANAGEMENT & POLICY IMPLEMENTATION UNIT (PMPIU)
 WATER SECTOR CAPACITY BUILDING AND ADVISORY SERVICES PROJECT (WCAP)

CONSULTANTS:
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED
 1-C, Block-N, Model Town Extension, Lahore - Pakistan.
 in association with

Deltares DELTARES, THE NETHERLANDS
 Enabling Delta Life

Source of Information:
 1. Topographic sheets of Survey of Pakistan
 2. Freely available satellite imagery
 3. FPSP-II GIS data
 4. Shuttle Radar Topographic Mission Data (Resolution:90m)
 5. Survey data of Flood protection embankments and structures

Coordinate System
 PROJECTION: Lambert Conformal Conic (LMPAK-I)
 DATUM: WGS84
 Grid Reference is in meters

Date: 29 Jan, 2016
 By Maria Yameen

Inundation Depth of Settlements along Ravi River

Ravi River - Sheet No. 5

Sr. No.	Settlement Name	Zone*	District	Inundation Depth at Discharge of 65,000 Cusec below Balloki		Inundation Depth at Discharge of 75,000 Cusec below Balloki		Inundation Depth at Discharge of 105,000 Cusec below Balloki		Inundation Depth at Discharge of 140,000 Cusec below Balloki			
				Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)
				1	Alpa Kalan	VH,H,M,L	KASUR	0.00	0.17	0.00	0.30	1.93	2.21
2	Ojlah and nearby 4 Settlements	VH,H,M,L	KASUR	0.00	0.34	0.00	0.77	0.00	1.20	0.09	1.69		
3	1 Settlement nearby Jajja Kalan	H,M,L	KASUR	0.00	0.00	0.00	0.10	0.00	0.38	0.00	0.55		
4	Alpha Sudhar and nearby 2 Settlements	H,M,L	KASUR	0.00	0.00	0.00	1.26	0.61	2.42	0.71	2.78		
5	Belloki Colony	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.18	0.00	1.22	0.00	1.36		
6	Jog Chak and nearby 1 Settlement	H,M,L	NANKANA SAHIB	0.00	0.00	0.36	0.40	0.71	1.04	1.12	1.27		
7	Khu Rehmatullah	H,M,L	KASUR	0.00	0.00	0.00	0.04	0.06	0.97	0.09	0.99		
8	Kot Mochhi and nearby 3 Settlements	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.93	0.00	1.45	0.24	1.69		
9	Mehr Di Dhari	H,M,L	OKARA	0.00	0.00	0.00	0.07	0.15	0.59	0.34	0.78		
10	Qila Qamar Singh and nearby 1 Settlement	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.88	0.00	1.33	0.01	1.81		
11	Sandrana Thatta	H,M,L	KASUR	0.00	0.00	0.23	0.47	0.65	1.10	1.08	1.38		
12	Taorian and nearby 1 Settlement	H,M,L	KASUR	0.00	0.00	0.00	0.05	0.00	0.15	0.12	0.22		
13	Thatta Mehran	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.50	0.00	0.92	0.00	1.34		
14	Aittari Bhop Singh and nearby 2 Settlements	M,L	KASUR	0.00	0.00	0.00	0.00	0.00	4.24	0.00	4.38		
15	Bungi and nearby 2 Settlements	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	3.05	3.78	3.63	4.02		
16	Chah Baghwala	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	2.12	0.00	2.33		
17	Dochewala Khu	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	1.22	1.75	1.40	1.93		
18	Kamian Thatta	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.93	1.78	0.99	1.81		
19	Kot Tahir	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.81	1.15	0.83	1.44		
20	Kot Wali Muhammad	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	2.73	0.00	2.79		
21	Lalu Khichhi di Jhuggian	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.71	2.17	1.10	2.55		
22	Manghera and nearby 3 Settlements	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.23		
23	Thatta Ala Singh and nearby 1 Settlements	M,L	KASUR	0.00	0.00	0.00	0.00	0.00	1.13	0.00	1.62		
24	Thatta Kalu Khokhar and nearby 3 Settlements	M,L	KASUR	0.00	0.00	0.00	0.00	0.00	0.77	0.00	1.46		
25	Thatta Malian and nearby 1 Settlement	M,L	KASUR	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.30		
26	Thatta Pevera	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.15	1.11	0.55	1.95		
27	Thatta Watwah and nearby 3 Settlements	M,L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.12	0.57	0.33	1.03		
28	Wahab da Khu	M,L	KASUR	0.00	0.00	0.00	0.00	0.00	0.86	0.00	1.59		
29	1 Settlement nearby Bath Kalan	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.92	1.47		
30	Asalpur	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.94	1.26		
31	Ballo and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	1.64	2.20		
32	Bamni da Thatta	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	2.76	3.87		
33	Banian	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.60		
34	Bongi Lulu	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49		
35	Chah Ali Chohan and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69		
36	Chah Mehndiwala and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	2.16	2.37		
37	Chah Qaim Chohan	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.68		
38	Chendpur	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.32		
39	Chitti Jatn and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.11	3.35		
40	Colony	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.85	2.22		
41	Dhone ka Thatta and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57		
42	Dhup Sari	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.65		
43	Dolo Multani	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48		
44	Dolu Guruk and nearby 1 Settlement	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45		
45	Faridabad	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53		
46	Fazal Da Khi	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.78	1.29		
47	Gillanwala and nearby 1 Settlement	L	OKARA	0.00	0.00	0.00	0.00	0.00	0.00	0.85	1.88		
48	Goaraya	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	1.98	2.64		
49	Gujranwala Khu and nearby 2 Settlements	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.40	2.01		
50	Halla Saiyidan	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96		
51	Hallo	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.43	1.15		
52	Kahanne and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	1.38	3.51		
53	Khichianwala and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.27		
54	Khu Mairanwala and nearby 3 Settlements	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.61	1.13		
55	Kot Basesar Singh	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	1.03	2.32		
56	Kot Mehr Jhando	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90		
57	Kot Nur Dolo	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31		
58	Kot Sangoka and nearby 2 Settlements	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.37	2.33		
59	Mahluke	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	2.85	3.70		
60	Wan Mehianwala	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.60		
61	Nalewala	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.13	1.00		
62	Naruke Par and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.39	1.89		
63	Qila Mankam Singh and nearby 2 Settlements	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05		
64	Rashtarpur Khare and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.36		
65	Same ka Thatta and nearby 1 Settlement	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1.82		
66	Sirai Din Da Kot	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.09	1.04		
67	Sokarwala	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.89	1.87		
68	Tanike	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.48		
69	Taurian and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43		
70	Thatta Bur Singh and nearby 2 Settlements	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.73	1.05		
71	Thatta Kamiana	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.37		
72	Thatta Khokhar and nearby 1 Settlement	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41		
73	Thatta Miran	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.95	1.24		
74	Thatta Qaimbo ka	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34		
75	Tibbi Salawa and nearby 1 Settlement	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.09	1.50		
76	Upawanwala and nearby 1 Settlement	L	KASUR	0.00	0.00	0.00	0.00	0.00	0.00	0.66	1.86		
77	Visapur	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46		
78	Wan Jalata and nearby 2 Settlements	L	NANKANA SAHIB	0.00	0.00	0.00	0.00	0.00	0.00	1.41	1.90		

Ravi River - Sheet No. 6

Sr. No.	Settlement Name	Zone*	District	Inundation Depth at Discharge of 65,000 Cusec below Balloki		Inundation Depth at Discharge of 75,000 Cusec below Balloki		Inundation Depth at Discharge of 105,000 Cusec below Balloki		Inundation Depth at Discharge of 140,000 Cusec below Balloki	
				Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)
				1	1 Settlement nearby Maddo Sharif	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.01
2	1 Settlement nearby Thatta Jamal Shah	H,M,L	NANKANA SAHIB	0.00	0.00	0.10	1.39	1.25	2.60	1.36	2.75
3	Chak Taliwala	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.66	0.25	1.12	0.47	1.34
4	Chakar ka Thatta and nearby 4 Settlements	H,M,L	OKARA	0.00	0.00	0.00	0.46	1.19	1.66	1.30	1.88
5	Dhari Bhago Lashar and nearby 2 Settlements	H,M,L	OKARA	0.00	0.00	0.00	2.51	0.75	3.25	0.95	3.38
6	Faridabad	H,M,L	OKARA	0.00	0.00	0.00	1.10	0.26	1.65	0.28	1.82
7	Jhidu and nearby 2 Settlements	H,M,L	OKARA	0.00	0.00	2.49	3.14	3.19	3.83	3.32	3.96
8	Khud Bohar and nearby 1 Settlement	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.43	0.00	1.84	0.00	2.00
9	Kot Allah Din	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	2.49	0.00	3.07	0.00	3.23
10	Kovira Kalan and nearby 2 Settlements	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	1.09	0.20	1.86	0.30	2.01
11	Kund Boharwala and nearby 1 Settlement	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.34	1.11	1.70	1.22	1.72
12	Kund Rehman Shah	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	0.10	0.84	1.41	0.90	1.55
13	Malang Da Pattan	H,M,L	FAISALABAD	0.00	0.00	0.00	0.05	0.00	0.72	0.00	0.92
14	Manakka Thatta and nearby 1 Settlement	H,M,L	NANKANA SAHIB	0.00	0.00	0.00	1.53	0.00	3.23	0.00	3.82
15	Mehpur and nearby 8 Settlements	H,M,L	OKARA	0.00	0.00	0.00	2.02	0.00	2.75	0.00	2.88
16	Mumhar and nearby 1 Settlement	H,M,L	OKARA	0.00	0.00	1.54	2.31				

Inundation Depth of Settlements along Ravi River

Ravi River - Sheet No. 8

Sr. No.	Settlement Name	Zone*	District	Inundation Depth at Discharge of 65,000 Cusec below Balloki		Inundation Depth at Discharge of 75,000 Cusec below Balloki		Inundation Depth at Discharge of 105,000 Cusec below Balloki		Inundation Depth at Discharge of 140,000 Cusec below Balloki	
				Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)
				1	Dad Wasli	VH,H.M.L	SAHWAL	0.00	0.50	0.00	0.97
2	Khane Ke Maryan and nearby 1 Settlement	VH,H.M.L	SAHWAL	0.10	0.43	0.32	0.84	0.75	1.34	1.28	1.84
3	2 Settlements nearby Khan da Tibba	H.M.L	SAHWAL	0.00	0.00	0.00	1.88	1.32	4.28	1.79	4.96
4	Ahmad Baghela	H.M.L	TOBA TEK SINGH	0.00	0.00	0.51	1.04	2.18	2.70	2.48	2.91
5	Bahawal Fattiana and nearby 1 Settlement	H.M.L	SAHWAL	0.00	0.00	0.25	3.35	0.91	4.01	1.14	4.66
6	Bunga Shahamad and nearby 2 Settlements	H.M.L	SAHWAL	0.00	0.00	1.72	1.95	3.98	4.21	4.00	4.93
7	Chak Bandi	H.M.L	SAHWAL	0.00	0.00	0.00	0.11	0.00	0.32	0.25	0.59
8	Kalu ke Fattana	H.M.L	FAISALABAD	0.00	0.00	0.30	0.73	0.78	1.23	1.50	1.95
9	Khuhab ke Baghela	H.M.L	SAHWAL	0.00	0.00	0.23	0.65	0.66	1.11	1.39	1.77
10	Murad ke Kathia and nearby 1 Settlement	H.M.L	FAISALABAD	0.00	0.00	0.00	0.55	0.00	1.05	0.00	1.71
11	Nathu Fattiana and nearby 2 Settlements	H.M.L	FAISALABAD	0.00	0.00	0.21	0.45	0.53	0.93	1.17	1.58
12	Nuran Sanpal	H.M.L	SAHWAL	0.00	0.00	0.00	0.32	0.00	0.77	0.35	1.38
13	Sher ka Fattana	H.M.L	SAHWAL	0.00	0.00	0.00	0.62	0.00	1.23	0.37	2.10
14	Sudallan Ka Thatta	H.M.L	SAHWAL	0.00	0.00	0.13	0.43	0.22	0.87	0.48	1.68
15	1 Settlement nearby Juttiwala	M.L	SAHWAL	0.00	0.00	0.00	0.00	1.06	1.31	1.27	1.54
16	2 Settlements nearby Jahan ke	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.09
17	2 Settlements nearby Saddewali	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.46	2.57	0.55	3.06
18	3 Settlements nearby Sajid ki Bhaini	M.L	SAHWAL	0.00	0.00	0.00	0.00	2.88	3.87	2.90	3.95
19	Banga Bahawal	M.L	SAHWAL	0.00	0.00	0.00	0.00	2.15	2.39	2.27	2.50
20	Chak 18A Tukra and nearby 4 Settlements	M.L	FAISALABAD	0.00	0.00	0.00	0.13	0.65	0.62	1.21	
21	Chak Bandi Amir and nearby 2 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.45	0.00	0.98	
22	Chak Bandi Nathu	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.32	0.52	0.49	1.03
23	Chak Bashira	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.23	0.65	1.08	1.41
24	Chak Chaukwala	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.29	0.66	1.01	1.05
25	Chakbandi Barkha	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.77	0.10	1.77
26	Dad Fattiana and nearby 2 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.49	0.12	0.99	
27	Dad ke Thatta	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.33	0.69	1.21	1.94
28	Dawanda Sandrana	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.78	1.33	1.58	
29	Dulle Baghela	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.69	0.48	1.30	
30	Kahwali Tibbi and nearby 10 Settlements	M.L	TOBA TEK SINGH	0.00	0.00	0.00	0.00	0.55	0.59	1.50	
31	Khangah Doda Saha and nearby 1 Settlement	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.77	0.29	1.29	
32	Kharha Tibba	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.53	0.74	1.32	
33	Kot Fazil	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.55	1.13	1.09	1.96
34	Kot Nasir and nearby 2 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.11	0.34	1.05	1.26	
35	Lal ke and nearby 5 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.65	1.05	1.69	1.91
36	Mazar Karam Shah	M.L	FAISALABAD	0.00	0.00	0.00	0.00	0.59	1.20	1.14	1.81
37	Miana Saho	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.97	0.00	1.82	
38	Nathu Wasli	M.L	FAISALABAD	0.00	0.00	0.00	0.00	0.86	0.25	1.56	
39	Nur ka Kathia and nearby 3 Settlements	M.L	FAISALABAD	0.00	0.00	0.00	0.00	0.51	0.32	1.68	
40	Purbera and nearby 1 Settlement	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.34	0.37	1.62	
41	Raja ka Dalu and nearby 2 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.62	0.34	1.54	
42	Riane Ke Dullu	M.L	SAHWAL	0.00	0.00	0.00	0.30	0.82	0.68	1.94	
43	Samundaran wala Khu	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.39	0.19	1.36	
44	Tara Haveli Khurd	M.L	SAHWAL	0.00	0.00	0.00	0.20	0.79	0.49	1.77	
45	Thatta Manjiwala and nearby 2 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.00	0.61	0.26	1.61	
46	Zarat ke Fattana and nearby 9 Settlements	M.L	SAHWAL	0.00	0.00	0.00	0.35	0.91	0.68	1.88	
47	1 Settlement nearby Dalal ke Tulle	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.86	1.54
48	1 Settlement nearby Basti Mir ka Kathia	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.35	2.94
49	1 Settlement nearby Basti Panjiane	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.97
50	1 Settlement nearby Killianwala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67
51	1 Settlement nearby Mirdad Mehaf	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50
52	1 Settlement nearby Nai Basti	L	TOBA TEK SINGH	0.00	0.00	0.00	0.00	0.00	0.00	0.54	2.38
53	1 Settlement nearby Habibullah Bhutto	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	2.39	2.81
54	18 Tukra WM	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	3.58	5.44
55	2 Settlements nearby Chak Azam Sahu	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.46
56	2 Settlements nearby Mahmud Langah	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	3.84	3.93
57	3 Settlements nearby Dadwala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	3.96	5.20
58	3 Settlements nearby Fateh ka Tulle	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.21	1.02
59	4 Settlements nearby Dilawar ka Kathia	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37
60	6 Settlements nearby Nama Shah	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.02	1.47
61	Azmat ka Kathia and nearby 4 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	2.74	3.33
62	Basti Mian ki Hatti and nearby 6 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.85
63	Basti Panjiane	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.02	4.04
64	Basti Sa Wali and nearby 1 Settlement	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	2.96	3.31
65	Basti Shukat Hussain Kathia and nearby 8 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	3.67	3.85
66	Basti Sial Jhangi and nearby 1 Settlement	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	2.64	2.89
67	Chah Dittawali	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.36	1.54
68	Chah Machiawala	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	0.34	1.44
69	Chah Naulanwala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.08
70	Chak 104 7R	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.86	1.92
71	Chak 106 7R and nearby 4 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.78	1.65
72	Chak 18B 7R	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.11	1.74
73	Chak 251 Tukra	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.46	1.25
74	Chak 63 GD and nearby 1 Settlement	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.81	1.40
75	Dadwala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.56	1.23
76	Dhol Siral and nearby 1 Settlement	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.01
77	Dhoo Sari	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.32	1.38
78	Dulle ke Vahnawal	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.52	1.40
79	Farm Kali Das	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.41	1.68
80	Farm Nalke and nearby 1 Settlement	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47
81	Faujanwala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.43	1.62
82	Ganbura	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.80
83	Ghiye Ka Khu	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.72	1.85
84	Gul ke Kathia and nearby 2 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.35	1.43
85	Habibullah Bhutto	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.88	1.81
86	Hashmat ke Kathie and nearby 2 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.59
87	Jawan Shah	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.99
88	Jota Tarana and nearby 1 Settlement	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.19	1.71
89	Kanganwali Basti and nearby 2 Settlements	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
90	Karamabad	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.79	1.17
91	Khan da Tibba and nearby 1 Settlement	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.80
92	Koniawala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	1.46	1.86
93	Lugman ke Jute and nearby 1 Settlement	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	0.97	1.39
94	Mahajaranwala	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.87	1.43
95	Mahmud Colony and nearby 1 Settlement	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69
96	Mochiwala	L	FAISALABAD	0.00	0.00	0.00	0.00	0.00	0.00	1.46	1.90
97	Nur ka Khu	L	SAHWAL	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.75
98	Rahimke	L	SAHWAL	0.							