

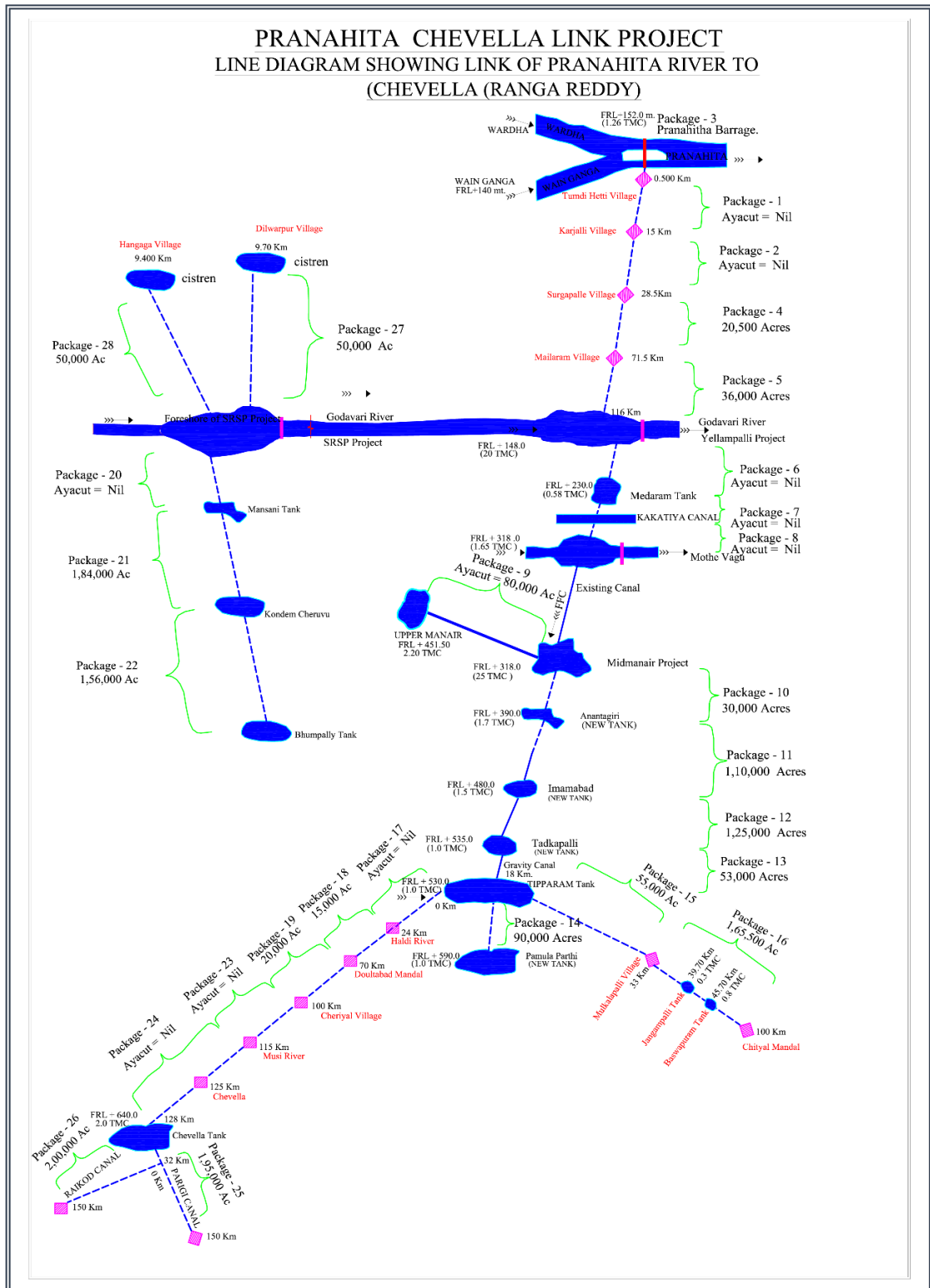
Appendices



Appendix 1.1

(Reference to Paragraph 1.1)

Line diagram of PCSS project

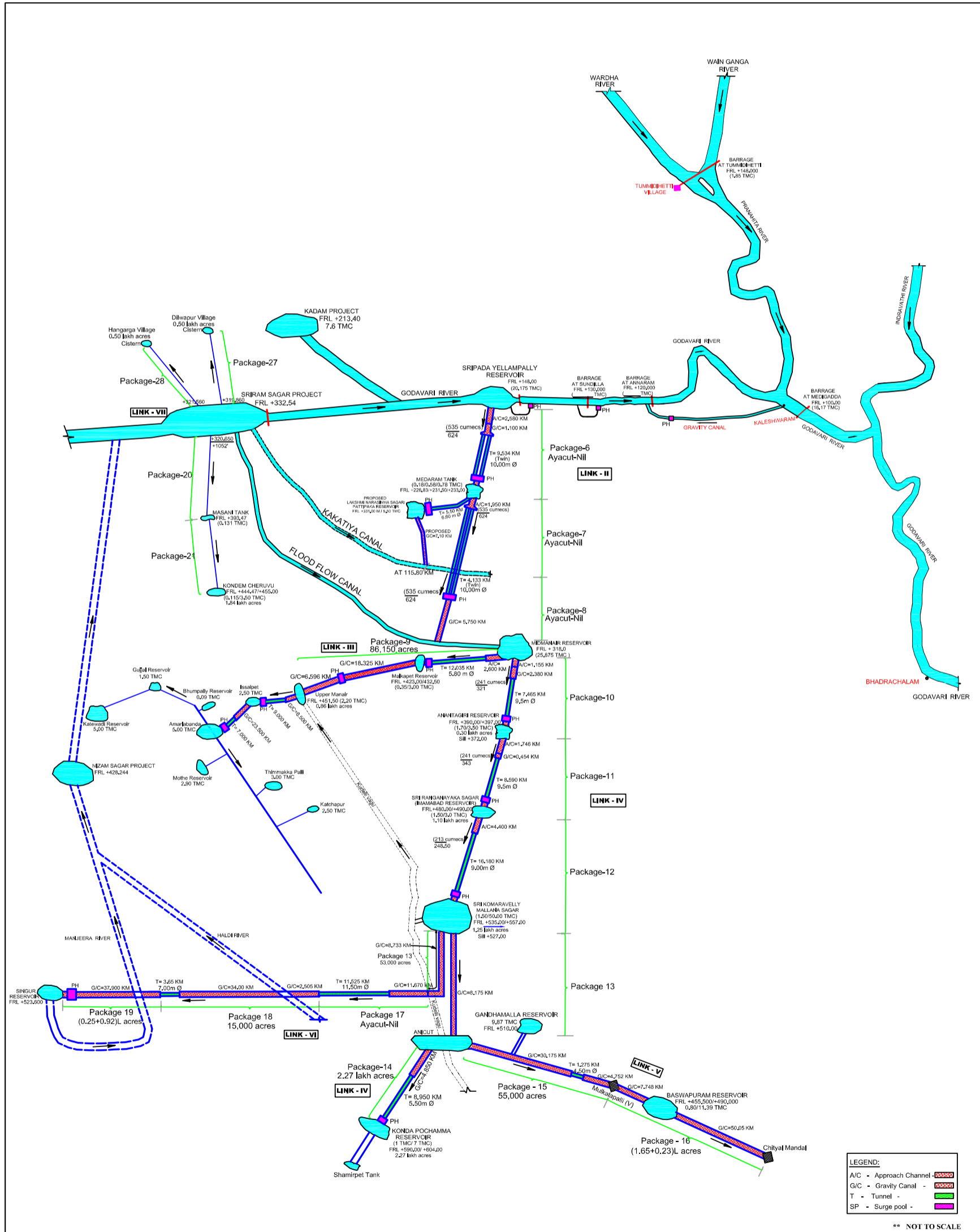


(Source: Records of the I&CAD Department)

Appendix 1.2

(Reference to Paragraph 1.1)

Line diagram of Kaleshwaram Project as per the DPR

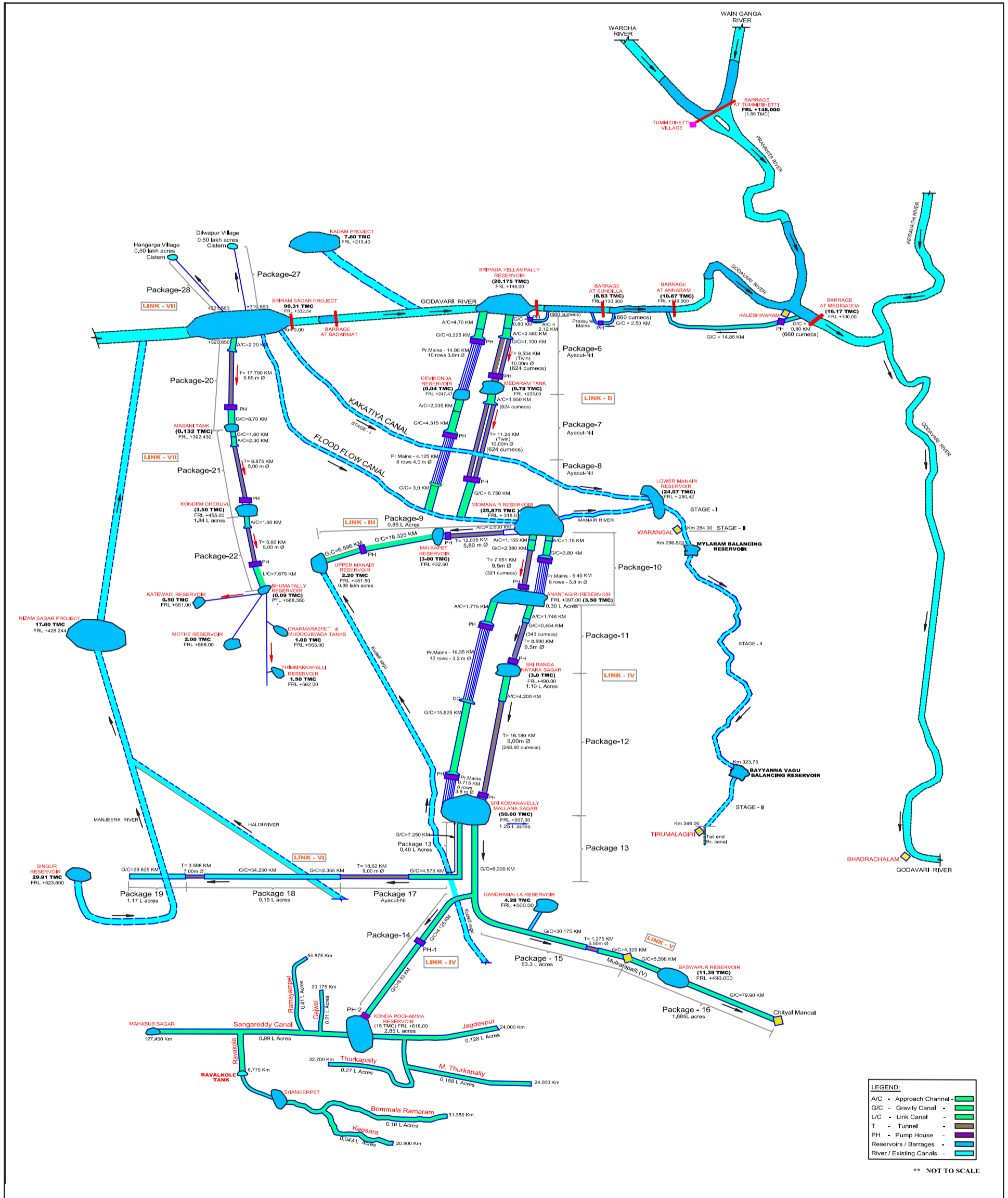


(Source: DPR of the Kaleshwaram Project)

Appendix 1.3

(Reference to Paragraph 1.1)

Line diagram of Kaleshwaram Project as being executed



(Source: Records of the I&CAD Department)

Appendix 3.1

(Reference to Paragraphs 3.2.2 and 4.7.3)

Details of the likely energy consumption for operation of lifts under Kaleshwaram Project

Name of the work/lift	Quantity of water to be lifted	Total lifting capacity of the pumps (TMC per day)	No. of days of pumping needed to lift the water	Installed capacity of pumps (in MW)*	Energy consumption per day (in MU) @	Total consumption for the pumping period (in MU)	Energy consumption if 20% margin as contended by Government is considered
Medigadda Lift	195	3.10	63	680	16.32	1028.16	856.80
Annaram Lift	195	3.01	65	480	11.52	748.80	624.00
Sundilla Lift	195	3.12	63	560	13.44	846.72	705.60
Sub-total of Link-I						2623.68	2186.40
Package-6 + Additional 1.1 TMC Package-1	212.50	1.90+1.10	71	1596	38.30	2719.30	2266.08
Package-8 + Additional 1.1 TMC Package-2	212.50	1.90+1.10	71	1525	36.60	2598.60	2165.50
Sub-total of Link-II						5317.90	4431.58
Package-9 (Lift-1)	6.74	0.096	70	60	1.44	100.80	84.00
Package-9 (Lift-2)	1.18	0.013	91	4.5	0.108	9.83	8.19
Sub-total of Link-III						110.63	92.19
Package-10 + Additional 1 TMC Package-1	136.51	1.99	69	924	22.18	1530.42	1275.35
Package-11 + Additional 1 TMC Package-2	134.71	2.05	66	1287.76	30.90	2039.40	1699.50
Package-12 + Additional 1 TMC Package-4	128.11	1.77	72	668	16.03	1154.16	961.80
Package-14 (Lift-1)	20.43	0.65	31	162	3.89	120.59	100.49
Package-14 (Lift-2)	20.43	0.65	31	204	4.89	151.59	126.33
Sub-total of Link-IV						4996.16	4163.47
Package -20	33.42	0.21	159	90	2.16	343.44	286.20
Package -21	33.42	0.21	159	60	1.44	228.96	190.80
Package-21 A (2 lift)	12.54	0.097	129	41	0.984	126.94	105.78
Package-22 (3 lift)	20.88	0.11	190	91.95	2.2068	419.29	349.41
Package-27	3.43	0.033	104	7.85	0.1884	19.59	16.33
Package-28	3.43	0.033	104	12.38	0.2971	30.90	25.75
Sub-total of Link-VII						1169.12	974.27
Total energy consumption of all lifts						14217.49	11847.91
Energy requirement for lifting of groundwater						126.90	126.90
Grand total						14344.39	11974.81

@ Energy consumption per day (MU) = Capacity of pumps (in MW) X 1,000 X 24 hours ÷ 10,00,000

* In addition, there are four small lifts (in Package-9) involving submersible pumps (total capacity: 4.66 MW). These have not been taken into account for Audit analysis.

(Source: Audit calculations based on information taken from the records of the I&CAD Department)

Appendix 4.1

(Reference to Paragraph 4.1.1)

Timelines given for preparation of various project reports

Sl. No.	Name of the Work	Scope of the Work	Agreement No. and Value	Stipulated date of completion	Total payment made as of January 2022 (₹ in crore)
1	Preparation of Detailed Project Report (DPR) for Kaleshwaram Project, Govt. of Telangana	<p>The Consultant scope of the work is 'Preparation of Detailed Project Report' of Construction of Barrage at Medigadda (Kaleshwaram) & Lift Irrigation Scheme, Mahadevpur (M), Karimnagar Dist with a discharge of 22,000 cusecs by lifting / gravity to Mid Manair Reservoir or any other such proposal as per the guidelines of CWC and clearance of the same by State & Central approving Agencies. Further the DPR report includes broadly following activities.</p> <ul style="list-style-type: none"> ➤ Study of all Engineering data related to the project. ➤ Collection of data relating to the project from Project authorities and other sources. ➤ Reconnaissance survey of the project area. ➤ Conducting topographical survey using DGPS, ETS and/ or LiDAR and Hydrographic survey for planning and Design of project components and canal network. ➤ Geotechnical investigation ➤ Hydrological studies ➤ Power & Energy requirements studies ➤ Design & preparation of drawings various project components ➤ Study of infrastructural facilities ➤ Details of land required including for expansion of plant area and colony ➤ Backwater study for barrage upstream ➤ Detailed project estimate ➤ Economic and Financial analysis ➤ Liaison with Central Water Commission till the project is cleared ➤ EIA, EMP studies and preparation of R&R 	<p>1. SE, MIP Circle, Bellampally LS AB No. 01/2015-16, dt. 23.04.2015 for ₹5.99 crore</p> <p>2. Supplemental Agt. No. 02/2015-16, dt. 20.01.2016 for ₹6.8 crore</p>	21.08.2015 (4 months from the date of agreement)	₹ 6.70
2	Vetting of DPRs for lift irrigation scheme from Mid Manair-Tadkapally-Pamulaparthi-Nizam Sagar	<p>The Consultant scope of work is:</p> <ul style="list-style-type: none"> ○ Vetting of DPR for lift irrigation scheme from <ul style="list-style-type: none"> ➤ Mid- Manair- Tadkapally- Pamulaparthi ➤ Tadkapally- Gandhmalla- Baswapur ➤ Tadkapally- Nizamsagar ➤ Pamulaparthi- Bhumpally ○ Topographic surveys of the water conductor system from <ul style="list-style-type: none"> ➤ Mid- Manair- Tadkapally- Pamulaparthi ➤ Tadkapally – Gandhmala- Baswapur ➤ Tadkapally- Nizamsagar ➤ Pamulaparthi- Bhumpally 	SE, MIPC Agt. No. LS AB No. 05/2015-16 dt. 28.10.2015 for ₹2.85 crore.	27.12.2015 (2 months from the date of agreement)	₹ 1.14

Sl. No.	Name of the Work	Scope of the Work	Agreement No. and Value	Stipulated date of completion	Total payment made as of January 2022 (₹ in crore)
		<ul style="list-style-type: none"> ○ Topographical surveys for construction of barrage on Pranahitha at Thummidihatti barrage with 152m FRL submergence area <ul style="list-style-type: none"> ➤ Study of all Engineering data related to the project. ➤ Collection of data relating to the project from project authorities and other sources ➤ Reconnaissance survey of the project area. ➤ Conducting Topographical survey using LiDAR, DGPS & ETS ➤ Geotechnical investigation ➤ Hydrological Studies ➤ Power and Energy requirements studies ➤ Design & Preparation of Drawings various project component ➤ Study of infrastructural facilities ➤ Detailed project estimate ➤ Economic and Financial analysis 			
3	Preparation of DPR for diversion of 160 TMC of water by constructing a barrage cross river Godavari at Medigadda (Kaleshwaram and Lift Irrigation Scheme – LiDAR Survey of extra area (1900 sq.km)	The main scope of proposed consultancy services is LiDAR survey of additional are of about 1900 Sq.Km. covering Godavari River from Kanthanapally to Bhadrachalam& from SRSP to Dharmapuri, water conductor system alignment from Kondapochamma to Bhoompalli and Connection of Kaleshwaram LIS alignment with Kakatiya Canal.	Agreement concluded by SE, PCSS Circle, Siddipet vide Agt. No. 01/2015-16 dt.16-03-2016 for ₹7.90 crore	30.03.2016 (15 days from the date of agreement)	₹ 8.75
4	Preparation of DPR for Two Barrages between Yellampally – Medigadda, as well as the other reservoirs to increase its capacity and its integration with Kaleshwaram Lift Irrigation	The consultant scope of work is: Topographic Survey of the river and proposed alignment of the water conductor system using LiDAR,DGPS & ETS covering entire river where water area is likely to come under submergence area and 5 km wide alignment of water conductor system, Manchippa reservoir, Gujjulu reservoir, Gandivaram reservoir, Fatehpur reservoir, Tapasupally reservoir, Ramadugu reservoir Basheerabad reservoir, Pachala Nadikudi reservoir, Isaipet reservoir, Katchapur reservoir (Kaalwala) and adjoining area (about 2100 Sq.Km)	Agreement concluded by the SE, Kaleshwaram Project, Circle No.1, Ramagundam, Karimnagar, vide Agmt. No.LS. AB. No. 01/2015-16, dated 25.03.2016 for ₹12.96 crore	24.05.2016 (2 months from the date of agreement)	₹ 13.48

**Performance Audit Report on
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Sl. No.	Name of the Work	Scope of the Work	Agreement No. and Value	Stipulated date of completion	Total payment made as of January 2022 (₹ in crore)
	Scheme (2100 Sq. Km)	<ul style="list-style-type: none"> a. Study of all existing data related to the project b. Collection of data relating to the project from project authorities and other sources c. Reconnaissance survey of the project area d. Conducting topographical survey using DGPS, ETS and / or LiDAR and hydrographic survey for planning & design of project components & canal network e. Geotechnical Investigation f. Hydrological Studies g. Power & Energy Requirement Studies h. Design & preparation of drawings of various project components i. Study of Infrastructural Facilities j. Detailed project estimate k. Economic and financial analysis 			
5	Preparation of DPR for Vetting of alignment from KomarelliMallanna Sagar to Singur reservoir (350 Sq. Km)	<p>The Consultant scope of work is:</p> <p>Topographic survey of the command area and proposed alignment of water conductor system (KomarelliMallanna Sagar to Singur reservoir) (about 350 Sq. Km)</p> <ul style="list-style-type: none"> a. Study of all existing data related to the project b. Collection of data relating to the project from project authorities and other sources c. Reconnaissance survey of the project area d. Conducting topographical survey using DGPs, ETS and / or LiDAR and hydrographic survey for planning & design of project components & canal network e. Geotechnical Investigation f. Hydrological Studies g. Power & Energy Requirement Studies h. Design & Preparation of drawings of various project components i. Study of Infrastructural Facilities j. Details of land required including expansion of Plan area and colony k. Command area survey l. Detailed project estimate m. Economic and financial analysis n. Liaison with CWC till the project is cleared o. EIA, EMP studies & Preparation of R&R Plan 	<p>Technical Sanction accorded vide CE, KP Proc.No. CE/KPH/DCED EE-3/AEE-9/WAPCOS/2016/1082, dt.9.9.2016</p> <p>Agt. no.02/16-17 dt. 21.11.2016 for ₹2.72 crore</p>	20.01.2017 (2 Months from the date of agreement)	₹ 1.49

(Source: Information furnished by I&CAD)

Appendix 4.2

(Reference to Paragraph 4.1.2)

Cost of works initially awarded in Kaleshwaram Project after re-engineering and the latest value of works as per revised estimates

S. No.	Package No./Work name	Cost of works initially awarded after re-engineering (₹ in crore)	Latest cost of works as per revised estimates/suppl. Agreements/ work slips (₹ in crore)	Percentage increase/decrease
Link I				
1	Medigadda Barrage	1849.31	4321.44	134
2	Medigadda Lift	2826.10	4915.37	74
3	Annaram Barrage	1452.82	2565.51	77
4	Annaram Lift	1669.23	3772.56	126
5	Sundilla Barrage	1248.27	2148.45	72
6	Sundilla Lift	1737.57	3573.78	106
Subtotal of Link I		10783.30	21297.11	
Link II				
7	Package 6	4961.31	5936.11	20
8	Package 7	1353.31	1984.48	39
		77.04		
9	Package 8	4900.39	5911.51	21
10	Package-I (Additional 1.10 TMC)	6339.99	6339.99	0
11	Package-II (Additional 1.10 TMC)	3203.85	3203.85	0
12	Package-III (Additional 1.10 TMC)	226.82	226.82	0
13	Package-IV (Additional 1.10 TMC)	218.86	218.86	0
Subtotal of Link II		21281.57	23821.62	
Link III				
14	Package 9	911.32	1029.33	13
15	Malkapet reservoir	472.28	513.12	9
16	Additional Lift - Package 9	138.74	194.83	40
Subtotal of Link III		1522.34	1737.28	
Link IV				
17	Package 10	2715.40	3135.52	15
18	Package 11	3127.58	3767.84	20
19	Sri Ranganayak Sagar Reservoir	461.17	493.66	7
20	Package 12	3348	4018.80	20
21	Sri Komaravelli Mallanna Sagar Reservoir -Reach I	1893.68	2196.94	16
22	Sri Komaravelli Mallanna Sagar Reservoir -Reach II	1546.65	1638.11	6
23	Sri Komaravelli Mallanna Sagar Reservoir -Reach III	2118.27	2494.56	18
24	Sri Komaravelli Mallanna Sagar Reservoir - Reach IV	1482.75	1620.20	9
25	Package 13	549.16	634.59	16
26	Ramayampet Canal	373.22	411.83	10
27	Package-I (Additional 1TMC)	3352.17	4037.93	20
28	Package-II (Additional 1TMC)	6314.49	7181.26	14
29	Package-III (Additional 1 TMC)	695.54	793.78	14
30	Package-IV (Additional 1TMC)	1613.69	1882.61	17

**Performance Audit Report on
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S. No.	Package No./Work name	Cost of works initially awarded after re-engineering (₹ in crore)	Latest cost of works as per revised estimates/suppl. Agreements/ work slips (₹ in crore)	Percentage increase/decrease
31	Shankarampet Canal	154.87	155.27	0.3
32	Package 14	1856.34	2709.32	46
33	Konda Pochamma Sagar Reservoir-Reach-I	884.47	1029.82	16
34	Konda Pochamma Sagar Reservoir – Reach-II	696.24	732.97	5
35	Gajwel Canal System	89.52	210.71	135
36	Jagadevpur Canal System	105.11	121.80	16
37	Kistapur Canal System	69.99	76.54	9
38	Upparapally Branch Canal	60.51	73.79	22
39	Thurkapally Canal	164.78	201.29	22
40	M Turkapally Canal System	85.52	108.05	26
41	Sangareddy Canal System, Reach-I	363.71	470.66	29
42	Sangareddy Canal System, Reach-II	372.92	372.92	0
43	Ravalkole Link Canal System	363.83	618.94	70
Subtotal of Link IV		34859.58	41189.71	
Link V				
44	Package 15	844.69	844.69	0
45	Gandhamalla Reservoir	719.08	719.08	0
46	Package 16	1059.75	1059.75	0
47	Baswapur Reservoir	1578.57	1701.09	8
Subtotal of Link V		4202.09	4324.61	
Link VI				
48	Package 17	986.18	986.18	0
49	Package 18	758.07	758.07	0
50	Package 19	762.47	762.47	0
Subtotal of Link VI		2506.72	2506.72	
Link VII				
51	Package 20	892.67	892.67	0
52	Package 21	1143.79	699.93	-39
53	Package 21 A	2413.53	3073.98	27
54	Package 22	1446.48	1446.48	0
55	Package 27	714	492.69	11
	Package 27 balance work		298.51	
56	Package 28	486.68	486.68	0
Subtotal of Link VII		7097.15	7390.94	
Grand total		82252.75	102267.99	

(Source: Records of the I&CAD Department)

Appendix 4.3

(Reference to Paragraph 4.5.4)

BC Ratio considering the latest market rates of crop produce, 20 per cent reduction in energy cost and removing IDC from the present likely project cost

S. No.	Component of benefit/cost	As per Department	As worked out by Audit	Basis for Audit calculations
Annual Benefits				
1	Agricultural income			
	Income of farm produce, post-project, from new CA	26903.88	15175.00	Audit considered income from only the Kharif season as water is not likely to be available for Rabi crops. Hence income from Rabi crops was not taken into account.
	Income of farm produce from stabilization (25% of 18,82,970 acres)	6936.96	3912.76	
	<i>Less:</i> Income of farm produce in pre-project scenario	682.65	1160.505	
	Net value of farm produce, post-project	33158.18	17927.26	
2	Revenue from Drinking Water Supply	1,019.30	1,019.30	As per Department
3	Revenue from Industrial Water Supply	7882.62	914.50	As per the rates prescribed by Government
4	Revenue from Fisheries	1,75.00	154.12	As per the actual water spread area of the reservoirs
	Total annual benefits	42,235.10	20,015.18	---
Annual costs				
1	Interest on capital @ 10% of estimated total cost of the project	12,348.54	12,787.10	As per the present likely cost of the project excluding IDC
2	Annual energy cost of pumping water for irrigation and other purposes	8,712.48	8,881.72	Energy consumption considering 20 per cent reduction.
3	Depreciation of the project @ 1% of the cost of the project for 100 years life	1,220.07	683.02	As per the present cost of the civil works
4	Annual O&M charges at ₹1,175 per Ha of command area	112.97	112.97	As per Department
5	Maintenance cost of headworks @ 1% of its cost	--	90.35	Provided as per DPR guidelines issued by GoI
6	Depreciation of the pumping system @ 8.33% of the cost of the pumping system assuming life of the system as 12 years	1,546.15	1,577.42	Calculated on the actual cost of pumping system including additional works taken up
7	Depreciation of the raising mains @ 3.33% of the cost of the raising mains assuming life of the system as 30 years	461.15	500.48	Calculated on the actual cost of pumping mains including additional works
	Total annual costs	24,401.36	24,633.06	---
	B.C. Ratio = Annual Benefits/Annual costs	1.731	0.813	Project is economically unviable

Appendix 4.4

(Reference to Paragraph 4.7.2.1)

Details of loans raised by KIPCL for Kaleshwaram Project

S. No.	Name of the Bank/ Financial Institution	Date of Agreement	Loan Amount sanctioned		Amount released upto March 2022			Rate of interest * per annum
			Hard Cost	IDC	Hard Cost	IDC	Total	
1	Union Bank of India Consortium	15.02.2017	6000.00	1400.00	6000.00	1342.32	7342.32	10%
2	Punjab National Bank Consortium	27.09.2017	9790.30	1609.70	11400.00	1527.37	11273.12	9.20%
3	Bank of Baroda Consortium	31.01.2018	1939.33	210.67	2150.00	210.67	2150.00	9.10%
4	PFC (EM&HM)	28.03.2018	9467.74	2599.62	12067.36	2599.62	11574.38	9.20%
5	PFC (Pkg 21A)	23.01.2019	2055.79	323.77	2379.56	323.77	2005.14	9.45%
6	PFC (Link-I)	23.01.2019	4443.14	962.25	5405.39	962.25	5403.87	10.41%
7	REC (Link-I)	09.09.2019	4154.59	503.36	4657.95	503.36	3770.99	10.90%
8	REC (Link-IV)	09.09.2019	12570.42	1523.01	14093.43	187.61	5530.25	10.90%
9	NABARD (Pkg 12,13)	11.09.2019	1500.00	0.00	1500.00	0.00	1125.01	9.75%
10	PFC (Ass. Works)	13.09.2019	3500.00	575.11	4075.11	575.11	4030.83	10.90%
11	REC (Link-II)	05.06.2020	10585.00	1199.70	11784.70	191.13	3316.09	10.90%
12	NABARD (SKMS)	15.10.2020	4674.83	0.00	4674.83	0.00	3728.64	7.80%
13	PFC (additional Loan)	26.03.2021	2111.51	313.03	2424.54	52.33	1060.67	10.90%
14	NABARD (Link-V)	11.10.2021	2051.14	0.00	2051.14	0.00	677.89	7.80%
15	PFC (additional IDC)	28.03.2022	1385.14	0.00	1385.14	0.00	1294.20	10.90%
	TOTAL		76228.93	11220.22	87449.15	8475.54	64283.40	

* These are the initial rates of interest as mentioned in the respective loan agreements. The rate of interest was variable and would depend on lending rates fixed by the respective banks/lending agencies from time to time.

PFC: Power Finance Corporation; **REC:** Rural Electrification Corporation; and **NABARD:** National Bank for Agriculture and Rural Development

(Source: Records of the KIPCL)

Appendix 5.1

(Reference to Paragraph 5.1.1)

Package/Work-wise status of Kaleshwaram Project

S. No.	Package No./ Name of the work	Stipulated period of completion	Final value of work to be done (₹ in crore)	Expenditure upto March 2022 (₹ in crore)	Percentage of financial progress	Time overrun as of March 2022 (months)
Link-I						
1	Medigadda Barrage	August 2018	4321.44	3348.24	77	Completed with a delay of 22 months
2	Medigadda Lift	February 2018	4915.37	4721.49	96	Completed with a delay of 21 months
3	Annaram Barrage	August 2018	2565.51	2326.83	91	Completed with a delay of 15 months
4	Annaram Lift	February 2018	3772.56	3003.98	80	Completed with a delay of 21 months
5	Sundilla Barrage	July 2018	2148.45	1671.80	78	Completed with a delay of 41 months
6	Sundilla Lift	February 2018	3573.78	2869.41	80	Completed with a delay of 21 months
	Subtotal of Link I		21297.11	17941.75		
Link-II						
7	Package 6	June 2019	5936.11	5405.04	91	Completed with a delay of 5 months
8	Package 7	June 2019	1984.48	1738.14	88	Completed with a delay of 5 months
9	Package 8	June 2019	5911.51	5396.66	91	Completed with a delay of 5 months
10	Package-I (Additional 1.1 TMC)	June 2022	6339.99	2457.49	39	No delay
11	Package-II (Additional 1.1 TMC)	June 2022	3203.85	1327.68	41	No delay
12	Package-III (Additional 1.1 TMC)	June 2022	226.82	0.00	0	
13	Package-IV (Additional 1.1 TMC)	June 2022	218.86	0.00	0	
	Subtotal of Link II		23821.62	16325.01		
Link-III						
14	Package 9	June 2019	1029.33	785.55	76	33
15	Malkapet reservoir	September 2019	513.12	420.89	82	30
16	Package 9 (Additional Lift)	March 2020	194.83	51.56	26	24
	Subtotal of Link III		1737.28	1258.00		

S. No.	Package No./ Name of the work	Stipulated period of completion	Final value of work to be done (₹ in crore)	Expenditure upto March 2022 (₹ in crore)	Percentage of financial progress	Time overrun as of March 2022 (months)
Link-IV						
17	Package 10	June 2019	3135.52	2863.48	91	33
18	Package 11	June 2019	3767.84	3365.36	89	33
19	Sri Ranganayak Sagar Reservoir	April 2019	493.66	484.16	98	Completed with a delay of 35 months
20	Package 12	June 2019	4018.80	3672.82	91	33
21	SKMS Reservoir - Reach I	November 2020	2196.94	1607.09	73	16
22	SKMS Reservoir - Reach II	October 2020	1638.11	1235.70	75	17
23	SKMS Reservoir - Reach III	December 2020	2494.56	2070.01	83	15
24	SKMS Reservoir - Reach IV	November 2020	1620.20	1214.00	75	16
25	Package 13	May 2019	634.59	497.95	78	34
26	Ramayampet Canal	July 2019	411.83	269.82	66	32
27	Package-I (Additional 1 TMC)	June 2022	4037.93	1555.20	39	No delay
28	Package-II (Additional 1 TMC)	June 2022	7181.26	3214.68	45	No delay
29	Package-III (Additional 1 TMC)	June 2022	793.78	0.00	0 ¹⁸⁴	No delay
30	Package-IV (Additional 1 TMC)	June 2022	1882.61	572.78	30	No delay
31	Shankarampet canal	August 2019	155.27	50.52	33	31
32	Package 14	May 2019	2709.32	2651.56	98	Completed with a delay of 16 months
33	KPS Reservoir-Reach I	May 2019	1029.82	955.28	93	Completed within time
34	KPS Reservoir-Reach II	May 2019	732.97	750.50	102	34
35	Gajwel Canal System	May 2019	210.71	117.78	56	34
36	Jagadevpur Canal System	April 2019	121.80	61.81	51	35
37	Kistapur Canal System	April 2019	76.54	18.81	25	35
38	Upparapally Branch Canal	April 2019	73.79	23.08	31	35
39	Thurkapally Canal	April 2019	201.29	114.08	57	35
40	M Thurkapally Canal System	June 2019	108.05	44.15	41	33
41	Sangareddy Canal System, Reach-I	December 2020	470.66	117.19	25	15
42	Sangareddy Canal System, Reach-II	May 2021	372.92	0.00	0	10
43	Ravalkole Link Canal System	January 2021	618.94	126.66	20	14
Subtotal of Link IV			41189.71	27654.47		

¹⁸⁴ Work commenced but no bills paid yet.

S. No.	Package No./ Name of the work	Stipulated period of completion	Final value of work to be done (₹ in crore)	Expenditure upto March 2022 (₹ in crore)	Percentage of financial progress	Time overrun as of March 2022 (months)
Link-V						
44	Package 15	June 2019	844.69	560.62	66	33
45	Gandhamalla Reservoir	November 2019	719.08	0.00	0	28
46	Package 16	June 2019	1059.75	574.10	54	33
47	Baswapur Reservoir	November 2019	1701.09	1067.73	63	28
	Subtotal of Link V		4324.61	2202.45		
Link-VI						
48	Package 17	June 2019	986.18	808.69	82	33
49	Package 18	June 2019	758.07	309.19	41	33
50	Package 19	June 2019	762.47	98.53	13	33
	Subtotal of Link VI		2506.72	1216.41		
Link-VII						
51	Package 20	June 2019	892.67	861.67	97	33
52	Package 21	June 2019	699.93	455.91	65	33
53	Package 21 A	October 2020	3073.98	1653.33	54	17
54	Package 22	June 2019	1446.48	369.37	26	33
55	Package 27	June 2019	492.69	492.69	100	33
	Package 27 balance work		298.51	0.00	0	
56	Package 28	June 2019	486.68	235.41	48	33
	Subtotal of Link VII		7390.94	4068.38		
			102267.99	70666.48	69	

(Source: Records of the I&CAD Department)

Appendix 5.2

(Reference to Paragraph 5.2)

Work-wise details of the land requirement identified, requisitioned, acquired and yet to be acquired under Kaleshwaram Project

(in acres)

Link	Name of the Package/Work	Total land required	Land requisitioned	Total land acquired	Balance to be acquired
I	Medigadda Barrage	2025.37	2025.37	1277.36	748.01
	Medigadda Lift	441.20	436	436	5.20
	Annaram Barrage	2323.52	1753.31	1753.91	569.61
	Annaram Lift	449.08	449.08	449.08	0
	Sundilla Barrage	1351.22	1351.22	761.05	590.17
	Sundilla Lift	563.38	563.38	563.38	0
	Link-I total		7153.77	6578.36	5240.78
II	Package 6	469.55	469.55	469.55	0
	Package 7	1348.05	1348.05	1348.05	0
	Package 8	615.275	615.275	615.275	0
	Package-I (Additional 1.10 TMC)	777.33	777.33	777.33	0
	Package-II (Additional 1.10 TMC)	421.82	421.82	375.62	46.20
	Package-III (Additional 1.10 TMC)	294.48	294.48	0	294.48
	Package-IV (Additional 1.10 TMC)	344.93	344.93	0	344.93
	Link-II total		4271.44	4271.44	3585.83
III	Package 9	2132.30	2132.3	1507.2	625.1
	Malkapet Reservoir	774.27	774.27	774.27	0
	Additional command area lift	212.13	212.13	2.29	209.84
	Link-III total		3118.70	3118.7	2283.76
IV	Package 10 (including Ananthagiri)	6706.58	6706.58	6256.08	450.5
	Package 11	3786.00	3382.00	1835.00	1951.00
	Sri Ranga Nayak Sagar Reservoir	2184.00	2184.00	2184.00	0.00
	Package 12	2792.37	2538.37	1553.35	1239.02
	Package-I (Additional 1 TMC)	540.85	540.85	475.25	65.6
	Package-II (Additional 1 TMC)	455.38	455.38	455.38	0
	Package-III (Additional 1 TMC)	862.23	862.23	473.7	388.53
	Package-IV (Additional 1 TMC)	97.13	97.13	97.13	0
	Sri Komaravelli Mallanna Sagar Reservoir (4 works)	17865	17865	17865	0
	Package 13	2205.62	2182.32	1610.5	595.12
	Package 14	524.29	524.29	524.29	0
	Konda Pochamma Sagar Reservoir (2 works)	4771	4771	4771	0
	Konda Pochamma Sagar Canals (11 works)	6057.07	6057.07	2935.89	3121.18

Link	Name of the Package/Work	Total land required	Land requisitioned	Total land acquired	Balance to be acquired
	<i>Link-IV total</i>	48847.52	48166.22	41036.57	7810.95
V	Package 15	3841	2277	1723	2118
	Gandhamalla Reservoir	2618	2566	239	2379
	Package 16	5911	2686	1165	4746
	Baswapur Reservoir	4230.73	4230.73	2018	2212.73
	<i>Link-V total</i>	16600.73	11759.73	5145	11455.73
VI	Package 17	401.92	401.92	383.76	18.16
	Package 18	1586.68	1286.68	800.13	786.55
	Package 19	3100	1354	453	2647
	<i>Link-VI total</i>	5088.6	3042.6	1636.89	3451.71
VII	Package 20	661.37	661.37	661.37	0
	Package 21	250	250	248	2
	Package 21A	2166.2	2166.2	801.7	1364.5
	Package 22	4426	2926	1256	3170
	Package 27	2500	1824.26	1521.26	978.74
	Package 28	3026	981	555	2471
	<i>Link-VII total</i>	13029.57	8808.83	5043.33	7986.24
Grand Total		98110.33	85745.88	63972.16	34138.17

(Source: Records of the I&CAD Department)

Appendix 6.1

(Reference to Paragraph 6.4.5)

Details of cases where excess payments pointed out by Audit have been recovered

(1) Excess payment to contractor due to incorrect inclusion of steel in adit tunnels

The scope of work under Package-12 (in Link-IV), which was awarded under the earlier PCSS project, *inter alia*, included excavation of a 9.18 Km long tunnel with 9 metres diameter. An amount of ₹372.14 crore was provided in the estimate for this tunnel. During re-engineering, the Department made some changes in the scope of work which included increase in the length of tunnel by another 6.9 Km. These additional items of work were entrusted to the same contractor by concluding a supplemental agreement.

Audit observed that while working out the cost of the supplemental agreement, the Department included 13,228 MT of reinforcement steel for the main tunnel and another 13,228 MT of steel for the entrance portals of four adits. As per seen from the estimate, the total quantity of reinforced cement concrete (RCC) involved in the main tunnel was 64,530 Cu.M. whereas the RCC quantity involved in the entrance portals of adits was only 891 Cu.M. Thus, the quantity of steel required for 891 Cu.M. of RCC work in adits would work out to only 182.64 MT¹⁸⁵. Thus, in the revised estimate, the Department provided about 13,045.36 MT of steel in excess of the actual requirement. This resulted in inflating the value of the supplemental agreement by ₹62.82 crore and excess payment to the contractor to that extent.

(2) Non-recovery of cost of stone and lead charges

The scope of work under the contract for construction of Kondapochamma Sagar (KPS) Reservoir (Reach-I), *inter alia* included several items requiring use of stone/metal. The rates payable to contractor were inclusive of the cost of stone/metal used in the work. In the estimates, the Department provided for the cost of stone including lead (conveyance) charges for 20 Km.

Audit observed that a total quantity of 3.57 lakh Cu.M. of stone/metal was used in the work, as seen from the XVI & part bill paid (May 2021) to the contractor. Audit further observed that during execution of the work, the Department had permitted (December 2017) the contractor to utilize the 58,888 Cu.M. of stone excavated in another work (Package-14) available in Chebarthy village, which was eight Km away from the KPS work site. However, in the measurement books of the work, the Department did not record the quantities of work executed by the contractor by re-using the excavated rock and did not recover the initial cost of stone (₹97 lakh) and difference of lead charges (₹79 lakh) from the bills paid to contractor, resulting in undue benefit of ₹1.76 crore to the contractor.

(3) Excess payment of price adjustment on POL

The price adjustment clause in the agreement of Package-15 stipulated that while calculating the price adjustment on POL, the average official retail price of diesel at the nearest consumers' petrol pumps nearest to work spot on 'the 15th day of the middle calendar month of the quarter for which the bill is being paid' shall be considered as the current price. For example, for the quarter January-March, the prevailing rate of diesel on 15th February is to be taken as the present price. Contrary to this, the Department paid price escalation to contractor by taking the diesel price prevailing on 'the 15th day of the month in which bills were paid' to the contractor. Due to this, an amount of ₹0.87 crore was excess paid toward price escalation to the contractor.

¹⁸⁵ Steel requirement projected for 64,530 Cu.M. of RCC in main tunnel: 13,228 MT. Pro-rata steel requirement for 891 Cu.M. of RCC in adit tunnels = 13,228 MT X 891 Cu.M./64,530 Cu.M. = 182.64 MT