

GOVERNMENT OF THE PUNJAB PLANNING & DEVELOPMENT BOARD (URBAN DEVELOPMENT SECTION)

WORKING PAPER FOR PDWP

1.	Project Title	Providing and Laying of Forcemain and Development of the Sewerage System in adjacent areas of Gatti, Aslam Park, Farooq Town, Adnan Town, Bagewala Road, Azhar Town, Sufyan Town and Adjoining Areas				
2.	Location	Faisalabad				
3.	Sponsoring Agency	HUD & PHE Department, Govt. of the Punjab				
4.	Executing Agency	Water & Sanitation Agency FDA				
5.	Operation and Maintenance	Water & Sanitation Agency FDA				
6	Proposed Cost	Rs.in Million				
	-		Cost	Difference	%	
		Cost Before Pre-PDWP	1,250	-9.14	-1%	
		Cost After Pre-PDWP1,240.86				
7.	ADP 2024-25 (GS.NO. 7416)	Technical Supplementary				
8.	Gestation period	24 months till Fel	oruary 2027			

9. BRIEF BACKGROUND / DESCRIPTION OF THE PROJECT

The Government of Punjab has approved a comprehensive Development Package to address the longstanding sewerage challenges of Faisalabad City. As outlined in the attached Minutes of the Cabinet Meeting, this package includes a total of fourteen (14) schemes aimed at modernizing and improving the city's sewerage infrastructure. The instant scheme is one (01) of these approved projects and is integral to achieving the package's overarching goal of resolving chronic sewerage issues and ensuring sustainable urban development. The scheme is included in ADP 2024-25 (GS # 7416).

The instant project contains the development of sewerage network in the Gatti and its adjoining areas. It also includes the laying of forcemain to avoid the double pumping indisposing the sewage from Gatti Disposal station. Currently, there is not proper sewage system in this

- area. This scheme includes the following major components;
 - Sewer Network to transport the sewage from household level to Gatti Disposal Station through existing trunk lines.
 - 2. Upgradation of Pumps at Disposal Station
 - 3. Forcemain from Disposal Station to Outfall Drain/Channel

10. JUSTIFICATION OF THE PROJECT

Area adjacent to Gatti Disposal Station is suffering from poor sanitation conditions due to absence of a proper sewerage system.

The proposed forcemain aims to eliminate the requirement for double pumping, thereby optimizing operational efficiency and reducing associated costs. Additionally, the existing 21inch diameter gravity sewer, which conveys wastewater from the Ghatti Disposal Station as well as its independent catchment area, experiences hydraulic overloading and overflow conditions upon receiving discharge from the 21-inch forcemain. This results in ponding and system inefficiencies. Therefore, a separate forcemain is required for this disposal station to combat the sewerage issues. The population of **99,490** was projected for the design period upto 2050.

11. SCOPE OF THE PROJECT

- Proposed Sewerage Network (Ø12" to Ø24") =64,065 ft
- Proposed Forcemain Length = 14,860 ft
- Proposed Forcemain Diameter = Ø900 mm
- Capacity of Proposed Pumps
 - Working Pumps =10 + 15 cusecs (W)
 - Standby Pumps = 10 cusecs (S)

12. PROJECT OBJECTIVES

- 1. To provide a reliable and sustainable sewerage system for the currently unserved areas of Gatti and its surroundings.
- 2. To eliminate sewage ponding and associated public health hazards in the region.
- 3. To reduce environmental pollution through the safe and systematic collection and conveyance of wastewater.
- 4. To enhance the quality of life for residents by improving sanitation facilities.
- **5.** To avoid the double pumping as existing disposal station of Gatti is disposing the sewage by double pumping.

13. PROJECT COST SUMMARY

SR. NO	DESCRIPTION	Cost Before Pre-PDWP	Cost After Pre- PDWP	Excess	Saving	Remarks
1	FORCEMAIN	456.63				1. In updated PC-1
2	PUMPING STATION NO.34	249.28	730.34			pressure rating of forcemain has been
	Total	705.91	730.34	24.43	-	revised to PN-08
3	DEVELOPMENT OF THE SEWERAGE SYSTEM	398.97	392.07	-	6.90	which was PN-10 in previous PC-I. 2. The cost for Geotechnical
4	FALL STRUCTURE	18.74	3.51	-	15.23	Investigations is added in updated
5	OFFICE BUILDING	6.67	-	-	6.67	PC-I.
6	STAFF BUILDING		4.60	4.60	-	
7	SUB STATION BUILDING	5.42	-	-	5.42	
8	BOUNDARY WALL INCLUDING GATE	10.89	7.18	-	3.71	
9	GEOTECHNICAL INVESTIGATIO N		0.70	0.70	-	
	TOTAL COST	1,146.6	1,138.4	-	8.20	
10	Contingency Charges @ 2%	22.93	22.77	-	0.16	
11	PRA @ 5%	57.33	56.92	-	0.41	
12	Consultancy charges @ 2%	22.93	22.77	-	0.16	
	GRAND TOTAL AMOUNT IN MILLION	1250	1240.86	-	8.94	8.94 million is in saving

14. SECTOR ISSUES AND STRATEGY

i.	Sector Issues	Sewerage IssuesEnvironmental Pollution
ii.	Sector Strategy	• The proposed project is fully aligned with the Master Plan 2018-38, which emphasizes the modernization and enhancement of the sewerage system to meet the growing demands of urban development

iii.	Other Major Ongoing & Potential Projects in the Sector	 Providing and Laying of HDPE Forcemain from Dawood Chowk Disposal Station to Fish Farm Satyana Road, Faisalabad Providing and Laying Trunk Sewer from Jawad Club Chowk to Chokera Disposal station Faisalabad Construction of Eastern Wastewater Treatment Plant for Faisalabad City (Phase-I) 						
iv.	Year-wise estimates of	I	tems		Yea	r wise phy activities	sical	Total
	Physical				2024-25	2025-26	2026-2	27
	activities by main components as per following:	i. Providing forcemai ii. Developr Sewerag to 24" di iii. Provision	g and layin n ment of th e Network a) 1 for Pump	ig e : (12" dia is	20%	60%	20%	o 100%
					20%	60%	20%	100%
	Add 2% Contingency cha			arges	20%	60%	20%	0 100%
		Add 2% Consu	ltancy cha	irges	20%	60%	20%	0 100%
		Add 5% PRA T	ах		20%	60%	20%	o 100%
			Gra	nd Total	20%	60%	20%	100%
v .		Year-wise/	Compon	ent-wise	Financia	l Phasing]	
	Iter	ns	Unit	Year w	ise Finano	cial activi	ties	Total
				2024-25	2025-2	26 202	6-27	
	i. Providing an forcemain ii. Developmen Sewerage N to 24" dia) iii. Provision for	d laying It of the etwork (12" dia ⁻ Pumps		229.53	688.5	9 229	9.53	1,147.65
		Total		229.53	688.5	9 229	9.53	1,147.65
	Add 2% Continger	ncy charges		4.59	13.77	' 4.	59	22.95
	Add 2% Consultar	ncy charges	ļ	4.59	13.77	<u>4.</u>	59	22.95
	Add 5% PRA Tax	Grand Total		11.48 250.00	34.43	<u> </u>	.48	57.38 1250 00

15. FINANCIAL ANALYSIS:

Financial Indicators	At 12% Discount Rate
Present Worth of Benefits (Rs million)	1520.18
Present Worth of Costs (Rs million)	1169.11
Net Present Value (Rs million)	351.07
B/ C Ratio	1.30
FIRR (Percent)	16.09

The results showed that project is financially viable.

16. ECONOMIC ANALYSIS:

Economic Indicators	At 12% Discount Rate
Present Worth of Benefits (Rs million)	2830.10
Present Worth of Costs (Rs million)	956.58
Net Present Value (Rs million)	1873.53
B/ C Ratio	2.96
EIRR (Percent)	34.51

The EIRR calculated is above the economic opportunity cost of capital (12%) in Pakistan. The results of NPV and B/C ration also proved that project is economically viable.

(PART-B)

TECHNICAL APPRAISAL

17. Deliberation of Pre-PDWP meeting:

Instant project was discussed in the Pre-PDWP meeting held on 06.02.2025 under the Chairmanship of Member (LG/UD), P&D Board. The observations raised by the P&D Board and replies of sponsors are juxtaposed as under:

A. Observations of UD Section:

Sr. No.	Observations	Reply	Remarks of the Pre-PDWP
i.	4.54 km forcemain with cost Rs.456 million along with establishment of disposal station amounting Rs.291 million are proposed in the instant project. The project seems to be stand alone and limited area will be benefitted despite of significant pubic investment. Furthermore, there will significant O&M cost due to significant distance of disposal station to Paharang Drain.	Cost is updated. Double pumping is avoided through this proposed scheme that will reduce the O&M costs. Also, sewage of this catchment is already being disposed off in the same drain, but through double pumping. Details are incorporated.	Noted.
ii.	What is the mechanism for disposal of Ghona area on the west side of the project area.	Details are provided	Noted.
iii.	Abadies mentioned in the	Elaborated in updated	Noted.

	nomenclature are not highlighted on the map. The same should be elaborated.	maps	
iv.	The project may be redesigned by augmenting existing trunk sewer network of Ghona East or Ghona West for greater benefits.	The project involves the development of new sewerage system in line with the existing system	Noted.
v.	Proposed PN-10 & PN-12.5 HDPE pipes should be supported by expected maximum operating pressure calculations.	PN-08 HDPE pipes are used in updated estimate. Calculations are also attached.	Noted.
vi.	Why 100 ft RCC drain (8.5'x8.5') is being proposed? Further, Rs.7.6 million cost for mild steel reinforcement seems to be overestimated under this component. The same to be reviewed.	Rectified and revised.	Noted.
vii.	Total population served, per capita water consumption and planning horizon to be provided to substantiate the proposed design of the sewer lines. Hydraulic statement may also be provided.	Details are incorporated	Noted.
viii.	In order to justify the provision of one 25 cusec pump and three 15 cusec pump following information/documents should be provided: a. Demand and supply analysis in terms of total discharge & required pumping capacity of existing pumping capacity. b. Efficiency of existing pumps duly supported by audit report	Updated and design sheets are attached.	Noted.
ix.	What measures are taken to prevent crown failures. Whether, SR cement is being used in sewer pipes? Further, what is the distance between proposed ventilating shafts? The Administrative	Ventilating shafts are proposed as per criteria. Moreover, Epoxy coating will be done on RCC pipe to enhance the life.	Noted.

	Department should device research-based measures in this regard.		
х.	Significant cost has been proposed for restoration of road. In this regard, it is proposed that sewer may be laid on side of road without dismantling the road, map showing right ways may be provided.	Updated as per actual.	Noted.

B. <u>Comments of Consultant SI:</u>

SN	Page	Caption	Comments	Replies	
Α	Desigr	n and			
	drawii	ngs			
1	2	Sewer map	 The sizes of the existing 2 Nos sewers leading to Gatti disposal station are missing. 	 Incorporated. A separate existing sewerage system map is also attached. 	Noted
			 New force main has been proposed from Gatti disposal works to Paharang drain. How the sewage from this disposal works is being disposed off presently? The map does not contain names of the abadies indicated in the title of the PC-I. A number of streets in 	 2) Presently, sewage from catchment area is carried to Gatti Disposal Station and is being pumped and disposed off into existing sewer (21") passing near the Gatti disposal station. The sewage is then carried to PS-32 Disposal Station and is again pumped and disposed off into Paharing drain. The same is shown in existing sewerage system map. 3) Abadies of 	
			abadies indicated in the title of the PC-I.4) A number of streets in the area have not	in existing sewerage system map. 3) Abadies of catchment areas	

			been proposed for		available on Google	
			sewers whereas some		Earth are marked.	
			verv small streets			
			have been proposed	4)	Sewers are	
			with sewers which	ĺ	proposed in all the	
			needs justification		unserved streets of	
			needs justineation.		a specific	
					catchment area	
					highlighted by the	
					Client as por	
					client as per	
					priority and	
2		Ducient	The design of the		constraints.	
2	-	Project	The design of the			
		design	following components of			
			the system is missing			
			which should be included	1)	Existing and	
			in the PC-I;		projected	
			1) Population to be		population is	
			served by the system		attached.	
			with reference to the			
			census report.	2)	25 cusecs	
			2) Total quantity of			
			sewage to be			
			handled by the Gatti			
			disposal works	3)	Hydraulic	
			determined from the		statement of trunk	
			population served.		sewers is attached.	
			3) Hydraulic statement	4)	Design data is	
			of sewers.		attached.	
			4) Hydraulic design of			
			the force main	5)	Designed as per	
			5) Design of the		flow demand.	
			pumping machinery	6)	The 2 nos. existing	
			6) Existing Nos of		pumps (10 & 15	
			pumping units, their		cusecs) are	
			capacity and year of		installed at disposal	
			installation in the		station but these	
			Gatti disposal station		do not meet the	
			and their future use		head requirements:	
					therefore, pumps	
					shall be replaced	
				71	The disposal	
			7) Adequacy of the	<u> </u>	station is recently	
			existing screening		constructed and no	
			chamber and		additional flow is	

			collecting tanks to	considered.	
			take the additional	Already 2 nos.	
			sewage from the area	numps of 25	
			to be served under	cusecs were	
			the project.	installed	
B	Coste	stimates			
9	9	Excavation	The excavation for 710	Incorporated in	Noted
	8.17	Excavation	mm dia nine should not	revised estimate	Noted.
	012		avcood 6 foot (pipo dia -	revised estimate	
			$28'' \pm cover = 2.5$ feet \pm		
			20 + 000 = 2.31 Feet +		
			Total $= 62$ whereas the		
			dopth of 12 foot has been		
			avery stad which should		
	0	Thomas E	De justined.	This suggestitutions	Natad
9	9	Item-5	There is no sewer under	I his quantity has	Noted.
		Sand under	the head of force main.	been used under the	
		sewers	where this sand will be	road; nowever,	
			used? The sand under the	updated in revised	
			force main has been	estimate.	
		7. 6	included in item-9.		
10	9	Item-6	The maximum delivery	Incorporated	Noted.
			head of the pumping		
			machinery has been		
			mentioned to be 80 feet		
			(2.5 bars). PN-8 HDPE		
			pipe will be adequate to		
			take this head and hence		
			this pipe class should be		
			used instead of PN-10		
			and PN-12.5.		
11	10	Item-22	The diameter of the	Incorporated.	Noted.
			casing is missing from the		
			item.		
12	10	Item-23	HDPE pipe will not be	Incorporated.	Noted.
			jacked in the MS casing.		
			Rather MS casing will be		
			jacked under the road.		
			The description should be		
			corrected.		
13	11	Item-26 &	1) Two similar items for	Rectified.	Noted.
		27	the sub base have		
			been provided which		
			should be justified.		
			2) The pavements		
			materials dismantled		

			from the road should be used for the sub		
			deleted.		
14	11	Item-31	The provision for the shifting of unforeseen services should be rationalized or its details provided.	Item is updated in revised estimate.	Noted.
15	12	Item-5	The sand cushion under the pipe is excessive (3.5 feet). It should be reduced to 12 inches maximum.	Rationalized in revised estimate. However, sand is also taken in trench under road area.	Noted.
16	12	Item-9	The provision of sand under the pipe is duplicate in this item and hence should be deleted.	Incorporated	Noted.
17	22	Disposal station	 The name of the disposal station is missing. The sewage will be pumped directly in force main. Then where the discharge sump and drain will be constructed? An appropriate sketch of this disposal station along with ultimate disposal of waste water, should be included for clarification. 	 Incorporated Only fall structure is provided in revised estimate. 	Noted.
18	27	Electrical sub station	From the cost estimate this building seems to be a control room and not a substation. It should be corrected.	Incorporated.	Noted.
19	30	Barbed wire fencing	Boundary wall and barbed wire fencing both have been proposed. Their location should be plotted in the disposal works sketches.	Rectified in revised estimate.	Noted.
20	33	Operator	1) The location of all	1) Incorporated	4) Noted.

		room, store, staff quarter and office	 these structures in the disposal works drawing should be plotted. 2) The need of operator room in presence of a staff quarter should be justified. 3) Generally, office is not required in a disposal works. It should be deleted. 	 2) This is a single building to be used for multiple purposes. 3) It is generally required in Disposal stations for office work, site meetings and maintaining the records. Also, it is finalized after discussions with 	
21	43	Sewers	The length statement of sewers is missing	Incorporated.	Noted.
	44	Item-19	The sewer is being laid in dry formation and bailing out of water is not involved which should be deleted.	This item is taken to bail out water from existing sewers during connection with new lines, not for lowering of water table.	Noted.
	48	Item-6	No sewers have been indicated to be replaced in the sewer map. Then why the disjointing of sewers has been included over here?	The replacement of sewers is involved.	Noted.
	49	Item-19	Where this sand will be used should be justified?	Deleted from estimate.	Noted.
	49	Item-27 & 28	The materials from the dismantled pavement will be used as a sub base. Hence both of these items should be deleted.	Incorporated.	Noted.
	50	Shifting of existing services	The cost should be rationalized or details thereof given.	Incorporated	
	51	MS casing	The thickness of casing as given here is 12.7 mm which is excessive. 6 to 8 mm thickness will be adequate and should be corrected.	It is taken as per previous experience of MS pipe jacking method.	Noted.

	74	Annual operating cost	The table should be completed.	Incorporated.	Noted.
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C. <u>Comments of Technical Section:</u>

Sr. No.	Observations	Reply	Remarks of the pre-PDWP
i.	Rate analysis for N.S item may be provided.	Attached	Noted.
ii.	Utility service charges taken as lumpsum provision may be substantiated with RD wise maps / drawings	Incorporated	Noted.
iii.	Master plan of city's drainage facilities and disposal stations may be provided	Provided	Noted.
iv.	Department may provide RD wise detail for sewage pipes replacement and new lying works.	Attached	Noted.
ν.	Site reports surveys regarding non-functional, old sewage systems may be provided.	Provided	Noted.
vi.	It is observed that both RCC and HDPE pipes are being used in various schemes. Sponsor may explain	Provided	Noted.
vii.	Rs. 14 M under single Girder overhead crane installation may be justified.	Rectified	Noted.
viii.	It is observed that rate analysis includes 12.5% contractor charges and 7.5% over head charges along with taxes provision, whereas 5% PRA charges are also included. The same may be discussed.	Rectified and Incorporated	Noted.
ix.	Construction of new disposal station may be discussed in reference to already existing facility.	Only pumps are provided due to increased head required for sewage disposal through	Noted.

		forcemain.	
х.	Rs. 50 M under NOC services may be clarified under various head.	Rationalized as per actual	Noted.

18. <u>RECOMMENDATION:</u>

Project is placed before PDWP at **Rs 1,240.86 million** for consideration & approval in the light of observations raised by P&D Board, replies furnished by HUD & PHED and remarks of the Pre-PDWP.