



The Urban Unit

Urban Sector Planning & Management Services Unit (Pvt.) Ltd.



Irrigation Regional Development Plan DG Khan- Division

The Urban Unit PVT LTD.

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1. Introduction

Dera Ghazi Khan, abbreviated as D.G. Khan, is a city located in the southwestern part of Punjab, Pakistan. It is the 19th most populous city in the country. Positioned west of the Indus River, it serves as the administrative headquarters of both the Dera Ghazi Khan District and Dera Ghazi Khan Division.

The city is named after Ghazi Khan, a Dodai chieftain and son of Haji Khan Mirani. It was established at the end of the 15th century when Baloch tribes were invited to settle in the region by Shah Husein, the second Langah Sultan. From the 16th to the 18th centuries, the Dera Ghazi Khan region was part of the Multan province under the Mughal Empire.

For fifteen generations, the Mirani family ruled the area until the 19th century. At the start of the 19th century, Zaman Khan governed Dera Ghazi Khan under Kabul's rule. In 1819, the Sikh Army from Multan, led by Khushal Singh, a general of Ranjit Singh, invaded the area, bringing it under Sikh control.

Dera Ghazi Khan is situated at 30°03' N latitude and 70°38' E longitude, nestled between the Indus River and the Koh-e-Suleman mountain range which separates it from the Baluchistan Province. It is bordered by Dera Ismail Khan to the north and Rajanpur to the south. The Indus River flows to the east across which lie the districts of Muzaffargarh and Layyah. To the west, the Loralai and Dera Bugti districts of Baluchistan Province are separated by the Koh-e-Suleman range.

The Dera Ghazi Khan Division spans an area of 38,780 square kilometers and includes the following districts:

- Dera Ghazi Khan
- Layyah
- Muzaffargarh
- Rajanpur

2. Climate

The city experiences a predominantly dry climate with minimal rainfall. Winters are mild and dry, while summers are extremely hot with average high temperatures reaching around 107°F (42°C). In winter, the average low temperature is about 40°F (4°C). The prevailing winds blow from north to south. The barren Koh-Suleman mountains and the sandy soil contribute to frequent windstorms in the summer. Summer temperatures in this region are among the highest in Pakistan. Fort Munro, situated at the edge of Punjab province, enjoys relatively cooler weather. High-altitude areas of Koh e Sulaiman occasionally experience scattered snowfall during the winter.

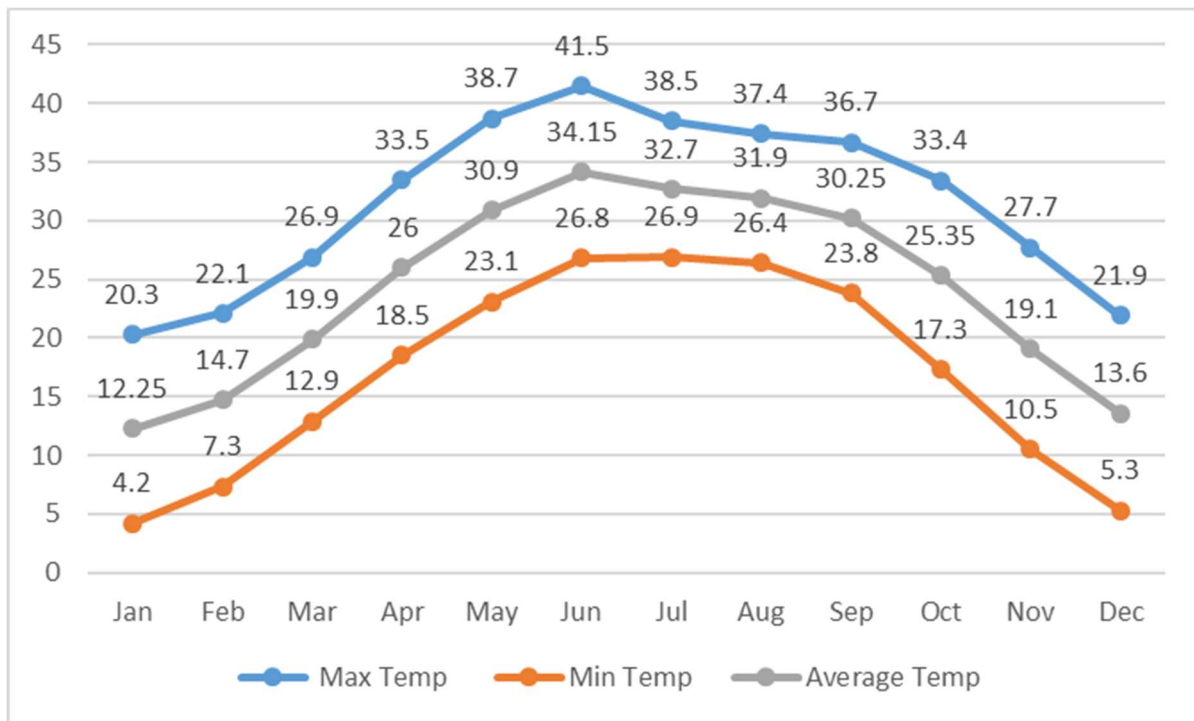


Figure 1: Historical Maximum, average and minimum temperatures in DG Khan region 1961 to 2023

3. Introduction of D G Khan Irrigation Zone

The D.G. Khan Irrigation Zone encompasses the districts of D.G. Khan, Rajanpur, and Muzaffargarh. It boasts fertile lands that contribute significantly to the country's Gross Domestic Product. This zone features an extensive irrigation network comprising 2,679.64 miles of canals, which irrigate a Cultivable Command Area of 2.084 million acres. The irrigation supplies for the zone are sourced from two barrages, the Chashma Barrage and the Taunsa Barrage. The D.G. Khan Irrigation Zone is organized into two Canal Circles and one Project Circle:

- Derajat Canal Circle, D.G. Khan
- Muzaffargarh Canal Circle, Multan
- Project Circle, D.G. Khan

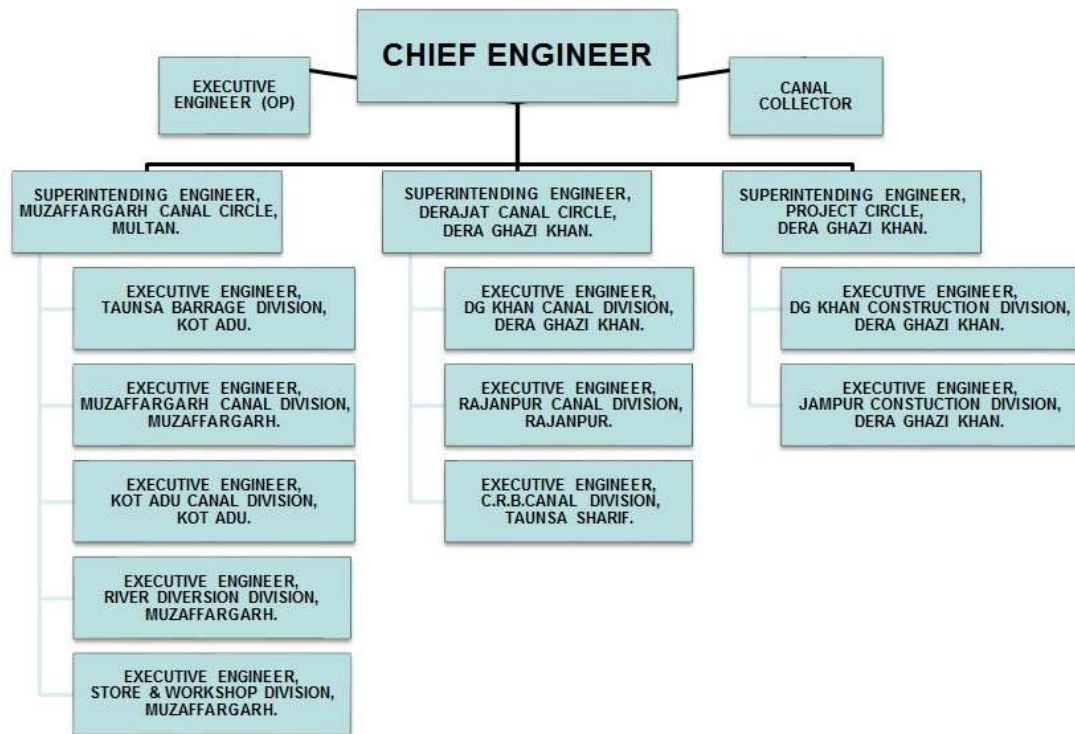


Figure 2: DG Khan Irrigation Department Organogram

3.1 Salient Features of D G Khan Irrigation Zone

No. of Barrages	1 No. (Taunsa Barrage)
Length of Main Canals	232 Miles
Length of Branch Canals	221 Miles
Length of Distributaries & Minors	2172 Miles
Inundation system	54.64 Miles
Total discharge demand. (Tarbela Command) D.G.Khan Canal (8953 Cs:) + Muzaffargarh Canal (8300 Cs:) + Rangpur Canal (1035 Cs:) + Chashma Right Bank Canal (1800 Cs:).	20088 Cs
Length of Drains	412 Miles
Total GCA	2.332 Million Acres
Total CCA	2.114 Million Acres
Total No. of outlets.	8197
No. of Hill Torrents (Major + Minor).	200 No.
No. of Major Hill Torrents.	13 No
Length of Flood Bunds & River Training Works.	
Along River Chenab	119.47 Miles
Along River Indus	496.55 Miles
River Training Works	161 No

Table 1: Salient Features of DG Khan Irrigation Zone

Irrigation Network Map of DG Khan Division

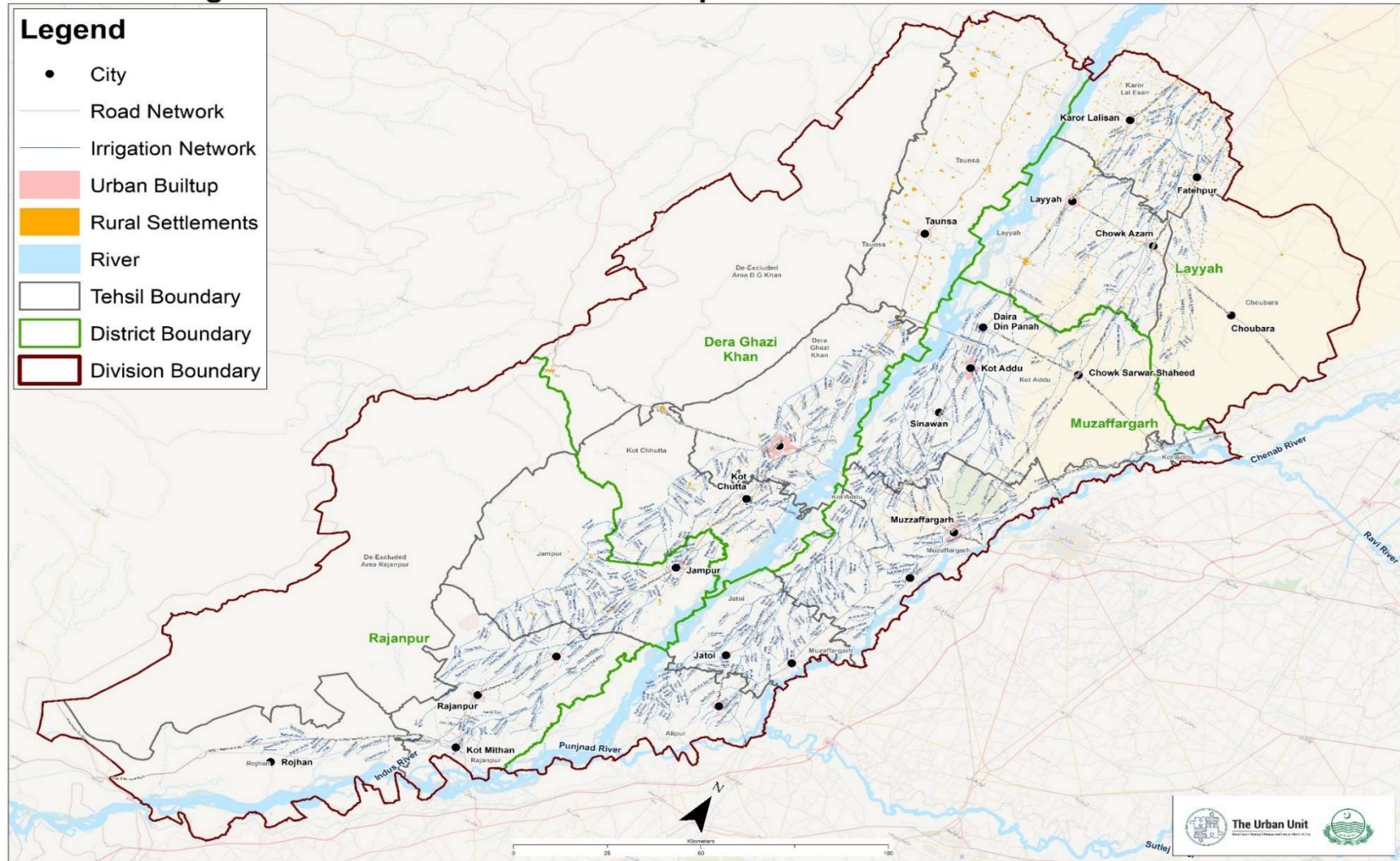


Figure 3: Irrigation Map of DG Khan division

3.2 Derajat Canal Circle, D.G.Khan

Derajat Canal Circle consists of 03 No. Canal Divisions namely as under

- D.G.Khan Canal Division. It operates and maintain D.G.Khan Canal and some portion of Dajal Branch System falls in District D.G.Khan. D.G.Khan Canal originated from Taunsa Barrage and cultivate the area of District D.G.Khan
- Rajanpur Canal Division. It operates and maintain Dajal Branch System falls in District Rajanpur. Dajal Branch off takes from D.G.Khan Canal and cultivate the area of District Rajanpur
- Chashma Right Bank Canal Division. It operates and maintain Chashma Right Bank Canal which cultivate the area of Tehsil Taunsa Sharif, District D.G.Khan. Chashma Right Bank Canal takes share from Chashma Barrage

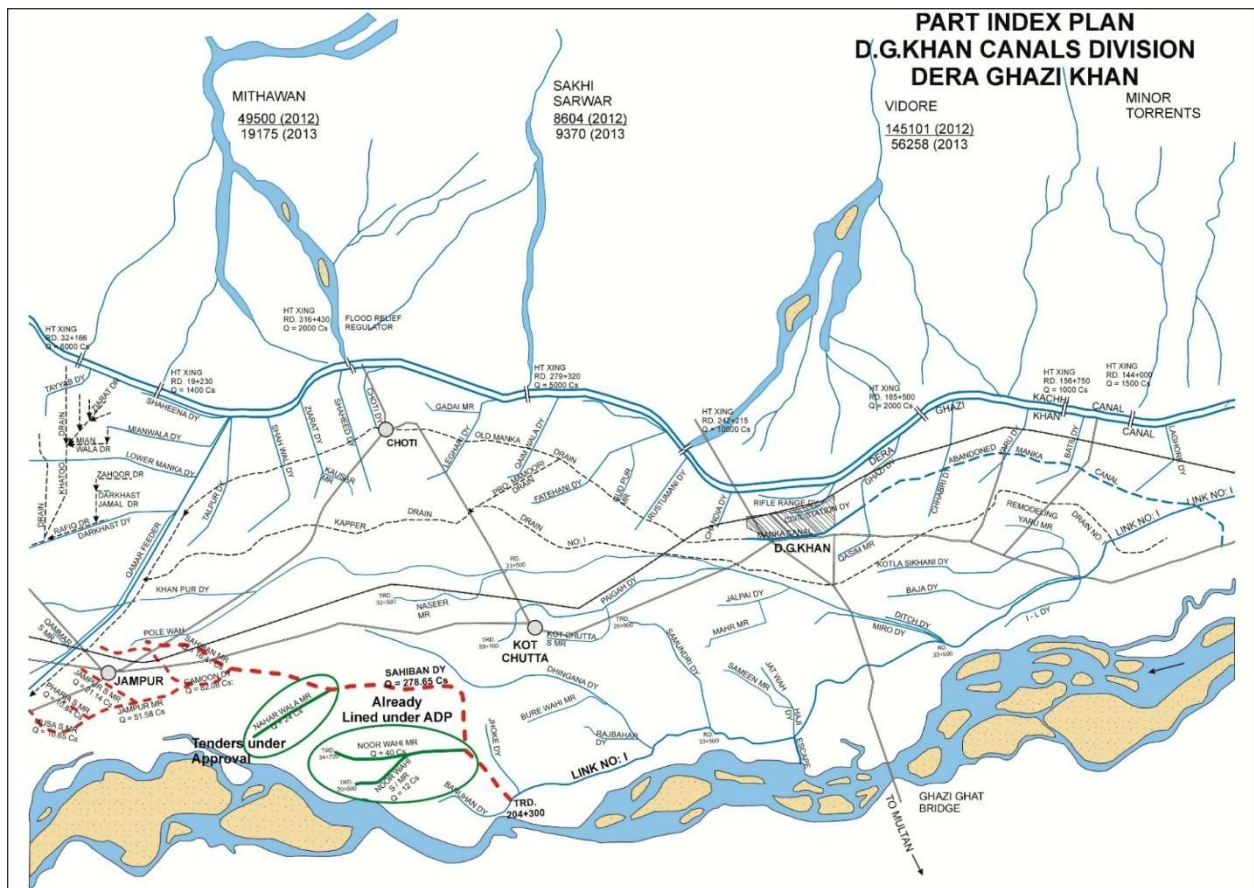


Figure 4: Index Plan DG Khan Canal Division

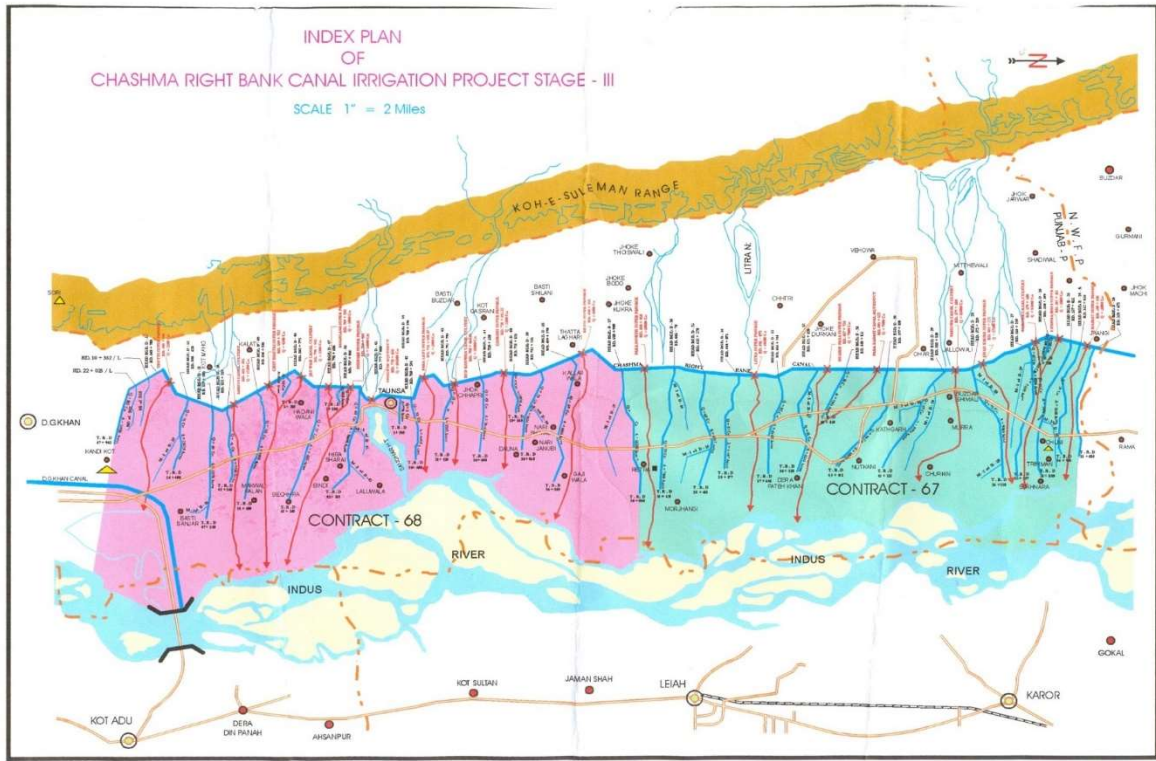


Figure 5: Index Plan CRBC Canal

3.3 Muzaffargarh Canal Circle,

Muzaffargarh Canal Circle consists of 05 No. Divisions namely as under

- Kot Adu Canal Division. It operates and maintain Muzaffargarh Canal System falls in District Kot Adu which cultivate the area of District Kot Adu
- Muzaffargarh Canal Division. It operates and maintain Muzaffargarh Canal and Rangpur Canal System falls in District Muzaffargarh. Muzaffargarh Canal originated from Taunsa Barrage and Rangpur Canal off takes from T.P Link and both the canals cultivate the area of District Muzaffargarh
- Taunsa Barrage Division. It operates and maintain Taunsa Barrage Headwork
- River Diversion Division. It operates and maintain the River Training Works (Flood Embankments & Spurs) along River Indus and also control the Drainage system
- Store and Work Shop Division. It operates and maintain the Tube Well System in District Muzaffargarh.

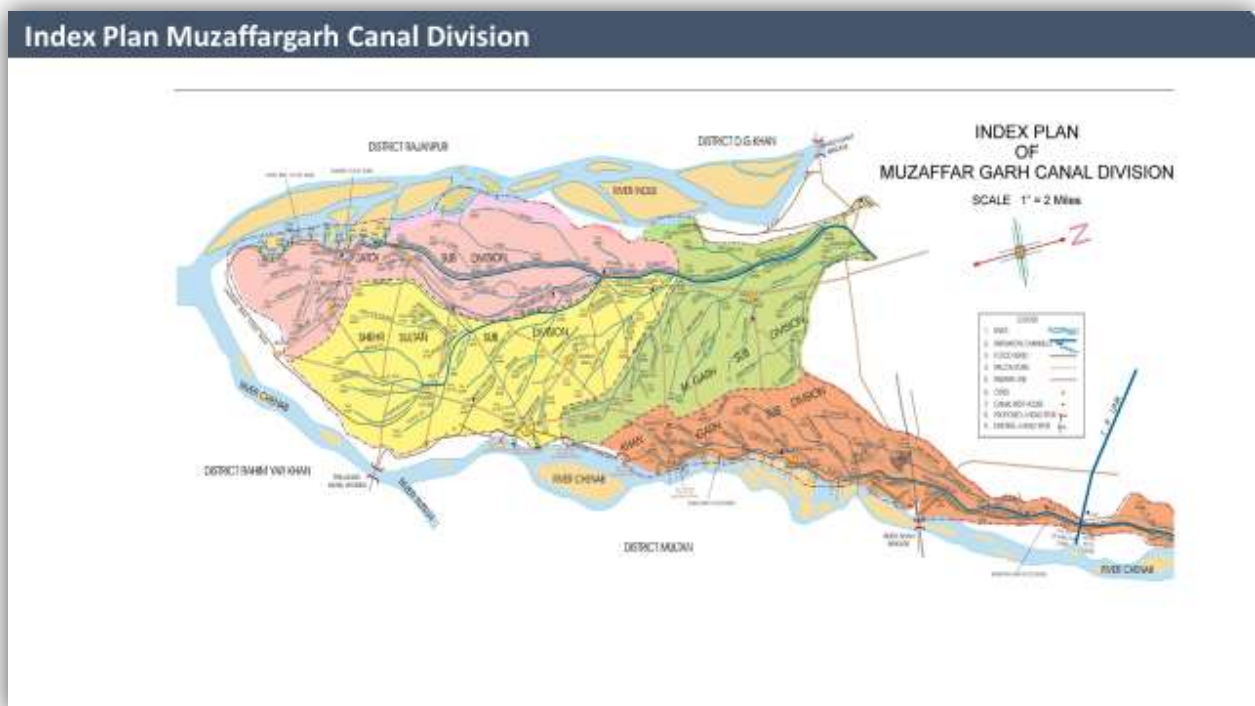


Figure 6: Index Plan Muzaffargarh Canal Division

3.4 Project Circle, D.G.Khan

Project Circle consists of 02 No. Divisions namely as under

- D.G.Khan Construction Division. It control the Hill Torrents and maintain River Training Works (Flood Embankments & Spurs) along River Indus and also control the Drainage system in District D.G.Khan.
- Jampur Construction Division. It controls the Hill Torrents and maintain River Training Works (Flood Embankments & Spurs) along River Indus and also control the Drainage system in District Rajanpur

4. Scope of Work

Following was considered as part of scope of work when conducting assessment of DG khan irrigation infrastructure.

- **Rehabilitation of Canal Infrastructure:**
Repair and maintenance of flood bunds, cross regulators, and weirs.
- **Upgrading Civil Infrastructure:**
Modernize structures in canal zones and circles, including flood-carrying structures, rest houses, gauge reading huts, gauging stations, and VR bridges.
- **Enhancement of Canal and Distribution System:**
Improve canal lining, check structures, and implement telemetric systems.
- **Environmental and Social Sustainability:**
Promote environmental sustainability in the irrigation network by managing wetlands, controlling sewerage effluents, reclaiming groundwater, and fostering public-private partnerships.
- **Future Planning:**
Develop comprehensive plans for the next decade, including small, medium, and long-term projects.

5. Assessment Methodology

In order to comprehensively assess the existing situation and to identify the issues being faced by the irrigation department and come up with effective planning and interventions, following methodology was taken up:

- Meetings and discussions with the relevant officials of Irrigation Department
- Field surveys, Facility Observations and Technical inspections
- Assessment of existing Infrastructure and Identification of issues
- Proposed interventions in terms of Proposed Schemes, Estimated cost and Conceptual plans

5.1 Assessment Criteria

A	Excellent	No noticeable defects. Some aging or wear may be visible
B	Good	Only minor deterioration or defects are evident
C	Fair	Some deterioration or defects are evident, but function is not significantly affected
D	Poor	Serious deterioration in at least some portion of the structure. Function is inadequate
F	Fail	No longer functional. General failure or complete failure of a major structural component

Table: 2 Assessment Criteria

6. Field Visit

The Water Resources Team conducted detailed visit of the DG Khan Division during the month of April to assess the condition of the irrigation infrastructure and its associated facilities. Meetings and detailed discussions with the relevant stakeholder were also conducted with the Irrigation Department of DG Khan, Punjab in order to come up with effective planning strategy.



Meeting with Dy. Director
(Development), DG Khan



Meeting with SE Derajat Canal
Circle



Meeting with SDO Kot Addu
Subdivision

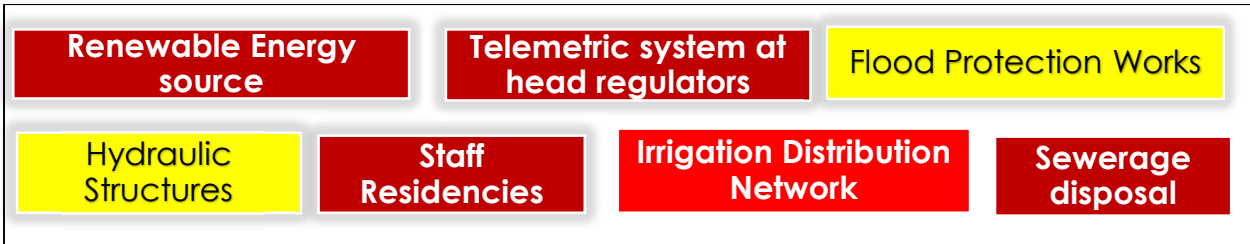


Meeting regarding MZG Canal
Division

Figure 7: Stakeholder Consultation

7. Existing Situation of Irrigation infrastructure.

On the basis of assessment methodology and assessment criteria, the existing infrastructure of DG Khan Irrigation network is categorized as following:



8. Major Issues:

During the visit and assessment following issues were identified:

- Water Theft and Low Discharge at Tail End
- Flood water Management
- Rehabilitation and Upgradation of Canal Infrastructure (Lining, Head/Cross Regulators, Gates)
- Restoration and Maintenance of Facilities (Offices, Gauging Huts, Rest Houses)
- Rehabilitation of Canal and Distribution
- Automation and Network Integration of Renewable Energy
- Restoration of Groundwater Quality and Quantity



Head Dari Peer Adil



Damaged Syphon at HT X-ing



Muzaffargarh Canal Office



Gauging Site at Canal



Canal Rest House



X Regulator at Magassan Branch

Figure 8: Field Visit and assessment of Irrigation Infrastructure

9. Project Planning

Keeping in mind effective planning and most efficient use of resources the projects proposed in this report have been categorized into short term, medium term and long term phases over the period of 2026 to 2034

Sr.	Project Phase	Proposed Schemes, Estimated Cost & Scope
1	Short Term (2026)	<p>Rehabilitation and Lining of Canals, Distributaries and minors</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concrete lining of Link No.1 Disty of DG Khan Canal <input type="checkbox"/> Noorpur Disty from RD 20+000 to 55+000 Tail of Rajanpur Canal <input type="checkbox"/> Concrete lining of Hazarat Wah disty from RD 11+800 to 54+000 <input type="checkbox"/> Concrete Lining of Bait Wala Minor Bait from RD 0+000 to 37+500 Tail <input type="checkbox"/> Stone Pitching of left side of DG Khan canal from RD 212+000 to 227+000 <input type="checkbox"/> Concrete Lining of Qaim Shah from RD 0+000 to 31+800 Tail <input type="checkbox"/> Rehabilaitation of Sahiba Disty and its Systems <input type="checkbox"/> Concrete lining of Khan Pur Disty from RD. 0+000 to 28+272 <input type="checkbox"/> Concrete Lining of Pole Wah Minor from RD 0+000 to Rd 33+140 Tail <p>Rehabilitation and solarization of Irrigation Infrastructure and Offices</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Solaraization of Derajat Canal Circle Office <input type="checkbox"/> Gauge Reader Hut at RD – 59 + 000 at Head Dari Peer Adil of Link No. 1 <input type="checkbox"/> Repair/Replacement of Gates of Cross regulator of MZG canal at RD 64+357, Rd 17+500 and 206+000 <p>Rehabilitation Gates & Gearing Systems</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rehabilaitaion of Head regulator at Head Gajani at RD 88+500 of DG Khan Canal <input type="checkbox"/> Rehabilitation of X regulator of Magassan Branch at RD 13+500 <input type="checkbox"/> Rehabilitation of X regulator of Thal Branch at RD 48+000 <input type="checkbox"/> 20 Head Regulators to be Integrated with Telemetry and SCADA <p>Rehabilitation and Upgradation of Drains and Flood carrying structures</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Restoration of Syphon at Hill Torrent crossing at RD 242+300 <input type="checkbox"/> Desilting of Old Manka Drain RD 93+000 to 132+500 <input type="checkbox"/> Desilting of Thatta Drain RD 0+000 to 11+000 <input type="checkbox"/> Bed Clearance of Bhatti Drain RD 0+000 to 7+000

Sr.	Phase	Proposed Schemes, Estimated Cost & Scope
2	Medium Term (2029)	<p>Rehabilitation and Lining of Canals, Distributaries and minors</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concrete lining of 2L Khanpur and System from RD 0+000 to RD 60+000 of Kot Addu canal <input type="checkbox"/> Concrete Lining of Concrete lining of Qamar Feeder from RD 0+000 to RD 16+650 <input type="checkbox"/> Concrete lining of Concrete lining of Qamar Minor from 0+000 to RD 43+189 <input type="checkbox"/> Concrete lining of Lower Manka Disty from Rd 0+000 to RD 41+080 <input type="checkbox"/> Concrete lining of D-28 from RD 0+000 to 36+111 <input type="checkbox"/> Concrete lining of MD-43 from RD 0+000 to 16+232 Tail <input type="checkbox"/> Concrete lining of Barerra Disty from RD 0+000 to 44+800 Tail <input type="checkbox"/> Concrete Lining of Pole Wah Minor from RD 0+000 to Rd 33+140 Tail <p>Rehabilitation and solarization of Irrigation Infrastructure and Offices</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hut at RD – 64+357, RD – 147 + 500, RD – 64+357 at Muzafargarh canal <input type="checkbox"/> Hut at RD – 64+357 at Magasan Branch, Hut at RD – 48 + 000 of Thal Canal, Hut at RD – 42 + 350 at Magasan Branch <input type="checkbox"/> Hut at Head Dandewala of MM link <input type="checkbox"/> Complete Rehabilatiation and Renovation of Muzafargarh Canal Office, Muzafargarh with Solarization of the office <p>Rehabilitation of Gates & Gearing Systems</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Repair/Replacement of Gates of Cross regulator of MZG canal at RD 64+357, Rd 17+500 and 206+000 <input type="checkbox"/> Gate of Lower Sultan Disty at RD 19+500 of MZG Canal, Gate of Lower Hazara Disty at RD 39+000 of MZG Canal <input type="checkbox"/> Gate of Lower Pattal Disty at RD 39+000 of MZG Canal, Gate of Lower Sultan Disty at RD 19+500 of MZG Canal <input type="checkbox"/> Gate of Upper Sardar Wuh Disty, Main gate of Khuni Disty, 1-L Khuni Disty, 2-R Ghazi Disty <input type="checkbox"/> 30 Head Regulators to be Integrated with Telemetry and SCADA <p>Rehabilitation and Upgradation of Drains and Flood carrying structures</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bed Clearance of Rafique Drain RD 0+000 to 11+000 <input type="checkbox"/> Bed Clearance of Chandia Drain RD 0+000 to 23+500 <input type="checkbox"/> Bed Clearance of Choti Drain RD 0+000 to 11+500

Sr.	Project Phase	Proposed Schemes, Estimated Cost & Scope
3	Long Term (2034)	<p>Rehabilitation and Lining of Canals, Distributaries and minors</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concrete lining of Mehraywala Disty RD 0+000 to 29+600 <input type="checkbox"/> Concrete lining of Sohrab Disty & its System 0+000 to RD 121+100 <input type="checkbox"/> Concrete lining of Soni Disty & its System <input type="checkbox"/> Concrete lining of Dinga Disty and System from RD29+200 of Kot Addu canal <input type="checkbox"/> Concrete lining of Rafiq Disty and System from RD 0+000 to RD 66+000 of Kot Addu canal <input type="checkbox"/> Concrete Lining of Concrete Lining of jhok Disty of DG Khan Canal <input type="checkbox"/> Concete lining of D-28 from RD 0+000 to 36+111 <input type="checkbox"/> Concrete lining of MD-43 from RD 0+000 to 16+232 Tail <p>Rehabilitation and solarization of Irrigation Infrastructure and Offices</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Renovation of SDO Basira at Head KAHA at RD 206 + 000 of Muzafargargh canal with solarization <input type="checkbox"/> Renovation of Division and SDO Kot Addu Office with solarization <input type="checkbox"/> Restoration of Dajani Rest House with solarization <input type="checkbox"/> Restoartion of Canal Rest House at Shah Jamal with solarization <input type="checkbox"/> Restoration of Talpur Rest House with solarization <input type="checkbox"/> 50 Head Regulators to be Integrated with Telemetry and SCADA <p>Rehabilitation and Upgradation of Drains and Flood carrying structures</p> <p>Scope of Project</p> <ul style="list-style-type: none"> <input type="checkbox"/> Remodeling of Manka Kapper Drain & Khotoo Drainage System. <input type="checkbox"/> Remodeling and Rehabilitation of Old Manka Drain into FCS for Vidor Hill Torrent and Mithawan Hill Torrent. <input type="checkbox"/> Restoration/Remodeling of Flood & Drainage Infrastructure of CRB Canal System Damaged during 2022 Flood <input type="checkbox"/> Rehabilitation of Flood Carrier Channels in CRBC Division Taunsa Sharif <input type="checkbox"/> Providing River Training Works along Khanwah Flood Bund
		Irrigation Projects – D.G. Khan:

10. Rough cost Estimate

10.1 Short Term Phase

THE URBAN UNIT (URBAN SECTOR PLANNING & MANAGEMENT SERVICES UNIT PVT.LTD)								
DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE LINING OF CANALS								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
	PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS							
	Short Term Plan							
	Rehabilitation and Lining of Canals, Distributaries and minors							
1	Concrete lining of Link No.1. Disty of DG Khan Canal	230,000,000	4,600,000	4,600,000	11,500,000	250,700,000	251	
2	Noorpur Disty from RD 20+000 to 55+000 Tail of Rajanpur Canal	254,890,779	5,097,816	5,097,816	12,744,539	277,830,949	278	
3	Concrete lining of Hazarat Wah disty from RD 11+800 to 54+000	347,364,540	6,947,291	6,947,291	17,368,227	378,627,348	379	
4	Stone Pitching of left side of DG Khan canal from RD 212+000 to 227+000	250,000,000	5,000,000	5,000,000	12,500,000	272,500,000	273	
5	Concrete Lining of Qaim Shah from RD 0+000 to 31+800 Tail	292,107,639	5,842,153	5,842,153	14,605,382	318,397,327	318	
6	Rehabilitation of Sahiban Disty and its Systems	383,000,000	7,660,000	7,660,000	19,150,000	417,470,000	417	
7	Concrete lining of Khan Pur Disty from RD. 0+000 to 28+272	150,000,000	3,000,000	3,000,000	7,500,000	163,500,000	164	
8	Concrete Lining of Pole Wah Minor from RD 0+000 to Rd 33+140 Tail	297,912,673	5,958,253	5,958,253	14,895,634	324,724,813	325	
	Rehabilitation and solarization of Irrigation Infrastructure and Offices							
1	Solarization of Derajat Canal Circle Office	129,000,000	2,580,000	2,580,000	6,450,000	140,610,000	141	
2	Gauge Reader Hut at RD – 59 + 000 at Head Dan Peer Adil of Link No. 1	13,321,082	266,422	266,422	666,054	14,519,980	15	

THE URBAN UNIT (URBAN SECTOR PLANNING & MANAGEMENT SERVICES UNIT PVT.LTD)								
DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE LINING OF CANALS								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
	PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS							
	Short Term Plan							
	Rehabilitation and Lining of Canals, Distributaries and minors							
3	Repair/Replacement of Gates of Cross regulator of MZG canal at RD 64+357, Rd 17+500 and 206+000	9,500,000	190,000	190,000	475,000	10,355,000	10	
4	Rehabilitaion of Head regulator at Head Gajani at RD 88+500 of DG Khan Canal	587,467,441	11,749,349	11,749,349	29,373,372	640,339,511	640	
5	Rehabilitation of X regulator of Magassan Branch at RD 13+500	587,467,441	11,749,349	11,749,349	29,373,372	640,339,511	640	
6	Rehabilitation of X regulator of Thal Branch at RD 48+000	587,467,441	11,749,349	11,749,349	29,373,372	640,339,511	640	
15	20 Head Regulators to be Integrated with Telemetry and SCADA	30,000,000	600,000	600,000	1,500,000	32,700,000	33	
16	Restoration of Syphon at Hill Torrent crossing at RD 242+300	600,000,000	12,000,000	12,000,000	30,000,000	654,000,000	654	
17	Desilting of Old Manka Drain RD 93+000 to 132+500	20,000,000	400,000	400,000	1,000,000	21,800,000	22	
18	Desilting of Thatta Drain RD 0+000 to 11+000	20,000,000	400,000	400,000	1,000,000	21,800,000	22	
19	Bed Clearance of Bhatti Drain RD 0+000 to 7+000	10,000,000	200,000	200,000	500,000	10,900,000	11	
	Total Amount R.s	4,799,499,037	91,389,981	91,389,981	228,474,952	4,980,753,950	4,981	

Table 3: Rough Cost Estimate Short Term Phase

10.2 Medium Term Phase

THE URBAN UNIT (URBAN SECTOR PLANNING & MANAGEMENT SERVICES UNIT PVT.LTD)								
DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS								
Medium Term Plan								
Rehabilitation and Lining of Canals, Distributaries and minors								
1	Concrete lining of 2L Khanpur and System from RD 0+000 to RD 60+000 of Kot Addu canal	442,502,335	8,850,047	8,850,047	22,125,117	482,327,545	482	
2	Concrete Lining of Concrete lining of Qamar Feeder from RD 0+000 to RD 16+650	137,188,436	2,743,769	2,743,769	6,859,422	149,535,395	150	
3	Concrete lining of Concrete lining of Qamar Minor from 0+000 to RD 43+189	460,279,759	9,205,595	9,205,595	23,013,988	501,704,937	502	
4	Concrete lining of Lower Manka Disty from Rd 0+000 to RD 41+080	437,992,092	8,759,842	8,759,842	21,899,605	477,411,380	477	
5	Concrete lining of D-28 from RD 0+000 to 36+111	315,062,730	6,301,255	6,301,255	15,753,137	343,418,376	343	
6	Concrete lining of MD-43 from RD 0+000 to 16+232 Tail	121,180,489	2,423,610	2,423,610	6,059,024	132,086,733	132	
7	Concrete lining of Barerra Disty from RD 0+000 to 44+800 Tail	477,290,221	9,545,804	9,545,804	23,864,511	520,246,341	520	
8	Concrete Lining of Pole Wah Minor from RD 0+000 to Rd 33+140 Tail	354,120,089	7,082,402	7,082,402	17,706,004	385,990,897	386	
Rehabilitation and solarization of Irrigation Infrastructure and Offices								
1	Hut at RD - 64+357, RD - 147 + 500, RD - 64+357 at Muzafargarh canal	39,963,247	799,265	799,265	1,998,162	43,559,940	44	
2	Hut at RD - 64+357 at Magasan Branch, Hut at RD - 48 + 000 of Thal Canal, Hut at RD - 42 + 350 at Magasan Branch	39,963,247	799,265	799,265	1,998,162	43,559,940	44	

THE URBAN UNIT (URBAN SECTOR PLANNING & MANAGEMENT SERVICES UNIT PVT.LTD)								
DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS								
Medium Term Plan								
Rehabilitation and Lining of Canals, Distributaries and minors								
3	Hut at Head Dandewala of MM link	13,321,082	266,422	266,422	666,054	14,519,980	15	
4	Complete Rehabilitation and Renovation of Muzafargarh Canal Office, Muzafargarh with Solarization of the office	138,000,000	2,760,000	2,760,000	6,900,000	150,420,000	150	
Rehabilitation of Gates & Gearing Systems								
1	Repair/Replacement of Gates of Cross regulator of MZG canal at RD 64+357, Rd 17+500 and 206+000	1,174,934,882	23,498,698	23,498,698	58,746,744	1,280,679,022	1,281	
2	Gate of Lower Sultan Disty at RD 19+500 of MZG Canal, Gate of Lower Hazara Disty at RD 39+000 of MZG Canal	587,467,441	11,749,349	11,749,349	29,373,372	640,339,511	640	
3	Gate of Lower Pattal Disty at RD 39+000 of MZG Canal, Gate of Lower Sultan Disty at RD 19+500 of MZG Canal	587,467,441	11,749,349	11,749,349	29,373,372	640,339,511	640	
4	Gate of Upper Sardar Wuh Disty, Main gate of Khuni Disty, 1-L Khuni Disty, 2-R Ghazi Disty	587,467,441	11,749,349	11,749,349	29,373,372	640,339,511	640	
	30 Head Regulators to be Integrated with Telemetry and SCADA	227,049,000	4,540,980	4,540,980	11,352,450	247,483,410	247	
Rehabilitation and Upgradation of Drains and Flood carrying structures								
1	Bed Clearance of Rafique Drain RD 0+000 to 11+000	10,000,000	200,000	200,000	500,000	10,900,000	11	

THE URBAN UNIT (URBAN SECTOR PLANNING & MANAGEMENT SERVICES UNIT PVT.LTD)								
DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
	PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS							
	Medium Term Plan							
	Rehabilitation and Lining of Canals, Distributaries and minors							
2	Bed Clearance of Chandia Drain RD 0+000 to 23+500	20,000,000	400,000	400,000	1,000,000	21,800,000	22	
3	Bed Clearance of Choti Drain RD 0+000 to 11+500	10,000,000	200,000	200,000	500,000	10,900,000	11	
	Total Amount R.s	6,781,249,934	126,774,952	126,774,952	316,937,380	6,909,234,883	6,909	

Table 4: Rough Cost Estimate Medium Term Phase

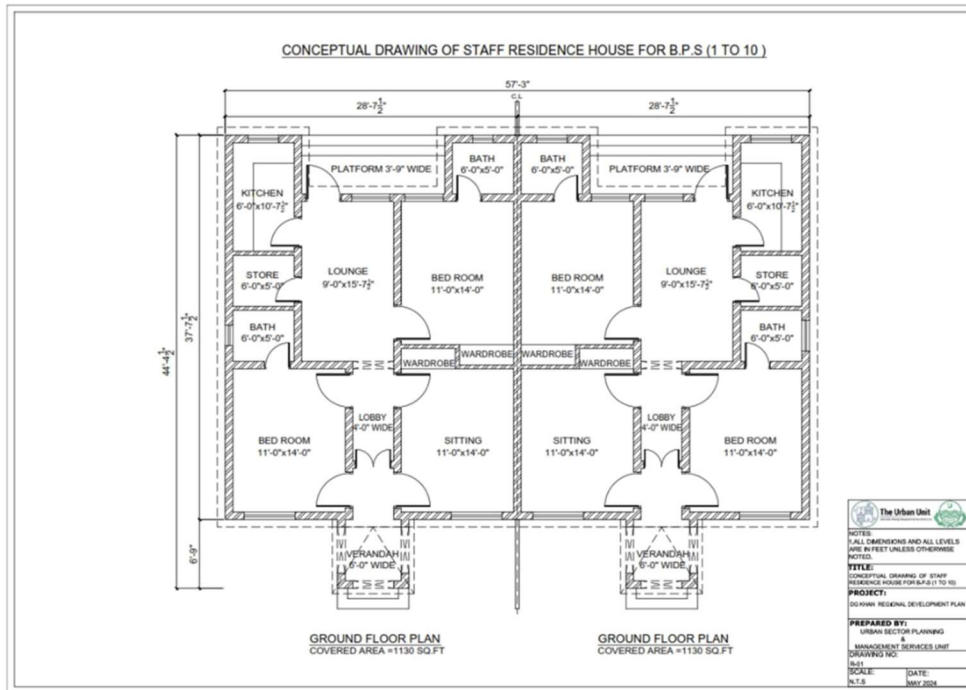
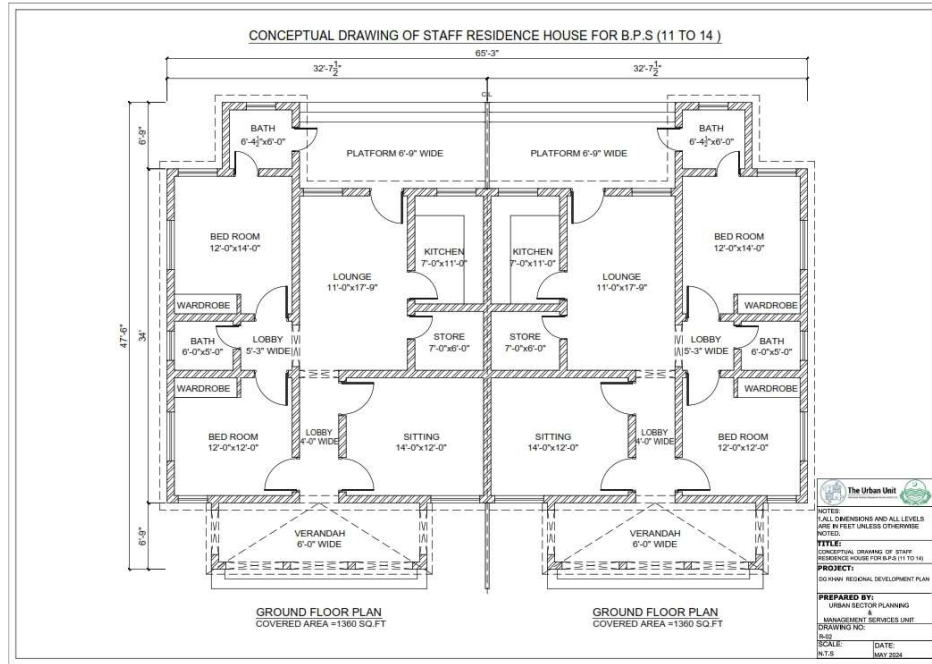
10.3 Long Term Phase

THE URBAN UNIT (URBAN SECTOR PLANNING & MANAGEMENT SERVICES UNIT PVT.LTD)								
DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS								
Long Term Plan								
Rehabilitation and Lining of Canals, Distributaries and minors								
1	Concrete lining of Mehraywala Disty RD 0+000 to 29+600	323,061,032	6,461,221	6,461,221	16,153,052	352,136,525	352	
2	Concrete lining of Sohrab Disty & its System 0+000 to RD 121+100	810,796,282	16,215,926	16,215,926	40,539,814	883,767,947	884	
3	Concrete lining of Dinga Disty and System from RD29+200 of Kot Addu canal	228,884,509	4,577,690	4,577,690	11,444,225	249,484,115	249	
4	Concrete lining of Rafiq Disty and System from RD 0+000 to RD 66+000 of Kot Addu canal	459,607,394	9,192,148	9,192,148	22,980,370	500,972,059	501	
5	Concrete lining of D-28 from RD 0+000 to 36+111	385,499,509	7,709,990	7,709,990	19,274,975	420,194,465	420	
6	Concrete lining of MD-43 from RD 0+000 to 16+232 Tail	121,180,489	2,423,610	2,423,610	6,059,024	132,086,733	132	
Rehabilitation and solarization of Irrigation Infrastructure and Office								
1	Renovation of SDO Basira at Head KAHA at RD 206 + 000 of Muzafargargh canal with solarization	150,000,000	3,000,000	3,000,000	7,500,000	163,500,000	164	
2	Renovation of Division and SDO Kot Addu Office with solarization	140,000,000	2,800,000	2,800,000	7,000,000	152,600,000	153	
3	Restoration of Dajani Rest House with solarization	120,000,000	2,400,000	2,400,000	6,000,000	130,800,000	131	
4	Restoration of Canal Rest House at Shah Jamal with solarization	148,000,000	2,960,000	2,960,000	7,400,000	161,320,000	161	

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DG KHAN REGIONAL DEVELOPMENT PLAN								
SUMMARY OF ROUGH COST ESTIMATE								
SR #	DESCRIPTION OF ITEM	COST	Add 2% Contingencies	Add 2% Consultancy	Add 5% PST	COST	MILLIONS	REMARKS
PROPOSED WATER SUPPLY INTERVENTIONS/PROJECTS								
Long Term Plan								
Rehabilitation and Lining of Canals, Distributaries and minors								
5	Restoration of Talpur Rest House with solarization	120,000,000	2,400,000	2,400,000	6,000,000	130,800,000	131	
6	50 Head Regulators to be Integrated with Telemetry and SCAD	378,415,000	7,568,300	7,568,300	18,920,750	412,472,350	412	
Rehabilitation and Upgradation of Drains and Flood carrying structures								
1	Remodeling of Manka Kapper Drain & Khotoc Drainage System	9,800,000	196,000	196,000	490,000	10,682,000	11	
2	Remodeling and Rehabilitation of Old Manka Drain into FCS for Vidor Hill Torrent and Mithawan Hill Torrent	25,000,000	500,000	500,000	1,250,000	27,250,000	27	
3	Restoration/Remodeling of Flood & Drainage Infrastructure of CRB Canal System Damaged during 2022 Flood	25,000,000	500,000	500,000	1,250,000	27,250,000	27	
4	Providing River Training Works along Khanwah Flood Bund	25,000,000	500,000	500,000	1,250,000	27,250,000	27	
	Total Amount R.s	3,470,244,214	62,943,664	62,943,664	157,359,159	3,430,429,669	3,430	

Table 5: Rough Cost Estimate Long Term Phase

11. Conceptual Drawings for Staff Housing



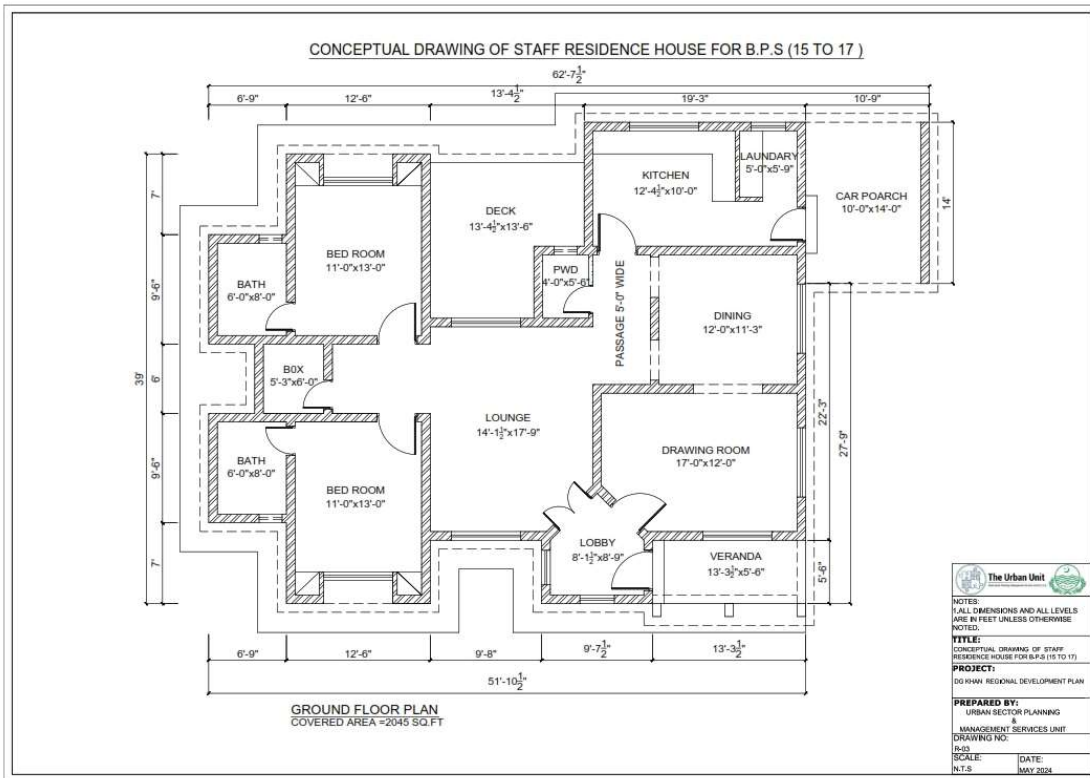


Figure 9. Conceptual drawings for Staff housing

12. Conceptual drawings of Cross & Head Regulators

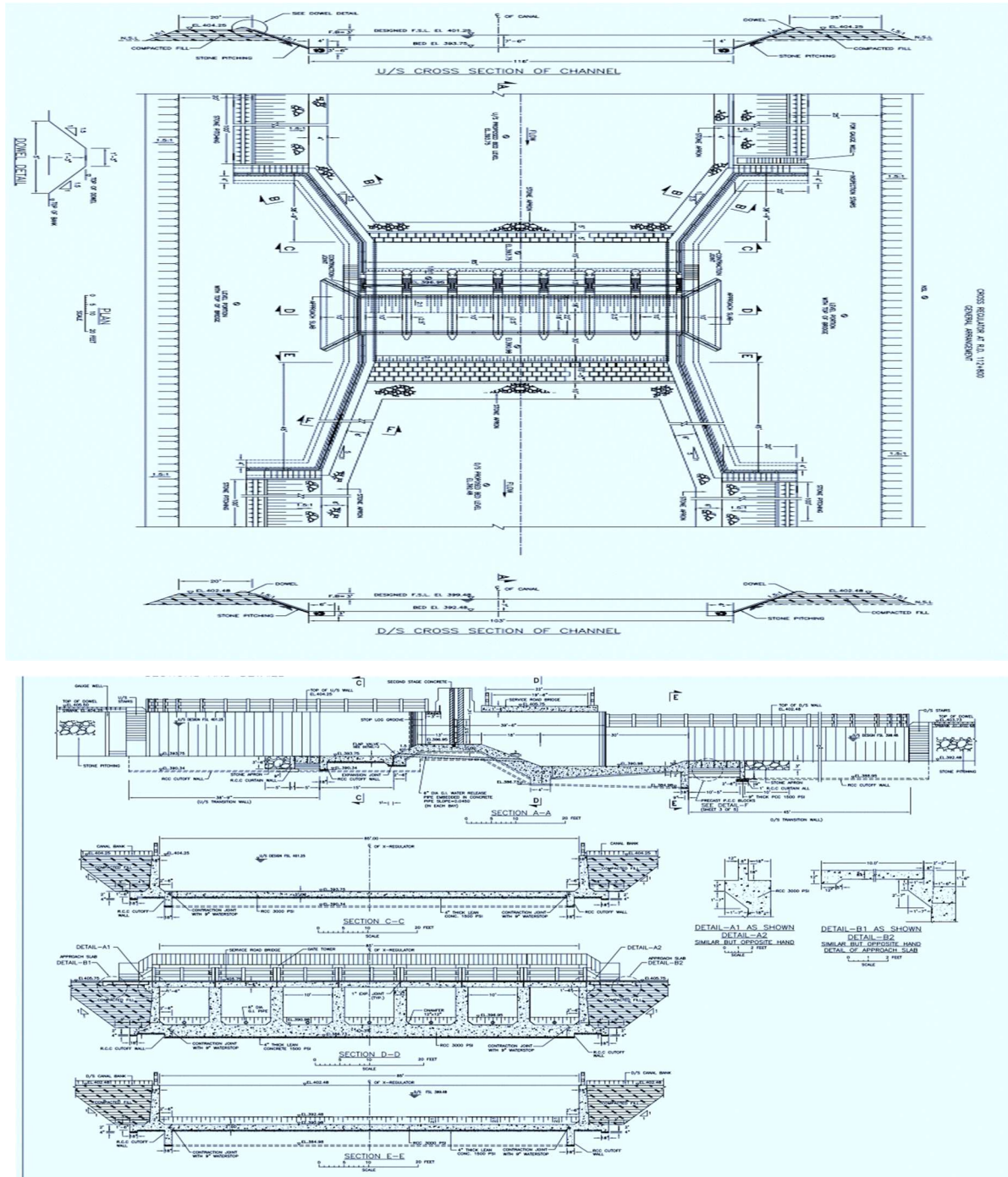


Figure 10. Conceptual drawings for Cross & Head Regulators