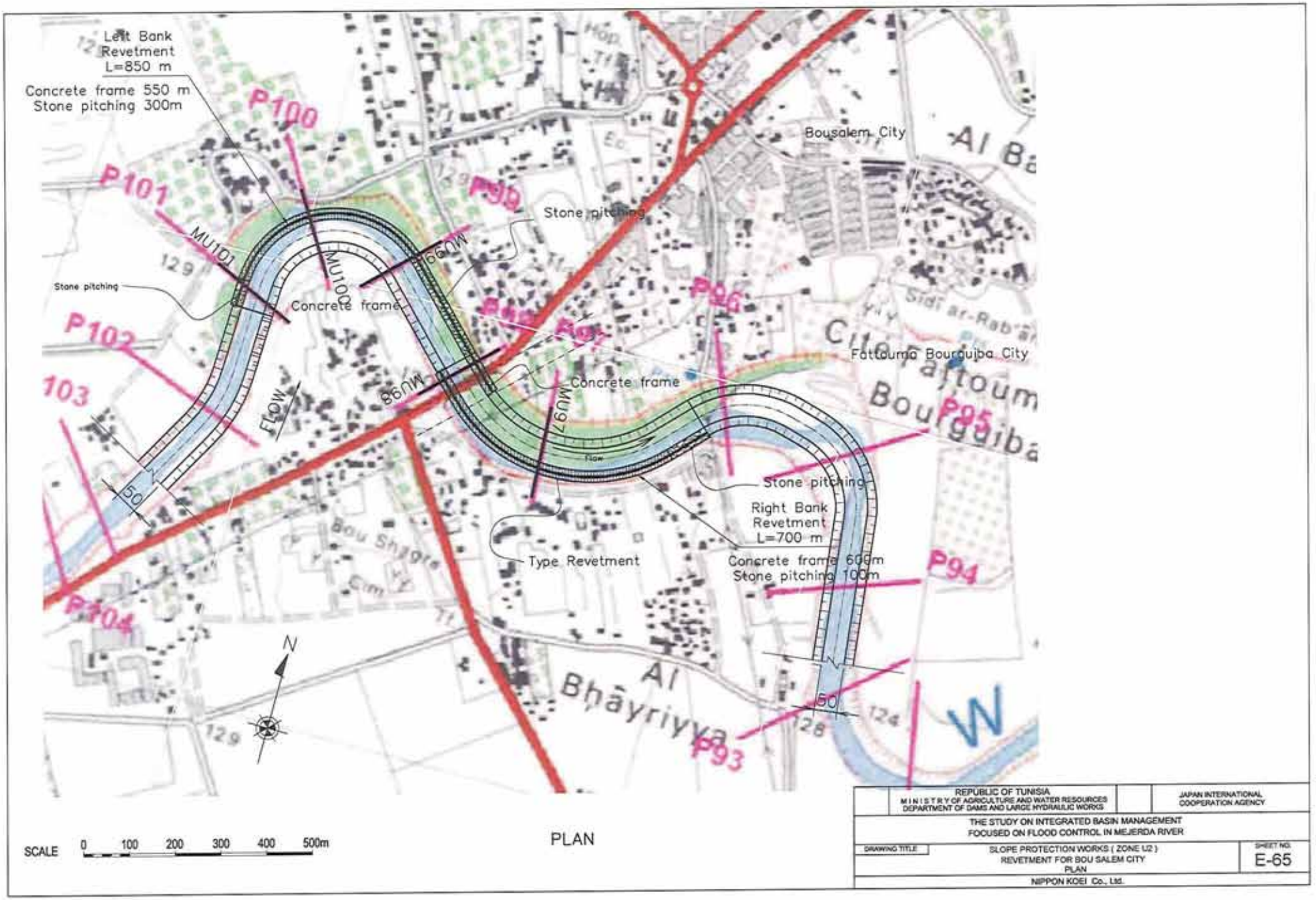


SCALE 0 100 200 300 400 500m

PLAN

REPUBLIC OF TUNISIA
MINISTRY OF AGRICULTURE AND WATER RESOURCES
DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS

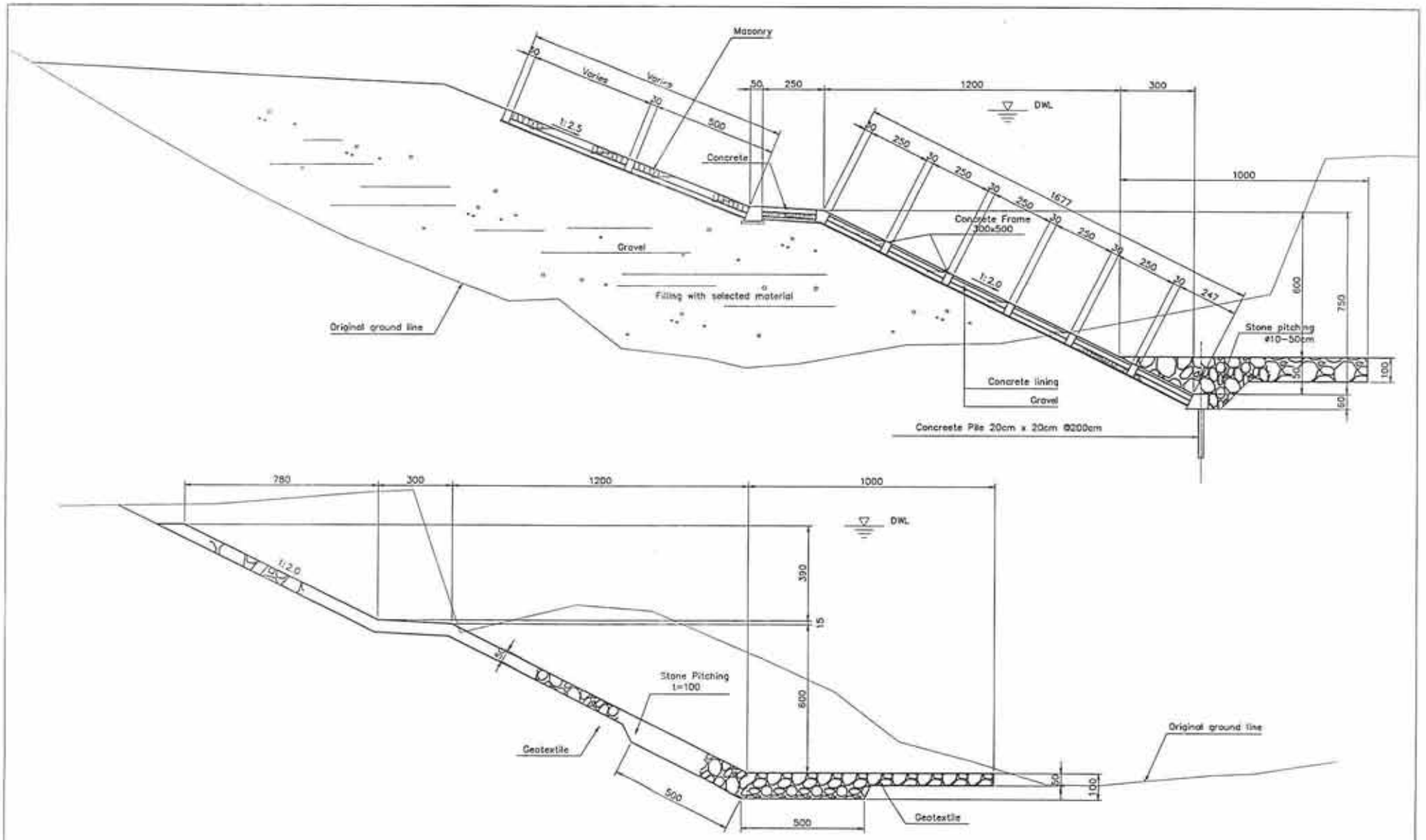
JAPAN INTERNATIONAL COOPERATION AGENCY

THE STUDY ON INTEGRATED BASIN MANAGEMENT
FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER

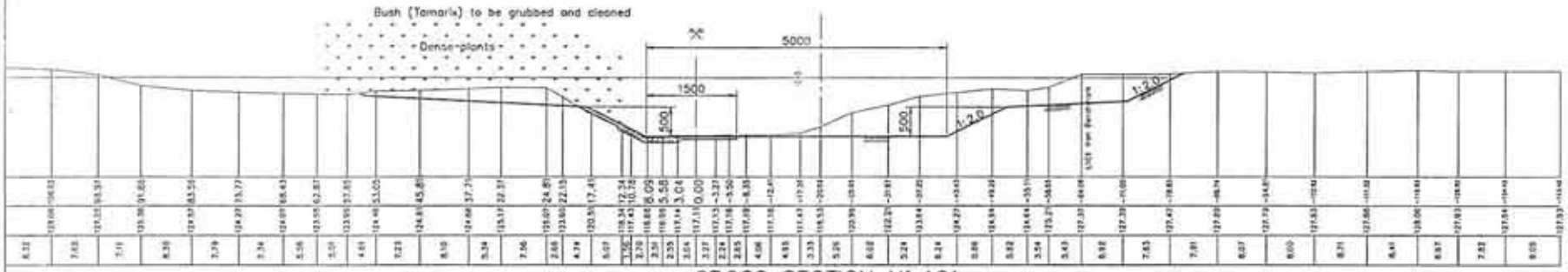
DRAWING TITLE: SLOPE PROTECTION WORKS (ZONE U2)
REVETMENT FOR BOU SALEM CITY
PLAN

SHEET NO. E-65

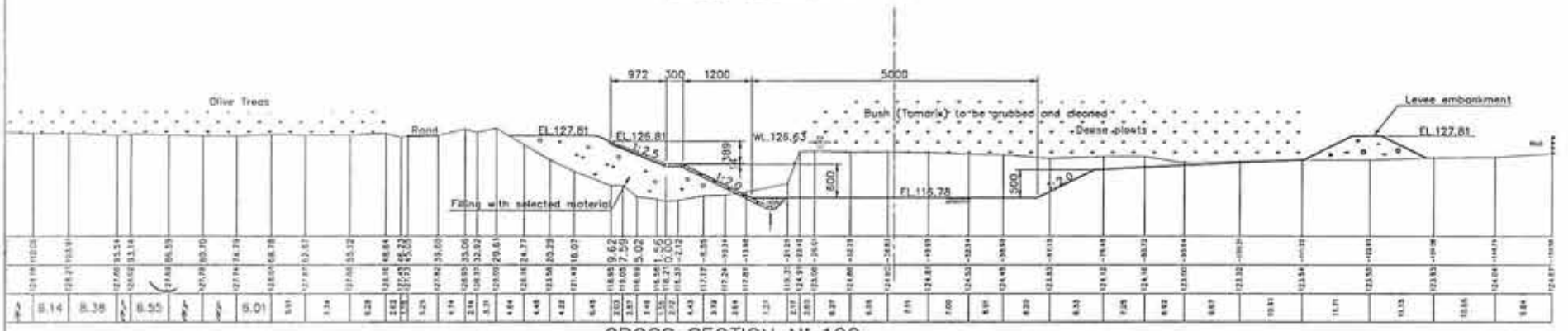
NIPPON KOEI Co., Ltd.



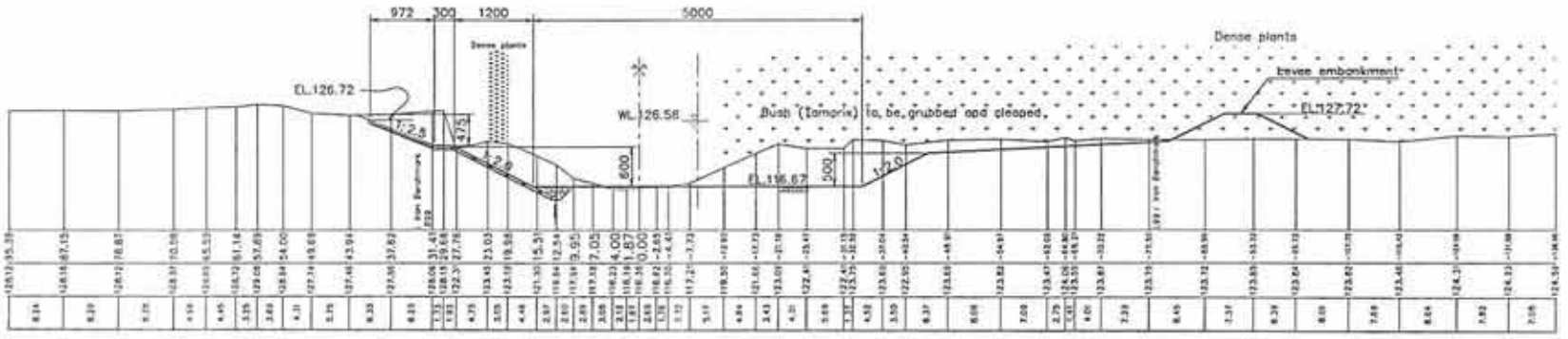
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE SLOPE PROTECTION WORKS (ZONE U2) TYPICAL SECTION		SHEET NO. E-66
NIPPON KOEI Co., Ltd.		



CROSS SECTION N° 101



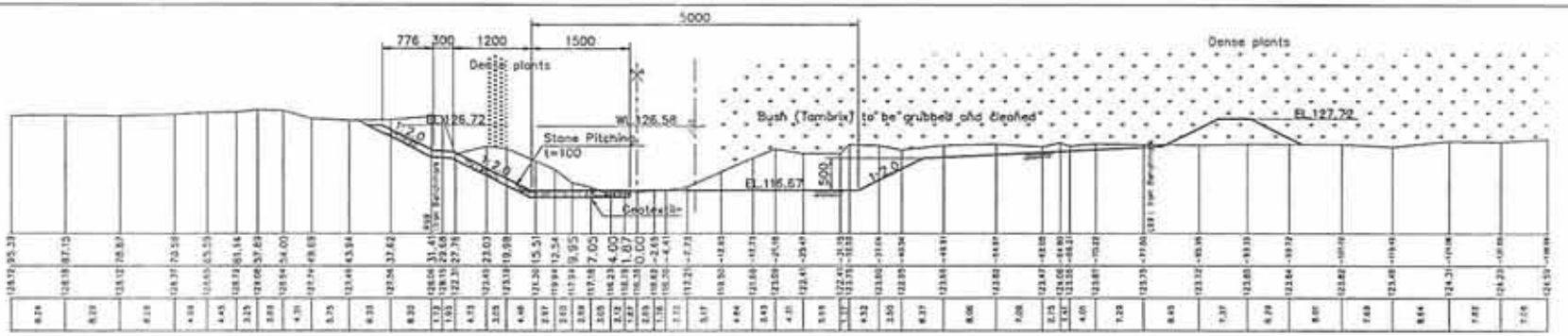
CROSS SECTION N° 100



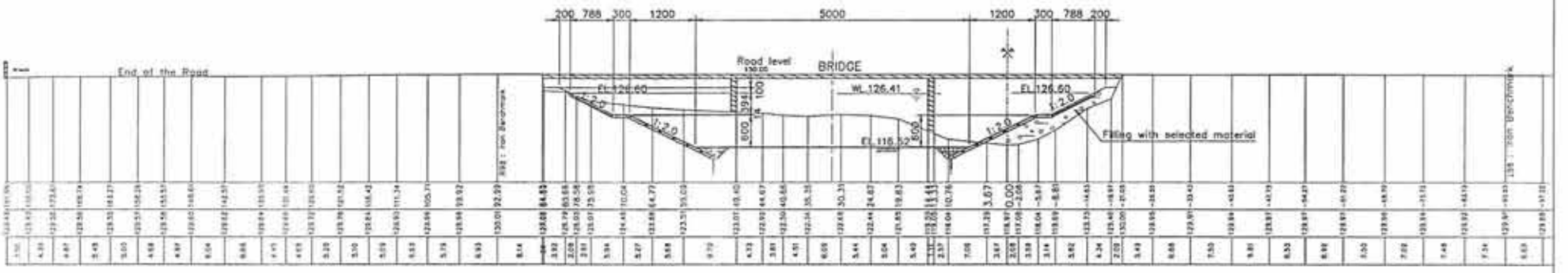
CROSS SECTION N° 99 (Upstream)

SCALE 0 10 20 30 40 m

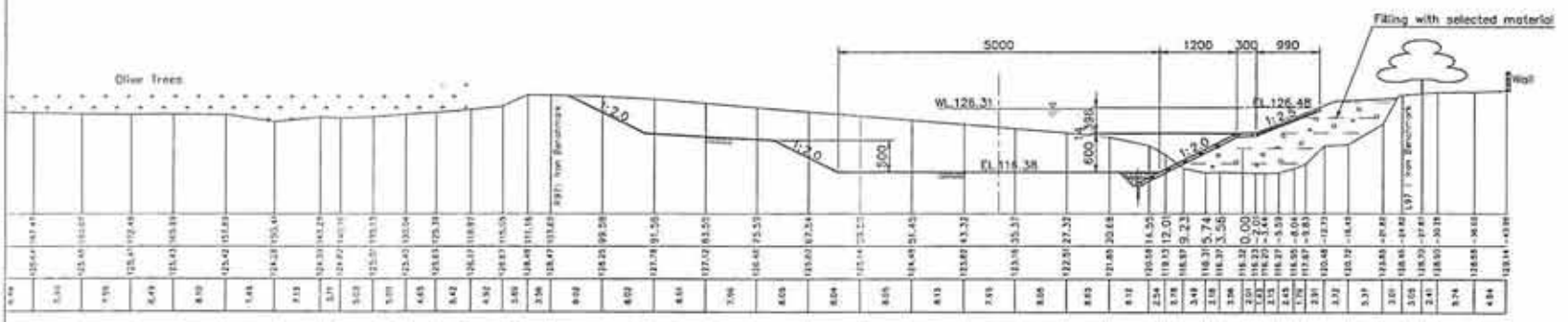
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE SLOPE PROTECTION WORKS (ZONE U2) SECTIONS (1/2)		SHEET NO. E-67
NIPPON KOEI Co., Ltd.		



CROSS SECTION N° 99 (Downstream)



CROSS SECTION N° 98

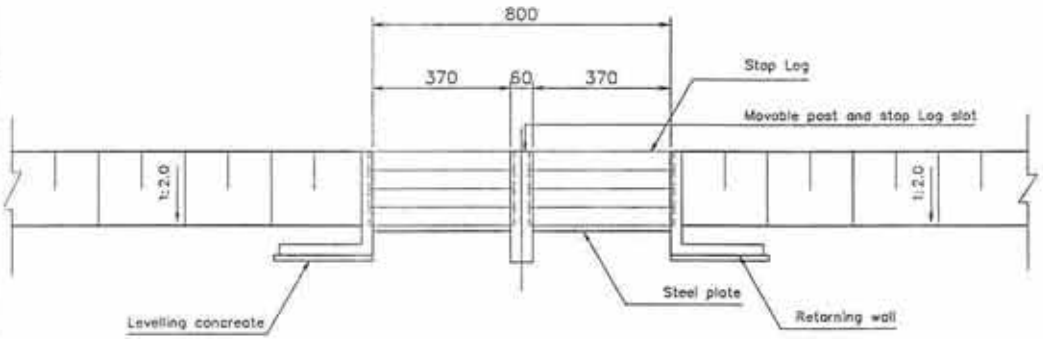


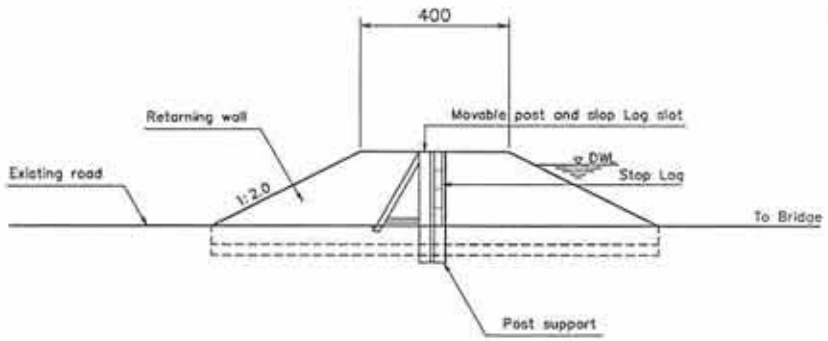
CROSS SECTION N° 97

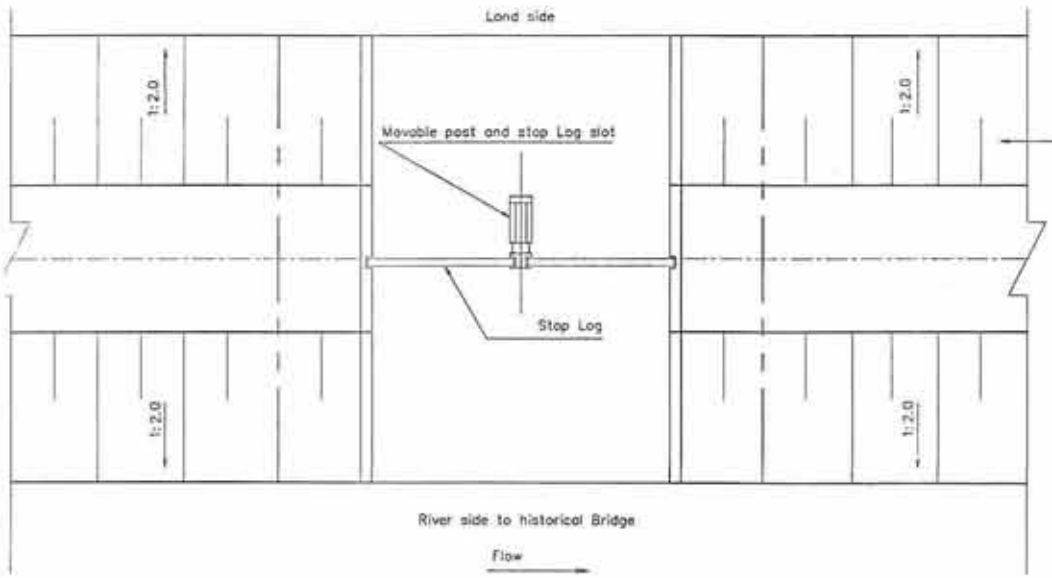
SCALE 0 10 20 30 40 m

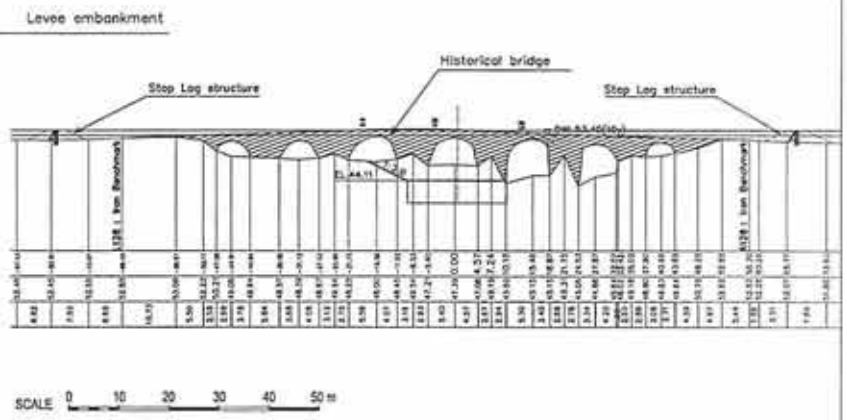
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE: SLOPE PROTECTION WORKS (ZONE U2) SECTIONS (2/2)		SHEET NO. E-68
NIPPON KOEI Co., Ltd.		

DE1-68

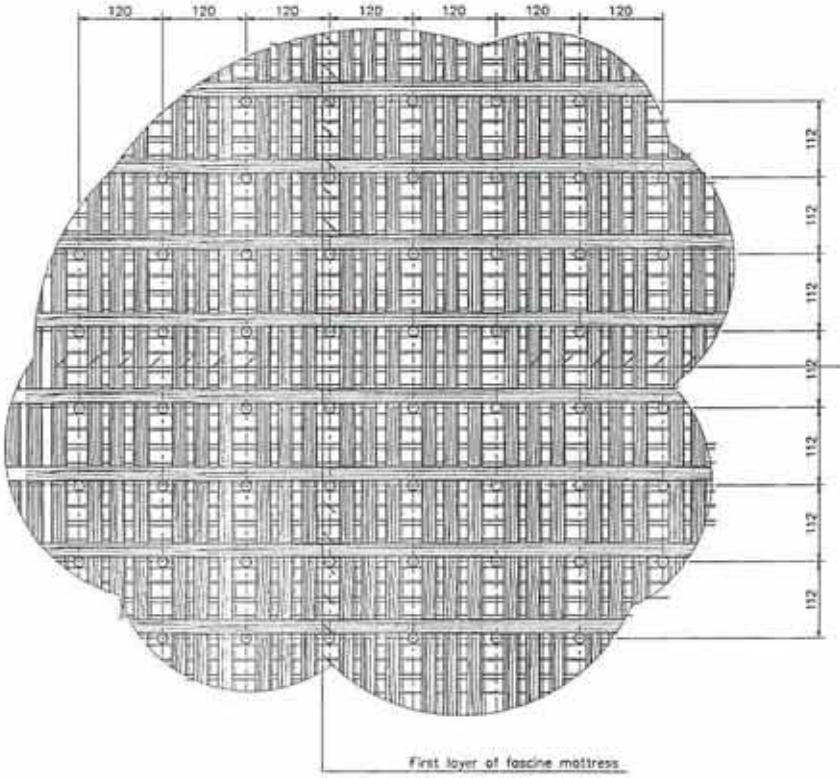




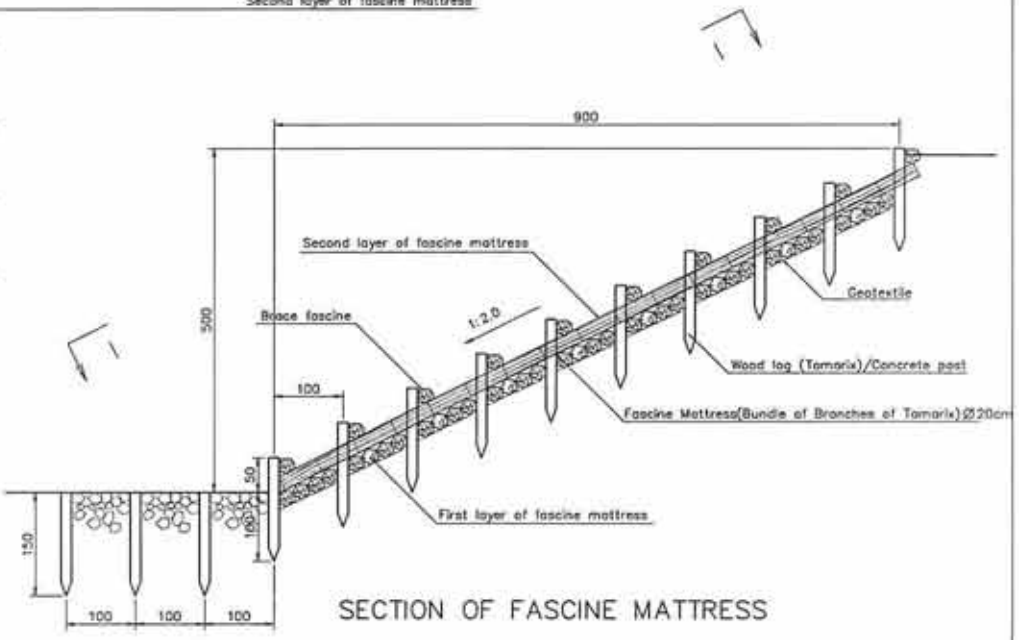




REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE DETACHABLE LEVEE (STOP LOG STRUCTURE) AT THE HISTORICAL BRIDGE IN MEJEZ EL BAB		SHEET NO. E-69
NIPPON KOEI Co., Ltd.		



PLAN
(SECTION I–I)

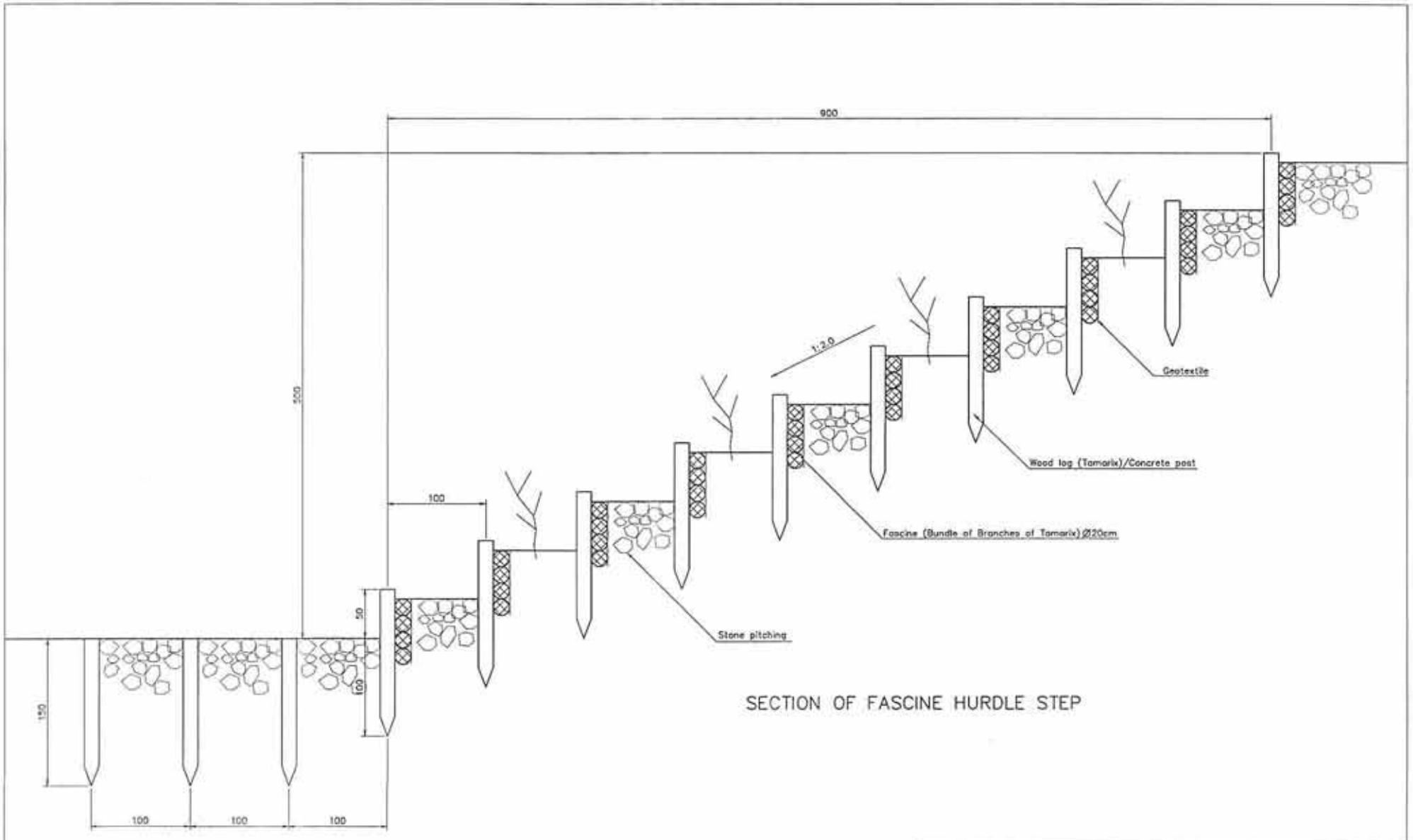


SECTION OF FASCINE MATTRESS

SLOPE PROTECTION WORKS

FIG.1 : TYPICAL DESIGN OF FASCINE MATTRESS

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE SLOPE PROTECTION TYPICAL DESIGN OF FASCINE MATTRESS		SHEET NO E-70
NIPPON KOEI Co., Ltd.		

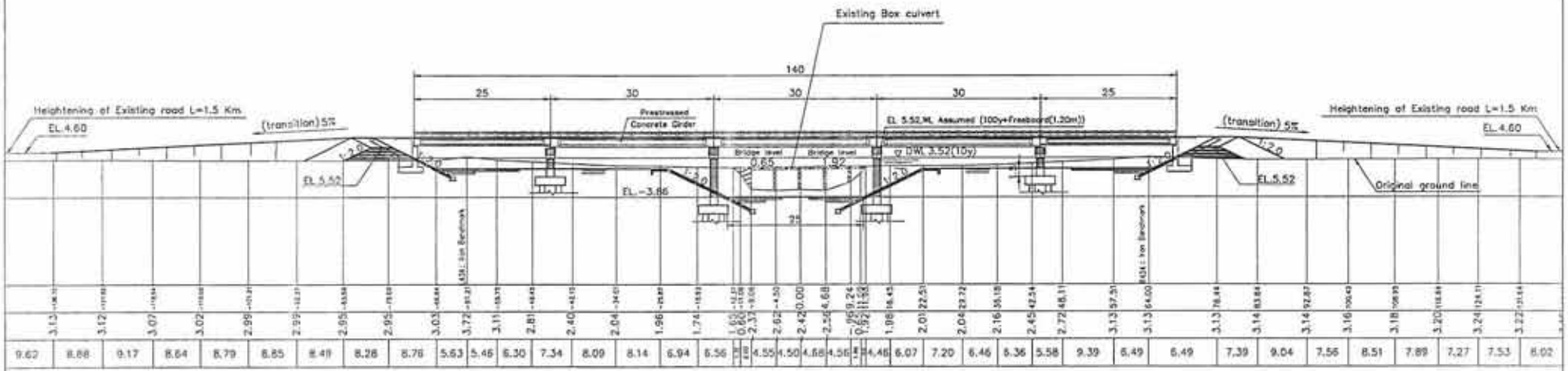


SECTION OF FASCINE HURDLE STEP

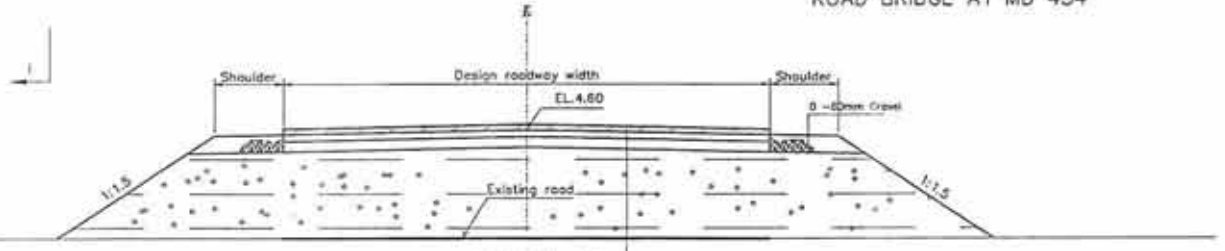
SLOPE PROTECTION WORKS

FIG.II : TYPICAL DESIGN OF FASCINE HURDLE STEP

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE: SLOPE PROTECTION TYPICAL DESIGN OF FASCINE HURDLE STEP		SHEET NO.: E-71
NIPPON KOEI Co., Ltd.		



ROAD BRIDGE AT MD 434

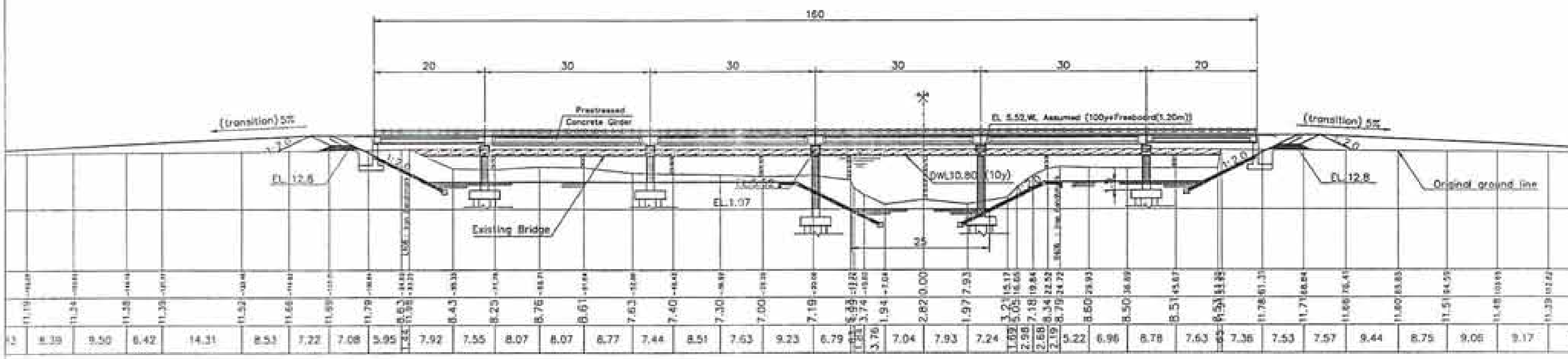


SECTION I–I

Surface course/Base course, t=8cm (Hot mixture)
Upper Subbase Course, t=10cm (0~40mm Designed Crushed crushed stone)
Lower Subbase Course, t=15cm (0 ~ 40mm Gravel)

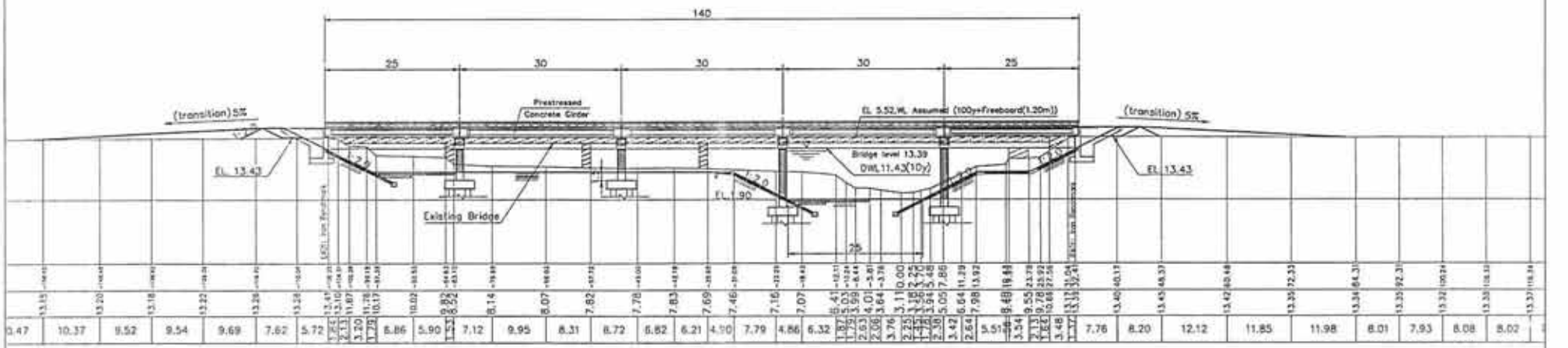
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE REPLACEMENT OF EXISTING BRIDGE (ZONE D2) ROAD BRIDGE AT MD 434		SHEET NO E-72
NIPPON KOEI Co., Ltd.		

DE1-73



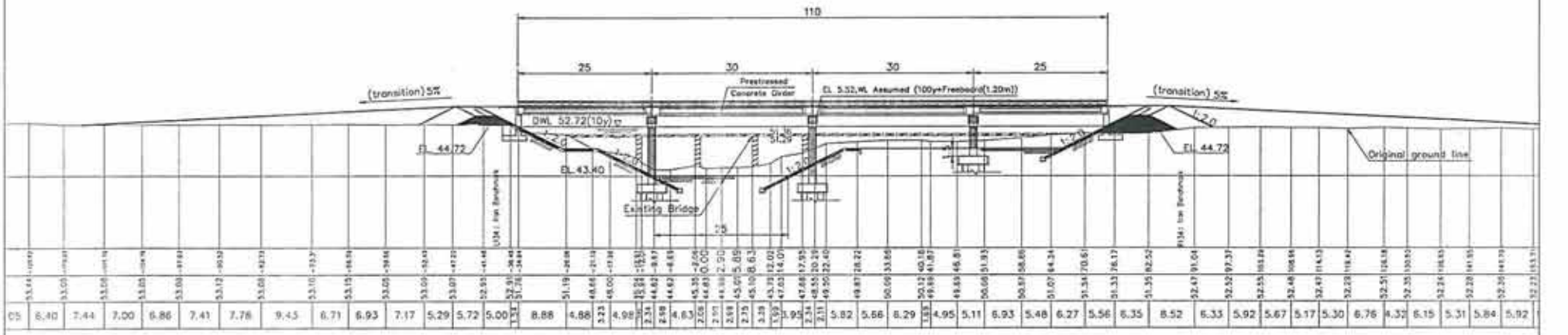
RAILWAY BRIDGE AT MD 406

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE	REPLACEMENT OF EXISTING BRIDGE (ZONE D2) RAILWAY BRIDGE AT MD 406	SHEET NO. E-73
NIPPON KOEI Co., Ltd.		



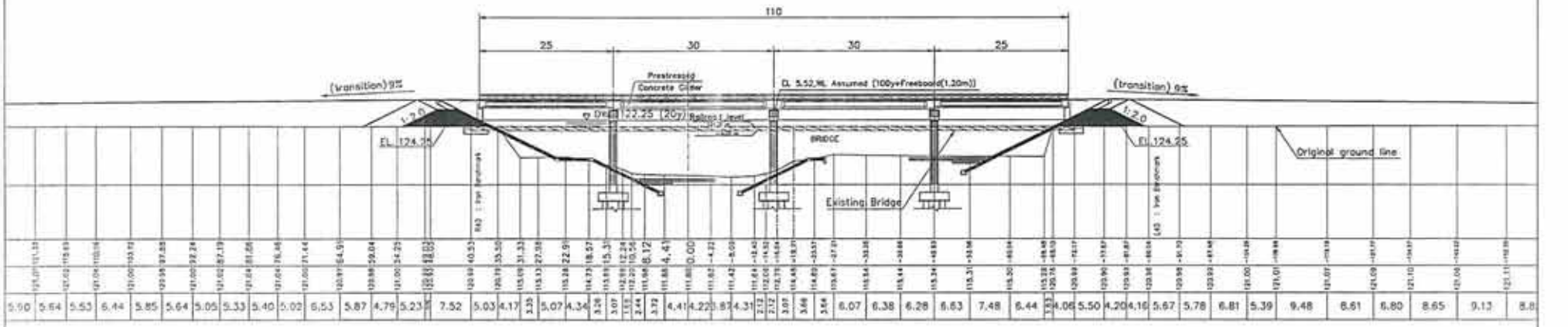
ROAD BRIDGE AT MD 401

	REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	REPLACEMENT OF EXISTING BRIDGE (ZONE D2) ROAD BRIDGE AT MD 401		SHEET NO. E-74
NIPPON KOEI Co., Ltd.			



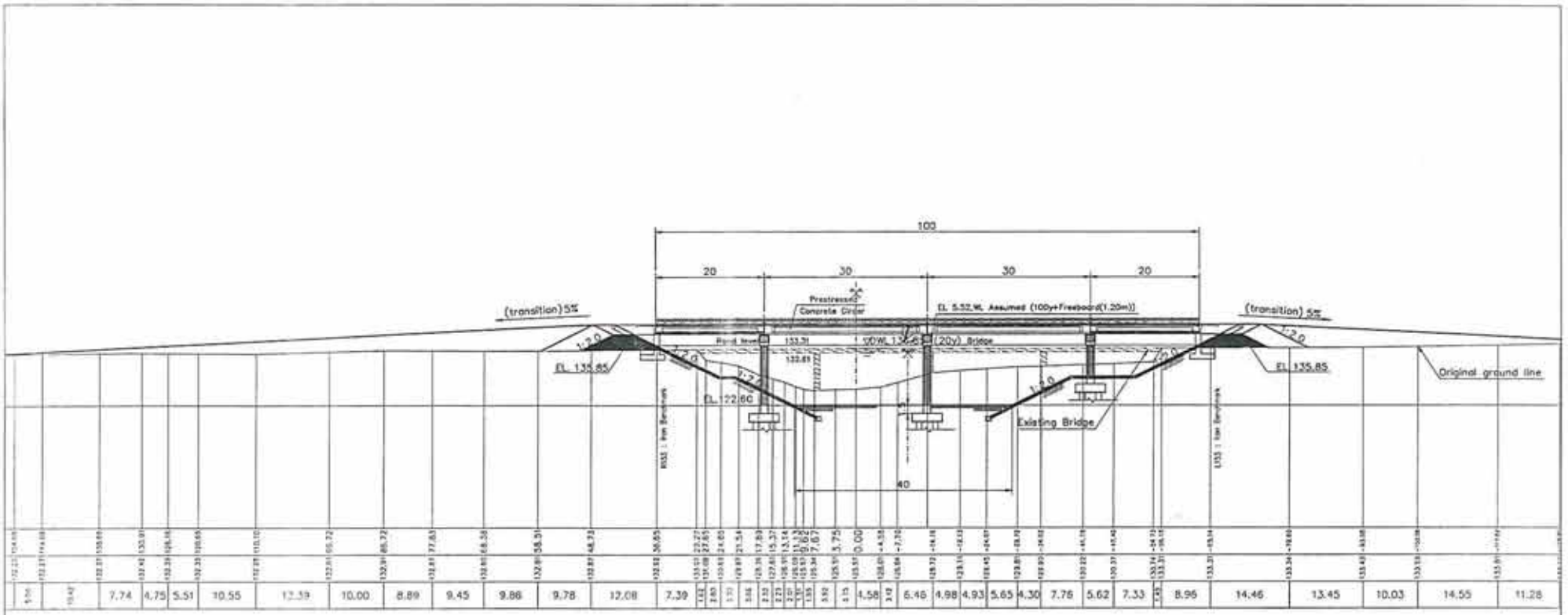
AQUEDUCT AND FOOT PATH BRIDGE AT MD 134 (improved to Road Bridge with aqueduct)

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE AQUEDUCT AND FOOT PATH BRIDGE (ZONE D1) (improved to Road Bridge with aqueduct) ROAD BRIDGE AT MD 134		SHEET NO. E-75
NIPPON KOEI Co., Ltd.		



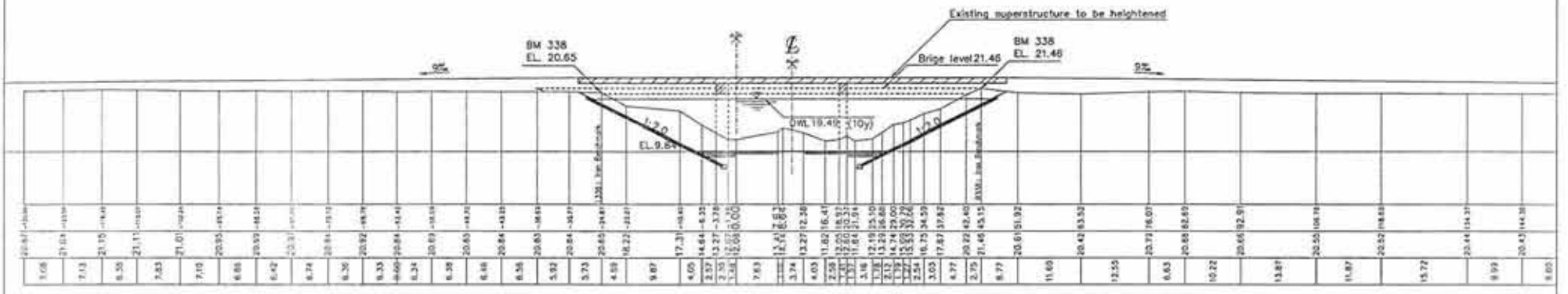
RAILWAY BRIDGE AT MU 40

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE REPLACEMENT OF EXISTING BRIDGE (ZONE U2) RAILWAY BRIDGE AT MU 40		SHEET NO. E-76
NIPPON KOEI Co., Ltd.		



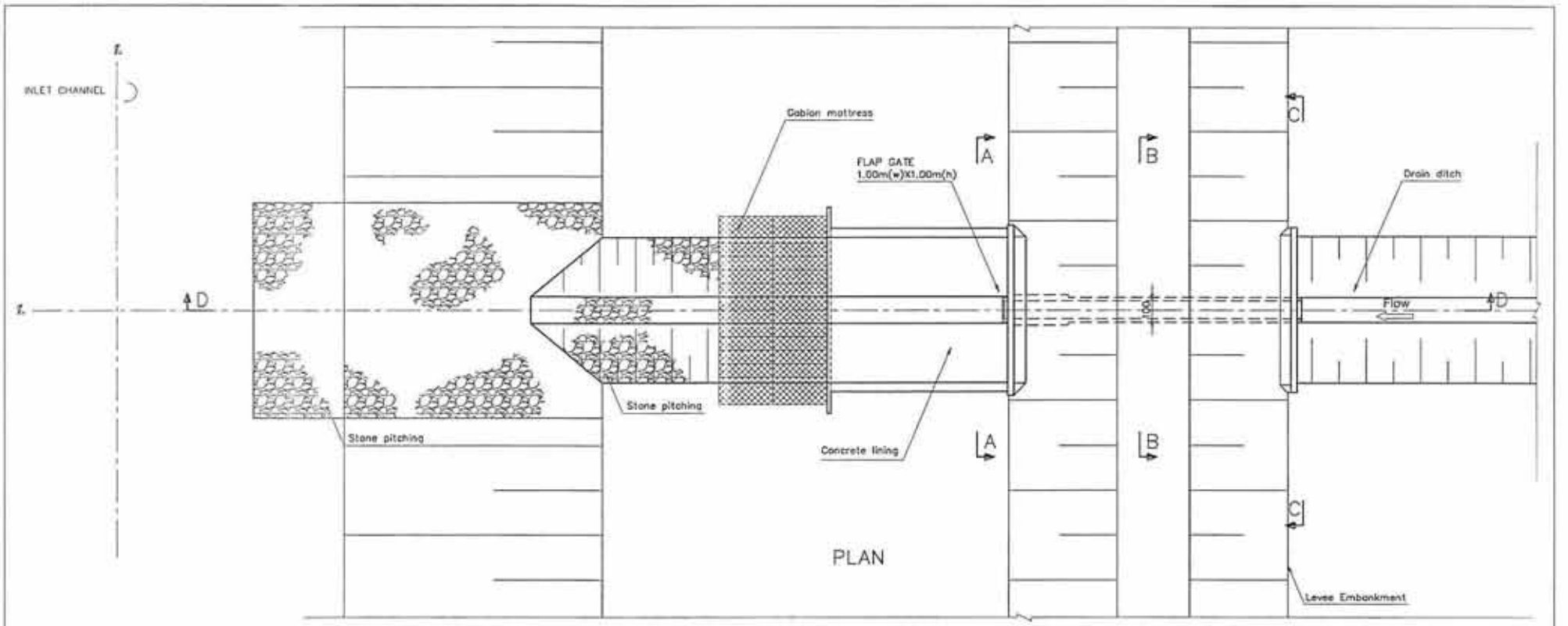
ROAD BRIDGE AT MU 153

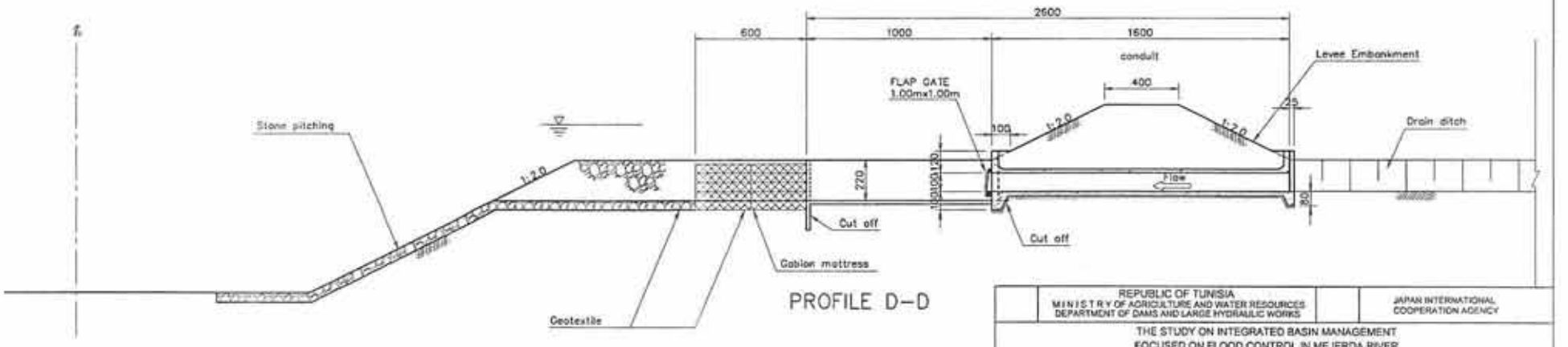
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE REPLACEMENT OF EXISTING BRIDGE (ZONE U2) ROAD BRIDGE AT MU 153		SHEET NO. E-77
NIPPON KOEI Co., Ltd.		



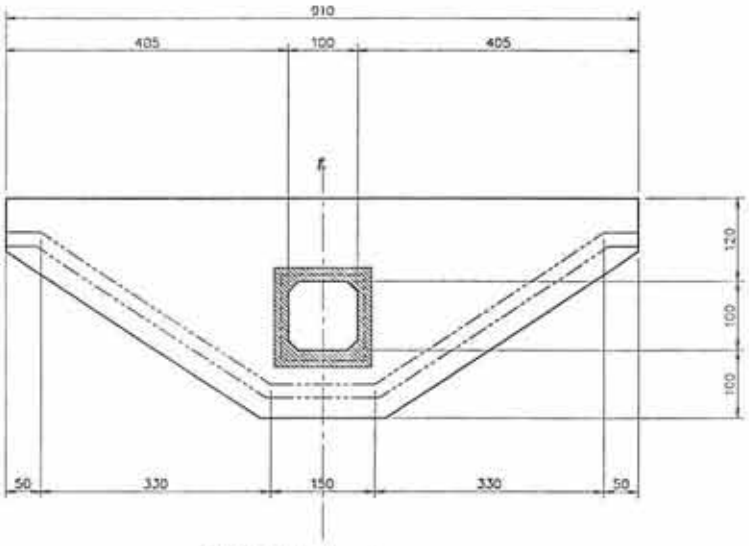
Heightening of Existing Railway Bridge at MD 338

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS			JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	HEIGHTENING OF EXISTING RAILWAY BRIDGE (ZONE D2) RAILWAY BRIDGE AT MD 338		SHEET NO. E-78
NIPPON KOEI Co., Ltd.			

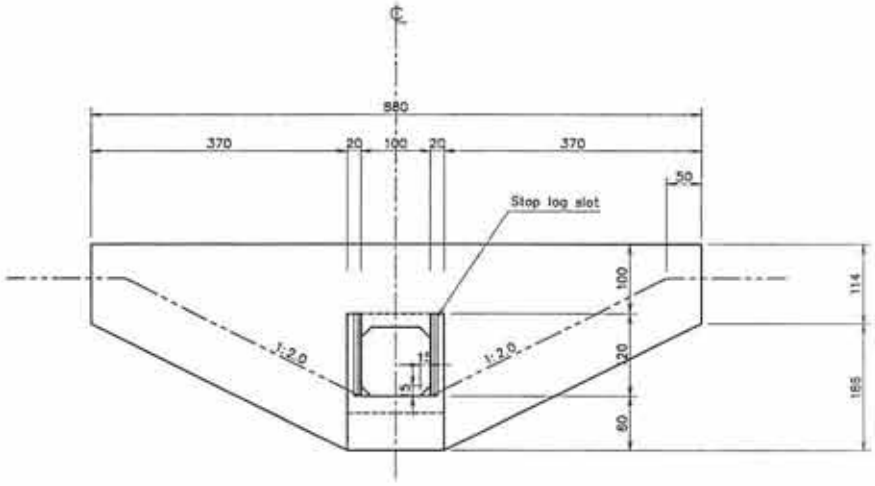




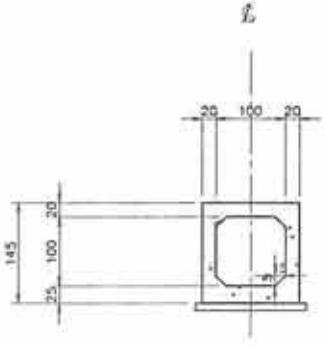
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE: TYPICAL DESIGN OF SLUICEWAY 1.00x1.00x1 BARREL PLAN ET PROFILE		SHEET NO: E-79
NIPPON KOEI Co., Ltd.		



SECTION A–A



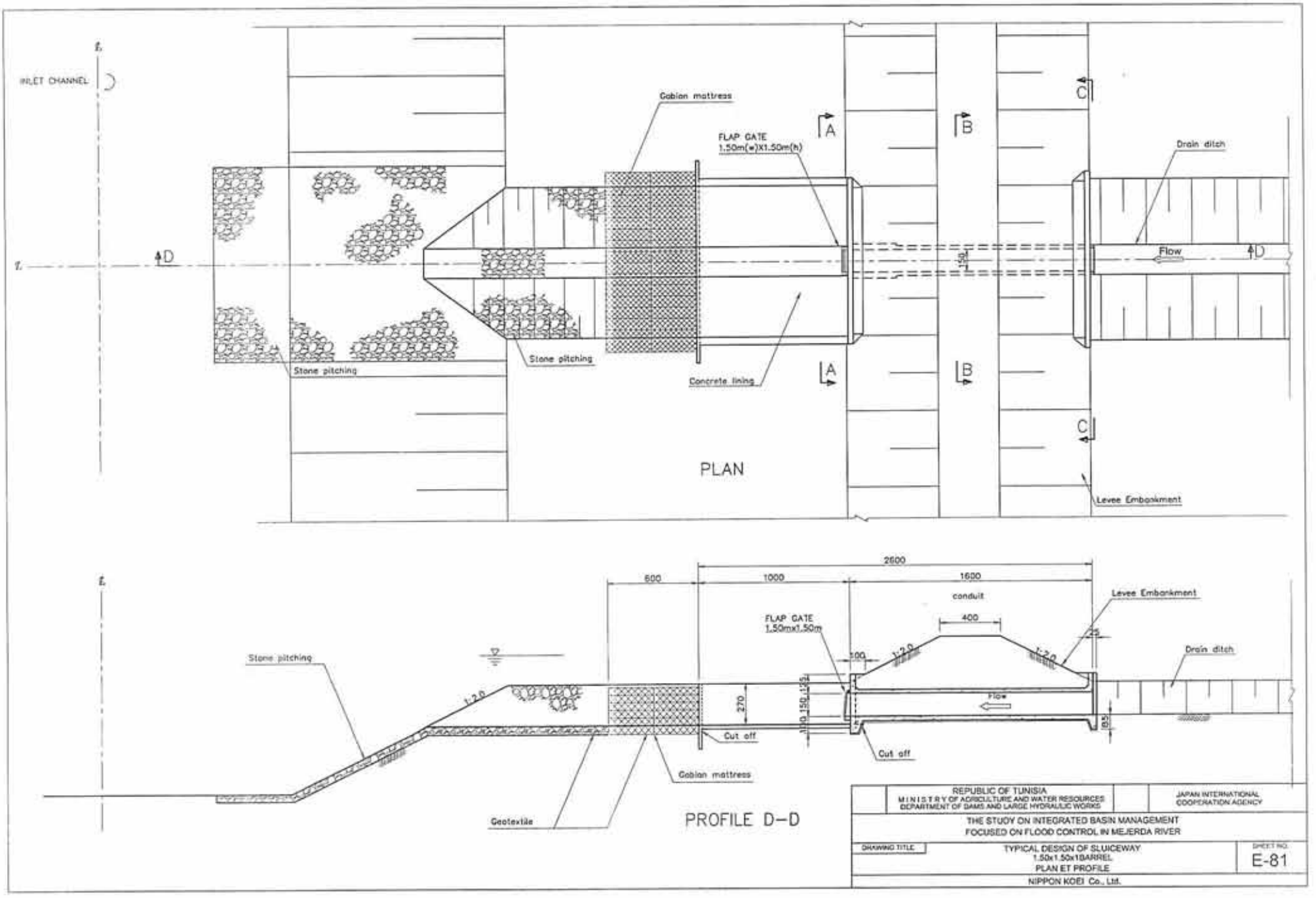
SECTION C–C

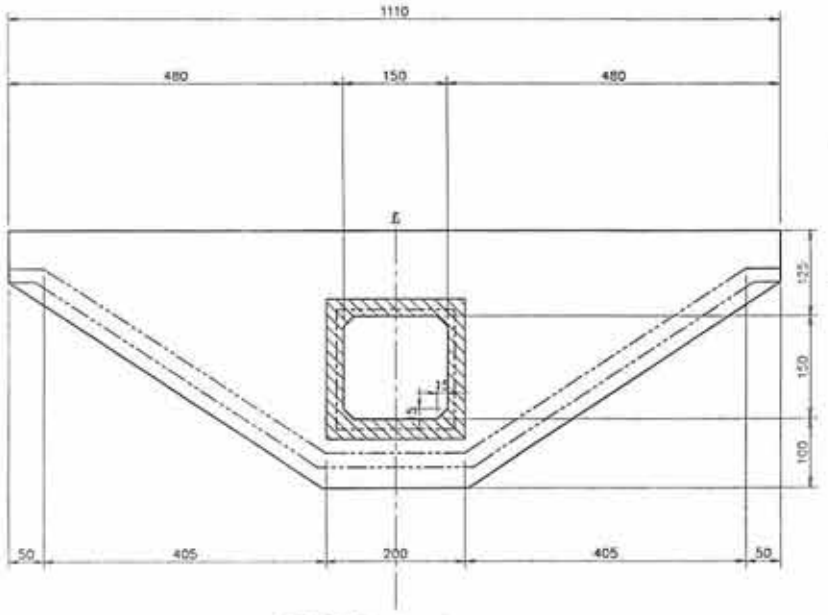


SECTION B–B

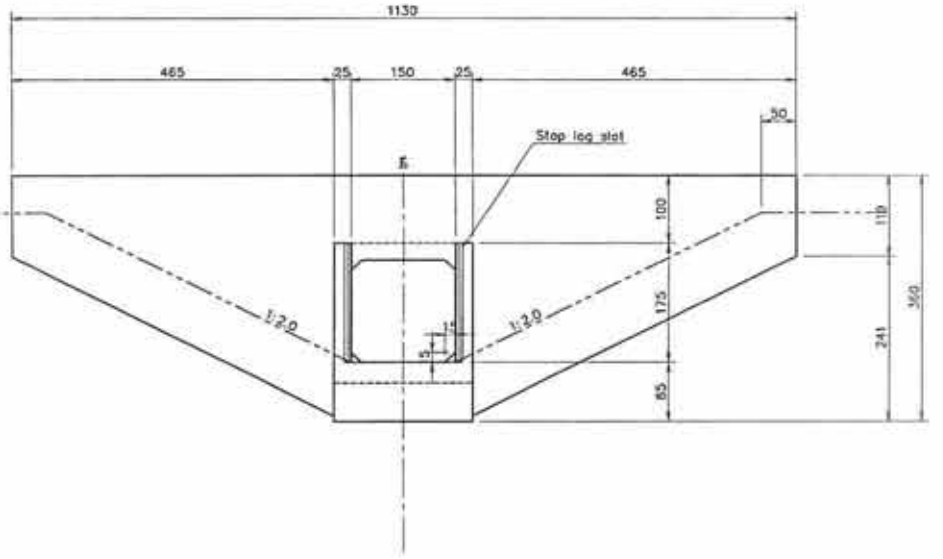
	REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	TYPICAL DESIGN OF SLUICEWAY 1.00x1.00x1 BARREL CROSS SECTIONS		SHEET NO. E-80
NIPPON KOEI Co., Ltd.			

DE1-80

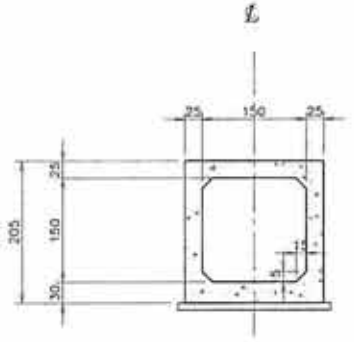

INLET CHANNEL
Gabion mattress
FLAP GATE
1.50m(w)X1.50m(h)
A
B
C
Drain ditch
Flow
D
Stone pitching
Stone pitching
Concrete lining
PLAN
Levee Embankment
2600
600
1000
1600
conduit
Levee Embankment
FLAP GATE
1.50mx1.50m
400
Stone pitching
Drain ditch
1:2.0
1:2.0
1:2.0
100
270
150
Flow
Cut off
Cut off
Gabion mattress
Geotextile
PROFILE D-D
REPUBLIC OF TUNISIA
MINISTRY OF AGRICULTURE AND WATER RESOURCES
DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS
JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT
FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER
DRAWING TITLE
TYPICAL DESIGN OF SLUICEWAY
1.50x1.50x1BARREL
PLAN ET PROFILE
SHEET NO.
E-81
NIPPON KOEI Co., Ltd.



SECTION A–A

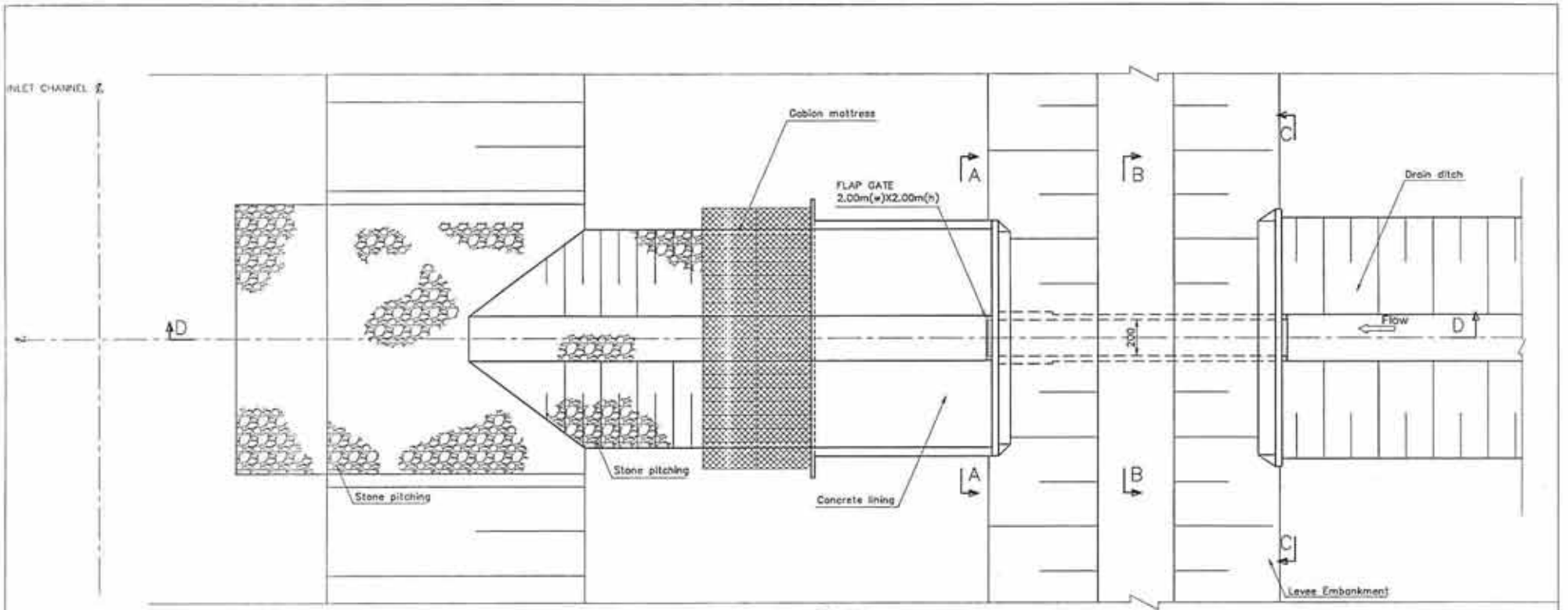


SECTION C–C

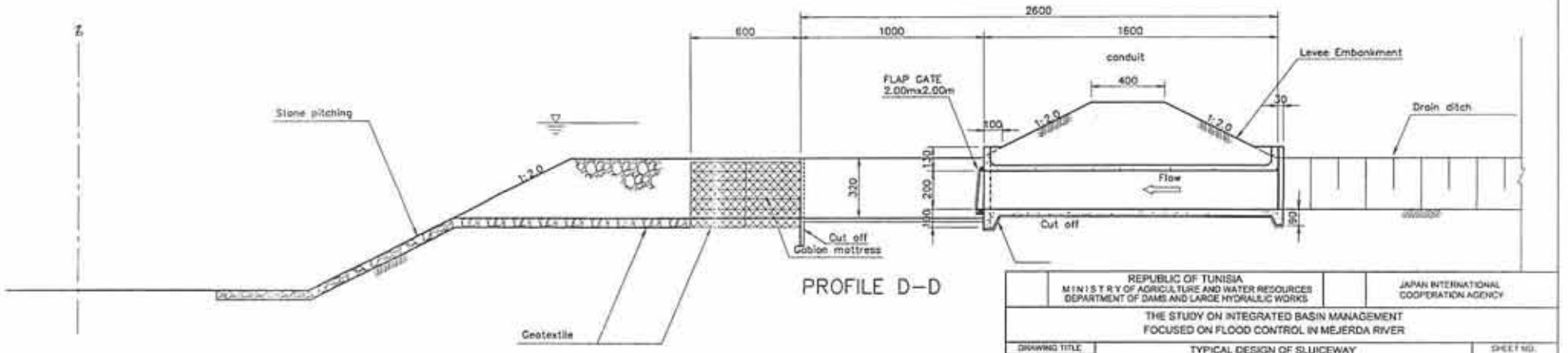


SECTION B–B

REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS			JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	TYPICAL DESIGN OF SLUICEWAY 1.50x1.50x1 BARREL CROSS SECTIONS		SHEET NO. E-82
NIPPON KOEI Co., Ltd.			

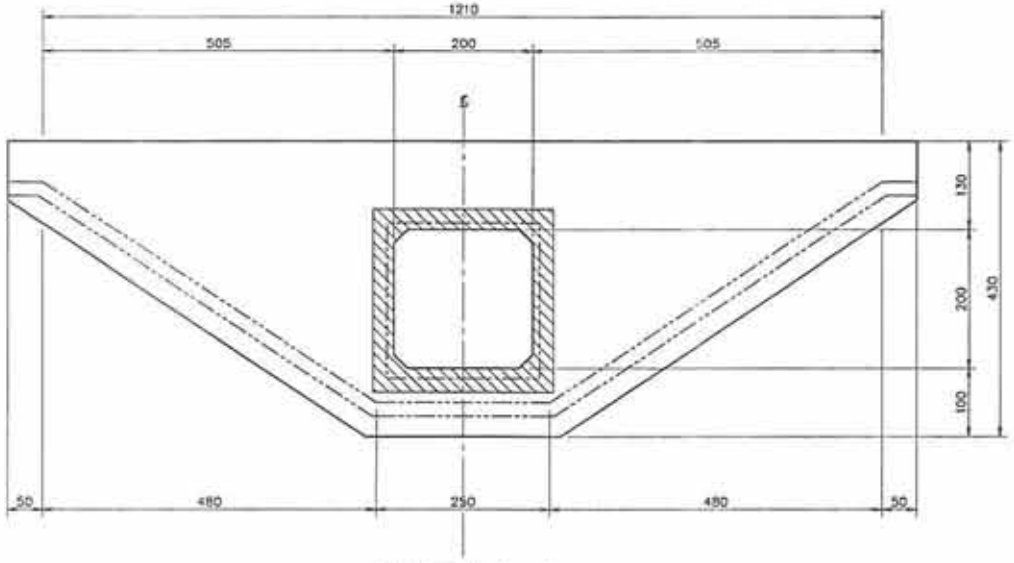


PLAN

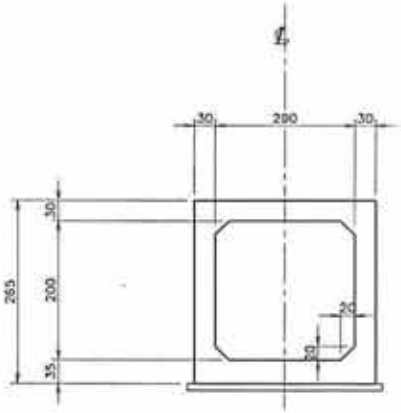


PROFILE D–D

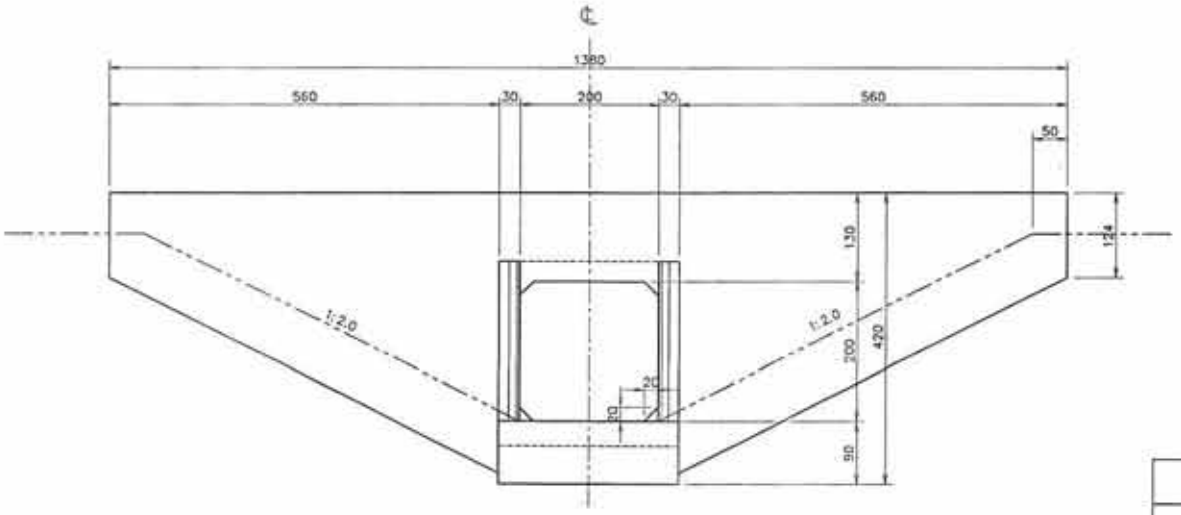
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE TYPICAL DESIGN OF SLUICEWAY 2.00x2.00x1 BARREL PLAN ET PROFILE		SHEET NO. E-83
NIPPON KOEI Co., Ltd.		



SECTION A–A

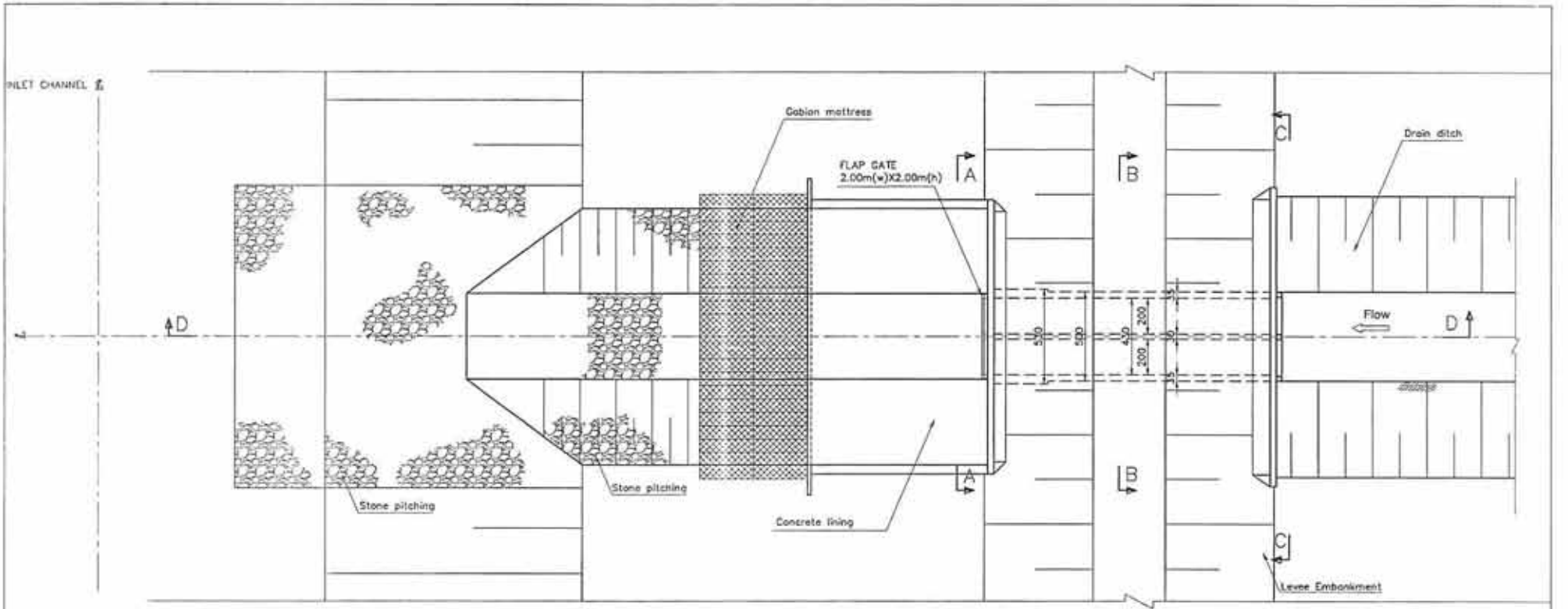


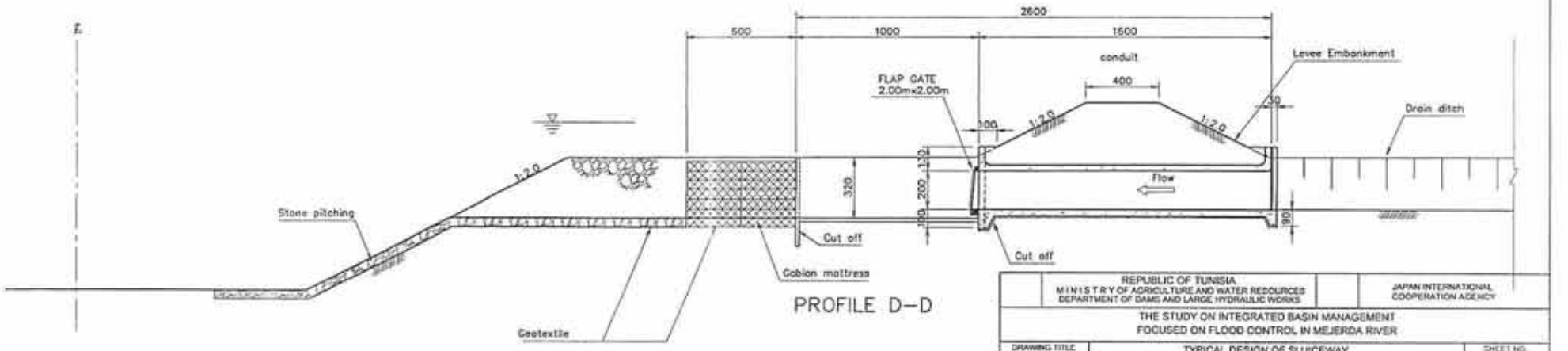
SECTION B–B



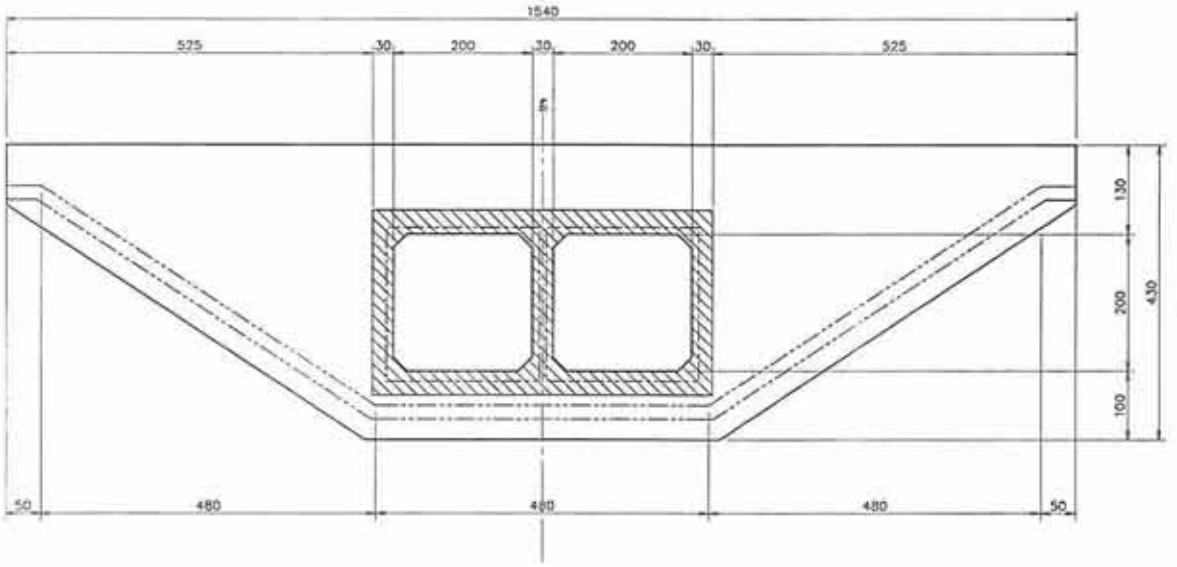
SECTION C–C

	REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	TYPICAL DESIGN OF SLUICEWAY 2.00x2.00x 1 BARREL CROSS SECTIONS		DRG.T NO. E-84
NIPPON KOEI Co., Ltd.			

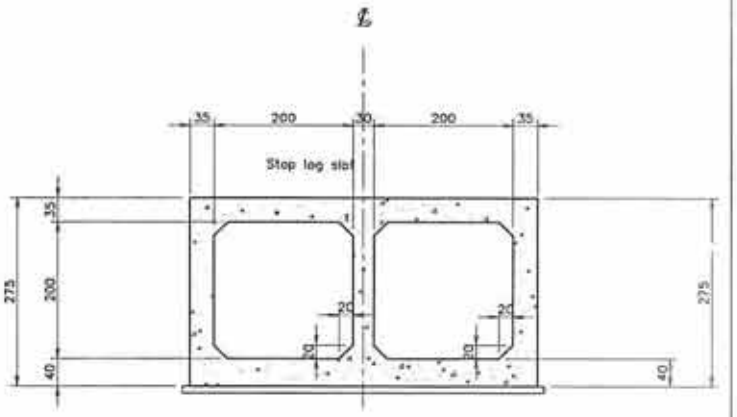




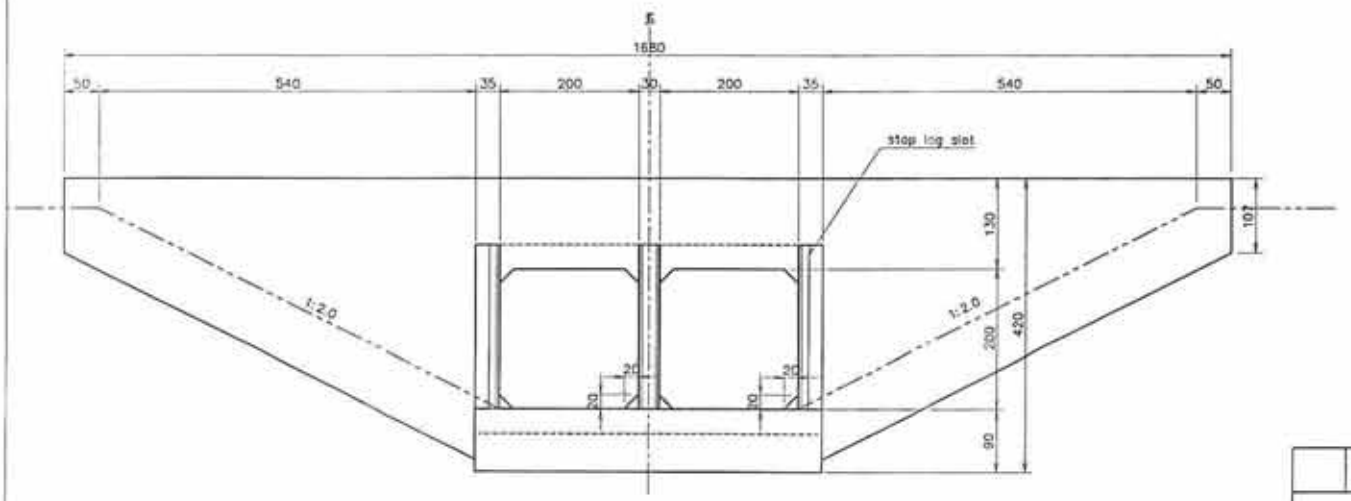
REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER REDOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER		
DRAWING TITLE: TYPICAL DESIGN OF SLUICEWAY 2.00x2.00x 2 BARRELS PLAN ET PROFILE		SHEET NO. E-85
NIPPON KOEI Co., Ltd.		



SECTION A–A

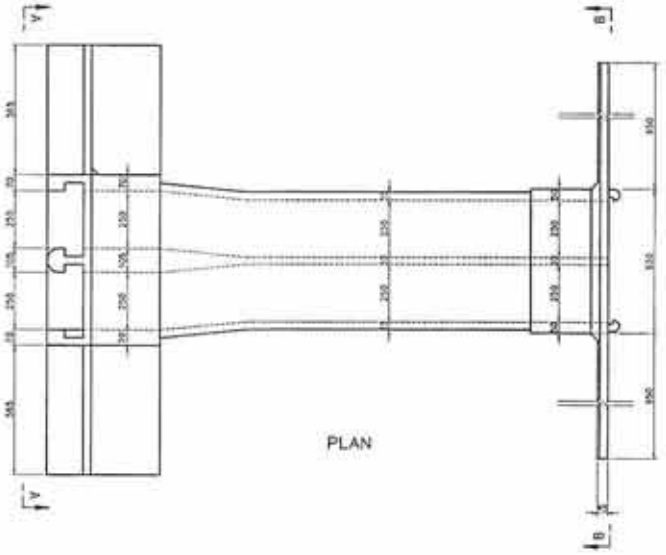


SECTION B–B

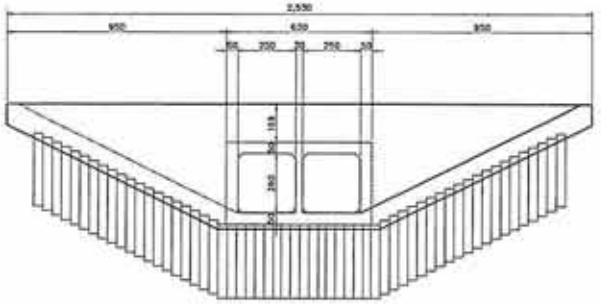


SECTION C–C

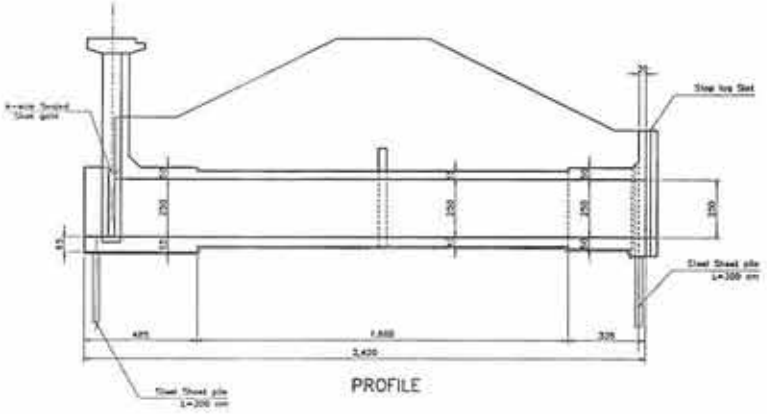
	REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	TYPICAL DESIGN OF SLUICEWAY 2.00x2.00x 2 BARRELS CROSS SECTIONS		SHEET NO. E-86
NIPPON KOEI Co., Ltd.			



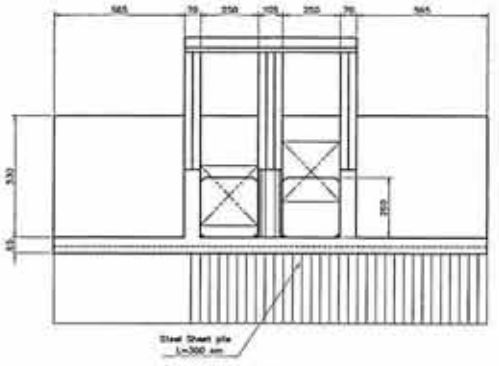
PLAN



SECTION B–B



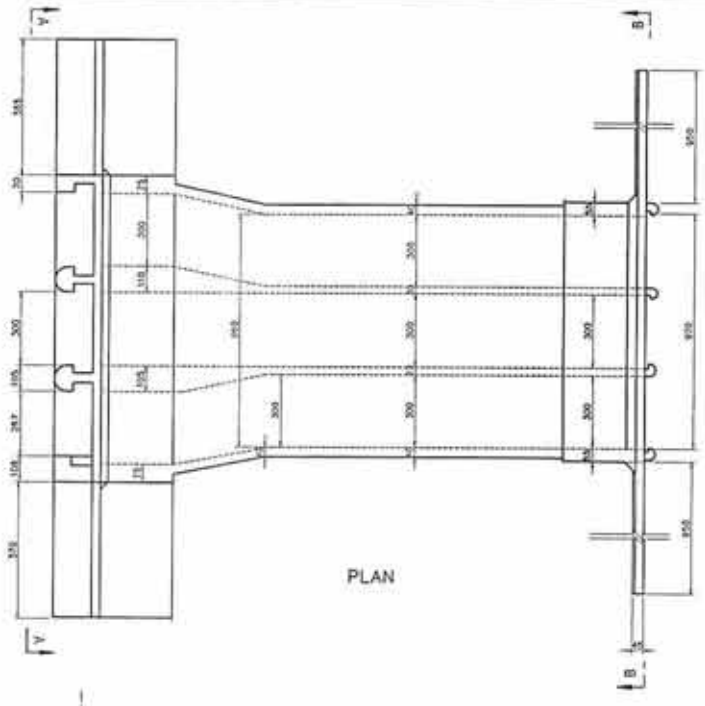
PROFILE

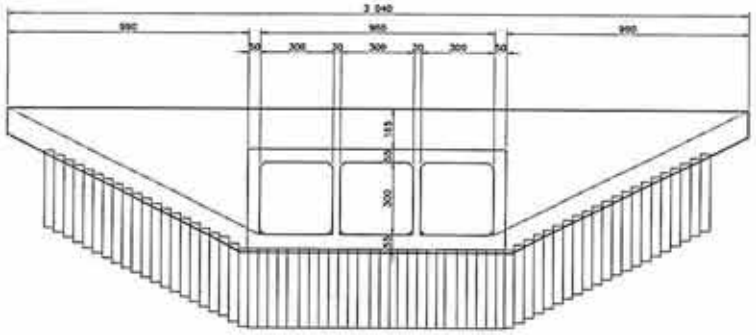


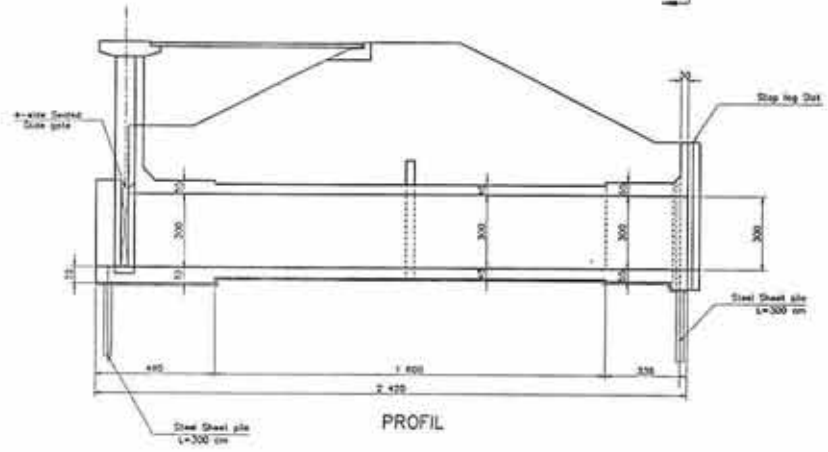
SECTION A–A

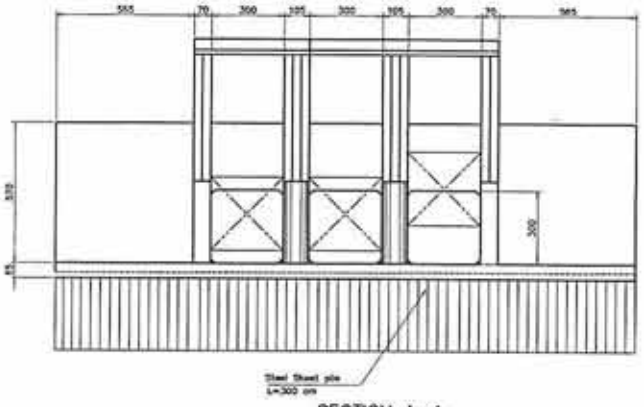
TYPICAL DESIGN OF CONTROL GATE
OF EL CHAOUAT CANAL

	REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS	JICA	JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	TYPICAL DESIGN OF SLUICE GATE (ROLLER GATE TYPE) 2.5.00x2.5.00x2 BARRELS		SHEET NO. E-87
NIPPON KOEI Co., Ltd.			









TYPICAL DESIGN OF SLUICE WAY/CONTROL GATE
OF EL MABTOUH RETARDING BASIN

	REPUBLIC OF TUNISIA MINISTRY OF AGRICULTURE AND WATER RESOURCES DEPARTMENT OF DAMS AND LARGE HYDRAULIC WORKS		JAPAN INTERNATIONAL COOPERATION AGENCY
THE STUDY ON INTEGRATED BASIN MANAGEMENT FOCUSED ON FLOOD CONTROL IN MEJERDA RIVER			
DRAWING TITLE	TYPICAL DESIGN OF SLUICE GATE (ROLLER GATE TYPE) 2.5.00x2.5.00x3 BARRELS		SHEET NO. E-88
NIPPON KOEI Co., Ltd.			

Data E2

Unit Price for Cost Estimate

Table DE2-1 Unit Price for Zone D2

No.	Work Item	Description	Unit	Foreign currency (TND)	Local currency (TND)	Unit price (TND)
	EARTH WORKS					
A1	Clearing and grubbing (Dense bush)	with average hauling distance of 1.00 km	m^2	0.907	1.360	2.267
A2	Clearing and grubbing (Thin bush)	with average hauling distance of 1.00 km	m^2	0.596	0.895	1.491
A3	Stripping	with average hauling distance of 1.00 km	m^2	0.107	0.160	0.267
A4	Excavation for river channel, common soil	with average hauling distance of 0.50 km	m^3	0.920	1.380	2.300
A5	Excavation for river channel, indurated	with average hauling distance of 0.50 km	m^3	1.536	2.304	3.840
A6	Excavation for river channel, rock	with average hauling distance of 0.50 km	m^3	3.272	4.908	8.180
A7	Excavation for Bypass channel, common soil	with average hauling distance of 1.00 km	m^3	0.966	1.448	2.414
A8	Excavation for structures		m^3	1.432	2.148	3.580
A9	Embankment	with average hauling distance of 2.00 km	m^3	1.504	2.255	3.759
A10	Embankment	Directly from excavation site	m^3	0.816	1.223	2.039
A11	Backfill to structures w/o haul		m^3	1.664	2.496	4.160
A12	Gravel metalling for inspection roads		m^3	10.924	16.386	27.310
A13	One-way hauling distance per 1.00 km		m^3	0.191	0.286	0.477
A14	Disposal of excavated materials	Directly from excavation site	m^3	0.100	0.150	0.250
A15	Disposal of excavated materials	with average hauling distance of 2.00 km	m^3	0.488	0.732	1.220
	CONCRETE WORKS					
B1	Lean concrete (32/10)	0.1 m2 of form included	m^3	32.800	49.200	82.000
B2	Concrete Type A (63/17), Plain concrete	0.5 m2 of form included	m^3	45.600	68.400	114.000
B3	Concrete Type B (32/26), Reinforced concrete	2.5 m2 of form included	m^3	69.418	104.127	173.545
B4	Concrete Type C (16/26), Reinforced concrete	4.0 m2 of form included	m^3	86.338	129.508	215.846
B5	Reinforcement - plain round bar		kg	0.716	1.075	1.791
B6	Reinforcement - deformed bar		kg	0.716	1.075	1.791
B7	Stone masonry Type A, with 1:3 mortar		m^3	30.154	45.232	75.386
	STONE WORKS					
C1	Gabion mattress		m^3	37.690	56.535	94.225
C2	Stone pitching (Rough finishing)		m^3	10.729	16.093	26.822
C3	Stone pitching (Fine finishing)		m^3	17.145	25.717	42.862
C4	Fascine mattress		m^2	7.163	10.744	17.907
C5	Cobble stone fill		m^3	6.544	9.816	16.360
C6	Graded sand and gravel filter		m^3	6.544	9.816	16.360
C7	Demolition and disposal of existing masonry and concrete		m^3	62.288	93.432	155.720
C8	Asphalt concrete			100.000	150.000	250.000
	OTHER MAJOR WORKS					
D1	Prestressed concrete beam L=30m		Unit	10,520.000	15,780.000	26,300.000
D2	Prestressed concrete beam L=25m		Unit	8,120.000	12,180.000	20,300.000
D3	Prestressed concrete beam L=20m		Unit	5,080.000	7,620.000	12,700.000
D4	Cast-in place concrete pile with steel pipe pile casing		Unit	2,760.000	4,140.000	6,900.000
D5	Steel sheet pile (Permanent cutoff)		m^2	18.644	27.966	46.610
D6	Heightening and removal of existing railway		m	160.000	240.000	400.000
	Metal Works					
E1	Slide gate (Manual operation hoist), Max size W = 1.50m, H = 1.50m		kg	1.872	2.808	4.680
E2	Slide gate/Roller gate (Electric driven hoist), larger than W = 2.00m, H = 2.00m		kg	2.496	3.744	6.240
E3	Other metal works		kg	1.292	1.938	3.230
	Miscellaneous					
F1	Restoration of affected existing structures, etc.		%	3.000		
F2	Miscellaneous works such as drainage crossing, inspection road, Accessories of bridge, Sod facing, etc.		%	7.000		

Table DE2-2 Unit Price for Zone D1 and U2

No.	Work Item	Description	Unit	Foreign currency (TND)	Local currency (TND)	Unit price (TND)
	EARTH WORKS					
A1	Clearing and grubbing (Dense bush)	with average hauling distance of 1.00 km	m^2	1.020	1.247	2.267
A2	Clearing and grubbing (Thin bush)	with average hauling distance of 1.00 km	m^2	0.671	0.820	1.491
A3	Stripping	with average hauling distance of 1.00 km	m^2	0.120	0.147	0.267
A4	Excavation for river channel, common soil	with average hauling distance of 0.50 km	m^3	1.035	1.265	2.300
A5	Excavation for river channel, indurated	with average hauling distance of 0.50 km	m^3	1.728	2.112	3.840
A6	Excavation for river channel, rock	with average hauling distance of 0.50 km	m^3	3.681	4.499	8.180
A7	Excavation for Bypass channel, common soil	with average hauling distance of 1.00 km	m^3	1.086	1.328	2.414
A8	Excavation for structures		m^3	1.611	1.969	3.580
A9	Embankment	with average hauling distance of 2.00 km	m^3	1.692	2.067	3.759
A10	Embankment	Directly from excavation site	m^3	0.918	1.121	2.039
A11	Backfill to structures w/o haul		m^3	1.872	2.288	4.160
A12	Gravel metalling for inspection roads		m^3	12.290	15.020	27.310
A13	One-way hauling distance per 1.00 km		m^3	0.215	0.262	0.477
A14	Disposal of excavated materials	Directly from excavation site	m^3	0.113	0.137	0.250
A15	Disposal of excavated materials	with average hauling distance of 2.00 km	m^3	0.549	0.671	1.220
	CONCRETE WORKS					
B1	Lean concrete (32/10)	0.1 m2 of form included	m^3	36.900	45.100	82.000
B2	Concrete Type A (63/17), Plain concrete	0.5 m2 of form included	m^3	51.300	62.700	114.000
B3	Concrete Type B (32/26), Reinforced concrete	2.5 m2 of form included	m^3	78.095	95.450	173.545
B4	Concrete Type C (16/26), Reinforced concrete	4.0 m2 of form included	m^3	97.131	118.715	215.846
B5	Reinforcement - plain round bar		kg	0.806	0.985	1.791
B6	Reinforcement - deformed bar		kg	0.806	0.985	1.791
B7	Stone masonry Type A, with 1:3 mortar		m^3	33.924	41.462	75.386
	STONE WORKS					
C1	Gabion mattress		m^3	42.401	51.824	94.225
C2	Stone pitching (Rough finishing)		m^3	12.070	14.752	26.822
C3	Stone pitching (Fine finishing)		m^3	19.288	23.574	42.862
C4	Fascine mattress		m^2	8.058	9.849	17.907
C5	Cobble stone fill		m^3	7.362	8.998	16.360
C6	Graded sand and gravel filter		m^3	7.362	8.998	16.360
C7	Demolition and disposal of existing masonry and concrete		m^3	70.074	85.646	155.720
C8	Asphalt concrete			112.500	137.500	250.000
	OTHER MAJOR WORKS					
D1	Prestressed concrete beam L=30m		Unit	11,835.000	14,465.000	26,300.000
D2	Prestressed concrete beam L=25m		Unit	9,135.000	11,165.000	20,300.000
D3	Prestressed concrete beam L=20m		Unit	5,715.000	6,985.000	12,700.000
D4	Cast-in place concrete pile with steel pipe pile casing		Unit	3,105.000	3,795.000	6,900.000
D5	Steel sheet pile (Permanent cutoff)		m^2	20.975	25.635	46.610
D6	Heightening and removal of existing railway		m	180.000	220.000	400.000
	Metal Works					
E1	Slide gate (Manual operation hoist), Max size W = 1.50m, H = 1.50m		kg	2.106	2.574	4.680
E2	Slide gate/Roller gate (Electric driven hoist), larger than W = 2.00m, H = 2.00m		kg	2.808	3.432	6.240
E3	Other metal works		kg	1.454	1.776	3.230
	Miscellaneous					
F1	Restoration of affected existing structures, etc.		%	3.000	3.000	3.000
F2	Miscellaneous works such as drainage crossing, inspection road, Accessories of bridge, Sod facing, etc.		%	7.000	7.000	7.000

Table DE2-3 Unit Price for Zone U1

No.	Work Item	Description	Unit	Foreign currency (TND)	Local currency (TND)	Unit price (TND)
	EARTH WORKS					
A1	Clearing and grubbing (Dense bush)	with average hauling distance of 1.00 km	m^2	1.134	1.133	2.267
A2	Clearing and grubbing (Thin bush)	with average hauling distance of 1.00 km	m^2	0.746	0.745	1.491
A3	Stripping	with average hauling distance of 1.00 km	m^2	0.134	0.133	0.267
A4	Excavation for river channel, common soil	with average hauling distance of 0.50 km	m^3	1.150	1.150	2.300
A5	Excavation for river channel, indurated	with average hauling distance of 0.50 km	m^3	1.920	1.920	3.840
A6	Excavation for river channel, rock	with average hauling distance of 0.50 km	m^3	4.090	4.090	8.180
A7	Excavation for Bypass channel, common soil	with average hauling distance of 1.00 km	m^3	1.207	1.207	2.414
A8	Excavation for structures		m^3	1.790	1.790	3.580
A9	Embankment	with average hauling distance of 2.00 km	m^3	1.880	1.879	3.759
A10	Embankment	Directly from excavation site	m^3	1.020	1.019	2.039
A11	Backfill to structures w/o haul		m^3	2.080	2.080	4.160
A12	Gravel metalling for inspection roads		m^3	13.655	13.655	27.310
A13	One-way hauling distance per 1.00 km		m^3	0.239	0.238	0.477
A14	Disposal of excavated materials	Directly from excavation site	m^3	0.125	0.125	0.250
A15	Disposal of excavated materials	with average hauling distance of 2.00 km	m^3	0.610	0.610	1.220
	CONCRETE WORKS					
B1	Lean concrete (32/10)	0.1 m2 of form included	m^3	41.000	41.000	82.000
B2	Concrete Type A (63/17), Plain concrete	0.5 m2 of form included	m^3	57.000	57.000	114.000
B3	Concrete Type B (32/26), Reinforced concrete	2.5 m2 of form included	m^3	86.773	86.772	173.545
B4	Concrete Type C (16/26), Reinforced concrete	4.0 m2 of form included	m^3	107.923	107.923	215.846
B5	Reinforcement - plain round bar		kg	0.896	0.895	1.791
B6	Reinforcement - deformed bar		kg	0.896	0.895	1.791
B7	Stone masonry Type A, with 1:3 mortar		m^3	37.693	37.693	75.386
	STONE WORKS					
C1	Gabion mattress		m^3	47.113	47.112	94.225
C2	Stone pitching (Rough finishing)		m^3	13.411	13.411	26.822
C3	Stone pitching (Fine finishing)		m^3	21.431	21.431	42.862
C4	Fascine mattress		m^2	8.954	8.953	17.907
C5	Cobble stone fill		m^3	8.180	8.180	16.360
C6	Graded sand and gravel filter		m^3	8.180	8.180	16.360
C7	Demolition and disposal of existing masonry and concrete		m^3	77.860	77.860	155.720
C8	Asphalt concrete			125.000	125.000	250.000
	OTHER MAJOR WORKS					
D1	Prestressed concrete beam L=30m		Unit	13,150.000	13,150.000	26,300.000
D2	Prestressed concrete beam L=25m		Unit	10,150.000	10,150.000	20,300.000
D3	Prestressed concrete beam L=20m		Unit	6,350.000	6,350.000	12,700.000
D4	Cast-in place concrete pile with steel pipe pile casing		Unit	3,450.000	3,450.000	6,900.000
D5	Steel sheet pile (Permanent cutoff)		m^2	23.305	23.305	46.610
D6	Heightening and removal of existing railway		m	200.000	200.000	400.000
	Metal Works					
E1	Slide gate (Manual operation hoist), Max size W = 1.50m, H = 1.50m		kg	2.340	2.340	4.680
E2	Slide gate/Roller gate (Electric driven hoist), larger than W = 2.00m, H = 2.00m		kg	3.120	3.120	6.240
E3	Other metal works		kg	1.615	1.615	3.230
	Miscellaneous					
F1	Restoration of affected existing structures, etc.		%	3.000		
F2	Miscellaneous works such as drainage crossing, inspection road, Accessories of bridge, Sod facing, etc.		%	7.000		

Table DE2-4 Hourly Equipment Cost

Sl. No.	List of Equipments	Delivered Cost (1) (TDN)	Life in hour (2)	Repair % (3)	Depreciation 90% (4) (1) x 0.9 / (2)	Repair Cost (5) (1) x (3) / (2)	Sub-Total	Fuel Cost (6)	Labor Cost (7)	Foreign (TDN)	Local (TDN)	Total Cost (8) (4) + (5) + (6) + (7)	Remarks 1% of Insurance and 5% of Miscellaneous incl. to Total cost
1	Bulldozer 21T	380,000	10,000	22	34.20	8.36	42.56	20.86	5.45	62.82	10.21	**73.04**	Market price in Tunis
2	Bulldozer 11T							15.05	5.45	40.08	8.17	**48.25**	Referred from Japanese market price
3	Backhoe 1.2 M3							21.35	5.45	46.76	8.17	**54.93**	Referred from Japanese market price
4	Backhoe 1.0 M3	187,000	10,000	22	16.83	4.11	20.94	15.82	5.45	36.81	7.96	**44.77**	Market price in Tunis
5	Backhoe 0.6 M3							15.93	5.45	32.97	7.37	**40.34**	Referred from Japanese market price
6	Wheel Excavator 1.0 M3	195,000	8,000	22	21.94	5.36	27.30	13.83		40.78	2.84	**43.62**	Market price in Tunis
7	Wheel loader 2.5 M3	230,000	8,000	22	25.88	6.33	32.20	16.40	5.45	48.19	9.13	**57.32**	Market price in Tunis
8	Wheel loader 1.5 M3							14.84	4.80	33.83	6.88	**40.71**	Referred from Japanese market price
9	Dump truck 11T							12.60	4.80	33.46	7.08	**40.54**	Referred from Japanese market price
10	Dump truck 4T							6.72	4.80	18.92	6.26	**25.18**	Referred from Japanese market price
11	Dump truck 2T							2.52	3.66	10.04	4.61	**14.65**	Referred from Japanese market price
12	Cargo truck 4T							2.50	4.80	18.73	6.68	**25.41**	Referred from Japanese market price
13	Vibrating tamping roller 10T	135,000	7,000	22	17.36	4.24	21.60	11.80	4.80	33.17	7.34	**40.50**	Market price in Tunis
14	Vibrating roller 2.5T							3.65	3.66	9.50	4.44	**13.93**	Referred from Japanese market price
15	Vibrating compactor 90 kg							1.01	2.52	2.27	2.79	**5.06**	Referred from Japanese market price
16	Macadam roller 10T							14.84	4.80	25.12	6.02	**31.14**	Referred from Japanese market price
17	Tire roller 10/15 T							7.50	4.80	17.87	6.07	**23.94**	Referred from Japanese market price
18	Truck crane 20T							4.40	4.80	58.27	10.40	**68.67**	Referred from Japanese market price
19	Truck crane 10T							3.52	4.80	54.66	10.13	**64.79**	Referred from Japanese market price

Table DE2-5 Basic Unit Cost of Material

No	Description of Material	Unit	(TND)	Remarks
I	CEMENT & CONCRETE ADMIXTURE			
1	Cement (Bulk)	ton	80.47	Without transportation cost, TE
	Cement (Sack)	ton	92.49	Without transportation cost, TE
2	Water Reducing Agents	Kg	5.00	Without transportation cost, JS
II	AGGREGATE & STONES			
1	Fine Aggregate for Concrete	m^3	9.10	Without transportation cost, TE
2	Course Aggregate for Concrete	m^3	9.10	Without transportation cost, TE
3	Masonry Stone	m^3	9.10	Without transportation cost, TE
4	Sand	m^3	3.60	Without transportation cost, TE
5	Cobble/Boulder	m^3	9.10	Without transportation cost, TE
III	STEEL MATERIAL			
1	Reinforcement Bar, Round / Plain	Ton	1,009.35	Without transportation cost, TE
2	Reinforcement Bar, Deformed	Ton	942.16	Without transportation cost, TE
3	Structural Steel, H-beam, Channel, Angle, etc.	Ton	1,392.40	Without transportation cost, TE
4	Steel wire for gabion (4mm, 6mm)	m^2	4.37	Without transportation cost, TE
VIII	FUEL & LUBRICANTS			
1	Light oil (solar)	lit	1.32	Without transportation cost, MP
2	Gasoline	lit	0.96	Without transportation cost, MP
3	Kerosene	lit	0.76	Without transportation cost, MP
IX	ROAD & BRIDGE MATERIALS			
1	Sand	m^3	3.60	Without transportation cost, TE
2	Gravel (1 - 2 cm)	m^3	6.00	Without transportation cost, TE
3	Gravel (0 - 4 cm)	m^3	5.80	Without transportation cost, TE
5	Straight Asphalt	ton	791.50	Without transportation cost, TE
6	Asphalt Emulsion	lit	59.00	Without transportation cost, TE

TE	Referred to La Tunisie economique
JS	Employed from data book of Japanese market price
MP	Market price in Tunis

Table DE2-6 Basic Unit Wage of Labours

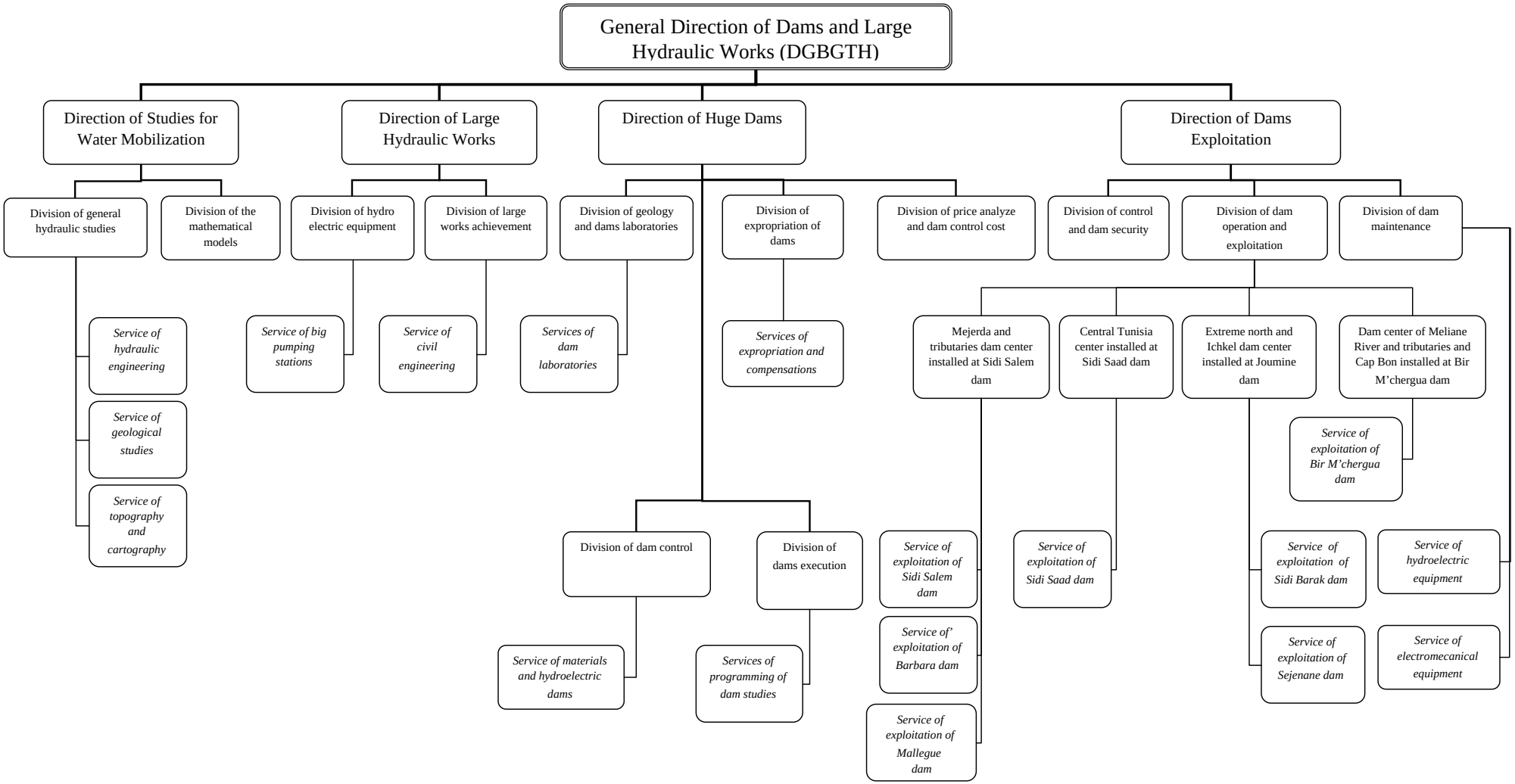
(Quoted from La Tunisie economique No197 June, July 2008)

No	Description		Unit	Hourly Rate TDN		
				Hourly unit cost	Social welfare (69.16%)	Total
I	**FOREMAN**					
1	Foreman, Local	Category 1	hr	1.886	1.300	3.186
		Category 2	hr	1.974	1.370	3.344
		Category 3	hr	2.077	1.440	3.517
II	**LABOUR**					
1	Skilled Labour		hr	1.349	0.930	2.279
3	Common Labour		hr	1.303	0.900	2.203
II	**CRAFTSMAN**					
1	Assistant		hr	1.428	0.990	2.418
2	Category 1		hr	1.488	1.030	2.518
3	Category 2		hr	1.555	1.080	2.635
4	Category 3		hr	1.626	1.120	2.746

Data H

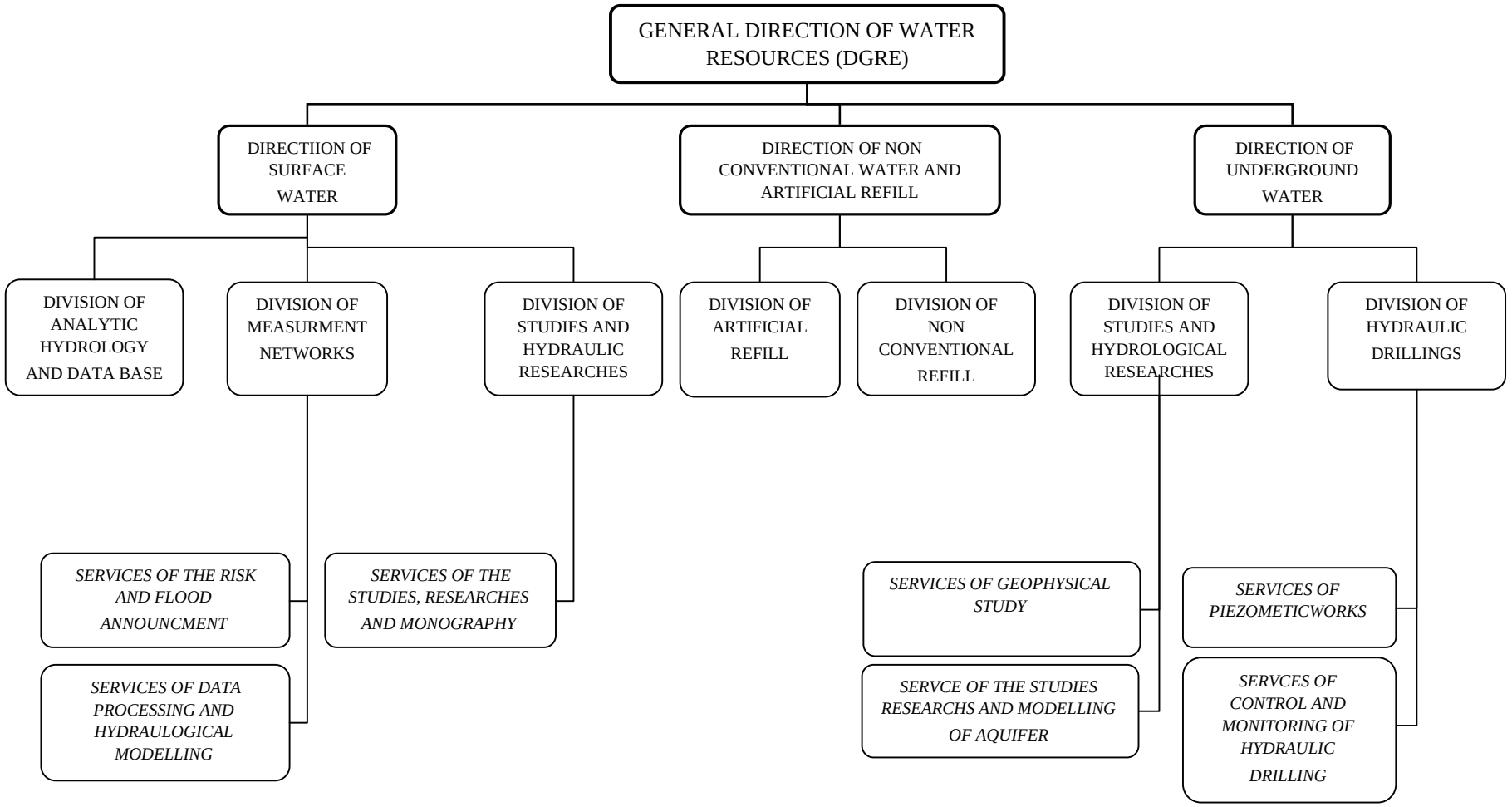
INSTITUTION AND ORGANIZATION

Data H1



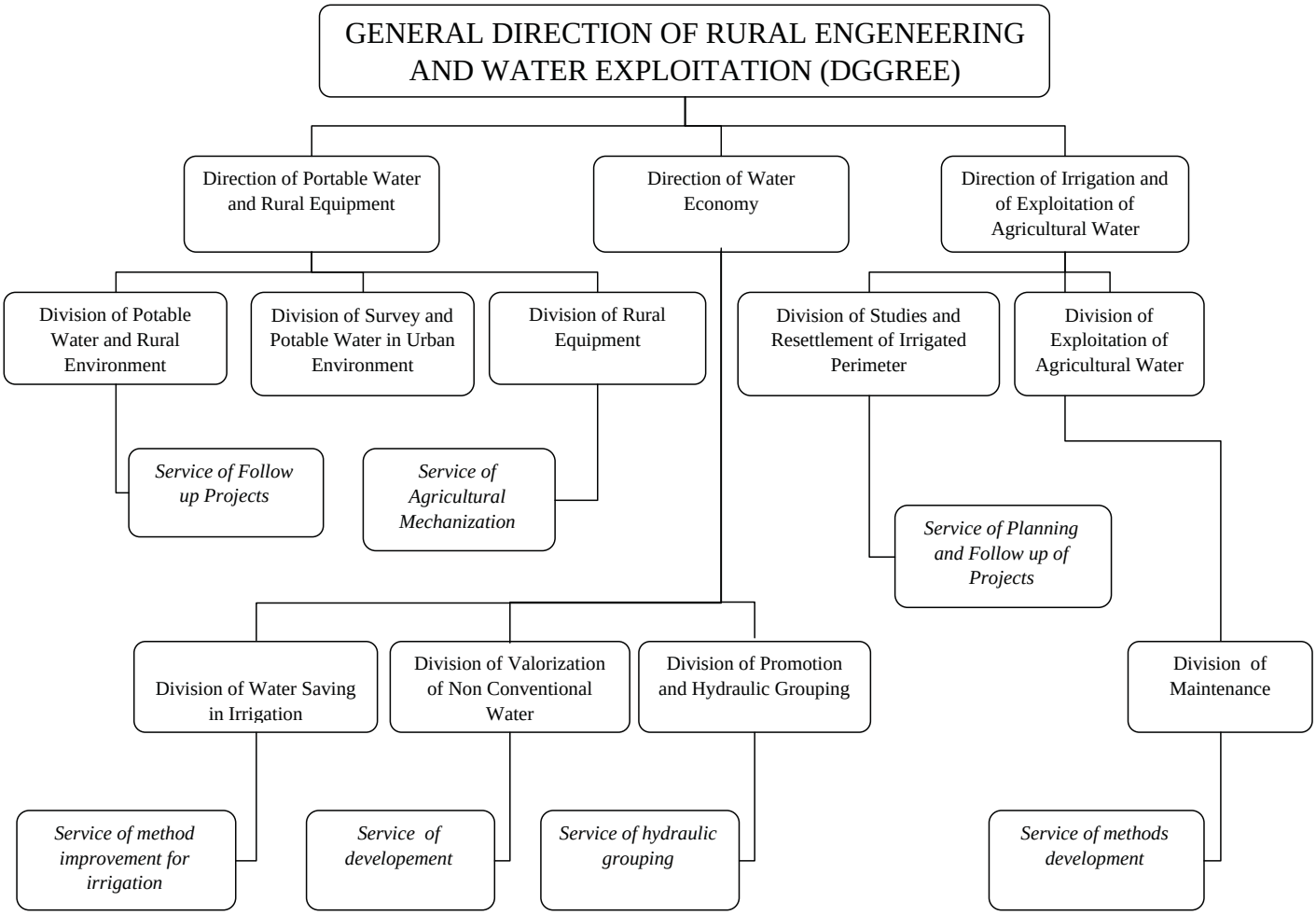
Organizational Structure of General Direction of Dams and Large Hydraulic Works, MARH (DGBGTH)

Data H2



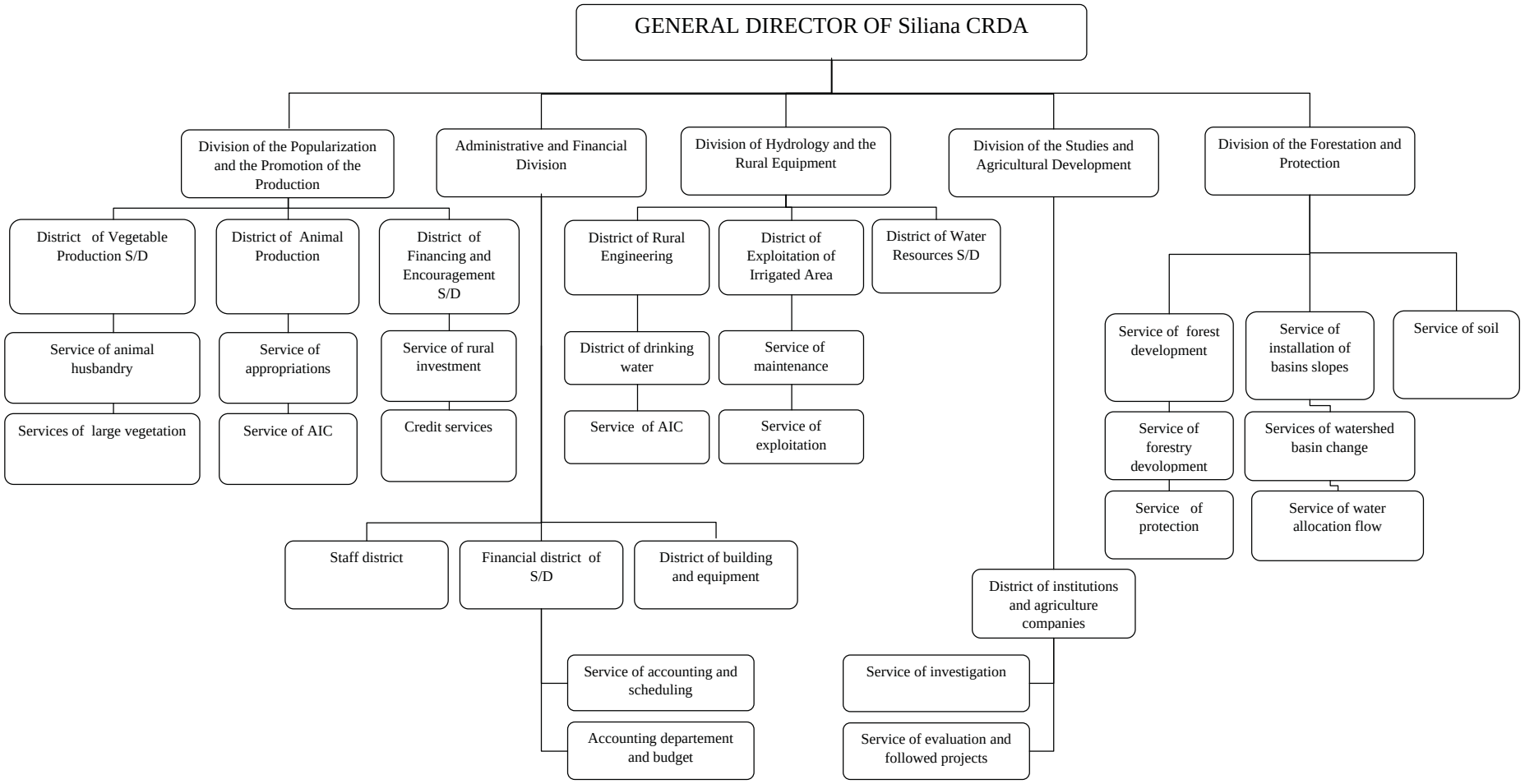
Organizational Structure of General Direction of Water Resources (DGRE)

Data H3



Organizational Structure of General Direction of Rural Engineering and Water Exploitation (DGGREE)

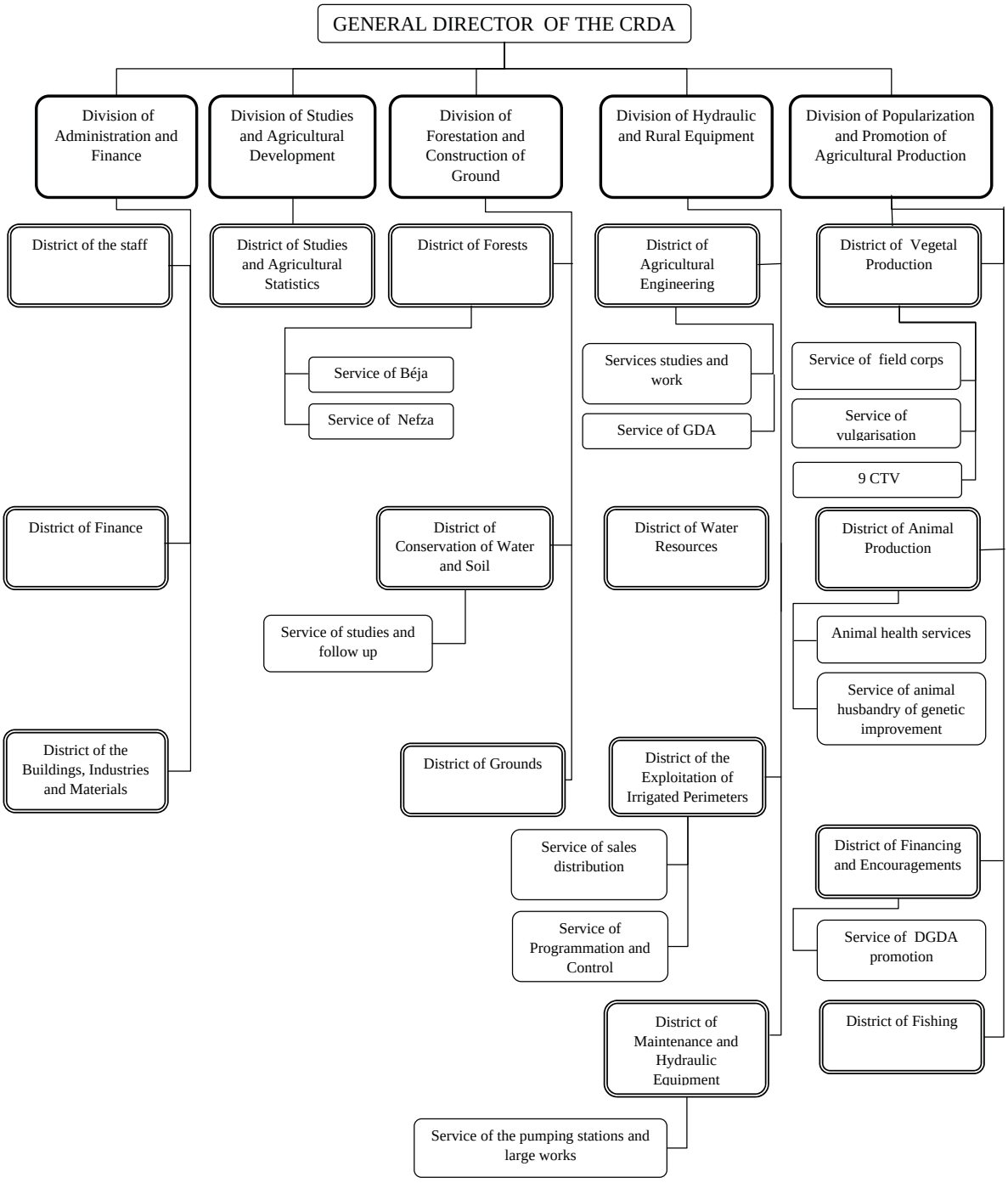
Data H4



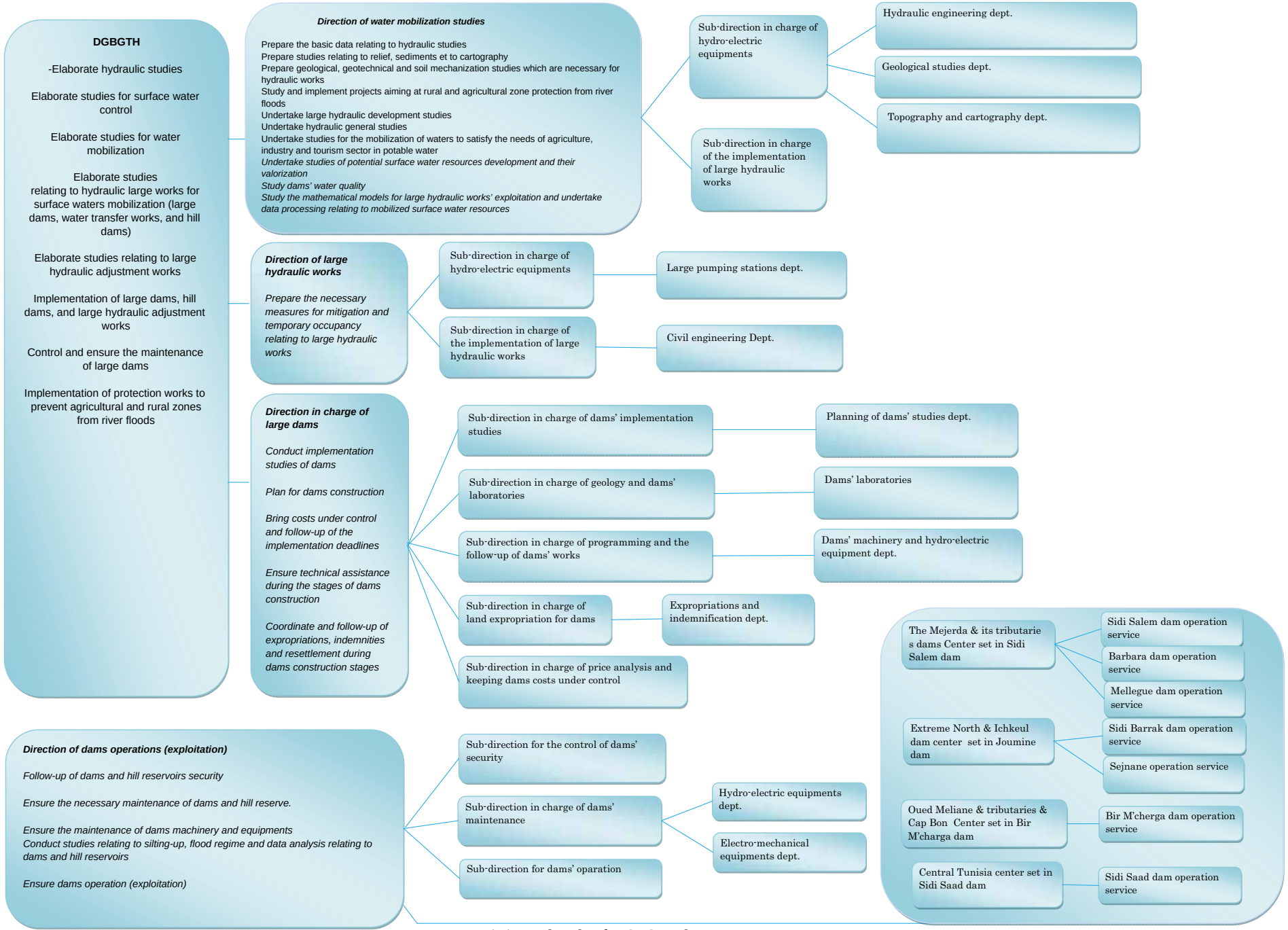
Organizational Structure of Siliana CRDA

DH4-1

Data H5

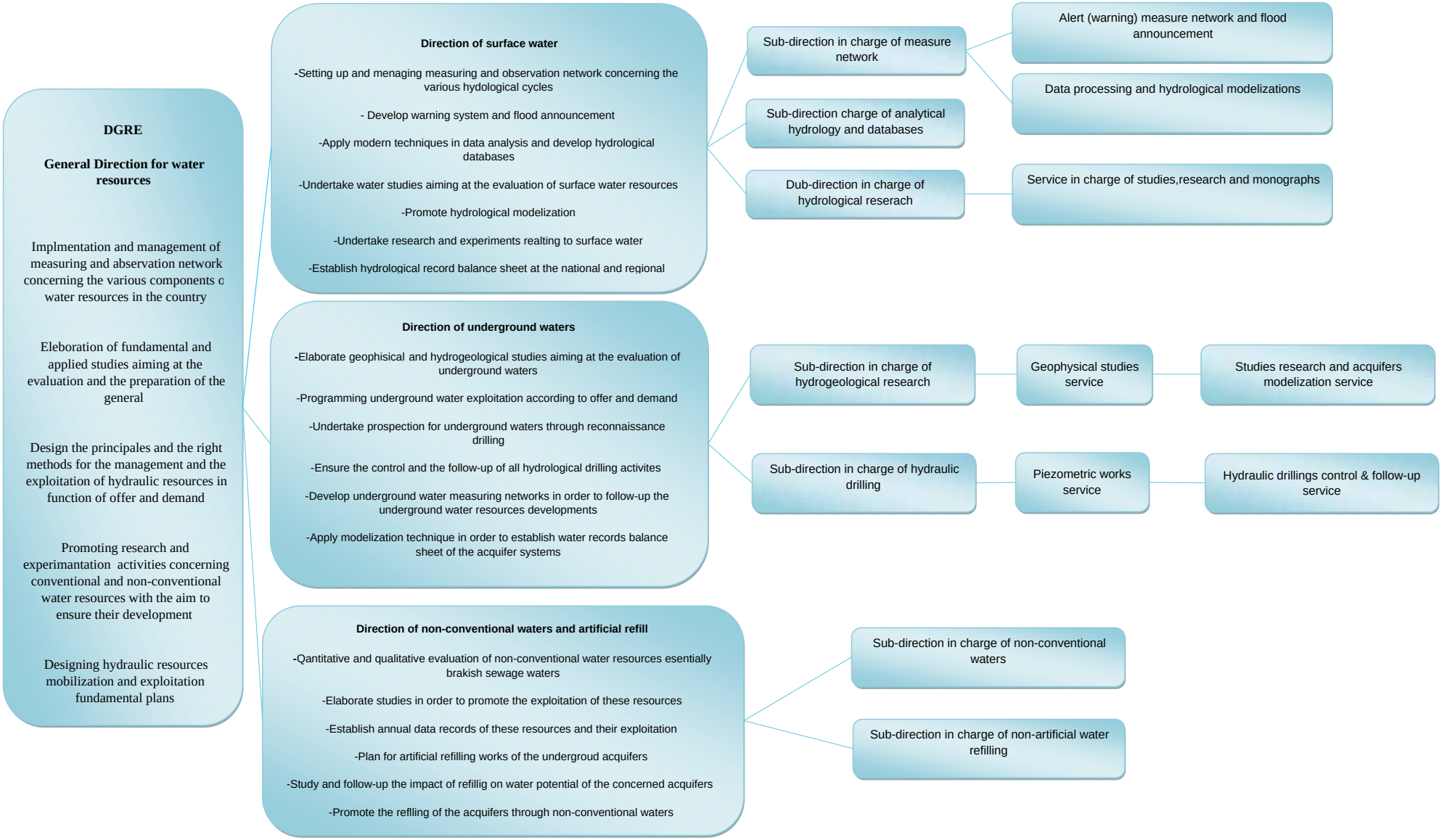


Organizational Structure of Beja CRDA



Mission and Tasks of DGBGTH by Decree

Data H7



Mission and Tasks of DGRE by Decree

DH7-1

Data I

ECONOMICS AND FINANCE

Data I1

Data for Economics and Finance

Table DI1-1 Probable Inundated Area in Zone D1, D2 (5 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	135.3	98.9	239.4	124.9	83.3	10.4	0.0	0.0	692.2
6	Ghar El Meleh	98.9	72.9	67.7	31.2	5.2	0.0	0.0	0.0	275.8
8	Jedeida	255.0	119.7	114.5	15.6	5.2	0.0	0.0	0.0	510.0
11	Kalaat El Andalous	1,025.2	1,269.9	926.4	260.2	31.2	0.0	0.0	0.0	3,512.9
13	Medjez El Bab	140.5	88.5	150.9	119.7	31.2	20.8	0.0	0.0	551.7
17	Sidi Thabet	150.9	0.0	72.9	15.6	0.0	5.2	0.0	0.0	244.6
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	15.6	0.0	10.4	10.4	5.2	10.4	0.0	0.0	52.0
21	Utique	2,544.9	333.1	2,815.5	1,160.6	218.6	10.4	5.2	0.0	7,088.3
Total		4,366.4	1,982.8	4,397.6	1,738.2	379.9	57.2	5.2	0.0	12,927.5

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	10.4
5	El Battane	0.0	0.0	26.0	10.4	10.4	0.0	0.0	0.0	46.8
6	Ghar El Meleh	20.8	5.2	0.0	0.0	0.0	0.0	0.0	0.0	26.0
8	Jedeida	916.0	130.1	437.2	62.5	15.6	0.0	0.0	0.0	1,561.3
11	Kalaat El Andalous	624.5	353.9	296.6	52.0	0.0	0.0	0.0	0.0	1,327.1
13	Medjez El Bab	822.3	353.9	504.8	187.4	57.2	10.4	0.0	0.0	1,936.0
17	Sidi Thabet	1,373.9	187.4	541.2	130.1	0.0	0.0	0.0	0.0	2,232.6
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	10.4	36.4	36.4	26.0	26.0	15.6	5.2	15.6	171.7
21	Utique	770.2	78.1	213.4	36.4	5.2	0.0	0.0	0.0	1,103.3
Total		4,543.4	1,150.2	2,055.7	504.8	114.5	26.0	5.2	15.6	8,415.4

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	5.2	0.0	5.2	5.2	0.0	0.0	0.0	0.0	15.6
13	Medjez El Bab	26.0	0.0	10.4	0.0	0.0	0.0	0.0	0.0	36.4
17	Sidi Thabet	36.4	5.2	10.4	0.0	0.0	0.0	0.0	0.0	52.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	15.6	0.0	5.2	0.0	0.0	0.0	0.0	0.0	20.8
Total		83.3	5.2	31.2	5.2	0.0	0.0	0.0	0.0	124.9

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	895.1	2,466.8	57.2	104.1	88.5	36.4	20.8	5.2	3,674.2
8	Jedeida	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6
11	Kalaat El Andalous	353.9	1,020.0	692.2	405.9	260.2	72.9	36.4	5.2	2,846.8
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0	10.4
21	Utique	452.8	109.3	728.6	312.3	67.7	10.4	0.0	20.8	1,701.8
Total		1,717.4	3,596.2	1,478.0	832.7	426.8	119.7	57.2	31.2	8,259.2

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	10.4
5	El Battane	135.3	98.9	265.4	135.3	93.7	10.4	0.0	0.0	739.0
6	Ghar El Meleh	1,014.8	2,544.9	124.9	135.3	93.7	36.4	20.8	5.2	3,976.1
8	Jedeida	1,186.6	249.8	551.7	78.1	20.8	0.0	0.0	0.0	2,086.9
11	Kalaat El Andalous	2,008.9	2,643.8	1,920.4	723.4	291.4	72.9	36.4	5.2	7,702.4
13	Medjez El Bab	988.8	442.4	666.2	307.1	88.5	31.2	0.0	0.0	2,524.1
17	Sidi Thabet	1,561.3	192.6	624.5	156.1	0.0	5.2	0.0	0.0	2,539.7
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	26.0	36.4	46.8	36.4	41.6	26.0	5.2	15.6	234.2
21	Utique	3,783.5	520.4	3,762.7	1,509.2	291.4	20.8	5.2	20.8	9,914.2
Total		10,710.5	6,734.4	7,962.6	3,081.0	921.2	203.0	67.7	46.8	29,727.0

Source: tthe Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	57.2	1,233.4	650.5	176.9	26.0	0.0	0.0	0.0	2,144.2
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	0.0	10.4	5.2	10.4	0.0	0.0	0.0	0.0	26.0
Total		57.2	1,243.8	655.7	187.4	26.0	0.0	0.0	0.0	2,170.2

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	0.0	286.2	93.7	10.4	0.0	0.0	0.0	0.0	390.3
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	286.2	93.7	10.4	0.0	0.0	0.0	0.0	390.3

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	41.6	20.8	0.0	10.4	0.0	0.0	0.0	0.0	72.9
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	10.4	1,009.6	614.1	405.9	260.2	72.9	36.4	5.2	2,414.8
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	5.2	5.2	5.2	5.2	0.0	0.0	0.0	0.0	20.8
Total		57.2	1,035.7	619.3	421.5	260.2	72.9	36.4	5.2	2,508.5

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	41.6	20.8	0.0	10.4	0.0	0.0	0.0	0.0	72.9
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	67.7	2,529.3	1,358.3	598.5	286.2	72.9	36.4	5.2	4,954.5
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	5.2	15.6	10.4	15.6	0.0	0.0	0.0	0.0	46.8
Total		114.5	2,565.7	1,368.7	624.5	286.2	72.9	36.4	5.2	5,074.2

Source: the Study Team

Table DI1-2 Probable Inundated Area in Zone D1, D2 (10 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	10.4	0.0	5.2	0.0	0.0	0.0	0.0	0.0	15.6
5	El Battane	130.1	88.5	260.2	156.1	93.7	15.6	0.0	0.0	744.2
6	Ghar El Meleh	130.1	98.9	161.3	46.8	15.6	5.2	0.0	0.0	458.0
8	Jedeida	312.3	114.5	239.4	46.8	20.8	10.4	5.2	0.0	749.4
11	Kalaat El Andalous	1,144.9	1,337.5	1,035.7	286.2	41.6	0.0	0.0	0.0	3,846.0
13	Medjez El Bab	135.3	98.9	223.8	182.2	98.9	31.2	0.0	0.0	770.2
17	Sidi Thabet	176.9	0.0	83.3	26.0	0.0	5.2	0.0	0.0	291.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	10.4	26.0	26.0	41.6	15.6	10.4	10.4	10.4	150.9
21	Utique	3,398.4	629.7	3,544.1	1,504.0	255.0	15.6	5.2	0.0	9,352.1
Total		5,448.9	2,394.0	5,579.0	2,289.9	541.2	93.7	20.8	10.4	16,378.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	145.7	26.0	88.5	26.0	0.0	0.0	0.0	0.0	286.2
5	El Battane	0.0	0.0	26.0	10.4	10.4	0.0	0.0	0.0	46.8
6	Ghar El Meleh	31.2	10.4	15.6	0.0	0.0	0.0	0.0	0.0	57.2
8	Jedeida	1,389.6	478.8	733.8	156.1	20.8	0.0	0.0	0.0	2,779.1
11	Kalaat El Andalous	603.7	463.2	338.3	52.0	0.0	0.0	0.0	0.0	1,457.2
13	Medjez El Bab	572.5	593.3	765.0	369.5	72.9	41.6	0.0	0.0	2,414.8
17	Sidi Thabet	1,571.7	234.2	593.3	130.1	5.2	0.0	0.0	0.0	2,534.5
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	57.2	67.7	114.5	104.1	67.7	52.0	31.2	46.8	541.2
21	Utique	926.4	395.5	650.5	114.5	15.6	0.0	0.0	0.0	2,102.5
Total		5,298.0	2,269.1	3,325.6	962.8	192.6	93.7	31.2	46.8	12,219.7

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	10.4
11	Kalaat El Andalous	5.2	0.0	5.2	5.2	0.0	0.0	0.0	0.0	15.6
13	Medjez El Bab	52.0	5.2	26.0	20.8	5.2	0.0	0.0	0.0	109.3
17	Sidi Thabet	36.4	5.2	10.4	0.0	0.0	0.0	0.0	0.0	52.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	15.6	0.0	5.2	0.0	0.0	0.0	0.0	0.0	20.8
Total		114.5	15.6	46.8	26.0	5.2	0.0	0.0	0.0	208.2

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	72.9	3,289.1	57.2	104.1	88.5	36.4	20.8	5.2	3,674.2
8	Jedeida	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6
11	Kalaat El Andalous	353.9	1,020.0	692.2	405.9	260.2	72.9	36.4	5.2	2,846.8
13	Medjez El Bab	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	-5.2
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0	10.4
21	Utique	556.9	93.7	791.1	369.5	72.9	10.4	0.0	20.8	1,915.2
Total		999.2	4,402.8	1,540.5	884.7	432.0	119.7	57.2	31.2	8,467.4

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	156.1	26.0	93.7	26.0	0.0	0.0	0.0	0.0	301.8
5	El Battane	130.1	88.5	286.2	166.5	104.1	15.6	0.0	0.0	791.1
6	Ghar El Meleh	234.2	3,398.4	234.2	150.9	104.1	41.6	20.8	5.2	4,189.5
8	Jedeida	1,722.6	598.5	973.2	203.0	41.6	10.4	5.2	0.0	3,554.5
11	Kalaat El Andalous	2,107.7	2,820.7	2,071.3	749.4	301.8	72.9	36.4	5.2	8,165.6
13	Medjez El Bab	759.8	697.4	1,014.8	567.3	176.9	72.9	0.0	0.0	3,289.1
17	Sidi Thabet	1,785.1	239.4	687.0	166.5	5.2	5.2	0.0	0.0	2,888.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	67.7	93.7	140.5	145.7	93.7	62.5	41.6	57.2	702.6
21	Utique	4,897.3	1,118.9	4,990.9	1,988.0	343.5	26.0	5.2	20.8	13,390.7
Total		11,860.6	9,081.5	10,491.9	4,163.4	1,171.0	307.1	109.3	88.5	37,273.3

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	822.3	858.7	1,103.3	348.7	78.1	0.0	0.0	0.0	3,211.1
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	52.0	0.0	10.4	15.6	15.6	15.6	0.0	0.0	109.3
21	Utique	0.0	10.4	0.0	5.2	0.0	0.0	0.0	0.0	15.6
Total		874.3	869.1	1,113.7	369.5	93.7	15.6	0.0	0.0	3,336.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	0.0	286.2	93.7	10.4	0.0	0.0	0.0	0.0	390.3
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	26.0	0.0	20.8	15.6	5.2	0.0	0.0	0.0	67.7
21	Utique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		26.0	286.2	114.5	26.0	5.2	0.0	0.0	0.0	458.0

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	5.2	31.2	0.0	10.4	0.0	0.0	0.0	0.0	46.8
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	322.7	718.2	817.1	577.7	255.0	78.1	36.4	5.2	2,810.3
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0	10.4
21	Utique	0.0	10.4	8,696.4	5.2	0.0	0.0	0.0	0.0	8,712.0
Total		327.9	759.8	822.3	593.3	265.4	78.1	36.4	5.2	2,888.4

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	5.2	31.2	0.0	10.4	0.0	0.0	0.0	0.0	46.8
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	1,144.9	1,863.1	2,014.1	942.0	333.1	78.1	36.4	5.2	6,416.9
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	78.1	0.0	31.2	31.2	31.2	15.6	0.0	0.0	187.4
21	Utique	0.0	20.8	8,696.4	10.4	0.0	0.0	0.0	0.0	8,727.6
Total		1,228.2	1,915.2	2,050.5	994.0	364.3	93.7	36.4	5.2	6,687.5

Source: the Study Team

Table DI1-3 Probable Inundated Area in Zone D1, D2 (20 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	10.4	0.0	5.2	0.0	0.0	0.0	0.0	0.0	15.6
5	El Battane	72.9	119.7	296.6	197.8	130.1	57.2	10.4	5.2	889.9
6	Ghar El Meleh	36.4	171.7	176.9	72.9	20.8	5.2	0.0	0.0	484.0
8	Jedeida	260.2	161.3	353.9	109.3	41.6	20.8	5.2	0.0	952.4
11	Kalaat El Andalous	1,478.0	1,165.8	1,327.1	432.0	83.3	0.0	0.0	0.0	4,486.1
13	Medjez El Bab	67.7	119.7	239.4	197.8	145.7	67.7	20.8	0.0	858.7
17	Sidi Thabet	187.4	41.6	119.7	15.6	10.4	5.2	0.0	0.0	379.9
18	Tebourba	83.3	10.4	26.0	15.6	36.4	5.2	0.0	5.2	182.2
19	Testour	26.0	15.6	36.4	67.7	41.6	15.6	15.6	26.0	244.6
21	Utique	2,003.7	1,618.5	3,315.1	2,789.5	1,087.7	213.4	10.4	5.2	11,043.5
Total		4,225.9	3,424.4	5,896.5	3,898.0	1,597.7	390.3	62.5	41.6	19,537.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	93.7	67.7	109.3	31.2	0.0	0.0	0.0	0.0	301.8
5	El Battane	145.7	104.1	124.9	26.0	10.4	0.0	0.0	0.0	411.1
6	Ghar El Meleh	26.0	26.0	26.0	5.2	0.0	0.0	0.0	0.0	83.3
8	Jedeida	2,024.5	1,020.0	1,727.8	577.7	62.5	10.4	5.2	0.0	5,428.1
11	Kalaat El Andalous	1,571.7	707.8	817.1	244.6	15.6	0.0	0.0	0.0	3,356.8
13	Medjez El Bab	359.1	588.1	1,009.6	525.6	203.0	72.9	26.0	0.0	2,784.3
17	Sidi Thabet	1,613.3	281.0	676.6	156.1	5.2	0.0	0.0	0.0	2,732.3
18	Tebourba	286.2	218.6	333.1	52.0	26.0	0.0	5.2	0.0	921.2
19	Testour	119.7	78.1	140.5	156.1	130.1	78.1	62.5	83.3	848.3
21	Utique	1,009.6	504.8	1,030.5	499.6	72.9	10.4	0.0	0.0	3,127.8
Total		7,249.6	3,596.2	5,995.4	2,274.3	525.6	171.7	98.9	83.3	19,995.0

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	36.4	5.2	5.2	0.0	0.0	0.0	0.0	0.0	46.8
11	Kalaat El Andalous	36.4	0.0	5.2	5.2	0.0	0.0	0.0	0.0	46.8
13	Medjez El Bab	41.6	20.8	26.0	26.0	5.2	5.2	0.0	0.0	124.9
17	Sidi Thabet	36.4	5.2	10.4	0.0	0.0	0.0	0.0	0.0	52.0
18	Tebourba	52.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	57.2
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	10.4	0.0	10.4	5.2	0.0	0.0	0.0	0.0	26.0
Total		218.6	31.2	62.5	36.4	5.2	5.2	0.0	0.0	359.1

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	5.2	0.0	0.0	0.0	0.0	0.0	0.0	5.2
6	Ghar El Meleh	62.5	3,299.5	57.2	104.1	88.5	36.4	20.8	5.2	3,674.2
8	Jedeida	5.2	20.8	0.0	0.0	0.0	0.0	0.0	0.0	26.0
11	Kalaat El Andalous	395.5	811.9	822.3	556.9	270.6	72.9	36.4	5.2	2,971.7
13	Medjez El Bab	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	-5.2
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	5.2	0.0	0.0	15.6	0.0	0.0	20.8
21	Utique	364.3	104.1	676.6	723.4	307.1	72.9	10.4	20.8	2,279.5
Total		827.5	4,241.5	1,561.3	1,389.6	666.2	197.8	67.7	31.2	8,982.6

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	104.1	67.7	114.5	31.2	0.0	0.0	0.0	0.0	317.5
5	El Battane	223.8	229.0	421.5	223.8	140.5	57.2	10.4	5.2	1,311.5
6	Ghar El Meleh	124.9	3,497.3	260.2	182.2	109.3	41.6	20.8	5.2	4,241.5
8	Jedeida	2,326.3	1,207.4	2,086.9	687.0	104.1	31.2	10.4	0.0	6,453.3
11	Kalaat El Andalous	3,481.7	2,685.4	2,971.7	1,238.6	369.5	72.9	36.4	5.2	10,861.4
13	Medjez El Bab	468.4	728.6	1,275.1	744.2	353.9	145.7	46.8	0.0	3,762.7
17	Sidi Thabet	1,837.1	327.9	806.7	182.2	15.6	5.2	0.0	0.0	3,174.6
18	Tebourba	421.5	229.0	364.3	67.7	62.5	5.2	5.2	5.2	1,160.6
19	Testour	145.7	93.7	182.2	223.8	171.7	109.3	78.1	109.3	1,113.7
21	Utique	3,388.0	2,227.4	5,032.6	4,017.7	1,467.6	296.6	20.8	26.0	16,476.8
Total		12,521.6	11,293.3	13,515.6	7,598.3	2,794.7	765.0	229.0	156.1	48,873.7

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	15.6	5.2	5.2	0.0	0.0	0.0	5.2	0.0	31.2
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	889.9	744.2	1,160.6	405.9	93.7	0.0	0.0	0.0	3,294.3
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	15.6	0.0	5.2	0.0	0.0	20.8
19	Testour	5.2	10.4	41.6	26.0	10.4	15.6	15.6	5.2	130.1
21	Utique	0.0	10.4	5.2	5.2	0.0	0.0	0.0	0.0	20.8
Total		910.8	770.2	1,212.6	452.8	104.1	20.8	20.8	5.2	3,497.3

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	31.2	0.0	5.2	0.0	0.0	0.0	0.0	0.0	36.4
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	0.0	286.2	93.7	10.4	0.0	0.0	0.0	0.0	390.3
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	46.8	5.2	15.6	5.2	0.0	0.0	0.0	0.0	72.9
19	Testour	31.2	5.2	20.8	26.0	15.6	10.4	0.0	0.0	109.3
21	Utique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		109.3	296.6	135.3	41.6	15.6	10.4	0.0	0.0	608.9

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		5.2	0.0	0.0	5.2	0.0	0.0	0.0	0.0	10.4

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Ghar El Meleh	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	525.6	666.2	916.0	624.5	265.4	83.3	36.4	5.2	3,122.6
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	10.4
21	Utique	0.0	10.4	11,610.8	5.2	0.0	0.0	0.0	0.0	11,626.4
Total		525.6	676.6	921.2	634.9	265.4	93.7	36.4	5.2	3,159.0

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	46.8	5.2	10.4	0.0	0.0	0.0	5.2	0.0	67.7
6	Ghar El Meleh	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
8	Jedeida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Kalaat El Andalous	1,415.6	1,696.6	2,170.2	1,046.1	359.1	83.3	36.4	5.2	6,812.4
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Sidi Thabet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Tebourba	52.0	5.2	15.6	20.8	0.0	5.2	0.0	0.0	98.9
19	Testour	36.4	15.6	62.5	52.0	26.0	36.4	15.6	5.2	249.8
21	Utique	0.0	20.8	11,616.0	10.4	0.0	0.0	0.0	0.0	11,647.2
Total		1,550.9	1,743.4	2,269.1	1,134.5	385.1	124.9	57.2	10.4	7,275.6

Source: the Study Team

Table DI1-4 Probable Inundated Area in Zone D1, D2 (50 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	10.4	5.2	0.0	0.0	0.0	0.0	0.0	15.6
5	El Battane	67.7	83.3	203.0	286.2	286.2	166.5	119.7	41.6	1,254.2
6	Ghar El Meleh	67.7	31.2	213.4	176.9	52.0	15.6	5.2	0.0	562.1
8	Jedeida	124.9	270.6	452.8	239.4	52.0	52.0	10.4	5.2	1,207.4
11	Kalaat El Andalous	1,733.0	905.5	1,800.7	744.2	130.1	0.0	0.0	0.0	5,313.6
13	Medjez El Bab	57.2	46.8	150.9	270.6	192.6	140.5	78.1	26.0	962.8
17	Sidi Thabet	93.7	156.1	187.4	26.0	10.4	5.2	0.0	0.0	478.8
18	Tebourba	31.2	46.8	104.1	62.5	31.2	41.6	5.2	20.8	343.5
19	Testour	67.7	31.2	36.4	31.2	36.4	67.7	52.0	57.2	379.9
21	Utique	1,025.2	1,436.4	4,049.0	3,830.4	1,717.4	291.4	15.6	5.2	12,370.6
Total		3,268.3	3,018.5	7,202.8	5,667.5	2,508.5	780.6	286.2	156.1	22,888.5

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	36.4	83.3	150.9	57.2	0.0	0.0	0.0	0.0	327.9
5	El Battane	88.5	140.5	239.4	119.7	57.2	10.4	10.4	10.4	676.6
6	Ghar El Meleh	67.7	15.6	57.2	26.0	0.0	0.0	0.0	0.0	166.5
8	Jedeida	1,249.0	1,233.4	2,518.9	1,202.2	333.1	36.4	5.2	5.2	6,583.4
11	Kalaat El Andalous	1,290.7	916.0	1,191.8	379.9	67.7	10.4	0.0	0.0	3,856.4
13	Medjez El Bab	322.7	374.7	942.0	962.8	489.2	187.4	67.7	36.4	3,382.8
17	Sidi Thabet	1,519.7	421.5	702.6	161.3	5.2	0.0	0.0	0.0	2,810.3
18	Tebourba	98.9	286.2	556.9	338.3	88.5	20.8	5.2	5.2	1,400.0
19	Testour	78.1	41.6	208.2	150.9	156.1	166.5	88.5	192.6	1,082.5
21	Utique	655.7	666.2	1,327.1	811.9	286.2	36.4	5.2	0.0	3,788.7
Total		5,407.3	4,179.1	7,894.9	4,210.3	1,483.2	468.4	182.2	249.8	24,075.1

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	10.4
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	57.2	15.6	10.4	0.0	0.0	0.0	0.0	0.0	83.3
11	Kalaat El Andalous	36.4	15.6	20.8	0.0	5.2	0.0	0.0	0.0	78.1
13	Medjez El Bab	10.4	26.0	52.0	26.0	20.8	5.2	5.2	0.0	145.7
17	Sidi Thabet	41.6	5.2	10.4	0.0	0.0	0.0	0.0	0.0	57.2
18	Tebourba	10.4	26.0	31.2	5.2	0.0	0.0	0.0	0.0	72.9
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	5.2	5.2	10.4	10.4	0.0	0.0	0.0	0.0	31.2
Total		166.5	98.9	135.3	41.6	26.0	5.2	5.2	0.0	478.8

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	15.6	0.0	0.0	0.0	5.2	0.0	20.8
6	Ghar El Meleh	67.7	2,513.7	811.9	78.1	124.9	41.6	31.2	15.6	3,684.6
8	Jedeida	15.6	5.2	20.8	0.0	0.0	0.0	0.0	0.0	41.6
11	Kalaat El Andalous	629.7	666.2	942.0	624.5	265.4	83.3	36.4	5.2	3,252.7
13	Medjez El Bab	0.0	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	-5.2
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	5.2	0.0	5.2	0.0	0.0	5.2	10.4	26.0
21	Utique	46.8	432.0	692.2	728.6	322.7	72.9	10.4	20.8	2,326.3
Total		759.8	3,622.2	2,482.5	1,446.8	707.8	197.8	88.5	52.0	9,357.3

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	36.4	93.7	156.1	57.2	0.0	0.0	0.0	0.0	343.5
5	El Battane	161.3	229.0	458.0	405.9	343.5	176.9	135.3	52.0	1,962.0
6	Ghar El Meleh	203.0	2,560.5	1,082.5	281.0	176.9	57.2	36.4	15.6	4,413.3
8	Jedeida	1,446.8	1,524.9	3,002.9	1,441.6	385.1	88.5	15.6	10.4	7,915.8
11	Kalaat El Andalous	3,689.9	2,503.3	3,955.3	1,748.6	468.4	93.7	36.4	5.2	12,500.7
13	Medjez El Bab	390.3	447.6	1,144.9	1,259.4	697.4	333.1	150.9	62.5	4,486.1
17	Sidi Thabet	1,655.0	582.9	900.3	197.8	15.6	5.2	0.0	0.0	3,356.8
18	Tebourba	140.5	359.1	692.2	405.9	119.7	62.5	10.4	26.0	1,816.3
19	Testour	145.7	78.1	244.6	187.4	192.6	234.2	145.7	260.2	1,488.4
21	Utique	1,733.0	2,539.7	6,078.6	5,381.3	2,326.3	400.7	31.2	26.0	18,516.9
Total		9,601.9	10,918.6	17,715.5	11,366.2	4,725.5	1,452.0	562.1	458.0	56,799.8

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	10.4	5.2	0.0	0.0	0.0	0.0	0.0	15.6
5	El Battane	57.2	109.3	203.0	317.5	244.6	130.1	72.9	36.4	1,171.0
6	Ghar El Meleh	67.7	78.1	197.8	150.9	31.2	10.4	5.2	0.0	541.2
8	Jedeida	150.9	307.1	426.8	166.5	62.5	46.8	5.2	5.2	1,171.0
11	Kalaat El Andalous	1,701.8	999.2	1,707.0	702.6	114.5	0.0	0.0	0.0	5,225.1
13	Medjez El Bab	67.7	72.9	182.2	234.2	192.6	119.7	62.5	10.4	942.0
17	Sidi Thabet	119.7	140.5	166.5	20.8	10.4	5.2	0.0	0.0	463.2
18	Tebourba	31.2	93.7	83.3	26.0	26.0	36.4	5.2	20.8	322.7
19	Testour	26.0	20.8	41.6	31.2	72.9	36.4	31.2	52.0	312.3
21	Utique	1,275.1	1,795.5	3,877.2	3,460.9	1,368.7	249.8	15.6	5.2	12,048.0
Total		3,497.3	3,627.4	6,890.5	5,110.6	2,123.4	634.9	197.8	130.1	22,212.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	67.7	62.5	145.7	52.0	0.0	0.0	0.0	0.0	327.9
5	El Battane	150.9	93.7	229.0	88.5	57.2	10.4	10.4	10.4	650.5
6	Ghar El Meleh	57.2	26.0	46.8	15.6	0.0	0.0	0.0	0.0	145.7
8	Jedeida	1,379.1	1,301.1	2,440.8	858.7	218.6	20.8	5.2	5.2	6,229.6
11	Kalaat El Andalous	1,441.6	822.3	1,118.9	322.7	36.4	0.0	0.0	0.0	3,741.9
13	Medjez El Bab	447.6	333.1	936.8	895.1	463.2	114.5	62.5	20.8	3,273.5
17	Sidi Thabet	1,530.1	390.3	687.0	161.3	5.2	0.0	0.0	0.0	2,773.9
18	Tebourba	234.2	281.0	525.6	265.4	36.4	20.8	0.0	5.2	1,368.7
19	Testour	41.6	130.1	171.7	166.5	150.9	124.9	72.9	145.7	1,004.4
21	Utique	785.9	671.4	1,290.7	671.4	192.6	31.2	0.0	0.0	3,643.0
Total		6,135.9	4,111.4	7,593.1	3,497.3	1,160.6	322.7	150.9	187.4	23,159.2

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	36.4	15.6	10.4	0.0	0.0	0.0	0.0	0.0	62.5
11	Kalaat El Andalous	20.8	20.8	15.6	0.0	5.2	0.0	0.0	0.0	62.5
13	Medjez El Bab	20.8	36.4	31.2	20.8	20.8	5.2	5.2	0.0	140.5
17	Sidi Thabet	36.4	5.2	10.4	0.0	0.0	0.0	0.0	0.0	52.0
18	Tebourba	31.2	10.4	31.2	0.0	0.0	0.0	0.0	0.0	72.9
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	0.0	5.2	15.6	5.2	0.0	0.0	0.0	0.0	26.0
Total		156.1	93.7	114.5	26.0	26.0	5.2	5.2	0.0	426.8

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	5.2	10.4	0.0	0.0	5.2	0.0	0.0	20.8
6	Ghar El Meleh	62.5	3,273.5	62.5	88.5	124.9	26.0	36.4	5.2	3,679.4
8	Jedeida	15.6	5.2	20.8	0.0	0.0	0.0	0.0	0.0	41.6
11	Kalaat El Andalous	598.5	687.0	910.8	619.3	265.4	83.3	36.4	5.2	3,205.9
13	Medjez El Bab	0.0	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	-5.2
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	5.2	0.0	0.0	5.2	0.0	0.0	5.2	10.4	26.0
21	Utique	31.2	442.4	692.2	14,452.4	322.7	72.9	10.4	20.8	16,044.9
Total		713.0	4,413.3	1,696.6	1,436.4	707.8	187.4	88.5	41.6	9,284.5

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	67.7	72.9	150.9	52.0	0.0	0.0	0.0	0.0	343.5
5	El Battane	218.6	208.2	442.4	405.9	301.8	145.7	83.3	46.8	1,852.7
6	Ghar El Meleh	187.4	3,377.6	307.1	255.0	156.1	36.4	41.6	5.2	4,366.4
8	Jedeida	1,582.1	1,628.9	2,898.8	1,025.2	281.0	67.7	10.4	10.4	7,504.6
11	Kalaat El Andalous	3,762.7	2,529.3	3,752.3	1,644.6	421.5	83.3	36.4	5.2	12,235.3
13	Medjez El Bab	536.0	442.4	1,150.2	1,150.2	671.4	239.4	130.1	31.2	4,350.8
17	Sidi Thabet	1,686.2	536.0	863.9	192.6	15.6	5.2	0.0	0.0	3,299.5
18	Tebourba	296.6	385.1	640.1	291.4	62.5	57.2	5.2	26.0	1,764.3
19	Testour	72.9	150.9	213.4	203.0	223.8	161.3	109.3	208.2	1,342.7
21	Utique	2,092.1	2,914.4	5,875.7	18,589.8	1,884.0	353.9	26.0	26.0	31,761.9
Total		10,502.3	12,245.7	16,294.7	10,070.3	4,017.7	1,150.2	442.4	359.1	55,082.4

Source: the Study Team

Table DI1-5 Probable Inundated Area in Zone D1, D2 (100 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	5.2	0.0	10.4	5.2	0.0	0.0	0.0	0.0	20.8
5	El Battane	15.6	41.6	140.5	187.4	249.8	260.2	213.4	213.4	1,321.9
6	Ghar El Meleh	62.5	46.8	156.1	182.2	124.9	15.6	10.4	5.2	603.7
8	Jedeida	104.1	156.1	458.0	385.1	114.5	67.7	41.6	5.2	1,332.3
11	Kalaat El Andalous	1,415.6	692.2	2,128.6	1,066.9	312.3	36.4	0.0	0.0	5,651.9
13	Medjez El Bab	57.2	57.2	109.3	171.7	249.8	187.4	140.5	98.9	1,072.1
17	Sidi Thabet	88.5	98.9	234.2	140.5	15.6	5.2	0.0	0.0	582.9
18	Tebourba	20.8	15.6	83.3	88.5	62.5	52.0	20.8	26.0	369.5
19	Testour	26.0	31.2	114.5	62.5	41.6	46.8	57.2	150.9	530.8
21	Utique	739.0	817.1	3,179.8	3,575.4	3,143.4	1,207.4	229.0	15.6	12,906.7
Total		2,534.5	1,956.8	6,614.7	5,865.3	4,314.4	1,878.8	713.0	515.2	24,392.6

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	36.4	78.1	171.7	67.7	0.0	0.0	0.0	0.0	353.9
5	El Battane	46.8	36.4	223.8	234.2	93.7	52.0	15.6	20.8	723.4
6	Ghar El Meleh	36.4	41.6	62.5	31.2	5.2	0.0	0.0	0.0	176.9
8	Jedeida	687.0	1,061.7	2,581.3	1,956.8	692.2	140.5	15.6	5.2	7,140.3
11	Kalaat El Andalous	1,524.9	697.4	1,670.6	650.5	182.2	20.8	0.0	0.0	4,746.3
13	Medjez El Bab	249.8	182.2	744.2	905.5	905.5	447.6	166.5	104.1	3,705.5
17	Sidi Thabet	1,441.6	562.1	978.4	270.6	20.8	0.0	0.0	0.0	3,273.5
18	Tebourba	145.7	98.9	463.2	546.5	249.8	72.9	15.6	10.4	1,602.9
19	Testour	46.8	78.1	109.3	213.4	156.1	161.3	161.3	322.7	1,249.0
21	Utique	395.5	614.1	1,321.9	1,051.3	551.7	171.7	31.2	0.0	4,137.4
Total		4,611.0	3,450.5	8,326.9	5,927.7	2,857.2	1,066.9	405.9	463.2	27,109.2

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	5.2	0.0	5.2	0.0	0.0	0.0	0.0	0.0	10.4
6	Ghar El Meleh	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
8	Jedeida	52.0	5.2	31.2	5.2	0.0	0.0	0.0	0.0	93.7
11	Kalaat El Andalous	20.8	15.6	31.2	5.2	5.2	0.0	0.0	0.0	78.1
13	Medjez El Bab	31.2	5.2	62.5	26.0	26.0	15.6	5.2	5.2	176.9
17	Sidi Thabet	41.6	5.2	15.6	0.0	0.0	0.0	0.0	0.0	62.5
18	Tebourba	31.2	10.4	36.4	26.0	5.2	0.0	0.0	0.0	109.3
19	Testour	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
21	Utique	5.2	0.0	5.2	15.6	5.2	0.0	0.0	0.0	31.2
Total		197.8	41.6	187.4	78.1	41.6	15.6	5.2	5.2	572.5

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	0.0	15.6	0.0	0.0	0.0	5.2	20.8
6	Ghar El Meleh	41.6	947.2	2,394.0	62.5	124.9	62.5	36.4	15.6	3,684.6
8	Jedeida	5.2	5.2	20.8	20.8	0.0	0.0	0.0	0.0	52.0
11	Kalaat El Andalous	468.4	603.7	1,061.7	619.3	400.7	244.6	67.7	41.6	3,507.7
13	Medjez El Bab	0.0	0.0	0.0	0.0	0.0	-5.2	0.0	0.0	-5.2
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	20.8	0.0	0.0	5.2	0.0	5.2	0.0	15.6	46.8
21	Utique	36.4	166.5	489.2	687.0	707.8	322.7	72.9	31.2	2,513.7
Total		572.5	1,722.6	3,965.7	1,420.8	1,233.4	629.7	176.9	109.3	9,830.9

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	41.6	78.1	182.2	72.9	0.0	0.0	0.0	0.0	374.7
5	El Battane	67.7	78.1	369.5	437.2	343.5	312.3	229.0	239.4	2,076.5
6	Ghar El Meleh	145.7	1,035.7	2,612.6	275.8	255.0	78.1	46.8	20.8	4,470.5
8	Jedeida	848.3	1,228.2	3,091.4	2,368.0	806.7	208.2	57.2	10.4	8,618.3
11	Kalaat El Andalous	3,429.6	2,008.9	4,892.0	2,341.9	900.3	301.8	67.7	41.6	13,984.0
13	Medjez El Bab	338.3	244.6	916.0	1,103.3	1,181.4	645.3	312.3	208.2	4,949.3
17	Sidi Thabet	1,571.7	666.2	1,228.2	421.5	36.4	5.2	0.0	0.0	3,929.3
18	Tebourba	197.8	124.9	582.9	660.9	317.5	124.9	36.4	36.4	2,081.7
19	Testour	98.9	109.3	223.8	281.0	197.8	213.4	218.6	489.2	1,831.9
21	Utique	1,176.2	1,597.7	4,996.1	5,329.2	4,408.0	1,701.8	333.1	46.8	19,589.0
Total		7,915.8	7,171.5	19,094.6	13,291.8	8,446.6	3,591.0	1,301.1	1,092.9	61,905.2

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	5.2	5.2	5.2	5.2	0.0	0.0	0.0	0.0	20.8
5	El Battane	62.5	57.2	203.0	213.4	281.0	239.4	119.7	119.7	1,295.9
6	Ghar El Meleh	62.5	46.8	197.8	176.9	72.9	20.8	5.2	0.0	582.9
8	Jedeida	166.5	161.3	494.4	312.3	83.3	52.0	26.0	5.2	1,301.1
11	Kalaat El Andalous	1,759.1	702.6	1,889.2	931.6	187.4	15.6	0.0	0.0	5,485.3
13	Medjez El Bab	72.9	62.5	130.1	260.2	197.8	176.9	78.1	41.6	1,020.0
17	Sidi Thabet	140.5	78.1	208.2	114.5	10.4	5.2	0.0	0.0	556.9
18	Tebourba	20.8	41.6	109.3	83.3	31.2	46.8	0.0	26.0	359.1
19	Testour	72.9	41.6	52.0	62.5	36.4	57.2	57.2	83.3	463.2
21	Utique	1,004.4	1,014.8	3,486.9	3,169.4	2,654.2	1,103.3	218.6	15.6	12,667.3
Total		3,367.2	2,211.8	6,776.0	5,329.2	3,554.5	1,717.4	504.8	291.4	23,752.5

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	46.8	78.1	161.3	62.5	0.0	0.0	0.0	0.0	348.7
5	El Battane	57.2	104.1	239.4	171.7	62.5	36.4	10.4	20.8	702.6
6	Ghar El Meleh	52.0	31.2	57.2	26.0	5.2	0.0	0.0	0.0	171.7
8	Jedeida	1,098.1	1,087.7	2,586.5	1,519.7	432.0	57.2	10.4	5.2	6,796.8
11	Kalaat El Andalous	1,483.2	666.2	1,467.6	510.0	104.1	10.4	0.0	0.0	4,241.5
13	Medjez El Bab	176.9	385.1	947.2	983.6	598.5	223.8	72.9	41.6	3,429.6
17	Sidi Thabet	1,556.1	478.8	765.0	208.2	10.4	0.0	0.0	0.0	3,018.5
18	Tebourba	104.1	203.0	582.9	416.3	140.5	20.8	10.4	5.2	1,483.2
19	Testour	62.5	57.2	197.8	166.5	171.7	150.9	119.7	223.8	1,150.2
21	Utique	713.0	504.8	1,280.3	942.0	478.8	83.3	10.4	0.0	4,012.5
Total		5,350.0	3,596.2	8,285.3	5,006.5	2,003.7	582.9	234.2	296.6	25,355.4

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	5.2	0.0	5.2	0.0	0.0	0.0	0.0	0.0	10.4
6	Ghar El Meleh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Jedeida	41.6	26.0	15.6	0.0	0.0	0.0	0.0	0.0	83.3
11	Kalaat El Andalous	36.4	5.2	26.0	5.2	5.2	0.0	0.0	0.0	78.1
13	Medjez El Bab	26.0	26.0	57.2	26.0	26.0	5.2	5.2	0.0	171.7
17	Sidi Thabet	41.6	5.2	10.4	0.0	0.0	0.0	0.0	0.0	57.2
18	Tebourba	31.2	26.0	31.2	10.4	0.0	0.0	0.0	0.0	98.9
19	Testour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Utique	5.2	0.0	5.2	15.6	5.2	0.0	0.0	0.0	31.2
Total		187.4	88.5	150.9	57.2	36.4	5.2	5.2	0.0	530.8

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	El Battane	0.0	0.0	5.2	10.4	0.0	0.0	5.2	0.0	20.8
6	Ghar El Meleh	57.2	1,623.7	1,701.8	78.1	119.7	52.0	36.4	15.6	3,684.6
8	Jedeida	5.2	15.6	20.8	5.2	0.0	0.0	0.0	0.0	46.8
11	Kalaat El Andalous	629.7	681.8	978.4	629.7	265.4	83.3	36.4	5.2	3,309.9
13	Medjez El Bab	0.0	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	-5.2
17	Sidi Thabet	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	10.4
18	Tebourba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Testour	0.0	0.0	5.2	0.0	5.2	0.0	0.0	15.6	26.0
21	Utique	182.2	36.4	515.2	650.5	16,627.8	307.1	72.9	31.2	18,423.2
Total		874.3	2,357.6	3,226.7	1,384.3	1,087.7	442.4	150.9	67.7	9,591.5

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
4	Douar Hicher	52.0	83.3	166.5	67.7	0.0	0.0	0.0	0.0	369.5
5	El Battane	124.9	161.3	452.8	395.5	343.5	275.8	135.3	140.5	2,029.7
6	Ghar El Meleh	171.7	1,701.8	1,956.8	281.0	197.8	72.9	41.6	15.6	4,439.3
8	Jedeida	1,311.5	1,290.7	3,117.4	1,837.1	515.2	109.3	36.4	10.4	8,228.0
11	Kalaat El Andalous	3,908.4	2,055.7	4,361.2	2,076.5	562.1	109.3	36.4	5.2	13,114.9
13	Medjez El Bab	275.8	473.6	1,134.5	1,269.9	817.1	405.9	156.1	83.3	4,616.2
17	Sidi Thabet	1,738.2	562.1	983.6	333.1	20.8	5.2	0.0	0.0	3,643.0
18	Tebourba	156.1	270.6	723.4	510.0	171.7	67.7	10.4	31.2	1,941.2
19	Testour	135.3	98.9	255.0	229.0	213.4	208.2	176.9	322.7	1,639.4
21	Utique	1,904.8	1,556.1	5,287.6	4,777.6	19,766.0	1,493.6	301.8	46.8	35,134.3
Total		9,778.9	8,254.0	18,438.9	11,777.3	6,682.3	2,747.9	895.1	655.7	59,230.2

Source: the Study Team

Table DI1-6 Probable Inundated Area in Zone U1+M (5 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	20.8	62.5	104.1	67.7	72.9	46.8	57.2	166.5	598.5
3	Bou Salem	0.0	52.0	52.0	46.8	31.2	83.3	20.8	15.6	301.8
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	62.5	52.0	57.2	26.0	31.2	20.8	0.0	-5.2	244.6
10	Jendouba Nord	62.5	26.0	67.7	26.0	36.4	20.8	15.6	20.8	275.8
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		145.7	192.6	281.0	166.5	171.7	171.7	93.7	197.8	1,420.8

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	41.6	31.2	5.2	26.0	10.4	5.2	5.2	124.9
3	Bou Salem	307.1	203.0	312.3	213.4	140.5	83.3	52.0	36.4	1,347.9
7	Ghardimaou	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	171.7	98.9	83.3	52.0	67.7	26.0	15.6	20.8	536.0
10	Jendouba Nord	20.8	5.2	5.2	20.8	20.8	10.4	15.6	15.6	114.5
15	Oued Mliz	10.4	0.0	5.2	0.0	0.0	0.0	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		510.0	348.7	442.4	291.4	255.0	130.1	88.5	78.1	2,144.2

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	15.6	0.0	5.2	0.0	0.0	0.0	0.0	5.2	26.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		15.6	0.0	5.2	5.2	0.0	0.0	0.0	5.2	31.2

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	5.2	0.0	10.4	0.0	0.0	0.0	0.0	15.6
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	10.4	0.0	0.0	0.0	5.2	5.2	0.0	5.2	26.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	5.2
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		10.4	5.2	0.0	10.4	5.2	10.4	0.0	5.2	46.8

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	20.8	104.1	135.3	72.9	98.9	57.2	62.5	171.7	723.4
3	Bou Salem	322.7	260.2	369.5	270.6	171.7	166.5	72.9	57.2	1,691.4
7	Ghardimaou	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	244.6	150.9	140.5	83.3	104.1	52.0	15.6	20.8	811.9
10	Jendouba Nord	83.3	31.2	72.9	46.8	57.2	36.4	31.2	36.4	395.5
15	Oued Mliz	10.4	0.0	5.2	0.0	0.0	0.0	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		681.8	546.5	728.6	473.6	432.0	312.3	182.2	286.2	3,643.0

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: the Study Team

Table DI1-7 Probable Inundated Area in Zone U1+M (10 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	26.0	57.2	88.5	88.5	67.7	83.3	46.8	286.2	744.2
3	Bou Salem	83.3	124.9	140.5	72.9	57.2	36.4	78.1	36.4	629.7
7	Ghardimaou	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	0.0	-5.2
9	Jendouba	192.6	114.5	260.2	98.9	104.1	31.2	36.4	0.0	837.9
10	Jendouba Nord	26.0	72.9	109.3	41.6	15.6	52.0	15.6	26.0	359.1
15	Oued Mliz	0.0	0.0	-5.2	0.0	-10.4	0.0	0.0	0.0	-15.6
20	Thibar	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
Total		327.9	369.5	593.3	301.8	234.2	203.0	176.9	348.7	2,555.3

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	15.6	46.8	62.5	36.4	20.8	31.2	10.4	10.4	234.2
3	Bou Salem	556.9	286.2	489.2	307.1	176.9	119.7	52.0	78.1	2,066.1
7	Ghardimaou	20.8	10.4	10.4	5.2	10.4	0.0	0.0	0.0	57.2
9	Jendouba	333.1	317.5	348.7	161.3	104.1	78.1	15.6	41.6	1,400.0
10	Jendouba Nord	20.8	0.0	10.4	15.6	20.8	10.4	20.8	15.6	114.5
15	Oued Mliz	114.5	57.2	57.2	31.2	26.0	26.0	5.2	0.0	317.5
20	Thibar	20.8	5.2	0.0	0.0	0.0	0.0	5.2	5.2	36.4
Total		1,082.5	723.4	978.4	556.9	359.1	265.4	109.3	150.9	4,225.9

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	15.6	15.6	5.2	5.2	0.0	0.0	0.0	5.2	46.8
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	5.2	0.0	5.2	0.0	0.0	0.0	0.0	10.4
10	Jendouba Nord	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
15	Oued Mliz	0.0	0.0	5.2	0.0	5.2	0.0	0.0	0.0	10.4
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		20.8	20.8	10.4	10.4	5.2	0.0	0.0	5.2	72.9

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	10.4	20.8	0.0	0.0	0.0	0.0	31.2
7	Ghardimaou	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	5.2	10.4	5.2	0.0	5.2	5.2	0.0	5.2	36.4
10	Jendouba Nord	0.0	5.2	0.0	0.0	5.2	0.0	5.2	0.0	15.6
15	Oued Mliz	0.0	0.0	0.0	0.0	5.2	0.0	0.0	0.0	5.2
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		5.2	15.6	20.8	20.8	15.6	5.2	5.2	5.2	93.7

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	41.6	104.1	150.9	124.9	88.5	114.5	57.2	296.6	978.4
3	Bou Salem	655.7	426.8	645.3	405.9	234.2	156.1	130.1	119.7	2,773.9
7	Ghardimaou	20.8	10.4	10.4	5.2	10.4	0.0	0.0	0.0	57.2
9	Jendouba	530.8	447.6	614.1	265.4	213.4	114.5	52.0	46.8	2,284.7
10	Jendouba Nord	52.0	78.1	119.7	57.2	41.6	62.5	41.6	41.6	494.4
15	Oued Mliz	114.5	57.2	57.2	31.2	26.0	26.0	5.2	0.0	317.5
20	Thibar	20.8	5.2	5.2	0.0	0.0	0.0	5.2	5.2	41.6
Total		1,436.4	1,129.3	1,602.9	889.9	614.1	473.6	291.4	510.0	6,947.8

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	41.6	41.6	41.6	41.6	31.2	67.7	46.8	312.3
7	Ghardimaou	0.0	-5.2	0.0	0.0	0.0	0.0	0.0	0.0	-5.2
9	Jendouba	31.2	78.1	83.3	41.6	52.0	31.2	0.0	5.2	322.7
10	Jendouba Nord	36.4	62.5	62.5	62.5	57.2	31.2	10.4	26.0	348.7
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		67.7	176.9	187.4	145.7	150.9	93.7	78.1	78.1	978.4

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	31.2	67.7	72.9	57.2	67.7	78.1	31.2	62.5	468.4
7	Ghardimaou	0.0	5.2	0.0	5.2	0.0	0.0	0.0	0.0	10.4
9	Jendouba	83.3	52.0	52.0	36.4	41.6	15.6	26.0	10.4	317.5
10	Jendouba Nord	10.4	0.0	5.2	15.6	15.6	15.6	5.2	15.6	83.3
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		124.9	124.9	130.1	114.5	124.9	109.3	62.5	88.5	879.5

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
10	Jendouba Nord	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	5.2	5.2	0.0	0.0	0.0	0.0	10.4

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	5.2	0.0	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	0.0	0.0	0.0	5.2	5.2	5.2	0.0	5.2	20.8
10	Jendouba Nord	0.0	0.0	5.2	5.2	0.0	10.4	0.0	0.0	20.8
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	5.2	5.2	10.4	5.2	15.6	0.0	5.2	46.8

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	31.2	109.3	114.5	98.9	109.3	109.3	98.9	109.3	780.6
7	Ghardimaou	0.0	5.2	0.0	5.2	0.0	0.0	0.0	0.0	10.4
9	Jendouba	114.5	130.1	135.3	88.5	98.9	52.0	26.0	20.8	666.2
10	Jendouba Nord	46.8	62.5	78.1	83.3	72.9	57.2	15.6	41.6	458.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		192.6	307.1	327.9	275.8	281.0	218.6	140.5	171.7	1,915.2

Source: the Study Team

Table DI1-8 Probable Inundated Area in Zone U2 (5 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	20.8	78.1	93.7	67.7	67.7	46.8	57.2	166.5	598.5
3	Bou Salem	0.0	52.0	52.0	41.6	31.2	83.3	20.8	15.6	296.6
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	62.5	52.0	57.2	26.0	31.2	20.8	0.0	-5.2	244.6
10	Jendouba Nord	72.9	20.8	62.5	26.0	36.4	20.8	15.6	20.8	275.8
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		156.1	203.0	265.4	161.3	166.5	171.7	93.7	197.8	1,415.6

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	41.6	31.2	5.2	26.0	10.4	5.2	5.2	124.9
3	Bou Salem	405.9	124.9	307.1	203.0	130.1	83.3	52.0	36.4	1,342.7
7	Ghardimaou	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	197.8	57.2	83.3	52.0	67.7	26.0	15.6	20.8	520.4
10	Jendouba Nord	20.8	5.2	5.2	20.8	20.8	10.4	15.6	15.6	114.5
15	Oued Mliz	10.4	0.0	5.2	0.0	0.0	0.0	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		634.9	229.0	437.2	281.0	244.6	130.1	88.5	78.1	2,123.4

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	15.6	0.0	5.2	0.0	0.0	0.0	0.0	5.2	26.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		15.6	0.0	5.2	5.2	0.0	0.0	0.0	5.2	31.2

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	5.2	0.0	10.4	0.0	0.0	0.0	0.0	15.6
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	10.4	0.0	0.0	0.0	5.2	5.2	0.0	5.2	26.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	5.2
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		10.4	5.2	0.0	10.4	5.2	10.4	0.0	5.2	46.8

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	20.8	119.7	124.9	72.9	93.7	57.2	62.5	171.7	723.4
3	Bou Salem	421.5	182.2	364.3	255.0	161.3	166.5	72.9	57.2	1,681.0
7	Ghardimaou	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	270.6	109.3	140.5	83.3	104.1	52.0	15.6	20.8	796.3
10	Jendouba Nord	93.7	26.0	67.7	46.8	57.2	36.4	31.2	36.4	395.5
15	Oued Mliz	10.4	0.0	5.2	0.0	0.0	0.0	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		817.1	437.2	707.8	458.0	416.3	312.3	182.2	286.2	3,617.0

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	36.4	57.2	98.9	109.3	104.1	93.7	62.5	46.8	608.9
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		36.4	57.2	98.9	109.3	104.1	93.7	62.5	46.8	608.9

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	36.4	57.2	98.9	109.3	104.1	93.7	62.5	46.8	608.9
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		36.4	57.2	98.9	109.3	104.1	93.7	62.5	46.8	608.9

Source: the Study Team

Table DI1-9 Probable Inundated Area in Zone U2 (10 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	31.2	46.8	88.5	98.9	67.7	83.3	46.8	286.2	749.4
3	Bou Salem	138.2	57.2	99.5	108.7	82.1	53.8	93.1	50.9	683.5
7	Ghardimaou	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	0.0	-5.2
9	Jendouba	145.7	83.3	150.9	57.2	62.5	20.8	26.0	0.0	546.5
10	Jendouba Nord	67.7	26.0	88.5	26.0	10.4	46.8	10.4	26.0	301.8
15	Oued Mliz	0.0	0.0	-5.2	0.0	-10.4	0.0	0.0	0.0	-15.6
20	Thibar	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
Total		382.8	213.4	422.1	290.9	212.2	204.7	176.4	363.1	2,265.6

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	36.4	41.6	67.7	36.4	20.8	31.2	10.4	10.4	255.0
3	Bou Salem	747.7	252.7	794.5	482.8	300.1	195.5	111.6	113.3	2,998.3
7	Ghardimaou	20.8	10.4	10.4	5.2	10.4	0.0	0.0	0.0	57.2
9	Jendouba	187.4	187.4	156.1	114.5	78.1	72.9	15.6	36.4	848.3
10	Jendouba Nord	20.8	0.0	10.4	15.6	20.8	10.4	20.8	15.6	114.5
15	Oued Mliz	135.3	57.2	57.2	31.2	26.0	26.0	5.2	0.0	338.3
20	Thibar	15.6	10.4	5.2	0.0	0.0	0.0	5.2	5.2	41.6
Total		1,164.0	559.8	1,101.6	685.8	456.2	336.0	168.9	181.0	4,653.2

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	60.7	31.8	66.5	34.1	18.5	3.5	6.4	6.4	227.8
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
10	Jendouba Nord	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
15	Oued Mliz	0.0	0.0	5.2	0.0	5.2	0.0	0.0	0.0	10.4
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		65.9	31.8	71.7	39.3	23.7	3.5	6.4	6.4	248.7

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	1,427.7	847.1	1,587.9	966.8	621.6	525.6	306.5	650.5	6,933.9
3	Bou Salem	946.6	341.7	960.5	625.7	400.7	252.7	211.1	170.6	3,909.6
7	Ghardimaou	20.8	10.4	5.2	5.2	10.4	0.0	0.0	0.0	52.0
9	Jendouba	333.1	270.6	307.1	176.9	140.5	93.7	41.6	36.4	1,400.0
10	Jendouba Nord	93.7	26.0	98.9	41.6	31.2	57.2	31.2	41.6	421.5
15	Oued Mliz	135.3	57.2	57.2	31.2	20.8	26.0	5.2	0.0	333.1
20	Thibar	15.6	10.4	10.4	0.0	0.0	0.0	5.2	5.2	46.8
Total		1,612.8	804.9	1,595.4	1,016.0	692.2	544.1	351.6	550.5	7,167.5

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	1,495.4	935.6	1,744.0	1,102.2	710.1	640.1	363.7	947.2	7,938.3
3	Bou Salem	1,893.2	683.5	1,921.0	1,251.3	801.5	505.4	422.1	341.2	7,819.2
7	Ghardimaou	41.6	20.8	10.4	10.4	20.8	0.0	0.0	0.0	104.1
9	Jendouba	666.2	541.2	614.1	353.9	281.0	187.4	83.3	72.9	2,799.9
10	Jendouba Nord	187.4	52.0	197.8	83.3	62.5	114.5	62.5	83.3	843.1
15	Oued Mliz	270.6	114.5	114.5	62.5	41.6	52.0	10.4	0.0	666.2
20	Thibar	31.2	20.8	20.8	0.0	0.0	0.0	10.4	10.4	93.7
Total		3,225.5	1,609.9	3,190.8	2,032.0	1,384.3	1,088.3	703.2	1,101.0	14,335.0

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	31.2	0.0	41.6	41.6	41.6	41.6	31.2	114.5	343.5
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	36.4	20.8	41.6	15.6	26.0	15.6	5.2	0.0	161.3
10	Jendouba Nord	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		83.3	20.8	83.3	57.2	67.7	57.2	36.4	114.5	520.4

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	150.9	5.2	83.3	104.1	83.3	78.1	72.9	88.5	666.2
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	10.4	26.0	15.6	20.8	26.0	5.2	0.0	0.0	104.1
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		161.3	31.2	98.9	124.9	109.3	83.3	72.9	88.5	770.2

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	182.2	5.2	124.9	145.7	124.9	119.7	104.1	203.0	1,009.6
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	46.8	46.8	57.2	36.4	52.0	20.8	5.2	0.0	265.4
10	Jendouba Nord	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		244.6	52.0	182.2	182.2	176.9	140.5	109.3	203.0	1,290.7

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	364.3	10.4	249.8	291.4	249.8	239.4	208.2	405.9	2,019.3
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	93.7	93.7	114.5	72.9	104.1	41.6	10.4	0.0	530.8
10	Jendouba Nord	31.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.2
15	Oued Mliz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		489.2	104.1	364.3	364.3	353.9	281.0	218.6	405.9	2,581.3

Source: the Study Team

Table DI1-10 Probable Inundated Area in Zone U2+M (20 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	57.2	36.4	46.8	41.6	41.6	41.6	31.2	114.5	411.1
7	Ghardimaou	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	0.0	-5.2
9	Jendouba	291.4	140.5	192.6	140.5	67.7	46.8	10.4	10.4	900.3
10	Jendouba Nord	15.6	5.2	5.2	10.4	10.4	5.2	0.0	0.0	52.0
15	Oued Mliz	-5.2	0.0	0.0	-10.4	-5.2	0.0	0.0	0.0	-20.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		359.1	182.2	239.4	182.2	114.5	93.7	41.6	124.9	1,337.5

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	62.5	135.3	78.1	83.3	46.8	52.0	67.7	88.5	614.1
7	Ghardimaou	67.7	10.4	26.0	10.4	20.8	0.0	0.0	0.0	135.3
9	Jendouba	213.4	36.4	114.5	57.2	62.5	31.2	20.8	15.6	551.7
10	Jendouba Nord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Oued Mliz	150.9	41.6	83.3	46.8	15.6	36.4	0.0	0.0	374.7
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		494.4	223.8	301.8	197.8	145.7	119.7	88.5	104.1	1,675.8

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
10	Jendouba Nord	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
15	Oued Mliz	5.2	0.0	0.0	5.2	5.2	0.0	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		26.0	0.0	0.0	5.2	5.2	0.0	0.0	0.0	36.4

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
7	Ghardimaou	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
9	Jendouba	5.2	5.2	0.0	5.2	0.0	0.0	0.0	0.0	15.6
10	Jendouba Nord	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
15	Oued Mliz	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		5.2	5.2	10.4	15.6	0.0	0.0	0.0	0.0	36.4

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	130.1	171.7	130.1	124.9	88.5	93.7	98.9	203.0	1,040.9
7	Ghardimaou	67.7	10.4	26.0	10.4	20.8	0.0	0.0	0.0	135.3
9	Jendouba	515.2	182.2	307.1	203.0	130.1	78.1	31.2	26.0	1,472.8
10	Jendouba Nord	20.8	5.2	5.2	15.6	10.4	5.2	0.0	0.0	62.5
15	Oued Mliz	150.9	41.6	83.3	46.8	15.6	36.4	0.0	0.0	374.7
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		884.7	411.1	551.7	400.7	265.4	213.4	130.1	229.0	3,086.2

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
2	Beja Sud	5.2	41.6	67.7	88.5	78.1	83.3	83.3	400.7	848.3
3	Bou Salem	255.0	83.3	234.2	119.7	104.1	52.0	67.7	135.3	1,051.3
7	Ghardimaou	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	-5.2
9	Jendouba	614.1	312.3	416.3	379.9	114.5	88.5	36.4	26.0	1,988.0
10	Jendouba Nord	130.1	109.3	187.4	140.5	31.2	15.6	41.6	41.6	697.4
15	Oued Mliz	-10.4	-5.2	0.0	-5.2	-5.2	0.0	0.0	0.0	-26.0
20	Thibar	0.0	0.0	0.0	0.0	5.2	0.0	0.0	0.0	5.2
Total		994.0	541.2	910.8	718.2	327.9	239.4	229.0	603.7	4,564.2

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	26.0	67.7	83.3	67.7	62.5	41.6	15.6	52.0	416.3
3	Bou Salem	1,410.4	640.1	1,181.4	754.6	343.5	203.0	130.1	197.8	4,860.8
7	Ghardimaou	67.7	15.6	41.6	10.4	5.2	10.4	0.0	0.0	150.9
9	Jendouba	1,160.6	218.6	697.4	312.3	166.5	104.1	57.2	57.2	2,773.9
10	Jendouba Nord	10.4	5.2	26.0	10.4	15.6	20.8	15.6	31.2	135.3
15	Oued Mliz	182.2	52.0	104.1	67.7	31.2	26.0	36.4	0.0	499.6
20	Thibar	20.8	5.2	5.2	20.8	15.6	5.2	0.0	10.4	83.3
Total		2,878.0	1,004.4	2,139.0	1,243.8	640.1	411.1	255.0	348.7	8,920.2

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	93.7	41.6	88.5	20.8	31.2	5.2	5.2	10.4	296.6
7	Ghardimaou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Jendouba	72.9	5.2	26.0	26.0	10.4	5.2	0.0	0.0	145.7
10	Jendouba Nord	5.2	5.2	5.2	5.2	0.0	0.0	0.0	0.0	20.8
15	Oued Mliz	5.2	0.0	0.0	5.2	0.0	5.2	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		176.9	52.0	119.7	57.2	41.6	15.6	5.2	10.4	478.8

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Bou Salem	5.2	0.0	5.2	15.6	5.2	0.0	0.0	0.0	31.2
7	Ghardimaou	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
9	Jendouba	0.0	5.2	15.6	10.4	0.0	0.0	5.2	5.2	41.6
10	Jendouba Nord	5.2	5.2	0.0	0.0	0.0	0.0	5.2	0.0	15.6
15	Oued Mliz	5.2	5.2	0.0	0.0	5.2	0.0	0.0	0.0	15.6
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		15.6	15.6	20.8	31.2	10.4	0.0	10.4	5.2	109.3

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
2	Beja Sud	31.2	109.3	150.9	156.1	140.5	124.9	98.9	452.8	1,264.6
3	Bou Salem	1,764.3	765.0	1,509.2	910.8	484.0	260.2	203.0	343.5	6,240.0
7	Ghardimaou	67.7	15.6	41.6	10.4	5.2	10.4	0.0	0.0	150.9
9	Jendouba	1,847.5	541.2	1,155.4	728.6	291.4	197.8	98.9	88.5	4,949.3
10	Jendouba Nord	150.9	124.9	218.6	156.1	46.8	36.4	62.5	72.9	869.1
15	Oued Mliz	182.2	52.0	104.1	67.7	31.2	31.2	36.4	0.0	504.8
20	Thibar	20.8	5.2	5.2	20.8	20.8	5.2	0.0	10.4	88.5
Total		4,064.6	1,613.3	3,190.2	2,050.5	1,020.0	666.2	499.6	968.0	14,072.4

Source: the Study Team

Table DI1-11 Probable Inundated Area in Zone U2+M (50 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
2	Beja Sud	15.6	57.2	62.5	41.6	67.7	88.5	78.1	567.3	978.4
3	Bou Salem	1,025.2	203.0	593.3	223.8	156.1	78.1	62.5	213.4	2,555.3
7	Ghardimaou	-15.6	-5.2	-15.6	0.0	-5.2	0.0	0.0	-15.6	-57.2
9	Jendouba	1,040.9	468.4	822.3	504.8	353.9	166.5	83.3	78.1	3,518.1
10	Jendouba Nord	567.3	249.8	608.9	333.1	208.2	88.5	78.1	88.5	2,222.2
15	Oued Mliz	15.6	-10.4	-5.2	-10.4	0.0	-10.4	5.2	-5.2	-20.8
20	Thibar	0.0	0.0	5.2	0.0	0.0	0.0	5.2	0.0	10.4
Total		2,649.0	962.8	2,076.5	1,092.9	780.6	411.1	312.3	926.4	9,211.6

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	26.0	36.4	67.7	88.5	98.9	57.2	62.5	109.3	546.5
3	Bou Salem	1,342.7	1,035.7	1,556.1	1,113.7	473.6	281.0	176.9	327.9	6,307.6
7	Ghardimaou	338.3	78.1	171.7	52.0	46.8	10.4	26.0	26.0	749.4
9	Jendouba	1,301.1	874.3	1,025.2	629.7	260.2	145.7	62.5	109.3	4,408.0
10	Jendouba Nord	72.9	10.4	62.5	20.8	26.0	5.2	20.8	41.6	260.2
15	Oued Mliz	192.6	109.3	208.2	109.3	57.2	52.0	31.2	52.0	811.9
20	Thibar	20.8	5.2	31.2	26.0	10.4	15.6	15.6	15.6	140.5
Total		3,294.3	2,149.4	3,122.6	2,040.1	973.2	567.3	395.5	681.8	13,224.1

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	5.2	10.4	0.0	0.0	0.0	0.0	0.0	15.6
3	Bou Salem	114.5	67.7	88.5	57.2	31.2	15.6	5.2	10.4	390.3
7	Ghardimaou	10.4	5.2	5.2	0.0	0.0	0.0	0.0	0.0	20.8
9	Jendouba	150.9	78.1	83.3	36.4	26.0	15.6	0.0	0.0	390.3
10	Jendouba Nord	10.4	0.0	20.8	10.4	5.2	0.0	0.0	0.0	46.8
15	Oued Mliz	0.0	5.2	5.2	5.2	0.0	5.2	0.0	0.0	20.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		286.2	161.3	213.4	109.3	62.5	36.4	5.2	10.4	884.7

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	0.0	-5.2
3	Bou Salem	10.4	10.4	-5.2	20.8	0.0	5.2	0.0	0.0	41.6
7	Ghardimaou	5.2	0.0	10.4	0.0	5.2	0.0	0.0	15.6	36.4
9	Jendouba	31.2	10.4	15.6	10.4	5.2	0.0	5.2	10.4	88.5
10	Jendouba Nord	10.4	10.4	0.0	5.2	10.4	0.0	0.0	10.4	46.8
15	Oued Mliz	5.2	10.4	10.4	10.4	0.0	5.2	0.0	5.2	46.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		62.5	41.6	26.0	46.8	20.8	10.4	5.2	41.6	255.0

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	5.2
2	Beja Sud	41.6	98.9	135.3	130.1	166.5	145.7	140.5	676.6	1,535.3
3	Bou Salem	2,492.9	1,316.7	2,232.6	1,415.6	660.9	379.9	244.6	551.7	9,294.9
7	Ghardimaou	338.3	78.1	171.7	52.0	46.8	10.4	26.0	26.0	749.4
9	Jendouba	2,524.1	1,431.2	1,946.4	1,181.4	645.3	327.9	150.9	197.8	8,405.0
10	Jendouba Nord	660.9	270.6	692.2	369.5	249.8	93.7	98.9	140.5	2,576.1
15	Oued Mliz	213.4	114.5	218.6	114.5	57.2	52.0	36.4	52.0	858.7
20	Thibar	20.8	5.2	36.4	26.0	10.4	15.6	20.8	15.6	150.9
Total		6,292.0	3,315.1	5,438.5	3,289.1	1,837.1	1,025.2	718.2	1,660.2	23,575.5

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	10.4	36.4	46.8	67.7	72.9	88.5	98.9	494.4	916.0
3	Bou Salem	910.8	150.9	536.0	218.6	135.3	78.1	67.7	166.5	2,263.9
7	Ghardimaou	-15.6	-5.2	-15.6	0.0	-5.2	0.0	0.0	-15.6	-57.2
9	Jendouba	817.1	390.3	650.5	426.8	270.6	130.1	67.7	62.5	2,815.5
10	Jendouba Nord	182.2	260.2	348.7	234.2	114.5	67.7	67.7	57.2	1,332.3
15	Oued Mliz	15.6	-10.4	-5.2	-10.4	0.0	-10.4	5.2	-5.2	-20.8
20	Thibar	5.2	0.0	0.0	0.0	0.0	5.2	0.0	0.0	10.4
Total		1,925.6	822.3	1,561.3	936.8	588.1	359.1	307.1	759.8	7,260.0

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	26.0	15.6	72.9	109.3	67.7	78.1	41.6	83.3	494.4
3	Bou Salem	1,452.0	759.8	1,400.0	942.0	499.6	213.4	176.9	270.6	5,714.3
7	Ghardimaou	338.3	78.1	171.7	52.0	46.8	10.4	26.0	26.0	749.4
9	Jendouba	1,472.8	390.3	921.2	562.1	213.4	114.5	78.1	83.3	3,835.6
10	Jendouba Nord	15.6	36.4	31.2	15.6	15.6	15.6	15.6	36.4	182.2
15	Oued Mliz	187.4	109.3	208.2	109.3	57.2	52.0	31.2	52.0	806.7
20	Thibar	5.2	20.8	36.4	5.2	20.8	15.6	5.2	10.4	119.7
Total		3,497.3	1,410.4	2,841.6	1,795.5	921.2	499.6	374.7	562.1	11,902.3

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	5.2	0.0	10.4	0.0	0.0	0.0	0.0	0.0	15.6
3	Bou Salem	104.1	78.1	72.9	52.0	31.2	15.6	5.2	10.4	369.5
7	Ghardimaou	10.4	5.2	5.2	0.0	0.0	0.0	0.0	0.0	20.8
9	Jendouba	156.1	10.4	62.5	26.0	10.4	15.6	0.0	0.0	281.0
10	Jendouba Nord	10.4	5.2	15.6	10.4	0.0	0.0	0.0	0.0	41.6
15	Oued Mliz	0.0	5.2	5.2	5.2	0.0	5.2	0.0	0.0	20.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		286.2	104.1	171.7	93.7	41.6	36.4	5.2	10.4	749.4

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	0.0	-5.2
3	Bou Salem	26.0	-5.2	0.0	10.4	0.0	5.2	0.0	0.0	36.4
7	Ghardimaou	5.2	0.0	10.4	0.0	5.2	0.0	0.0	15.6	36.4
9	Jendouba	20.8	5.2	15.6	10.4	5.2	0.0	10.4	5.2	72.9
10	Jendouba Nord	5.2	5.2	0.0	5.2	5.2	0.0	0.0	10.4	31.2
15	Oued Mliz	5.2	10.4	10.4	10.4	0.0	5.2	0.0	5.2	46.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		62.5	15.6	31.2	36.4	15.6	10.4	10.4	36.4	218.6

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	41.6	52.0	124.9	176.9	140.5	166.5	140.5	577.7	1,420.8
3	Bou Salem	2,492.9	983.6	2,008.9	1,223.0	666.2	312.3	249.8	447.6	8,384.1
7	Ghardimaou	338.3	78.1	171.7	52.0	46.8	10.4	26.0	26.0	749.4
9	Jendouba	2,466.8	796.3	1,649.8	1,025.2	499.6	260.2	156.1	150.9	7,005.0
10	Jendouba Nord	213.4	307.1	395.5	265.4	135.3	83.3	83.3	104.1	1,587.3
15	Oued Mliz	208.2	114.5	218.6	114.5	57.2	52.0	36.4	52.0	853.5
20	Thibar	10.4	20.8	36.4	5.2	20.8	20.8	5.2	10.4	130.1
Total		5,771.6	2,352.3	4,605.8	2,862.4	1,566.5	905.5	697.4	1,368.7	20,130.3

Source: the Study Team

Table DI1-12 Probable Inundated Area in Zone U2+M (100 years probable flood)

Without Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
2	Beja Sud	0.0	52.0	36.4	62.5	57.2	46.8	78.1	718.2	1,051.3
3	Bou Salem	999.2	359.1	692.2	291.4	176.9	130.1	57.2	270.6	2,976.9
7	Ghardimaou	-5.2	-10.4	-15.6	-5.2	-5.2	0.0	0.0	-15.6	-57.2
9	Jendouba	983.6	603.7	916.0	723.4	364.3	333.1	109.3	130.1	4,163.4
10	Jendouba Nord	577.7	322.7	702.6	452.8	312.3	187.4	88.5	156.1	2,799.9
15	Oued Mliz	5.2	0.0	-10.4	5.2	-5.2	-10.4	5.2	-5.2	-15.6
20	Thibar	0.0	0.0	0.0	10.4	0.0	0.0	0.0	5.2	15.6
Total		2,560.5	1,327.1	2,321.1	1,545.7	900.3	687.0	338.3	1,259.4	10,939.5

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	78.1	52.0	67.7	62.5	114.5	62.5	229.0	666.2
3	Bou Salem	806.7	1,124.1	1,837.1	1,311.5	874.3	364.3	213.4	452.8	6,984.2
7	Ghardimaou	343.5	135.3	192.6	72.9	52.0	15.6	20.8	31.2	863.9
9	Jendouba	1,488.4	900.3	1,446.8	952.4	468.4	166.5	114.5	150.9	5,688.3
10	Jendouba Nord	26.0	20.8	67.7	57.2	20.8	20.8	15.6	52.0	281.0
15	Oued Mliz	161.3	78.1	229.0	130.1	78.1	52.0	41.6	62.5	832.7
20	Thibar	15.6	0.0	26.0	26.0	36.4	5.2	26.0	31.2	166.5
Total		2,841.6	2,336.7	3,851.2	2,617.8	1,592.5	739.0	494.4	1,009.6	15,482.8

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	5.2	5.2	5.2	10.4	0.0	0.0	0.0	26.0
3	Bou Salem	78.1	78.1	119.7	88.5	15.6	26.0	26.0	10.4	442.4
7	Ghardimaou	5.2	5.2	10.4	0.0	0.0	0.0	0.0	0.0	20.8
9	Jendouba	239.4	72.9	176.9	98.9	36.4	10.4	20.8	5.2	660.9
10	Jendouba Nord	46.8	5.2	20.8	15.6	20.8	5.2	0.0	0.0	114.5
15	Oued Mliz	0.0	0.0	10.4	0.0	5.2	5.2	0.0	0.0	20.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		369.5	166.5	343.5	208.2	88.5	46.8	46.8	15.6	1,285.5

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	-5.2
3	Bou Salem	5.2	-5.2	5.2	5.2	20.8	-5.2	0.0	5.2	31.2
7	Ghardimaou	0.0	5.2	5.2	5.2	5.2	0.0	0.0	15.6	36.4
9	Jendouba	26.0	0.0	20.8	20.8	-5.2	0.0	5.2	15.6	83.3
10	Jendouba Nord	0.0	5.2	15.6	5.2	5.2	5.2	0.0	10.4	46.8
15	Oued Mliz	0.0	10.4	10.4	10.4	0.0	10.4	0.0	5.2	46.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		31.2	15.6	57.2	46.8	20.8	10.4	5.2	52.0	239.4

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	5.2
2	Beja Sud	0.0	135.3	93.7	135.3	124.9	161.3	140.5	947.2	1,738.2
3	Bou Salem	1,889.2	1,556.1	2,654.2	1,696.6	1,087.7	515.2	296.6	739.0	10,434.6
7	Ghardimaou	343.5	135.3	192.6	72.9	52.0	15.6	20.8	31.2	863.9
9	Jendouba	2,737.5	1,576.9	2,560.5	1,795.5	863.9	510.0	249.8	301.8	10,596.0
10	Jendouba Nord	650.5	353.9	806.7	530.8	359.1	218.6	104.1	218.6	3,242.3
15	Oued Mliz	166.5	88.5	239.4	145.7	78.1	57.2	46.8	62.5	884.7
20	Thibar	15.6	0.0	26.0	36.4	36.4	5.2	26.0	36.4	182.2
Total		5,802.8	3,846.0	6,573.0	4,418.5	2,602.2	1,483.2	884.7	2,336.7	27,947.1

Source: the Study Team

With Project Case

Agricultural Area (Non-irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	31.2	57.2	62.5	46.8	78.1	78.1	640.1	994.0
3	Bou Salem	843.1	359.1	650.5	223.8	166.5	104.1	52.0	244.6	2,643.8
7	Ghardimaou	-5.2	-10.4	-15.6	-5.2	-5.2	0.0	0.0	-15.6	-57.2
9	Jendouba	1,051.3	504.8	853.5	608.9	390.3	260.2	104.1	109.3	3,882.4
10	Jendouba Nord	660.9	244.6	702.6	442.4	270.6	150.9	98.9	119.7	2,690.6
15	Oued Mliz	5.2	0.0	-10.4	5.2	-5.2	-10.4	5.2	-5.2	-15.6
20	Thibar	0.0	0.0	5.2	0.0	0.0	0.0	5.2	0.0	10.4
Total		2,555.3	1,129.3	2,243.1	1,337.5	863.9	582.9	343.5	1,092.9	10,148.4

Agricultural Area (Irrigated) (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	5.2	46.8	67.7	62.5	109.3	67.7	67.7	161.3	588.1
3	Bou Salem	1,035.7	853.5	1,733.0	1,228.2	645.3	317.5	203.0	416.3	6,432.5
7	Ghardimaou	338.3	135.3	192.6	72.9	52.0	15.6	20.8	31.2	858.7
9	Jendouba	1,530.1	843.1	1,243.8	801.5	343.5	166.5	104.1	119.7	5,152.3
10	Jendouba Nord	26.0	62.5	52.0	31.2	20.8	15.6	20.8	41.6	270.6
15	Oued Mliz	161.3	78.1	229.0	130.1	78.1	52.0	41.6	62.5	832.7
20	Thibar	0.0	20.8	20.8	36.4	5.2	26.0	10.4	20.8	140.5
Total		3,096.6	2,040.1	3,538.9	2,362.8	1,254.2	660.9	468.4	853.5	14,275.4

Urban Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	5.2	5.2	10.4	0.0	0.0	0.0	0.0	20.8
3	Bou Salem	119.7	67.7	109.3	52.0	26.0	31.2	5.2	10.4	421.5
7	Ghardimaou	5.2	5.2	10.4	0.0	0.0	0.0	0.0	0.0	20.8
9	Jendouba	171.7	135.3	109.3	57.2	31.2	5.2	20.8	5.2	536.0
10	Jendouba Nord	36.4	5.2	26.0	15.6	15.6	5.2	0.0	0.0	104.1
15	Oued Mliz	0.0	0.0	10.4	0.0	5.2	5.2	0.0	0.0	20.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		333.1	218.6	270.6	135.3	78.1	46.8	26.0	15.6	1,124.1

Other Areas (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	0.0	0.0	0.0	-5.2	0.0	0.0	0.0	0.0	-5.2
3	Bou Salem	10.4	10.4	-5.2	5.2	10.4	-5.2	5.2	0.0	31.2
7	Ghardimaou	0.0	5.2	5.2	5.2	5.2	0.0	0.0	15.6	36.4
9	Jendouba	20.8	5.2	20.8	10.4	0.0	-5.2	5.2	15.6	72.9
10	Jendouba Nord	5.2	10.4	5.2	5.2	5.2	5.2	0.0	10.4	46.8
15	Oued Mliz	0.0	10.4	10.4	10.4	0.0	10.4	0.0	5.2	46.8
20	Thibar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		36.4	41.6	36.4	31.2	20.8	5.2	10.4	46.8	229.0

Total Inudated Area (Unit: ha)

ID	Delegation	0.0 - 0.5m	0.5 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	5.0 - 6.0m	6.0m <	Total
1	Balta Bou Aouane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Beja Sud	5.2	83.3	130.1	130.1	156.1	145.7	145.7	801.5	1,597.7
3	Bou Salem	2,008.9	1,290.7	2,487.7	1,509.2	848.3	447.6	265.4	671.4	9,529.1
7	Ghardimaou	338.3	135.3	192.6	72.9	52.0	15.6	20.8	31.2	858.7
9	Jendouba	2,773.9	1,488.4	2,227.4	1,478.0	765.0	426.8	234.2	249.8	9,643.6
10	Jendouba Nord	728.6	322.7	785.9	494.4	312.3	176.9	119.7	171.7	3,112.2
15	Oued Mliz	166.5	88.5	239.4	145.7	78.1	57.2	46.8	62.5	884.7
20	Thibar	0.0	20.8	26.0	36.4	5.2	26.0	15.6	20.8	150.9
Total		6,021.4	3,429.6	6,089.0	3,866.8	2,217.0	1,295.9	848.3	2,008.9	25,776.9

Source: the Study Team

Table DI1-13 Input and Output Table for Tunisian Economy in 2006

Aux prix courants (Toutes Taxes Comprises) **(Données exprimées en millions de Dinars)**

RESSOURCES

	PRODUITS / SECTEURS	Prod.	Import.	Droits / Import.	Marges Comm.	Total
00	Produits agricoles & pêche	5 687.1	858.1	112.5	869.1	7 526.8
10	Produits de l'industrie agro-alimentaire	7 660.1	972.3	245.0	1 480.1	10 357.5
20	Mat. de Construction Céramique et Verre	2 015.4	183.0	63.3	246.5	2 508.2
30	Machines & Matériel Mécanique et Electrique	6 127.9	8 340.9	587.3	1 373.3	16 429.5
40	Produits chimiques	3 127.1	2 176.1	295.2	349.5	5 947.9
50	Textile, Hab.& cuir	6 024.1	3 410.5	102.6	682.1	10 219.2
60	Prod.des Indust Manufact.Diverses	2 441.5	1 157.8	220.9	574.4	4 394.6
65	Minerais et minéraux	338.1	35.7	2.4	51.4	427.7
66	Pétrole et gaz	3 700.1	2 945.3	126.5	5.2	6 777.1
67	Electricité	1 149.8			0.3	1 150.2
68	Eau	203.8				203.8
69	Bâtiment et Travaux Publics	6 739.4				6 739.4
72	Commerce	5 631.9			-5 631.9	0.0
76	Transport & Télécommunication	7 133.5	686.2			7 819.7
79	Hôtelerie et Restauration	4 063.3				4 063.3
82	Services financiers & d'assurance	1 894.8	129.7			2 024.5
85	Autres services marchands	5 703.6	524.1			6 227.6
94	Services non marchands	6 454.2				6 454.2
99	Tourisme et autres séjours		507.9			507.9
	Total	76 095.8	21 927.7	1 755.7		99 779.1

Entrées Intermédiaires

	PRODUITS / SECTEURS	00	10	20	30	40	50	60	65	66	67	68	69	72	76	79	82	85	94	N.V.	Total
00	Produits agricoles & pêche	320.6	3171.4	1.0	1.9	11.9	61.0	45.3	3.5				2.3	4.3	4.4	195.5		2.9	135.5		3 961.6
10	Produits de l'industrie agro-alimentaire	526.1	1395.8	3.6	0.3	28.7	53.0	2.5		0.9			1.9	131.1	23.8	779.6		1.5	103.4		3 052.2
20	Mat. de Construction Céramique et Verre	0.2	7.2	513.7	42.6	10.8	6.4	11.2	0.5	3.0	3.4	4.9	1415.5	0.2	4.2	21.0	0.7	7.5	34.1		2 087.1
30	Machines & Matériel Mécanique et Electrique	11.9	170.8	69.6	3302.7	74.2	74.5	156.3	13.5	294.4	81.0	4.2	1325.9	6.1	232.5	16.1	3.8	98.9	369.9		6 306.4
40	Produits chimiques	145.9	200.8	115.7	262.4	1590.7	169.3	380.0	6.1	38.4	6.8	8.8	82.8	6.4	41.5	23.4	10.5	128.0	82.1		3 299.8
50	Textile, Hab.& cuir	3.2	8.4	1.6	4.2	10.5	2880.7	56.2	1.9	0.1	0.7		0.2	4.9	4.6	2.2		8.1	25.1		3 012.6
60	Prod.des Indust Manufact.Diverses	10.9	359.2	51.0	106.5	34.4	244.9	754.4	11.3	6.1	3.8	2.4	268.8	87.8	32.3	28.3	31.9	34.1	80.1		2 148.2
65	Minerais et minéraux		13.2	4.4	30.7	309.8	4.6	7.3	0.7							8.7		1.6	0.6		381.6
66	Pétrole et gaz	169.6	142.1	287.2	155.3	72.3	77.4	47.3	19.6	1058.7	571.1	9.3	72.1	36.7	611.0	93.1	7.8	52.6	155.5		3 638.6
67	Electricité	8.6	51.5	158.4	72.2	70.9	52.6	37.1	20.1	33.8	1.8	17.9	7.9	21.0	16.7	21.1	4.6	17.1	100.9		714.1
68	Eau	11.9	5.6	2.9	4.6	4.4	1.9	0.7	1.2	0.4	0.4	1.1	6.8	2.1	5.0	6.5		2.4	17.6		75.5
69	Bâtiment et Travaux Publics		11.6	9.2	9.7	5.5	10.6	5.2	0.8	2.6	1.9	0.6	33.6	13.9	7.3	8.9	6.8	17.6	8.0		153.9
72	Commerce																				0.0
76	Transport & Télécommunication	14.8	103.0	82.8	105.7	56.3	253.9	75.3	37.1	379.0	18.2	13.0	278.2	836.9	812.3	249.3	92.8	316.4	219.6		3 944.8
79	Hôtelerie et Restauration		0.5	0.8	2.3	0.7	2.8	0.8	0.5	0.4	0.1	0.1	2.8	2.4	4.5	13.0	1.0	3.6	11.2		47.4
82	Services financiers & d'assurance	20.3	54.2	27.5	59.9	88.7	63.4	22.4	4.3	23.6	7.7	2.7	33.6	48.7	82.8	13.3	83.0	27.4	6.2	1117.5	1 787.4
85	Autres services marchands	29.8	88.3	48.3	75.5	46.7	86.2	82.5	18.5	66.3	16.6	13.6	367.8	68.7	600.0	92.7	90.1	162.7	163.0		2 117.4
94	Services non marchands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
99	Tourisme et autres séjours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
	Total des Entrées Intermédiaires	1273.9	5783.7	1377.6	4236.5	2416.7	4043.4	1684.5	139.4	1907.7	713.5	78.6	3900.3	1271.2	2483.0	1572.6	333.1	882.4	1512.8	1117.5	36 728.6
	Rémunération des salariés	655.1	674.1	352.6	612.2	342.0	1369.1	382.7	143.1	91.6	200.3	106.4	721.5	911.7	1056.3	783.3	593.7	497.5	5479.2	0.0	14 972.5
	Impôts et taxes indirectes nets de subventions	-15.9	741.5	89.9	216.5	34.2	109.3	71.8	0.8	218.4	101.6	25.8	29.2	132.4	133.0	118.6	145.4	201.4	13.3	0.0	2 367.2
	Excédent Brut d'Exploitation	3 886.7	617.9	383.4	883.6	376.0	531.1	483.5	94.3	2 055.8	239.2	67.3	1 607.1	3 042.7	3 354.2	1 541.3	826.9	3 154.0		-1 117.5	22 027.4
	Valeur Ajoutée	4 525.9	2 033.5	825.9	1 712.3	752.2	2 009.5	938.0	238.2	2 365.8	541.1	199.5	2 357.8	4 086.8	4 543.5	2 443.2	1 566.0	3 852.9	5 492.5	-1 117.5	39 367.1
	Production	5 799.8	7 817.2	2 203.5	5 948.8	3 168.9	6 052.9	2 622.5	377.7	4 273.5	1 254.7	278.2	6 258.1	5 358.1	7 026.6	4 015.8	1 899.1	4 735.3	7 005.1		76 095.7

Consommation finale

	PRODUITS / SECTEURS	Mén.	APU.	Total	FBCF	Var. Stocks	Export.
00	Produits agricoles & pêche	2 941.1	0.0	2 941.1	21.9	168.5	433.9
10	Produits de l'industrie agro-alimentaire	5 972.7	0.0	5 972.7		- 119.7	1 452.3
20	Mat. de Construction Céramique et Verre	146.7	0.0	146.7		0.0	274.4
30	Machines & Matériel Mécanique et Electrique	3 038.1	0.0	3 038.1	3 120.2	- 100.2	4 064.9
40	Produits chimiques	1 149.7	0.0	1 149.7	3.6	- 1.7	1 496.6
50	Textile, Hab.& cuir	2 038.2	0.0	2 038.2	0.0	- 22.7	5 191.0
60	Prod.des Indust Manufact.Diverses	1 503.2	0.0	1 503.2	131.6	0.0	611.7
65	Minerais et minéraux	2.4	0.0	2.4		- 14.5	58.1
66	Pétrole et gaz	896.3	0.0	896.3		222.1	2 020.1
67	Electricité	436.1	0.0	436.1			
68	Eau	128.3	0.0	128.3			
69	Bâtiment et Travaux Publics	266.1	0.0	266.1	6 290.9	28.5	
72	Commerce		0.0	0.0			
76	Transport & Télécommunication	2 211.7	0.0	2 211.7		0.0	1 663.2
79	Hôtelerie et Restauration	4 015.8	0.0	4 015.8		0.0	0.0
82	Services financiers & d'assurance	144.4	0.0	144.4		0.0	92.7
85	Autres services marchands	3 412.6	0.0	3 412.6	119.0	0.0	578.7
94	Services non marchands	277.5	6 176.7	6 454.2	0.0	0.0	0.0
99	Tourisme et autres séjours	-2 560.9	0.0	-2 560.9	0.0	0.0	3 068.7
	Total	26 019.8	6 176.7	32 196.6	9 687.2	160.4	21 006.3

CALCUL DU PRODUIT INTERIEUR BRUT

Somme des Valeurs Ajoutées	39 367.1
Droits et Taxes sur importations	1 755.7
P.I.B. aux prix du marché	41 122.8

Source: Input-output Table for Tunisian Economy in 2006, INS Tunisia

Table DI1-14 Inverse Matrix Table for Tunisian Economy in 2006

Aux prix courants (Toutes Taxes Comprises)

(Données exprimées en millions de Dinars)

		00	10	20	30	40	50	60	65	66	67	68	69	72	76	79	82	85	94	99	Total
00	Produits agricoles & pêche	1.087	0.449	0.002	0.001	0.010	0.016	0.021	0.010	0.000	0.000	0.001	0.002	0.011	0.002	0.122	0.001	0.001	0.024	0.000	1.761
10	Produits de l'industrie agro-alimentaire	0.101	1.225	0.003	0.001	0.013	0.013	0.004	0.002	0.001	0.000	0.001	0.002	0.027	0.004	0.211	0.000	0.001	0.018	0.000	1.626
20	Mat. de Construction Céramique et Verre	0.000	0.002	1.264	0.009	0.006	0.002	0.007	0.003	0.001	0.004	0.021	0.256	0.001	0.001	0.007	0.002	0.003	0.006	0.000	1.598
30	Machines & Matériel Mécanique et Electrique	0.000	0.002	0.003	1.026	0.002	0.001	0.004	0.002	0.004	0.004	0.001	0.011	0.000	0.002	0.001	0.000	0.001	0.003	0.000	1.065
40	Produits chimiques	0.018	0.029	0.042	0.028	1.291	0.023	0.103	0.013	0.007	0.005	0.021	0.020	0.004	0.006	0.011	0.006	0.017	0.009	0.000	1.652
50	Textile, Hab.& cuir	0.000	0.001	0.001	0.000	0.002	1.170	0.010	0.002	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.001	0.000	1.190
60	Prod.des Indust Manufact.Diverses	0.005	0.044	0.024	0.015	0.015	0.037	1.221	0.024	0.002	0.003	0.008	0.039	0.014	0.005	0.014	0.014	0.006	0.010	0.000	1.501
65	Minerais et minéraux	0.002	0.005	0.006	0.007	0.114	0.003	0.012	1.003	0.001	0.000	0.002	0.002	0.000	0.001	0.003	0.001	0.002	0.001	0.000	1.165
66	Pétrole et gaz	0.013	0.016	0.075	0.013	0.020	0.010	0.014	0.031	1.092	0.161	0.026	0.022	0.009	0.036	0.015	0.004	0.007	0.012	0.000	1.577
67	Electricité	0.003	0.011	0.094	0.015	0.036	0.012	0.021	0.055	0.009	1.003	0.067	0.022	0.005	0.004	0.009	0.003	0.005	0.016	0.000	1.391
68	Eau	0.002	0.002	0.002	0.001	0.002	0.001	0.001	0.003	0.000	0.000	1.004	0.002	0.001	0.001	0.002	0.000	0.001	0.003	0.000	1.027
69	Bâtiment et Travaux Publics	0.000	0.002	0.006	0.002	0.003	0.002	0.003	0.003	0.001	0.002	0.003	1.007	0.003	0.002	0.003	0.004	0.004	0.001	0.000	1.051
72	Commerce	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
76	Transport & Télécommunication	0.007	0.023	0.061	0.023	0.041	0.054	0.044	0.107	0.098	0.031	0.056	0.063	0.159	1.125	0.070	0.055	0.071	0.036	0.000	2.124
79	Hôtelerie et Restauration	0.000	0.000	0.001	0.000	0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.001	0.001	0.001	1.003	0.001	0.001	0.002	0.000	1.014
82	Services financiers & d'assurance	0.005	0.012	0.019	0.012	0.038	0.014	0.014	0.014	0.007	0.008	0.012	0.011	0.011	0.014	0.007	1.044	0.007	0.002	0.000	1.251
85	Autres services marchands	0.008	0.020	0.036	0.016	0.030	0.023	0.043	0.058	0.024	0.018	0.053	0.068	0.026	0.091	0.032	0.052	1.039	0.026	0.000	1.664
94	Services non marchands	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
99	Tourisme et autres séjours	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
	Total	1.253	1.842	1.637	1.170	1.625	1.381	1.524	1.332	1.248	1.240	1.276	1.527	1.273	1.295	1.509	1.186	1.168	1.171	1.000	

Source: Calculated by the Study Team based on Input-output Table for Tunisian Economy in 2006, INS Tunisia

Table DI1-15 Calculation of Economic Internal Rate of Return (zone D1: 2011 start)

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte. Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2011		2,466			2,466				-2,466
2012		4,100			4,100				-4,100
2013		14,023	33		14,056				-14,056
2014		24,041	103		24,144				-24,144
2015		23,057	223		23,280				-23,280
2016		18,275	338		18,613				-18,613
2017	1		578		578	17,337	3,228	20,565	19,987
2018	2		578		578	18,117	3,374	21,491	20,913
2019	3		578		578	18,932	3,525	22,458	21,880
2020	4		578	113	691	19,784	3,684	23,468	22,778
2021	5		578		578	20,675	3,850	24,525	23,947
2022	6		578		578	21,295	3,965	25,260	24,682
2023	7		578		578	21,934	4,084	26,018	25,440
2024	8		578		578	22,592	4,207	26,799	26,221
2025	9		578	113	691	23,269	4,333	27,603	26,912
2026	10		578		578	23,968	4,463	28,431	27,853
2027	11		578		578	24,687	4,597	29,284	28,706
2028	12		578		578	25,427	4,735	30,162	29,584
2029	13		578		578	26,190	4,877	31,067	30,489
2030	14		578	113	691	26,976	5,023	31,999	31,308
2031	15		578		578	27,785	5,174	32,959	32,381
2032	16		578		578	28,619	5,329	33,948	33,370
2033	17		578		578	29,477	5,489	34,966	34,388
2034	18		578		578	30,361	5,654	36,015	35,437
2035	19		578	113	691	31,272	5,823	37,096	36,405
2036	20		578		578	32,210	5,998	38,208	37,630
2037	21		578		578	33,177	6,178	39,355	38,777
2038	22		578		578	34,172	6,363	40,535	39,957
2039	23		578		578	35,197	6,554	41,751	41,173
2040	24		578	113	691	36,253	6,751	43,004	42,313
2041	25		578		578	37,341	6,953	44,294	43,716
2042	26		578		578	38,461	7,162	45,623	45,045
2043	27		578		578	39,615	7,377	46,992	46,414
2044	28		578		578	40,803	7,598	48,401	47,823
2045	29		578	113	691	42,027	7,826	49,853	49,162
2046	30		578		578	43,288	8,061	51,349	50,771
2047	31		578		578	44,587	8,303	52,889	52,311
2048	32		578		578	45,924	8,552	54,476	53,898
2049	33		578		578	47,302	8,808	56,110	55,532
2050	34		578	113	691	48,721	9,073	57,794	57,103
2051	35		578		578	50,183	9,345	59,527	58,950
2052	36		578		578	51,688	9,625	61,313	60,735
2053	37		578		578	53,239	9,914	63,153	62,575
2054	38		578		578	54,836	10,211	65,047	64,469
2055	39		578	113	691	56,481	10,518	66,999	66,308
2056	40		578		578	58,176	10,833	69,009	68,431
2057	41		578		578	59,921	11,158	71,079	70,501
2058	42		578		578	61,718	11,493	73,211	72,633
2059	43		578		578	63,570	11,838	75,408	74,830
2060	44		578	113	691	65,477	12,193	77,670	76,979
2061	45		578		578	67,441	12,558	80,000	79,422
2062	46		578		578	69,465	12,935	82,400	81,822
2063	47		578		578	71,549	13,323	84,872	84,294
2064	48		578		578	73,695	13,723	87,418	86,840
2065	49		578	113	691	75,906	14,135	90,041	89,350
2066	50		578		578	78,183	14,559	92,742	92,164

EIRR= 20.3%

Table DI1-16 Calculation of Economic Internal Rate of Return (zone D2: 2011 Start)

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte. Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2011		7,248			7,248				-7,248
2012		7,702			7,702				-7,702
2013		14,781	75		14,856				-14,856
2014		21,692	149		21,840				-21,840
2015		24,295	257		24,552				-24,552
2016		19,001	379		19,380				-19,380
2017		7,576	474		8,049				-8,049
2018	1		647		647	63,364	12,682	76,046	75,399
2019	2		647		647	66,215	13,253	79,468	78,821
2020	3		647		647	69,195	13,849	83,044	82,397
2021	4		647		647	72,309	14,472	86,781	86,134
2022	5		647	103	750	74,478	14,906	89,384	88,634
2023	6		647		647	76,712	15,354	92,066	91,419
2024	7		647		647	79,013	15,814	94,828	94,181
2025	8		647		647	81,384	16,289	97,673	97,026
2026	9		647		647	83,825	16,777	100,603	99,956
2027	10		647	103	750	86,340	17,281	103,621	102,870
2028	11		647		647	88,930	17,799	106,729	106,082
2029	12		647		647	91,598	18,333	109,931	109,284
2030	13		647		647	94,346	18,883	113,229	112,582
2031	14		647		647	97,177	19,449	116,626	115,979
2032	15		647	103	750	100,092	20,033	120,125	119,375
2033	16		647		647	103,095	20,634	123,729	123,082
2034	17		647		647	106,188	21,253	127,440	126,794
2035	18		647		647	109,373	21,891	131,264	130,617
2036	19		647		647	112,654	22,547	135,202	134,555
2037	20		647	103	750	116,034	23,224	139,258	138,507
2038	21		647		647	119,515	23,920	143,435	142,788
2039	22		647		647	123,100	24,638	147,738	147,091
2040	23		647		647	126,793	25,377	152,171	151,524
2041	24		647		647	130,597	26,138	156,736	156,089
2042	25		647	103	750	134,515	26,923	161,438	160,687
2043	26		647		647	138,551	27,730	166,281	165,634
2044	27		647		647	142,707	28,562	171,269	170,622
2045	28		647		647	146,988	29,419	176,407	175,760
2046	29		647		647	151,398	30,302	181,700	181,053
2047	30		647	103	750	155,940	31,211	187,151	186,400
2048	31		647		647	160,618	32,147	192,765	192,118
2049	32		647		647	165,437	33,111	198,548	197,901
2050	33		647		647	170,400	34,105	204,505	203,858
2051	34		647		647	175,512	35,128	210,640	209,993
2052	35		647	103	750	180,777	36,182	216,959	216,209
2053	36		647		647	186,200	37,267	223,468	222,821
2054	37		647		647	191,786	38,385	230,172	229,525
2055	38		647		647	197,540	39,537	237,077	236,430
2056	39		647		647	203,466	40,723	244,189	243,542
2057	40		647	103	750	209,570	41,945	251,515	250,764
2058	41		647		647	215,857	43,203	259,060	258,413
2059	42		647		647	222,333	44,499	266,832	266,185
2060	43		647		647	229,003	45,834	274,837	274,190
2061	44		647		647	235,873	47,209	283,082	282,435
2062	45		647	103	750	242,949	48,625	291,575	290,824
2063	46		647		647	250,238	50,084	300,322	299,675
2064	47		647		647	257,745	51,587	309,332	308,685
2065	48		647		647	265,477	53,134	318,611	317,964
2066	49		647		647	273,442	54,728	328,170	327,523
2067	50		647	103	750	281,645	56,370	338,015	337,265
								EIRR=	33.7%

Table DI1-17 Calculation of Economic Internal Rate of Return (zone U1+M: 2011 Start)

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte. Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2008		309			309				-309
2009		1,160			1,160				-1,160
2010		2,016	7		2,023				-2,023
2011		3,323	17		3,340				-3,340
2012		15,331	34		15,365				-15,365
2013		21,422	111		21,533				-21,533
2014		12,920	218		13,138				-13,138
2015		5,395	282		5,678				-5,678
2016	1		321		321	4,825	669	5,493	5,172
2017	2		321		321	5,042	699	5,741	5,420
2018	3		321		321	5,269	730	5,999	5,678
2019	4		321		321	5,506	763	6,269	5,948
2020	5		321	9	330	5,754	797	6,551	6,221
2021	6		321		321	6,012	833	6,846	6,525
2022	7		321		321	6,193	858	7,051	6,730
2023	8		321		321	6,379	884	7,263	6,942
2024	9		321		321	6,570	910	7,481	7,160
2025	10		321	9	330	6,767	938	7,705	7,375
2026	11		321		321	6,970	966	7,936	7,615
2027	12		321		321	7,179	995	8,174	7,853
2028	13		321		321	7,395	1,025	8,419	8,098
2029	14		321		321	7,616	1,056	8,672	8,351
2030	15		321	9	330	7,845	1,087	8,932	8,602
2031	16		321		321	8,080	1,120	9,200	8,879
2032	17		321		321	8,323	1,153	9,476	9,155
2033	18		321		321	8,572	1,188	9,760	9,439
2034	19		321		321	8,830	1,224	10,053	9,732
2035	20		321	9	330	9,094	1,260	10,355	10,025
2036	21		321		321	9,367	1,298	10,665	10,344
2037	22		321		321	9,648	1,337	10,985	10,664
2038	23		321		321	9,938	1,377	11,315	10,994
2039	24		321		321	10,236	1,419	11,654	11,333
2040	25		321	9	330	10,543	1,461	12,004	11,674
2041	26		321		321	10,859	1,505	12,364	12,043
2042	27		321		321	11,185	1,550	12,735	12,414
2043	28		321		321	11,521	1,597	13,117	12,796
2044	29		321		321	11,866	1,644	13,511	13,190
2045	30		321	9	330	12,222	1,694	13,916	13,586
2046	31		321		321	12,589	1,745	14,333	14,012
2047	32		321		321	12,966	1,797	14,763	14,442
2048	33		321		321	13,355	1,851	15,206	14,885
2049	34		321		321	13,756	1,906	15,663	15,342
2050	35		321	9	330	14,169	1,964	16,132	15,803
2051	36		321		321	14,594	2,022	16,616	16,295
2052	37		321		321	15,032	2,083	17,115	16,794
2053	38		321		321	15,483	2,146	17,628	17,307
2054	39		321		321	15,947	2,210	18,157	17,836
2055	40		321	9	330	16,426	2,276	18,702	18,372
2056	41		321		321	16,918	2,345	19,263	18,942
2057	42		321		321	17,426	2,415	19,841	19,520
2058	43		321		321	17,949	2,487	20,436	20,115
2059	44		321		321	18,487	2,562	21,049	20,728
2060	45		321	9	330	19,042	2,639	21,681	21,351
2061	46		321		321	19,613	2,718	22,331	22,010
2062	47		321		321	20,201	2,800	23,001	22,680
2063	48		321		321	20,807	2,884	23,691	23,370
2064	49		321		321	21,432	2,970	24,402	24,081
2065	50		321	9	330	22,075	3,059	25,134	24,804

EIRR= 9.96%

Table DI1-18 Calculation of Economic Internal Rate of Return (zone U2: 2011 Start)

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte. Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2008		206			206				-206
2009		1,774			1,774				-1,774
2010		2,343	10		2,353				-2,353
2011		3,823	22		3,845				-3,845
2012		9,710	41		9,751				-9,751
2013		19,321	89		19,410				-19,410
2014		26,524	186		26,709				-26,709
2015		32,076	319		32,394				-32,394
2016		27,411	479		27,890	8,155	1,017	9,172	-18,718
2017		25,716	616		26,332	8,522	1,062	9,584	-16,748
2018		5,651	745		6,396	8,905	1,110	10,016	3,620
2019	1	5,381	773		6,153	17,104	2,439	19,542	13,389
2020	2	3,628	800		4,428	17,873	2,548	20,422	15,994
2021	3		1,057		1,057	18,678	2,663	21,341	20,284
2022	4		1,057		1,057	19,238	2,743	21,981	20,924
2023	5		1,057	182	1,239	19,815	2,825	22,640	21,401
2024	6		1,057		1,057	20,409	2,910	23,319	22,263
2025	7		1,057		1,057	21,022	2,997	24,019	22,962
2026	8		1,057		1,057	21,652	3,087	24,740	23,683
2027	9		1,057		1,057	22,302	3,180	25,482	24,425
2028	10		1,057	182	1,239	22,971	3,275	26,246	25,007
2029	11		1,057		1,057	23,660	3,373	27,034	25,977
2030	12		1,057		1,057	24,370	3,475	27,845	26,788
2031	13		1,057		1,057	25,101	3,579	28,680	27,623
2032	14		1,057		1,057	25,854	3,686	29,540	28,483
2033	15		1,057	182	1,239	26,630	3,797	30,427	29,187
2034	16		1,057		1,057	27,429	3,911	31,339	30,282
2035	17		1,057		1,057	28,251	4,028	32,279	31,223
2036	18		1,057		1,057	29,099	4,149	33,248	32,191
2037	19		1,057		1,057	29,972	4,273	34,245	33,188
2038	20		1,057	182	1,239	30,871	4,402	35,273	34,034
2039	21		1,057		1,057	31,797	4,534	36,331	35,274
2040	22		1,057		1,057	32,751	4,670	37,421	36,364
2041	23		1,057		1,057	33,734	4,810	38,543	37,487
2042	24		1,057		1,057	34,746	4,954	39,700	38,643
2043	25		1,057	182	1,239	35,788	5,103	40,891	39,652
2044	26		1,057		1,057	36,862	5,256	42,117	41,061
2045	27		1,057		1,057	37,968	5,413	43,381	42,324
2046	28		1,057		1,057	39,107	5,576	44,682	43,626
2047	29		1,057		1,057	40,280	5,743	46,023	44,966
2048	30		1,057	182	1,239	41,488	5,915	47,404	46,164
2049	31		1,057		1,057	42,733	6,093	48,826	47,769
2050	32		1,057		1,057	44,015	6,276	50,290	49,234
2051	33		1,057		1,057	45,335	6,464	51,799	50,742
2052	34		1,057		1,057	46,695	6,658	53,353	52,296
2053	35		1,057	182	1,239	48,096	6,857	54,954	53,715
2054	36		1,057		1,057	49,539	7,063	56,602	55,545
2055	37		1,057		1,057	51,025	7,275	58,300	57,244
2056	38		1,057		1,057	52,556	7,493	60,049	58,993
2057	39		1,057		1,057	54,133	7,718	61,851	60,794
2058	40		1,057	182	1,239	55,757	7,950	63,706	62,467
2059	41		1,057		1,057	57,429	8,188	65,618	64,561
2060	42		1,057		1,057	59,152	8,434	67,586	66,529
2061	43		1,057		1,057	60,927	8,687	69,614	68,557
2062	44		1,057		1,057	62,755	8,947	71,702	70,645
2063	45		1,057	182	1,239	64,637	9,216	73,853	72,614
2064	46		1,057		1,057	66,576	9,492	76,069	75,012
2065	47		1,057		1,057	68,574	9,777	78,351	77,294
2066	48		1,057		1,057	70,631	10,070	80,701	79,644
2067	49		1,057		1,057	72,750	10,373	83,122	82,066
2068	50		1,057	182	1,239	74,932	10,684	85,616	84,377

EIRR= 12.12%

Table DI1-19 Calculation of Economic Internal Rate of Return (Whole Project) (Unit: 1,000 TND)

	Cost					Benefit					Net
	D1	D2	U1+M	U2	Total	D1	D2	U1+M	U2	Total	Benefit
2008			309	206	516						-516
2009			1,160	1,774	2,935						-2,935
2010			2,033	2,353	4,386						-4,386
2011	1,239	7,248	2,020	2,359	12,866						-12,866
2012	801	7,702	7,117	5,387	21,007						-21,007
2013	835	14,856	8,721	6,476	30,888						-30,888
2014	14	21,840	8,181	5,449	35,484						-35,484
2015	14	24,552	5,568	7,655	37,789						-37,789
2016	14	19,380	173	5,491	25,058			4,211	9,172	13,383	-11,675
2017	14	8,049	173	9,507	17,744			4,401	9,584	13,985	-3,758
2018	14	647	173	10,237	11,072		76,046	4,599	10,016	90,660	79,589
2019	14	647	173	18,565	19,399		79,468	4,806	10,466	94,740	75,341
2020	14	647	173	25,167	26,001		83,044	5,022	10,937	99,003	73,002
2021	14	647	173	25,036	25,870		86,781	5,248	11,430	103,458	77,589
2022	14	750	173	22,695	23,632		89,384	5,406	11,772	106,562	82,930
2023	1,242	647	173	18,607	20,669		92,066	5,568	12,126	109,759	89,090
2024	3,320	647	173	1,057	5,196		94,828	5,735	23,319	123,882	118,685
2025	13,235	647	173	1,057	15,111		97,673	5,907	24,019	127,598	112,487
2026	24,144	647	173	1,057	26,020		100,603	6,084	24,740	131,426	105,406
2027	23,280	750	1,510	1,057	26,598		103,621	6,266	25,482	135,369	108,771
2028	18,613	647	8,498	1,239	28,997		106,729	6,454	26,246	139,430	110,433
2029	578	647	13,092	1,057	15,374	31,067	109,931	6,648	27,034	174,680	159,306
2030	578	647	5,182	1,057	7,464	31,999	113,229	6,848	27,845	179,920	172,457
2031	578	647	321	1,057	2,603	32,959	116,626	9,200	28,680	187,465	184,862
2032	578	750	321	1,057	2,706	33,948	120,125	9,476	29,540	193,089	190,383
2033	691	647	321	1,239	2,898	34,966	123,729	9,760	30,427	198,882	195,984
2034	578	647	321	1,057	2,603	36,015	127,440	10,053	31,339	204,848	202,245
2035	578	647	330	1,057	2,612	37,096	131,264	10,355	32,279	210,993	208,382
2036	578	647	321	1,057	2,603	38,208	135,202	10,665	33,248	217,323	214,721
2037	578	750	321	1,057	2,706	39,355	139,258	10,985	34,245	223,843	221,137
2038	691	647	321	1,239	2,898	40,535	143,435	11,315	35,273	230,558	227,660
2039	578	647	321	1,057	2,603	41,751	147,738	11,654	36,331	237,475	234,872
2040	578	647	330	1,057	2,612	43,004	152,171	12,004	37,421	244,599	241,988
2041	578	647	321	1,057	2,603	44,294	156,736	12,364	38,543	251,937	249,335
2042	578	750	321	1,057	2,706	45,623	161,438	12,735	39,700	259,495	256,789
2043	691	647	321	1,239	2,898	46,992	166,281	13,117	40,891	267,280	264,382
2044	578	647	321	1,057	2,603	48,401	171,269	13,511	42,117	275,299	272,696
2045	578	647	330	1,057	2,612	49,853	176,407	13,916	43,381	283,558	280,946
2046	578	647	321	1,057	2,603	51,349	181,700	14,333	44,682	292,064	289,462
2047	578	750	321	1,057	2,706	52,889	187,151	14,763	46,023	300,826	298,120
2048	691	647	321	1,239	2,898	54,476	192,765	15,206	47,404	309,851	306,953
2049	578	647	321	1,057	2,603	56,110	198,548	15,663	48,826	319,147	316,544
2050	578	647	330	1,057	2,612	57,794	204,505	16,132	50,290	328,721	326,109
2051	578	647	321	1,057	2,603	59,527	210,640	16,616	51,799	338,583	335,980
2052	578	750	321	1,057	2,706	61,313	216,959	17,115	53,353	348,740	346,034
2053	691	647	321	1,239	2,898	63,153	223,468	17,628	54,954	359,202	356,304
2054	578	647	321	1,057	2,603	65,047	230,172	18,157	56,602	369,978	367,376
2055	578	647	330	1,057	2,612	66,999	237,077	18,702	58,300	381,078	378,466
2056	578	647	321	1,057	2,603	69,009	244,189	19,263	60,049	392,510	389,907
2057	578	750	321	1,057	2,706	71,079	251,515	19,841	61,851	404,285	401,579
2058	691	647	321	1,239	2,898	73,211	259,060	20,436	63,706	416,414	413,516
2059	578	647	321	1,057	2,603	75,408	266,832	21,049	65,618	428,906	426,304
2060	578	647	330	1,057	2,612	77,670	274,837	21,681	67,586	441,774	439,162
2061	578	647	321	1,057	2,603	80,000	283,082	22,331	69,614	455,027	452,424
2062	578	750	321	1,057	2,706	82,400	291,575	23,001	71,702	468,678	465,971
2063	691	647	321	1,239	2,898	84,872	300,322	23,691	73,853	482,738	479,840
2064	578	647	321	1,057	2,603	87,418	309,332	24,402	76,069	497,220	494,617
2065	578	647	330	1,057	2,612	90,041	318,611	25,134	78,351	512,137	509,525
2066	578	647	321	1,057	2,603	92,742	328,170	25,888	80,701	527,501	524,898
2067	578	750	321	1,057	2,706	95,524	338,015	26,664	83,122	543,326	540,620
2068	691		321	1,239	2,251	98,390		27,464	85,616	211,470	209,219
2069	578		321	1,057	1,956	101,342		28,288	88,184	217,814	215,859
2070	578		330	1,057	1,965	104,382		29,137	90,830	224,349	222,384
2071	578		321	1,057	1,956	107,513		30,011	93,555	231,079	229,123
2072	578		321	1,057	1,956	110,739		30,911	96,362	238,012	236,056
2073	691		321	1,239	2,251	114,061		31,839	99,252	245,152	242,901
2074	578		321		899	117,483		32,794		150,276	149,378
2075	578		330		908	121,007		33,778		154,785	153,877
2076	578		321		899	124,637		34,791		159,428	158,529
2077	578		321		899	128,376		35,835		164,211	163,312
2078	691		321		1,012	132,228		36,910		169,137	168,126
2079			321		321			38,017		38,017	37,696
2080			330		330			39,158		39,158	38,828
										EIRR=	25.0%

Table DI1-20 Cash Flow of Economic Internal Rate of Return **Zone D1** (Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte. Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2011		1,239			1,239				-1,239
2012		801			801				-801
2013		825	10		835				-835
2014		0	14		14				-14
2015		0	14		14				-14
2016		0	14		14				-14
2017		0	14		14				-14
2018		0	14		14				-14
2019		0	14		14				-14
2020		0	14		14				-14
2021		0	14		14				-14
2022		0	14		14				-14
2023		1,227	14		1,242				-1,242
2024		3,299	20		3,320				-3,320
2025		13,198	37		13,235				-13,235
2026		24,041	103		24,144				-24,144
2027		23,057	223		23,280				-23,280
2028		18,275	338		18,613				-18,613
2029	1		578		578	26,190	4,877	31,067	30,489
2030	2		578		578	26,976	5,023	31,999	31,421
2031	3		578		578	27,785	5,174	32,959	32,381
2032	4		578		578	28,619	5,329	33,948	33,370
2033	5		578	113	691	29,477	5,489	34,966	34,275
2034	6		578		578	30,361	5,654	36,015	35,437
2035	7		578		578	31,272	5,823	37,096	36,518
2036	8		578		578	32,210	5,998	38,208	37,630
2037	9		578		578	33,177	6,178	39,355	38,777
2038	10		578	113	691	34,172	6,363	40,535	39,844
2039	11		578		578	35,197	6,554	41,751	41,173
2040	12		578		578	36,253	6,751	43,004	42,426
2041	13		578		578	37,341	6,953	44,294	43,716
2042	14		578		578	38,461	7,162	45,623	45,045
2043	15		578	113	691	39,615	7,377	46,992	46,301
2044	16		578		578	40,803	7,598	48,401	47,823
2045	17		578		578	42,027	7,826	49,853	49,275
2046	18		578		578	43,288	8,061	51,349	50,771
2047	19		578		578	44,587	8,303	52,889	52,311
2048	20		578	113	691	45,924	8,552	54,476	53,785
2049	21		578		578	47,302	8,808	56,110	55,532
2050	22		578		578	48,721	9,073	57,794	57,216
2051	23		578		578	50,183	9,345	59,527	58,950
2052	24		578		578	51,688	9,625	61,313	60,735
2053	25		578	113	691	53,239	9,914	63,153	62,462
2054	26		578		578	54,836	10,211	65,047	64,469
2055	27		578		578	56,481	10,518	66,999	66,421
2056	28		578		578	58,176	10,833	69,009	68,431
2057	29		578		578	59,921	11,158	71,079	70,501
2058	30		578	113	691	61,718	11,493	73,211	72,520
2059	31		578		578	63,570	11,838	75,408	74,830
2060	32		578		578	65,477	12,193	77,670	77,092
2061	33		578		578	67,441	12,558	80,000	79,422
2062	34		578		578	69,465	12,935	82,400	81,822
2063	35		578	113	691	71,549	13,323	84,872	84,181
2064	36		578		578	73,695	13,723	87,418	86,840
2065	37		578		578	75,906	14,135	90,041	89,463
2066	38		578		578	78,183	14,559	92,742	92,164
2067	39		578		578	80,529	14,995	95,524	94,946
2068	40		578	113	691	82,944	15,445	98,390	97,699
2069	41		578		578	85,433	15,909	101,342	100,764
2070	42		578		578	87,996	16,386	104,382	103,804
2071	43		578		578	90,636	16,878	107,513	106,935
2072	44		578		578	93,355	17,384	110,739	110,161
2073	45		578	113	691	96,155	17,905	114,061	113,370
2074	46		578		578	99,040	18,443	117,483	116,905
2075	47		578		578	102,011	18,996	121,007	120,429
2076	48		578		578	105,072	19,566	124,637	124,059
2077	49		578		578	108,224	20,153	128,376	127,798
2078	50		578	113	691	111,470	20,757	132,228	131,537

EIRR= 20.5%

Table DI1-21 Calculation of Economic Internal Rate of Return (zone D2)

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte. Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2011		7,248			7,248				-7,248
2012		7,702			7,702				-7,702
2013		14,781	75		14,856				-14,856
2014		21,692	149		21,840				-21,840
2015		24,295	257		24,552				-24,552
2016		19,001	379		19,380				-19,380
2017		7,576	474		8,049				-8,049
2018	1		647		647	63,364	12,682	76,046	75,399
2019	2		647		647	66,215	13,253	79,468	78,821
2020	3		647		647	69,195	13,849	83,044	82,397
2021	4		647		647	72,309	14,472	86,781	86,134
2022	5		647	103	750	74,478	14,906	89,384	88,634
2023	6		647		647	76,712	15,354	92,066	91,419
2024	7		647		647	79,013	15,814	94,828	94,181
2025	8		647		647	81,384	16,289	97,673	97,026
2026	9		647		647	83,825	16,777	100,603	99,956
2027	10		647	103	750	86,340	17,281	103,621	102,870
2028	11		647		647	88,930	17,799	106,729	106,082
2029	12		647		647	91,598	18,333	109,931	109,284
2030	13		647		647	94,346	18,883	113,229	112,582
2031	14		647		647	97,177	19,449	116,626	115,979
2032	15		647	103	750	100,092	20,033	120,125	119,375
2033	16		647		647	103,095	20,634	123,729	123,082
2034	17		647		647	106,188	21,253	127,440	126,794
2035	18		647		647	109,373	21,891	131,264	130,617
2036	19		647		647	112,654	22,547	135,202	134,555
2037	20		647	103	750	116,034	23,224	139,258	138,507
2038	21		647		647	119,515	23,920	143,435	142,788
2039	22		647		647	123,100	24,638	147,738	147,091
2040	23		647		647	126,793	25,377	152,171	151,524
2041	24		647		647	130,597	26,138	156,736	156,089
2042	25		647	103	750	134,515	26,923	161,438	160,687
2043	26		647		647	138,551	27,730	166,281	165,634
2044	27		647		647	142,707	28,562	171,269	170,622
2045	28		647		647	146,988	29,419	176,407	175,760
2046	29		647		647	151,398	30,302	181,700	181,053
2047	30		647	103	750	155,940	31,211	187,151	186,400
2048	31		647		647	160,618	32,147	192,765	192,118
2049	32		647		647	165,437	33,111	198,548	197,901
2050	33		647		647	170,400	34,105	204,505	203,858
2051	34		647		647	175,512	35,128	210,640	209,993
2052	35		647	103	750	180,777	36,182	216,959	216,209
2053	36		647		647	186,200	37,267	223,468	222,821
2054	37		647		647	191,786	38,385	230,172	229,525
2055	38		647		647	197,540	39,537	237,077	236,430
2056	39		647		647	203,466	40,723	244,189	243,542
2057	40		647	103	750	209,570	41,945	251,515	250,764
2058	41		647		647	215,857	43,203	259,060	258,413
2059	42		647		647	222,333	44,499	266,832	266,185
2060	43		647		647	229,003	45,834	274,837	274,190
2061	44		647		647	235,873	47,209	283,082	282,435
2062	45		647	103	750	242,949	48,625	291,575	290,824
2063	46		647		647	250,238	50,084	300,322	299,675
2064	47		647		647	257,745	51,587	309,332	308,685
2065	48		647		647	265,477	53,134	318,611	317,964
2066	49		647		647	273,442	54,728	328,170	327,523
2067	50		647	103	750	281,645	56,370	338,015	337,265
								EIRR=	33.7%

Table DI1-22 Cash Flow of Economic Internal Rate of Return (Zone U1+M)

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte.Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2008		309			309				-309
2009		1,160			1,160				-1,160
2010		2,016	17		2,033				-2,033
2011		1,992	27		2,020				-2,020
2012		7,054	63		7,117				-7,117
2013		8,615	106		8,721				-8,721
2014		8,035	146		8,181				-8,181
2015		5,395	173		5,568				-5,568
2016			173		173	3,795	416	4,211	4,038
2017			173		173	3,966	435	4,401	4,228
2018			173		173	4,144	455	4,599	4,426
2019			173		173	4,331	475	4,806	4,633
2020			173		173	4,525	497	5,022	4,849
2021			173		173	4,729	519	5,248	5,075
2022			173		173	4,871	535	5,406	5,233
2023			173		173	5,017	551	5,568	5,395
2024			173		173	5,168	567	5,735	5,562
2025			173		173	5,323	584	5,907	5,734
2026			173		173	5,482	602	6,084	5,911
2027		1,330	180		1,510	5,647	620	6,266	4,757
2028		8,277	221		8,498	5,816	638	6,454	-2,044
2029		12,807	285		13,092	5,991	657	6,648	-6,444
2030		4,885	297		5,182	6,170	677	6,848	1,666
2031	1		321		321	8,080	1,120	9,200	8,879
2032	2		321		321	8,323	1,153	9,476	9,155
2033	3		321		321	8,572	1,188	9,760	9,439
2034	4		321		321	8,830	1,224	10,053	9,732
2035	5		321	9	330	9,094	1,260	10,355	10,025
2036	6		321		321	9,367	1,298	10,665	10,344
2037	7		321		321	9,648	1,337	10,985	10,664
2038	8		321		321	9,938	1,377	11,315	10,994
2039	9		321		321	10,236	1,419	11,654	11,333
2040	10		321	9	330	10,543	1,461	12,004	11,674
2041	11		321		321	10,859	1,505	12,364	12,043
2042	12		321		321	11,185	1,550	12,735	12,414
2043	13		321		321	11,521	1,597	13,117	12,796
2044	14		321		321	11,866	1,644	13,511	13,190
2045	15		321	9	330	12,222	1,694	13,916	13,586
2046	16		321		321	12,589	1,745	14,333	14,012
2047	17		321		321	12,966	1,797	14,763	14,442
2048	18		321		321	13,355	1,851	15,206	14,885
2049	19		321		321	13,756	1,906	15,663	15,342
2050	20		321	9	330	14,169	1,964	16,132	15,803
2051	21		321		321	14,594	2,022	16,616	16,295
2052	22		321		321	15,032	2,083	17,115	16,794
2053	23		321		321	15,483	2,146	17,628	17,307
2054	24		321		321	15,947	2,210	18,157	17,836
2055	25		321	9	330	16,426	2,276	18,702	18,372
2056	26		321		321	16,918	2,345	19,263	18,942
2057	27		321		321	17,426	2,415	19,841	19,520
2058	28		321		321	17,949	2,487	20,436	20,115
2059	29		321		321	18,487	2,562	21,049	20,728
2060	30		321	9	330	19,042	2,639	21,681	21,351
2061	31		321		321	19,613	2,718	22,331	22,010
2062	32		321		321	20,201	2,800	23,001	22,680
2063	33		321		321	20,807	2,884	23,691	23,370
2064	34		321		321	21,432	2,970	24,402	24,081
2065	35		321	9	330	22,075	3,059	25,134	24,804
2066	36		321		321	22,737	3,151	25,888	25,567
2067	37		321		321	23,419	3,245	26,664	26,343
2068	38		321		321	24,121	3,343	27,464	27,143
2069	39		321		321	24,845	3,443	28,288	27,967
2070	40		321	9	330	25,590	3,546	29,137	28,807
2071	41		321		321	26,358	3,653	30,011	29,690
2072	42		321		321	27,149	3,762	30,911	30,590
2073	43		321		321	27,963	3,875	31,839	31,518
2074	44		321		321	28,802	3,992	32,794	32,473
2075	45		321	9	330	29,666	4,111	33,778	33,448
2076	46		321		321	30,556	4,235	34,791	34,470
2077	47		321		321	31,473	4,362	35,835	35,514
2078	48		321		321	32,417	4,492	36,910	36,589
2079	49		321		321	33,390	4,627	38,017	37,696
2080	50		321	9	330	34,391	4,766	39,158	38,828

EIRR= 12.11%

Table DI1-23: Cash Flow of Economic Internal Rate of Return Zone U2

(Unit: 1,000 TND)

		Capital Cost	Routine O&M Cost	Periodic Mainte.Cost	Total Cost	Direct Benefits	In-direct Benefits	Total Benefit	Net Benefit
2008		206			206				-206
2009		1,774			1,774				-1,774
2010		2,343	10		2,353				-2,353
2011		2,337	22		2,359				-2,359
2012		5,354	33		5,387				-5,387
2013		6,416	60		6,476				-6,476
2014		5,356	92		5,449				-5,449
2015		7,536	119		7,655				-7,655
2016		5,334	157		5,491	8,155	1,017	9,172	3,681
2017		9,324	183		9,507	8,522	1,062	9,584	77
2018		10,007	230		10,237	8,905	1,110	10,016	-222
2019		18,285	280		18,565	9,306	1,160	10,466	-8,098
2020		24,795	371		25,167	9,725	1,212	10,937	-14,229
2021		24,540	495		25,036	10,163	1,267	11,430	-13,606
2022		22,077	618		22,695	10,468	1,305	11,772	-10,922
2023		17,879	728		18,607	10,782	1,344	12,126	-6,481
2024	1		1,057		1,057	20,409	2,910	23,319	22,263
2025	2		1,057		1,057	21,022	2,997	24,019	22,962
2026	3		1,057		1,057	21,652	3,087	24,740	23,683
2027	4		1,057		1,057	22,302	3,180	25,482	24,425
2028	5		1,057	182	1,239	22,971	3,275	26,246	25,007
2029	6		1,057		1,057	23,660	3,373	27,034	25,977
2030	7		1,057		1,057	24,370	3,475	27,845	26,788
2031	8		1,057		1,057	25,101	3,579	28,680	27,623
2032	9		1,057		1,057	25,854	3,686	29,540	28,483
2033	10		1,057	182	1,239	26,630	3,797	30,427	29,187
2034	11		1,057		1,057	27,429	3,911	31,339	30,282
2035	12		1,057		1,057	28,251	4,028	32,279	31,223
2036	13		1,057		1,057	29,099	4,149	33,248	32,191
2037	14		1,057		1,057	29,972	4,273	34,245	33,188
2038	15		1,057	182	1,239	30,871	4,402	35,273	34,034
2039	16		1,057		1,057	31,797	4,534	36,331	35,274
2040	17		1,057		1,057	32,751	4,670	37,421	36,364
2041	18		1,057		1,057	33,734	4,810	38,543	37,487
2042	19		1,057		1,057	34,746	4,954	39,700	38,643
2043	20		1,057	182	1,239	35,788	5,103	40,891	39,652
2044	21		1,057		1,057	36,862	5,256	42,117	41,061
2045	22		1,057		1,057	37,968	5,413	43,381	42,324
2046	23		1,057		1,057	39,107	5,576	44,682	43,626
2047	24		1,057		1,057	40,280	5,743	46,023	44,966
2048	25		1,057	182	1,239	41,488	5,915	47,404	46,164
2049	26		1,057		1,057	42,733	6,093	48,826	47,769
2050	27		1,057		1,057	44,015	6,276	50,290	49,234
2051	28		1,057		1,057	45,335	6,464	51,799	50,742
2052	29		1,057		1,057	46,695	6,658	53,353	52,296
2053	30		1,057	182	1,239	48,096	6,857	54,954	53,715
2054	31		1,057		1,057	49,539	7,063	56,602	55,545
2055	32		1,057		1,057	51,025	7,275	58,300	57,244
2056	33		1,057		1,057	52,556	7,493	60,049	58,993
2057	34		1,057		1,057	54,133	7,718	61,851	60,794
2058	35		1,057	182	1,239	55,757	7,950	63,706	62,467
2059	36		1,057		1,057	57,429	8,188	65,618	64,561
2060	37		1,057		1,057	59,152	8,434	67,586	66,529
2061	38		1,057		1,057	60,927	8,687	69,614	68,557
2062	39		1,057		1,057	62,755	8,947	71,702	70,645
2063	40		1,057	182	1,239	64,637	9,216	73,853	72,614
2064	41		1,057		1,057	66,576	9,492	76,069	75,012
2065	42		1,057		1,057	68,574	9,777	78,351	77,294
2066	43		1,057		1,057	70,631	10,070	80,701	79,644
2067	44		1,057		1,057	72,750	10,373	83,122	82,066
2068	45		1,057	182	1,239	74,932	10,684	85,616	84,377
2069	46		1,057		1,057	77,180	11,004	88,184	87,128
2070	47		1,057		1,057	79,496	11,334	90,830	89,773
2071	48		1,057		1,057	81,881	11,674	93,555	92,498
2072	49		1,057		1,057	84,337	12,025	96,362	95,305
2073	50		1,057	182	1,239	86,867	12,385	99,252	98,013

EIRR= 14.6%

Data J

ENVIRONMENTAL AND SOCIAL CONSIDERATION

DATA J1

Terms and Conditions procedure fixing the environmental measures that the owner or the petitioner of a project of installation of channels of transport or transfer of water must respect

Article 1: This Terms and Conditions procedure fixes the environmental measures that the owner or the petitioner of a project of installation of channels of transport or transfer of water must respect.

Article 2: This Terms and Conditions procedure includes eighteen (18) articles and four (04) pages. It must be signed and legalized by the owner or the petitioner.

Article 3: The owner or the petitioner must respect the legislative texts and regulations in vigor and in particular:

- The law n°88-91 enacted in August 2nd, 1988 creating the National Agency for Protection of the Environmental and as modified by the law 92-115 of November 30th, 1992 and the law 93-1 20 of December 27th, 1993.
- The decree n°2005 - 1991 of July 11th, 2005 relating to the study of environmental impact assessment and fixing the categories of the units or projects subjected to the study of environmental impact assessment and the categories of the units or projects subjected to the Terms and Conditions procedure.

Article 4: The owner or the petitioner must respect the vocation of the area where the project is being implemented, the plans of installation and the standards in force.

Article 5: The project must be implemented in an authorized area, outside of the areas under a legal protection and in particular natural or sensible areas, and its implementation should not cause any degradation to the environment.

Article 6: The owner or the petitioner must choose suitable techniques which guarantee the safeguard of the environment.

Article 7: The rejection of waste water in the natural environment is prohibited.

Article 8: The owner or the petitioner must take all the necessary measures to evacuate rain water, to avoid their stagnation and to ensure their management so as to preserve the environment.

Article 9: The owner or the petitioner must collect waste and ensure their setting in authorized discharge.

Article 10: The incineration of waste in the open air is prohibited.

Article 11: The owner or the petitioner must sprinkle with water the site of work and isolate it, in order to avoid the emissions of dust.

Article 12: The owner or the petitioner must carry out the maintenance of the equipment and the material used for the realization of the project and undertake the change of oils at specialized locations, if necessary; it is however possible to change oils on the site provided that these are collected in containers reserved for this purpose, which are put indoor and readily accessible to the vehicles collecting them that shall deliver the wastes to the authorized people managing them, in accordance with the legislation and regulations in force.

Article 13: The owner or the petitioner commits themselves taking the necessary measures to limit the noise in order not to cause inconveniences to the residents during the period of work.

Article 14: The owner or the petitioner is held responsible to exert a continuous monitoring and to conform to the legislation, regulation, and standards in force and to what is mentioned in this Terms and Conditions procedure.

Article 15: The owner or the petitioner is held responsible to notify the National Agency for Protection of the Environment prior to any modification in the declared data.

Article 16: The experts of the National Agency for Protection of the Environment are charged to control the application of the provisions of this Terms and Conditions procedure.

Article 17: Any infringement with the provisions of this terms and Conditions procedure gives place to judicial proceedings and penalties envisaged by the legislation in force.

Article 18: This Terms and Conditions procedure can be withdrawn from the departments related to the MEDD, the National Agency for Protection of the Environment, the Official Journal of the Republic of Tunisia or from the Internet.

DATA J1

Data related to the owner or the petitioner

Natural person (1):

First name ....

Name .....

Date and birthplace ....
NID card:..... *Issued at*..... *On*.....

Profession:.....
Address: No.....*Street/Avenue*..... *Postal Code* .....

Commune..... *Delegation,* ..... *Governorate,* ....
Tel:.....*Fax* ..... *E-mail* .....

Moral person (2):

Name of company ....

Type of company ....

Activity ....

Head office N° ..... *Street/Avenue* ....
Commune ..... *Delegation* ..... *Governorate* .....
Tel: ..... *Fax* ..... *E-mail* .....

Legal representative:

First name .....

Name ....

Date and birthplace .....
NID card:..... *Issued at*..... *on* .....

Identification and specificities of the project (3):

Name of the project .....

Situation of the project ....

Source of water and its characteristics ....

Zone to be supplied with water ....

Discharge of water ..... *m3/hour* .....
Length of the Canal. - Total Length .....

- *Length of the underground canal* .....
- *Length of the surface canal*.....

DATA J1

Diameter of the canal ....

Typology of the canal ....

Number of reservoirs and their storage capacity ....

Number of the pumping stations ....

Duration of the work ....

Date for the starting of the work:..... .....

I, the undersigned ..... signatory of the present Terms and Conditions procedure, attest the exactitude of the data mentioned above.

At ..... On .....

Legalized signature

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(1) to join a photograph of the identity card

(2) to join a copy of the statute of the company published in J.O.R.T

(3) to join a plan of the site.

Source: Internet, MEDD site

Translated by the Study Team

DATAJ2 INDIVIDUAL COMMENTS, GROUPS' DISCUSSIONS IN FIRST STAKEHOLDERS' MEETINGS

(1) Individual Comments

Some of the main individual interventions are presented as follows:

1) At Bousalem

- A participant of Bousalem explained that during the floods of 2000, the damage was not important, because the floods occurred in the dry period (May), contrary to the floods of 2003, whose negative effects were very important.

  An alarm was given in the last hour. People were asked to leave their houses immediately, because the floods were already there. This created problems, because people fled in disorder and gave up their goods in the houses; certain criminals benefited from this situation of catastrophe to plunder the abandoned houses.

  The speaker wished that an alarm be given sufficiently in time so that people evacuate their houses in order. In addition, the people wish that information on the floods be transparent and controlled by qualified organizations to put an end to the rumour which disturbs the life of people.

  She considered that the psychological disturbances related to these rumours are considerable. The rumours which develop before the advent of a flood make people worried and ask questions to the local representatives in charge to obtain the right information on the potential floods, but they do not find good answers. They take themselves the responsibility to daily control the level of the River to prepare with a possible evacuation. This situation worries them and disturbs them psychologically.

  On the other hand, the speaker proposed that the release of water from the dams should be better studied and programmed and should not be cumulated with the effects of the floods.

- A participant of Bousalem explained that in fact the local administrations parcelled out and put on sale the plots bordering the River for construction, giving the example of the City El Khalij in Bousalem, which is known to be an agricultural area.
  In addition, certain regional organizations (API and APIA) grant licence of construction of factories and projects in the areas bordering the River.
  He considered that Civil Protection should play a part in flood control, but it intervenes in a late and slow way; it does not give any alarm to people before the advent of the floods.

- A participant of Ghardimaou explained that Algeria releases sometimes their dams' water at night, which causes sudden floods in Tunisia and wished that there would be certain coordination between Tunisia and Algeria to avoid these problems.
  He explained that the project of protection of Ghardimaou-City from the floods did not produce the expected effects.

- A participant of Jendouba explained that we should prohibit the plantation of trees in the riverbeds, under pretext of fixing the soil, because these trees block the flow of the river.

  He suggested attaching importance to the development and rehabilitation of rural roads, which are in bad condition, to avoid the enclosure in the event of flood, which is an opinion widely expressed in the interview survey.

- A participant of Bousalem suggested a greater vigilance on the dams and a better planning of their evacuation.

2) At Testour

- A participant of Mejez El Bab suggested the creation of a bypass channel of Medjerda River at Mejez El Bab-City to distribute the water flow and to decrease the risks of flood on the City.

- A participant of Slouguia explained that the floods of 1973 were among the most important floods in Tunisia, but their effect was very short. On the other hand, the floods of 2003 had very negative effects, because the Sidi Salem Dam was built at around 1980 without taking into account the interests of the inhabitants in the downstream low lands who suffered the effects of the dam water release.

  Recent floods last much longer than previous floods, and this is due to the release of large quantities of water from the dams.

  The compensations granted to the inhabitants of the downstream low areas were very modest.

  The release of dams' water is carried out to detriment of the cultivated lands which suffer consecutive damage.

  He suggested a better coordination and a better planning of the dams' water release.

- A participant of Mejez El Bab explained that people await urgent measures, such as the cleaning of the Mejerda River, because the period of the study can be long and they are likely to still suffer damage because of the floods which can happen.

  He estimated that the Siliana River will cause damage to Mejez El Bab and desired that levee be built for reducing the negative effects of this River.

- A participant of Grich El Oued suggested constructing a bypass channel of the Mejerda River to control the maximum discharge during the floods.
  He considered that the cleaning of the River is not effective, because the torn off trees are abandoned on the bed of the River.

- A participant of Slouguia estimated that the Mejerda River invades the cultivated lands and suggested correcting its route.

- A participant of the locality Sidi Ismaïl explained that the sedimentation and wild trees developed in a considerable way, which created conditions favourable with the appearance of the wild boars which destroy the crops.

- A participant of Slouguia also required correcting the route of the River to avoid its sinuosity which invades the cultivated lands.

- A participant of the locality of Mastouta recommended to solve the urgent problems, such as the cleaning of the bed of the River and possibly its widening.
  He also considered that the dam creates a micro wet climate which is at the origin of the allergies which assail the population.

3) At Sidi Thabet

Almost the same views as in Testour are recorded. These are few others:

- A participant of Utique estimated that the principal cause of the floods is due to sedimentation in the rivers and in particular under the bridges.

  There are some side drains which supply the Mejerda water to Ras Jebel-City. These drains are badly conceived and block the water run-off in period of flood and cause a water reversal on the cultivated lands in the zone of Tobias.

- A participant of Utique Nouvelle considered that the Mejerda River is historical and that it constitutes an inexhaustible source of water for agriculture; unfortunately it undergoes acts of vandalism on behalf of egoistic farmers who divert his water with their profit or which builds bridges of passage towards their property without authorization and respect of the standards. It would be necessary to promulgate laws which prohibit introducing the least modification on the course of the river for personal reasons. In addition, it would be necessary to ensure a regular preventive maintenance of the river and to regard it as closed area.

- A participant of Jedaida presented several remarks, mainly:

  He considered that there are contributions more important than the financial contribution, such as mobilization of machines to clean the trees and to remove the sediments.

  He also confirmed that the authorities authorized the construction of houses in the flood prone areas, such as in certain areas of Jedaida or Sidi Hassine (surroundings of Tunis).

  He considered that in the systems of education, there is usually a module on natural disasters, including floods; however, in Tunisia, there is not this kind of module in the school system. Hence, he suggested introducing such module.

(2) Groups' Contributions

The summary of the groups' discussions and major conclusions are presented as follows:

1) The floods are the source of disorder and psychological concerns; during each flood, rumours develop due to the lack of adequate organizations and credible information especially from those in charge of informing the population in the advent of floods.

No alarm come in time, but often in the last minute. Thus, the evacuation is carried out in an anarchistic way; people flee and leave their properties and their goods with plundering and degradation.

The evacuation of people is not planned and is carried out in catastrophe.

2) It would be necessary to have an optimal level of coordination between the various administrations to avoid disordered and counter-productive measures, such as the authorizations delivered by the local administration to build in low lands or the authorizations given by the economic organizations, such the API or the APIA to build factories or projects in flooded areas, or even the plantation of trees in riverbeds by the departments concerned with the Ministry of Agriculture.

3) People are not sufficiently informed on the management of the dams and are consequently inclined to bring severe judgements on their management; the false rumours and information and tendentious interpretations lead them to think that the dams are the source of their problems; they think that the release of dam water is responsible for the damages inflicted to their agricultural activities through the accumulation of the sediments and mud and the stagnation of released water for long periods of time.

   According to them, the dams are responsible for amplification of the phenomenon of floods.

4) Better information and sensitization of the residents of the Mejerda River basin would solve many problems and would create a climate of confidence between the population and the administration.

   Within the same framework, the participants wish a high level of coordination between all the dams of the Basin of Mejerda to plan water release correctly and to avoid cumulating the water release with strong rains so as not to amplify the phenomenon of floods;

   They wish rehabilitation or replacement of old dams, because the populations which live near these dams live in the concern, amplified by the rumour of the collapse of these dams.

5) Civil Protection plays a tiny part; it gives no alarm and is not sufficiently equipped to intervene effectively during of floods; its role seems to be limited to the urban areas and the participation in the evacuation of disaster victims.

   Participants estimate that it is the population which supervises the water level in the river and inform the neighbours in the event of perceptible change. This situation is disturbing because the population is not sufficiently qualified to detect the dangers; false rumours and contradictory information are propagated which accentuates concerns of the population.
   It is necessary to correctly define the role and the prerogatives of Civil Protection during floods

6) The regular maintenance of the rivers (clearing, cleaning, pulling up of the trees and the wild plantations), the improvement of riverbed are regarded as measures of first need to undertake before the end of the study. People wish that these measures be applied carefully to be effective.

7) The anarchistic or non-authorized use of the Mejerda River water would be at the origin of the amplification of the phenomenon of the floods: diversion of the course of the river at personal ends, construction of individual bridges of passage, etc
   It is recommended to promulgate severe regulation which would prohibit any illicit use of

water of the river and to declare the Mejerda River closed area.

8) Certain measures having been taken by the qualified services of the Administration are not understood by the population, such as the diversion of the course of the Mejerda River between Ghar El Meleh and Kalaat Landalous.

   Follow-up measures, such as information and public sensitization campaigns would be necessary at the time of major decisions to establish confidence between the Administration and the population.

9) The degree of acceptance of the risks of flood is very weak. The fear of the return of floods is dominant.

   According to the participants, the negative impact of floods should not be evaluated only on the material losses, but it would also be necessary to take into account the psychological disturbances which precede and follow the floods. Family instability, the instability of the production, the loss of sources of income or their degradation are all alarming subjects which affect the moral of the population.

10) The level of individual engagement in flood protection activities is rather low, the participants reflect the dominant ideas among the population according to which the Government is almost the single entity in charge, which is to face the damage of floods, whereas the citizen assumes only one little share of responsibility, which dos not exceed 10%, because the Administration authorizes the construction of houses and buildings in low lands and does not take necessary measures to forbid people who divert the river in their own interest.

    However, most of the participants denounced the anarchistic behaviours of people who build anarchically in flood prone areas, destroy the levees which protect from floods and throw the waste into the rivers.

11) The participants are unanimous to preserve the historic monuments and to find friendly solutions which do not put in danger the historical inheritance of Tunisia.

DATA J3 COMMENTS, SUGGESTIONS AND PROPOSALS IN SECOND STAKEHOLDERS' MEETINGS

(1) Comments

After the JICA Study Team presented the conceivable river improvement works (see **Table J3.3.1**), which have been envisaged in the Study as some of the structural measures for flood control of the Mejerda River, a variety of comments were made on the measures by the participants in the meetings and major comments are as enumerated below.

1) Bou Salem

- A participant from Bou Salem City wondered why some of the measures envisaged by the Study Team had not been applied earlier by the Government considering their urgency.
- Another participant said that the situation of Bou Salem differs from that of Jendouba City, considering there are several rivers draining into the Mejerda River between Jendouba and Bou Salem, such as the Bou Hertma, the Kasseb and the Mellegue Rivers, thus aggravating the Bou Salem situation and requiring that the diversion canal envisaged for Bou Salem be wider and deeper. The same speaker continued:
  - The drainage is to be underground as in some European cities.
  - More dams are to be built upstream of the Sidi Salem Dam to relieve that dam from the burden of flood control.
  - The Ministry of Agriculture should permit people to take sand from the bed of the Mejerda River without authorization, which will help to clean the riverbed.
- Another speaker said that the Study is very important and expressed the wish that it would be done effectively, because people are expecting good achievements from it with impatience. He explained that people are afraid of promises that are not kept, especially because other studies were prepared in the past without being executed.
- One lady speaker complained about the deplorable conditions she incurred from her relocation to a rural locality after the flood of 2003 and the modest compensation she received (600 DT instead of 7,000 DT).
- Another speaker emphasized the psychological repercussions, and social/economic consequences of the floods on the people. He wondered whether the measures envisaged by the Study are likely to protect the Bou Salem City from future floods. He expressed his concern that the dams near Bou Salem continue to threaten the city.

- One speaker of Ghardimaou City wondered why the Study did not provide for some measures to protect the city, especially for residents living along the Mejerda river, near the Ghardimaou Bridge, and whether the health effects on people would be really at a minimum.
- Another speaker explained that other similar studies had been conducted in the past, and similar proposals had been made, such as the bypass channel of the Mejerda River, but these studies have never been materialized. He did not want this Study to lead to the same. Furthermore, he asked to include in the Study the two rivers situated north of Bou Salem, namely the Boujarine and the Khoulene Rivers (the tributaries of the Bou Hertma River) and provide the improvement of their riverbeds to increase their flow capacities, preventing them from threatening the north side of Bou Salem.

2) Testour

- One speaker wondered why no action had been envisaged for Testour City and hoped that the Study would take necessary steps to protect that city.
- A second speaker wondered why the localities of Ouljet Slouguia near Testour and Slouguia had not been included in the areas covered by the measures considered in the Study.
- Another speaker wanted to understand how the dikes would be built and what kind of materials would be used. In addition, he asked about the locations of the spoil disposal areas of excavated materials and methods of compensation. He further stressed that residents and farmers should be adequately informed in advance before the commencement of the construction works.
- Another speaker explained that previous floods had destroyed private farmlands along the Mejerda River, and the topographical survey work currently performed by General Direction of Water Resources (DGRE, MARH) to delineate the public hydraulic domain has not taken account of this situation and have included private lands in the public hydraulic domain.
- One speaker wondered what would be the depth of the river after the river improvement and what would be the criteria for compensation, especially regarding private land compensation.
- Another speaker requested that the public be consulted as in the case of this meeting to negotiate land expropriation and provision of fair compensation for those who have lands along the Mejerda River.
- One speaker explained that the water released from the Sidi Salem Dam is detrimental to his land where the water stagnates for months, making the area uncultivable, and he needs compensation for the losses incurred due to the stagnation of the water from the Dam. He wanted to be given land equivalent to

his current land in other areas.

- Another speaker wondered where the livestock would get water, since the river improvement works will usually cause water pollution. Furthermore, he explained that some families have been using river water for their daily lives. He wanted to know what solutions are planned for these families and also for livestock breeders. He asked how the people could reach the river after 4m high dikes are built near their houses.
- One speaker explained that the flow of the Mejerda River during major previous floods had reached 2,000 m^3/s (1973) and the measures envisaged by the Study seem not to be enough for protecting against serious floods when the water depth exceeds 4 m. He proposed to change the bypass channel envisaged for Mejez El Bab to a retarding basin. He also pointed out that the envisaged structural measures would require periodic maintenance.
- One speaker suggested that there should be coordination between the Study and the topographic survey work being conducted by DGRE to delineate the public hydraulic domain. He wondered why DGRE did not adopt the same method as the Study, holding consultation meetings with the population.
- One speaker wondered whether the compensation following land expropriation would take place before or after the works. He was concerned because in the past, during the construction of the Sidi Salem Dam, he was entitled to compensation that has not been received so far.
- One speaker criticized local authorities who have not informed the people of this stakeholders' meeting, and was also critical of DGRE and the Office of Topography who had broken into his land without any consultation in advance. He strongly recommended government offices concerned to inform the people several days before they get into their private domain.
- One speaker complained of a lack of water in the Mejerda River during a dry season, depriving farmers of irrigation activities and suggested better management of dams so as to supply water during drought and to prevent inundation during heavy rains.
- One speaker suggested that the land acquisition required by the structural measures should consider compensating the affected people because he had a bad experience in the past, namely not having received the compensation he had been promised.

3) Sidi Thabet

- One speaker suggested the rehabilitation of the Mabtouh Bridge which has been poorly maintained for decades.
- One speaker thanked DGBGTH and the Study Team for the public consultation and felt that it was a good initiative and he hoped it would continue. He expressed his

concerns in relation to negative impacts during construction of the structural measures for farmers of Bach Hamba, Lezdine and Tobias, as there is a lot of farmlands irrigated by the Mejerda River (nearly 5,000 ha, including 1,800 ha in Bach Hamba locality); these lands are feared to be deprived of irrigation water during the construction works due to water pollution, especially because many farmers have been using localized irrigation as a drip or spray system.

- One speaker of Tebourba wondered why the Tebourba City was not included in the areas covered by the structural measures. He also suggested generalizing such a consultation meeting to all delegations and localities on the Mejerda River basin.
- Another speaker of Bach Hamba said that the water abstraction from the river generally experiences water turbidity at the time of heavy rains, forcing farmers to stop irrigation until the calm of the river. The problem seems to be most severe during the construction works because the water turbidity would force farmers to stop farming activities for a long period of time. He suggested the establishment of a pipeline system to transfer water from the Laroussia Dam to enable farmers to irrigate their lands and to avoid water turbidity during floods and the works.
- One speaker wondered if it was possible to divert the Mejerda River before Jedeida City. He also exposed the case of a railway bridge built at El Henna by SNCFT (Tunisia National Railway) in the city, which had blocked water during floods and returned it into residential areas.
- One speaker of Jedeida suggested that the public consultation be maintained between construction companies and the people during the execution of the works so as to improve the effectiveness of the works. In addition, he suggested the protection of the banks of the Mejerda River against erosion. He also hoped that solutions would be found for the drainage channels operated by ONAS which also are responsible for flooding at Hached City, Jraidia City and the City of the RTT (Radio).
- One speaker suggested building new dams to store flood water. He was against the construction of bypass channels because the function of bypass channel is limited in improving flow capacity.
- One speaker of Kalat Landalous questioned the status of agricultural land in Kalaat Landalous. According to him, the department concerned by the distribution of land (Agricultural Land Agency- AFA) was involved in the demarcation of land, but the Office of Topography (DGRE) entered their land to determine the limits of public hydraulic domain. He wondered why the various intervention agencies do not coordinate their activities and did not consult with the people before taking any action in their field. He expressed fears that the improvement of the upstream riverbed may increase the flow capacity and thus threaten the land located

downstream.

- One speaker of El Ghar Meleh noted that the construction of dams upstream of El Ghar Meleh would deprive it of the Mejerda water. He also drew attention to tributaries which have spilled over into farmland during floods.
- One speaker of Sidi Thabet asked why the village of Sidi Thabet was not included in the areas covered by the structural measures envisaged. He informed that the inhabitants of Sidi El Khaddar live near the river and are not protected by dikes. Furthermore, he drew attention to rivers from Jbel Ammar, pouring their waters in the Mejerda River. Currently, the CRDA of Ariana sets dikes to prevent these rivers from flooding homes and farmland; he wished more radical solutions.
- One speaker of the locality El Mabtouh suggested to drain flood plains in El Mabtouh that are under water, which would enable farmers to use the water for a long period of time.
- One speaker of Kalaat Landalous suggested the construction of a dam at Kalaat Landalous to store the water of the Mejerda River instead of letting it pour into the sea; the dam could supply the zone of Cap Bon. In addition, he suggested that the materials extracted from the river following the improvement works be used to strengthen the riverbanks and prevent bank erosion.

(2) Suggestions and Proposals through the survey

A questionnaire survey was also conducted in the meetings to allow the stakeholders to freely express their suggestions and additional proposals to enable the Study Team to take them into account. The suggestions and proposals are as compiled below:

1) Bousalem

- To complete the measures as soon as possible because they are strongly requested by the populations that want to live in security,
- To find a solution for El Khalij area, Bou Salem, which has become an estuary for a tributary and a garbage dumping site,
- To provide protections for the riverbank along Bou Salem City,
- To take into consideration the channel that exists in the middle of Bou Salem and find a solution because it leads to Kheireddine district, causing negative impacts on the drainage in its neighbourhoods,
- To include Ghardimaou in the areas covered by the structural measures, as well as Oued Mliz upstream of Jendouba, to clean up the whole riverbed and remove the sediment which has blocked river flow,
- To protect residents in the Ezzouhour area in Ghardimaou (near the main bridge) from the inundation of the Mejerda River during floods,
- To remove trees in the Mejerda River to improve the flow capacity,

- To coordinate with the Ministry of Equipment regarding the urban development plan of Bou Salem City to reflect new measures envisaged by the Study, and
- To study the design of bridges on the new bypass channel so as not to cause the isolation of some communities.

2) Testour

- To include the Testour area in the areas covered by the structural measures since it has been damaged by floods,
- To ensure fair compensation based on the irrigated farmland and land value,
- To minimize the duration of the construction works and affected farmland due to water pollution during the construction works,
- To include the Mastouta area in the areas covered by the measures taking into account the waterways from the mountains,
- To help farmers clean and remove the Mejerda River sediment,
- To ensure water supply to the Zeldou area near Testour and water for livestock,
- To improve the Mejerda River between the Sidi Salem Dam and Slouguia,
- To provide in the future more days of consultation and information so as to enable the people to better understand the measures especially at the time of execution of the works, and
- To coordinate with DGRE regarding the current survey that is delimitating the public hydraulic domain of the Mejerda River.

3) Sidi Thabet

- To protect riverbanks against erosion,
- To take into consideration the interests of families living along and near the Mejerda River in Sidi Thabet,
- To find solutions (alternative income) to the irrigation area in Mabtouh - Bach Hamba, where irrigated farming may be compelled to stop at the time of construction,
- To build dikes up to Kalâat Landalous (from the bridge where the pumping station is located to the river mouth) so as to protect Hessiane City (houses and farmland) and part of the irrigated area of Tobias,
- To take into account the interests of breeders of Kalâat Landalous who have been using the Mejerda River to supply water to their livestock,
- To create a dam upstream of El Battane and construct a bypass between El Battane and Mabtouh,
- To provide obstacles on riverbed to decrease flow velocity,
- To coordinate with ONAS to solve the problem of rainwater drainage in the city of

Radio (RTT) because the primary and the secondary schools there are the first to be submerged during floods,

- To prohibit constructions near the Mejerda River, especially in low lands,
- To provide a channel parallel to the Mejerda River because the irrigation area of Bach Hamba is equipped with a water saving system, such as drip and spray, and
- To drain the Mabtouh flood plains beneficial to agriculture and rehabilitate the Mabtouh bridge, currently nonfunctional for decades.