

6/2016

GOVERNMENT OF JAMMU AND KASHMIR



*KASHMIR IRRIGATION & FLOOD CONTROL DEPARTMENT,  
SRINAGAR*

REVISED PROJECT REPORT  
OF  
TRAL LIFT IRRIGATION SCHEME,  
PULWAMA,  
KASHMIR

IRRIGATION DIVISION, TRAL

## CONTENTS

<b>Chapter No 1 Preamble</b>	03
1.1 Introduction	03
1.2 History	04
1.3 Necessity	05
1.4 Proposals	09
1.5 Recommendations	10
<b>Chapter No 2 Salient features</b>	12
1.1 Salient features	12
<b>Chapter No 3 Hydrology</b>	15
3.1 Source	15
3.2 Ten-daily delta statement	16
3.3 Water requirement of crops	17
<b>Chapter No 4 Irrigation planning</b>	18
4.1 List of beneficiary villages	18
4.2 Land potential & crop pattern	18
<b>Chapter No 5 Cost Estimates</b>	20
5.1 General Abstract of cost	20
5.2 Detailed Abstract of cost	21
<b>Chapter No 6 Economics</b>	54
6.1 Benefit – Quantitative approach	54
<b>Chapter No 7 Construction programme and planning</b>	58
7.1 Source of construction materials,	58
7.2 Availability of machinery	58
7.3 Completion time & funding source	58
<b>Chapter No 8 Quality control aspects</b>	59
8.1 Specifications of works	59
8.2 Quality control management	62
<b>Chapter No 9 Water User Associations</b>	64
9.1 Formation of water user associations	64
<b>Chapter No 10 Command area development</b>	65
10.1 Command area activity	65

## 1.1 Introduction

Water is lifeline of mankind. The entire history of mankind could be written in terms of our need for water. Early civilizations flourished on land made productive by great rivers like Nile in Egypt, Euphrates in Mesopotamia, Indus in India and Huang-Ho in China. One of the aspects of evolution of mankind revolved around the tradition of collecting, storing and preserving water for various uses. Water came to be regarded as precious and its conservation and preservation was sanctified by religion.

Many of us have an image of the world as a blue planet as 70% of the earth's surface is covered with water. The reality, however, is that 97% of the total water on earth is saline and only 3% is available as fresh water. About 77% of this fresh water is locked up in glaciers, 11% occurs at depths exceeding 800m below the ground (extractable but non-viable), 11% occurs within 800m depth (extractable & viable) and 1% is available as surface water in lakes and rivers.

In this context, the nature has been particularly benevolent to the state of Jammu and Kashmir in respect of huge aqua resources in the form of perennial rivers, nallahs, lakes and springs. The state of Jammu and Kashmir lies in the lap of Himalayas, extending from 32° to 36° N latitudes and 73° to 80° E longitudes. The state has a geographical area of 22, 22,236 sq. km. (including 78,114 sq. km. under Pakistan and 42,685 sq. km. under China). The valley itself is situated in a river basin historically known as the Vitista, in recent nomenclature as the Jhelum basin. The topography of the basin is predominantly characterized by alluvial plains, plateaus and karewa.

Total cultivable area in the state is 0.575% of total national cultivable area whereas it supports a population of nearly 1% of the national population. The gross irrigated area of the state is 40.26% of the gross sown area. As such, nearly 59.74% gross sown area is still bereft of irrigation facilities and is dependent on erratic rainfall. The food grain production of the state is 1505 kg/ha against a national figure of 1739 kg/ha. As such, there is huge scope for bringing more cultivable land under the ambit of irrigation. To this end, necessary infrastructure in agriculture sector needs to be created.

## 1.2 History

Had there been cultivation not known to man, the man itself would have starved, famished, lacking numbers and consequently become an endangered species. Cultivation has given man a space for multiplication, expansion and development. Development of reliable sources of water such as storage reservoirs, ponds, lakes, irrigation canals etc. came to be regarded as an essential part of good governance. To ensure water availability to the populace, emperors and kings built various water bodies. *Rajtarangini* gives a detailed account of irrigation systems developed in the 12th Century in Kashmir.

Planned exploitation of cultivable land in Kashmir commenced with the establishment of Irrigation Department in 1953-54. Over the years, significant developments have been made in respect of development of command area in J&K under various modes of irrigation:

### NET AREA IRRIGATED

YEAR	1950-51	1955-56	1960-61	1965-66	1968-69	1974-75	1980-81
Th. ha	261.00	290.00	274.00	278.00	264.00	295.00	304.00
YEAR	1985-86	1990-91	1995-96	1996-97	1997-98	1998-99	1999-00
Th. ha	309.61	298.09	306.58	313.25	308.77	309.15	303.09
YEAR	2000-01	2001-02	2002-03	2003-04	2004-05		
Th. ha	310.87	310.17	299.67	306.53	310.89		

(Source: Planning & Development Department, Govt. of J&K)

The utilization under different modes of irrigation in 2004-05 is depicted as:

#### NET AREA IRRIGATED (Th. Ha)

Canals	286.28
Tanks	003.93
Wells	001.08
Other sources	019.60

(Source: Planning & Development Department, Govt. of J&K)

In India, rainfall is unevenly distributed spatially and temporally. Against an all India area weighted annual rainfall of 1213 mm, Jammu & Kashmir had an average rainfall of 1241 mm in 2010. Notwithstanding the fact that the precipitation accruing from the

monsoons helps in catering to the irrigation needs of the commands of various canals, the rainfall is erratic and non-dependable. There is a need for exploration and subsequent exploitation of alternative dependable sources of water for irrigation purposes as about 60% gross sown area in the state still requires adequate irrigation water supplies.

### 1.3 Necessity

The state of J&K faces acute shortage of food grains and these have to be imported from other states of the country to meet the demand. As stated earlier, the food grain production of the state is 1505 kg/ha against a national figure of 1739 kg/ha. The food grains are being supplied to the public at subsidized rates causing serious setback to the economy and over-all development of the state. However, every effort is being made to produce adequate food grains locally by providing adequate irrigation facilities.

The contribution of agriculture sector towards the GDP of a state is too worthwhile to be forsaken. This sector while ameliorates substantially the economic status of an involved agrarian populace on one hand, it adds to the state exchequer by way of accrual of irrigation water tax on the other hand. It generates thousands of man days as employment to the local as well as non-state labor force. There is less drain of public money towards import of edibles and consequently more money is spared for infrastructural development. The purchasing power of the beneficiaries of irrigation systems also leaps up thereby enabling them to enjoy the facilities furnished by the modern living. There is less unrest among the population having enough to fill their bellies and still spare enough to barter against facilities which make the present day living comfortable.

The command area of the canal inhabits people with agriculture as the foremost important occupation. There are no institutions/industries established in the area which could provide substantial employment though an unnoticeable chunk of the local population is engaged in public or minor self-employed enterprises. This scenario culminates into a situation wherein agriculture sector figures as priority one for any consistent development of the area. Having said so, the agriculture cannot be sustained through archaic methods of cultivations like dependence on natural rains, absence of quality seeds, no or meager use of fertilizers and de-weeding agents, chance cropping etc. Even if other factors are improved, only assured adequate irrigation facilities can

fructify results. The irrigation facilities can be ensured through a well oriented irrigation network in the command alone which is currently non-existent in the area. Keeping in view its continuous use and utility in fulfilling the irrigation commitments of the command, it is expediently exigent to establish an irrigation system so that the intended objectives of the large scale investment in the establishment of the scheme are realized in conjunction with socio-economic upliftment of the beneficiary agrarian community.

There are persistent demands from the farmers of this area for providing assured water supplies for irrigation purposes. These areas have been developed mostly into orchard, maize and vegetable fields. There is no irrigation system that would suffice the need of the area in irrigation sector. Presently, the quality of the crop is far below standards in size, volume of crop, juiciness of crop in absence of water requisite for fungicidal measures and particularly for the growth of the plant itself. The farmers have to carry water from long stretched distances for spray purposes and irrigation is just too luxurious a thing to be dreamed of.

In this context, a scheme for providing irrigation facilities in Tral and adjoining 25 villages of tehsil Tral, district Pulwama was envisaged in the form of Tral Lift Irrigation Scheme with an irrigation potential of 6000 ha over a command of 4000 ha which was subsequently started in 1979-80 (9/1979) at an estimated cost of Rs. 612.84 lacs under state sector. The scheme is a three-stage lift system comprising of pump houses, rising mains, water conductors (open lined sections as well as conduits) including irrigations structures viz. delivery tanks, syphons, aqueducts, super passages, escapes, etc.

An expenditure of Rs. 782.00 lacs was incurred upon the scheme ending 3/1999. The scheme was included in AIBP in 2000-01. The revised cost of the scheme at 2009 price level as approved by the PCI, GoI vide File No: 20(9)/1/2009-WR dated 12-05-2010 was Rs. 14075.622 lacs including pre-AIBP amount of Rs. 782.00 lacs. The cumulative expenditure of the scheme ending 11/2015 is Rs. 9923.64 lacs (Rs. 782.00 lacs Pre- AIBP & Rs. 9141.64 lacs under AIBP).

The completion of the scheme got inordinately delayed owing to a number of factors viz. turmoil in valley, resistance in land acquisition, non-availability of funds, non-availability of departmental stores, snowbound-ness of project area, etc. However, a meticulous milestone was achieved in 8/2014, when first two stages of the scheme were commissioned by then Hon'ble Chief Minister of the Jammu and Kashmir state. An

irrigation potential of 4440 ha and potential utilization of 1200 ha stands achieved ending 3/2016.

Human activities have been recognized as a major force shaping the biosphere. Over the years, it has been observed that rampant urbanization, development of infrastructural utilities, small scale industrial growth, population growth, nuclear family trends, etc. has eaten into arable lands of various irrigation systems and this scheme too could not escape this global agriculture land conversion phenomenon. While losing command area to the aforementioned factors over the period since its inception, this scheme has borne the brunt somewhat more overwhelmingly. Even the shrinking of the command was felt since 2008 when an exercise was initiated for assessment of the command of the scheme which ultimately led to the conclusion that the loss of command was for real and suggestions came up for compensation by way of inclusion of cultivable land of Awanpora plateau so that full potential of the project infrastructure created so far should be utilized in full. A strong case for inclusion of Awanpora plateau in Tral LIS was made earlier but could not fructify probably owing to administrative hassles. In this very context, certain changes were affected in the project report of the scheme during various stages of execution viz. number of pumps in 3<sup>rd</sup> stage, size of rising mains in 2<sup>nd</sup> and 3<sup>rd</sup> stages, etc. Accordingly pump house 3<sup>rd</sup> has been constructed. All these changes (or deviations) have been made with a view to avert any wasteful expenditure in creating any infrastructure for non-existent command which stands proved now with recent assessment. The farsighted decisions taken earlier by the project authorities from time to time in consonance with the ground facts thus stand vindicated and public money has been saved from getting down the drain.

As per recent assessment/chakbandi of the command of the scheme in its 3<sup>rd</sup> stage, the ziladari wing of the department after surveying the whole area afresh has come up with figures which points towards shrunk command of this stage of the project. The causes attributed to the loss of cultivable land have been noted above. It has been found that about 585 ha arable land has been lost from 2000 ha command of 3<sup>rd</sup> stage canal envisaged earlier as per approved DPR. The villages most hit by the loss are situated near the tail of the 3<sup>rd</sup> stage canal.

For ensuring full realization of the potential of the scheme and to account for the escalation in cost of land and key construction materials, a revised DPR incorporating

Awanpora plateau was submitted to State Government in January 2016. To assess the ground reality with regard to need and feasibility of the revised DPR, the Honorable Minister for Public Health Engineering, Irrigation & Flood Control Department, Government of J&K constituted a three member committee comprising of Deputy commissioner, District Pulwama, Chief Engineer Kashmir, Irrigation & Flood Control Department, Srinagar and Director, M&AD, CWC, Jammu (or his representative) which visited the area on 13-04-2016. The conclusions of the committee are reproduced as under:

1. Command area may be irrigated through piped irrigation network beyond already constructed canal which results in less acquisition of land and shall minimize water losses.
2. There will be saving in water as concluded at 1 above which can be utilized in serving the command area of Awanpora Plateau or any such command as proposed by irrigation department with a separate scheme.

*(The full text of the report of the committee is appended herewith this manuscript)*

#### **1.4 Proposals**

Under these circumstances, the proposals adopted in compliance to the conclusions of the committee are noted hereunder:

1. The 3<sup>rd</sup> stage canal shall be constructed to the originally approved extent, however, replacing the open lined canal proposal by pipe network from RD 6600m to RD 7500m and beyond RD 12500m;
2. The 3<sup>rd</sup> stage canal shall be constructed as open lined canal from RD 7500m to 12500m, however, with a reduced section where the canal is yet to be constructed;
3. The right branch of 2<sup>nd</sup> stage canal beyond RD 2400m shall be constructed by pipe network replacing the open lined canal;
4. Eight pumps to be installed at stage 2<sup>nd</sup> pump house, keeping available space of two pumps for Awanpora plateau.
5. Four pumps for stage 2<sup>nd</sup> command as per original DPR and only four pumps for stage 3<sup>rd</sup> command owing to diminishing of command;
6. 1200mm diameter MS rising main for stage 3<sup>rd</sup> canal and 1050mm diameter for the second rising main for stage 2<sup>nd</sup>,

As per adopted proposals, brief details with achievements thereof are noted as under:

**Stage 1<sup>st</sup>:** Pump house (33° 51' 44" N, 75° 02' 48" E) located on right flank of river Jhelum bank at Kaichachkote stands constructed. 2 no MS pipe each 1.125 m dia. & 375 m long as rising mains stand laid. Stage 1<sup>st</sup> canal of length 1265m as OLC also stands



constructed. The pump house is housed with all the necessary pumping equipment and is operational since 8/2014. Total installed capacity of pumps is 150 cusec (5x30 cusec and 1x30 cusec standby).

**Stage 2<sup>nd</sup>:** Pump house (33° 51' 59" N, 75° 03' 45" E) located at Hariparigam stands constructed. 1 no MS pipe 1.30 m dia. & 2225 m long as rising main has been laid. 1 no 1.05m dia. & 2225 m long rising main along with its anchoring and saddling arrangement is yet to be laid. Stage 2<sup>nd</sup> canal of length 2350m out of 3000m on right branch is complete and 6700m long OLC left branch acting as feeder for 3<sup>rd</sup> stage pump house also stands constructed. The right branch from RD 2400m is now proposed as pipe conduit with DI pipes (from 600mm  $\phi$  to 150mm  $\phi$  at tail) with intercepting/outlet manholes at intervals of 48m. The pump house has a space for 10 pumps. Eight number pumps are meant for Tral area and two no pumps are proposed for Awanpora plateau. Presently the pump house is installed with 7 no pumps. There is no standby arrangement. As the scheme is meant for orchards only, a constant supply just like paddy is not required and no standby arrangement has been opted as per original DPR. Five out of the seven fitted pumps are operational since 8/2014. Total proposed installed capacity of pump house is 150 cusec. The area wise distribution of discharge is 60 cusec for stage 2<sup>nd</sup> canal (as per original DPR), 60 cusec for 3<sup>rd</sup> stage canal (instead of 90 cusec as per original DPR) and 30 cusec is reserved for Awanpora.

**Stage 3<sup>rd</sup>:** Pump house (33° 54' 07.5" N, 75° 07' 47" E) located at Shikargah stands constructed. Minor finishing touches remain yet to be achieved. Pumping equipment is yet to be installed. In tune with deliberations outlined in subhead "Necessity" regarding loss of command in third stage canal, only four no pumps have been provided which are yet to be installed. The rising main of 1.20m dia. and 970m long is yet to be laid. Stage 3<sup>rd</sup> canal stands constructed up to RD 5250m and in patches in tail portion. Some important structures like syphons, aqueducts, road crossings, super passages stand constructed at places. As formation level of canal bed very deep from RD 6600m to 7520m (NSL 3.5m to 13.6m high from bed level), MS pipe of 1500mm diameter has been proposed with inspection/cleaning manholes at 100m intervals. The canal section shall have a bed width of 0.90m from RD 75200m to RD 12500m against 1.50m provided upstream. From RD 12500m, DI pipes (from 600mm  $\phi$  to 150mm  $\phi$  at tail) with intercepting/outlet manholes at intervals of 48m. The manholes have been proposed in RCC m-15 concrete.

#### 1.5 Recommendations

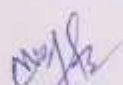
In view of the persistent demands and in consonance with the policy of government for development of infrastructural facilities at grass root level, the arrangement of irrigation facility in this area has been an issue discussed every now and


then in the forums held in connection with the development of this hilly sub-district. Accordingly, this scheme was conceived in seventies and after passage of 35 years, the local farmers want to see the logical establishment of this scheme which has hit numerous bottlenecks till date. For the concerned farmers, the completion of this scheme would mean a dream come true.


*The snail pace of progress on this scheme on account of various factors outlined hereinabove, entailed incorporation of this scheme, on national level, into a list of such 23 schemes which have been prioritized by the union ministry of water resources for completion by 2016-17 on fast track basis by way of concerted monitoring, guidance and ready availability of funds. The recent field visit of some authorities from Central Water commission and Niti Ayog for taking stock of progress on Tral Lift Irrigation Scheme in 12/2015 was a step in the same direction. The scheme is being monitored by PMO for effective implementation.*

In tune with the above proposals, the DPR submitted earlier has been recast and works out to Rs. 17050.00 lacs for the aforementioned revised proposals against the original approved cost of Rs. 14075.662 lacs. The scheme remains economically viable with a BCR of 1.20:1.

The need for completing the scheme is aimed at boosting the socio-economic condition of the beneficiaries of the scheme. Majority of these people with farming as their main source of income, their economy sprouts by dint of the agriculture produce, yielded annually by the fields. The benefits of the scheme are too abundant to be out rightly overlooked or forsaken. The scheme in its revised format is, therefore, earnestly recommended for consideration for approval.

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral


  
Chief Engineer,  
Kashmir Irrigation & Flood Control Department,  
Srinagar


## 2.1 SALIENT FEATURES


(A)	<b>General</b>	
1	State	Jammu and Kashmir
2	Tehsil and District	Tral, Pulwama
3	Villages to be benefitted	25 no
4	Administrative authority	Planning Commission, Government of India vide File No: 20(9)/1/2009-WR dated 12-05-2010
5	Date of start	9/1979
6	Date of completion	2016-17
(B)	<b>Hydrology</b>	
1	River basin	Jhelum
2	Source	River Jhelum
3	Highest flood discharge	2600.00 cumec/91873 cusec
4	Highest flood level (1973)	1594.62 m
5	Max. dependable discharge in river	170.00 cumec/6007 cusec (June)
6	Minimum dependable discharge in river	28.30 cumec/1007 cusec (January)
7	Minimum water level in river	1585.37 m
8	<b>Design Discharge</b>	
a	Intake channel	74.99 cumec/2650 cusec
b	Stage 1 <sup>st</sup> pump house	4.25 cumec/150 cusec
c	Stage 2 <sup>nd</sup> pump house	4.25 cumec/150 cusec
d	Stage 3 <sup>rd</sup> pump house	1.70 cumec/60 cusec
(C)	<b>Civil works</b>	
1	Pump houses	
a	No of pump houses	03 no
b	Type of structure	Inundation head works
c	Type of construction	Framed structure
d	Location of pump houses	
(i)	Stage 1 <sup>st</sup> pump house	Kaichachkote (33° 51' 44" N, 75° 02' 48" E)
(ii)	Stage 2 <sup>nd</sup> pump house	Hariparigam (33° 51' 59" N, 75° 03' 45" E)
(iii)	Stage 3 <sup>rd</sup> pump house	Shikargah (33° 54' 07.5" N, 75° 07' 47" E)
2	Canals (reach wise canal length)	
a	Stage 1 <sup>st</sup> canal	
(i)	Open lined channel	1.265 km
b	Stage 2 <sup>nd</sup> canal	
(i)	Left branch: OLC/covered channel	6.700 km
(ii)	Right branch: OLC	2.400 km
	Pipe conductor	0.600 km
c	Stage 3 <sup>rd</sup> canal	
(i)	Open lined/covered channel	11.560 km
(ii)	Pipe conductor	5.440 km

3	Cross Drainage Works	57 No		
a	Super passages	29 No		
b	Canal Siphons	4 No		
c	Aqueducts/flumes	24 No		
d	Minor drainage works	— No		
4	Bridges/Culverts	44 No		
a	RCC Culverts/Tractor crossings	29 No		
b	Foot Bridges	25 No		
(D)	Electrical/ mechanical work			
1	Stage 1 <sup>st</sup>			
a	Pumps	6 no vertical turbine pumps of 0.85 cumec/30 cusec capacity each having gross head of 13 m		
b	Motors	6 no 200 hp/150 kW, 33/0.44 kV vertical squirrel cage induction motors		
c	Rising mains	2 no pipes each 1.125 m dia. & 375 m long		
2	Stage 2 <sup>nd</sup>			
a	Pumps	8 no vertical turbine pumps of 0.425 cumec/15 cusec capacity each having gross head of 130.5 m		
b	Motors	8 no 1045 hp/780 kW, 33/11 kV vertical squirrel cage induction motors		
c	Rising mains	2 no pipes: 1 no 1.30 m dia. & 2225 m long, 1 no 1.05m dia. & 2225 m long for 2 <sup>nd</sup> stage rising main		
3	Stage 3 <sup>rd</sup>			
a	Pumps	4 no vertical turbine pumps of 0.425 cumec/15 cusec capacity each having gross head of 130.5 m		
b	Motors	4 no 1045 hp/780 kW, 33/11 kV vertical squirrel cage induction motors		
c	Rising mains	1 no pipe 1.20 m dia. & 970 m long		
(E)	Command Area			
a	Gross Command Area	6800 hectare		
b	Cultivable Command Area	3415 hectare		
c	Ultimate Irrigation Potential	5415 hectare		
d	Potential utilization	Kharif: 3415 hectare, Rabi: 1707 hectare		
(F)	Crop pattern			
	Kharif	3415.00 hectare	Rabi	1707.00 hectare
1	Potatoes	483.91	Wheat	304.17
2	Vegetables	120.96	Oil seeds	859.12
3	Pulses	794.99	Peas	543.71
4	Maize	557.20		
5	Lucerne	404.06		
6	Orchards	1053.88		

<b>(G)</b>	<b>Economics of scheme</b>	
a	Estimated cost of scheme	Rs. 17050.00 lacs
b	Benefit cost ratio	1.315 : 1
<b>(H)</b>	<b>Beneficiary villages (25 no)</b>	Panchpora, Dadoo, Hariparigam, Partap Pora Chak, Bati Pora, Lariyar, Buchoo, Saimoh, Ratsuna, Koil Shikargah, Laribal, Pinglish, Cherbug, Haffoo, Hayena, Mandoora, Chewa Ullar, Chan Kitar, Lal Pora, Khasi Pora, Chattargam, Monghama, Panzoo, Tral Bala, Tral Payeen


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

### 3.1 Source of the scheme

The Pir Panjal ranges lie in the Inner Himalayan region, running from east southeast to west northwest across the states of Himachal Pradesh and Jammu and Kashmir in India as well as Pakistan Occupied Kashmir in Pakistan, where the average elevation varies from 1,400 m (4,600 ft) to 4,100 m (13,500 ft). The glaciers on northern slopes of Pir Panjal range Kashmir constitute the source of many nallahs which are tributaries of river Jhelum. The river is the source of this scheme and the adequacy of discharge in the river during kharif season is an undisputed fact. A mere 150 cusec discharge requirement for this scheme is readily available from the river. The aspects relating to hydrology stand discussed in the original DPR.

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

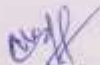
### 3.2 Ten-Daily Delta and Water requirement

The following table gives values of crop wise delta in inches on 10-daily basis for the cropping season of kharif.

Month	Ten Daily period	Kharif crops					
		Vegetables	Potatoes	Maize	Orchards	pulses	Lucerne
April	I	---	---	---	---	---	---
	II	1/2	---	---	---	---	---
	III	1/2	---	---	---	---	---
May	I	1/2	---	1	1.5	---	1
	II	1	---	1	1.5	---	1
	III	1	---	1	1.5	---	1
June	I	1	4	2	1.5	1/3	2
	II	2	5	2	1.5	1/3	2.5
	III	1.5	5	1	1.5	2/3	1.5
July	I	1	4	1	1.5	1/3	---
	II	1	---	1	1.5	1/3	---
	III	1	---	1	1.5	1/3	---
August	I	1	---	1	---	1/3	---
	II	1	---	1	---	1/3	---
	III	1	---	1	---	1/3	---
September	I	---	---	---	---	---	---
	II	---	---	---	---	---	---
	III	---	---	---	---	---	---

(Source: State Agriculture Department)

Based on the above values of delta on ten-daily basis, the calculations of water requirement of crops for Kharif are worked out in the following table at 60% conveyance efficiency and 90% field application efficiency, wherefrom the peak irrigation requirement works out to 150 cusec (4.245 cumec). This requirement forms the base for installed capacity of the three pump houses. Total installed capacity of pumps is 150 cusec in pump house 1<sup>st</sup>. The area wise distribution of discharge is 60 cusec for stage 2<sup>nd</sup> command and 60 cusec for stage 3<sup>rd</sup> command. 30 cusec are meant for the proposed Awanpora LIS.

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

3-3 Water requirement of crops

Month	Ten Daily period	Kharif crops							(CCA in acres & discharge in cusec)		
		Potatoes		Vegetables	Pulses	Maize	Lucerne	Orchards	NIR	FIR	GIR
									@ 60%	@ 90%	
April	I	566.80	141.70	931.17	652.65	473.27	1234.41	4000.00			
	II	1400	350	2300	1612	1169	3049	9880			
	III	0	0	0	0	0	0	0			
	I	0	0.74	0	0	0	0	0.74	1.23	1.36	
	II	0	0.74	0	0	0	0	0.74	1.23	1.36	
	III	0	0.74	0	6.77	4.91	19.22	31.63	52.72	58.58	
May	I	0	1.47	0	6.77	4.91	19.22	32.37	53.95	59.94	
	II	0	1.47	0	6.77	4.91	19.22	32.37	53.95	59.94	
	III	0	1.47	0	6.77	4.91	19.22	70.80	118.00	131.12	
June	I	23.53	1.47	3.22	13.55	9.82	19.22	80.61	134.35	149.28	
	II	29.41	2.94	3.22	13.55	12.28	19.22	80.61	134.35	149.28	
	III	29.41	2.21	6.44	6.77	7.37	19.22	71.41	119.02	132.24	
July	I	23.53	1.47	3.22	6.77	0	19.22	54.21	90.35	100.38	
	II	0	1.47	3.22	6.77	0	19.22	30.68	51.13	56.81	
	III	0	1.47	3.22	6.77	0	19.22	30.68	51.13	56.81	
August	I	0	1.47	3.22	6.77	0	0	11.46	19.11	21.23	
	II	0	1.47	3.22	6.77	0	0	11.46	19.11	21.23	
	III	0	1.47	3.22	6.77	0	0	11.46	19.11	21.23	

Peak discharge requirement works out to 149.28 cusec say 150.0 cusec (4.245 cumec)

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral



#### 4.1 List of beneficiary villages

S. No.	Name of villages	S. No.	Name of villages	S. No.	Name of villages
1	Panchpora	10	Koil Shikargah	19	Lal Pora
2	Dadoo	11	Laribal	20	Khasi Pora
3	Hariparigam	12	Pinglish	21	Chattargam
4	Partap Pora Chak	13	Cherbug	22	Monghama
5	Batipora	14	Nigeen Pora	23	Panzoo
6	Lariyar	15	Nazneen Pora	24	Tral Bala
7	Buchoo	16	Mandoora	25	Tral Payeen
8	Saimoh	17	Chewa Ullar		
9	Ratsuna	18	Chankitar		


#### 4.2 Land potential & crop pattern


The scheme had a culturable command area of 4000 ha. As per original DPR, the command was bifurcated in two stages of the project- 2000 ha in 2<sup>nd</sup> stage, 2000 ha in 3<sup>rd</sup> stage while stage 1<sup>st</sup> has no command. Due to urbanization, small scale industrial growth, population growth etc., the command of 3<sup>rd</sup> stage has shrunk as felt since 2008 and established by recent survey of the command by Ziladari wing of the department. A loss in command of 3<sup>rd</sup> stage canal to the tune of 585 ha has been estimated. Although, the command in stage 2<sup>nd</sup> is irrigated since 8/2014 with commissioning of the first two stages of the project in 8/2014, the crops in stage 3<sup>rd</sup> command are currently grown as chance crops and are dependent over rains which are erratic and scanty. Currently there is no sustained irrigation source for these land chunks resulting in poor yield despite considerable physical and financial investments.

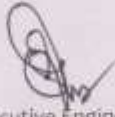
Despite abandoning a command of 585 ha in the tail portion of the 3<sup>rd</sup> stage canal, the crop pattern envisaged earlier in the original DPR has been retained except for the orchard crop to which a lot of land has been converted. The Ziladari branch has assessed through recent chakbandi that a considerable command has been brought under orchard

crop which is proving a lucrative cash crop in the valley. Accordingly, the envisaged post-construction stage cropping pattern of the scheme has been modified. The statement of existing and proposed cropping pattern envisaged in the command of the scheme is given below.

Pre-Construction stage			Post-Construction stage		
S. No.	Crop	CCA (ha)	S. No.	Crop	CCA (ha)
<b>Kharif:</b>			<b>Kharif:</b>		
1	Potatoes	600.00	1	Potatoes	483.91
2	Pulses	600.00	2	Vegetables	120.96
3	Maize	2200.00	3	Pulses	794.99
4	Orchards	600.00	4	Maize	557.20
			5	Lucerne	404.06
			6	Orchards	1053.88
	<b>Sub total</b>	<b>4000.00</b>		<b>Sub total</b>	<b>3415.00</b>
<b>Rabi:</b>			<b>Rabi:</b>		
1	Wheat	1200.00	1	Wheat	304.17
2	Oil seeds	400.00	2	Oil seeds	859.12
3	Peas	400.00	3	Peas	543.71
	<b>Sub total</b>	<b>2000.00</b>		<b>Sub total</b>	<b>1707.00</b>

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

5.1 General Abstract of cost

(Rs. in lacs)

S. No.	Sub head of Project	Original cost	Excess/ Savings	Revised Cost	Cum Expd. ending 03/2016	Balance Cost
1	2	3	4	5	6	7
<b>A</b>	<b>DIRECT CHARGES</b>					
	<b>I-WORKS</b>					
1	A- Preliminary	37.409	0.000	37.409	33.489	3.920
2	B- Land	806.601	949.175	1755.776	805.776	950.000
3	C- Works	1769.447	526.850	2296.297	1769.447	526.850
5	F- CD Works	675.319	-11.970	863.349	793.649	69.700
6	G- Bridges	188.986	21.774	210.760	180.030	30.730
7	H- Escapes	141.348	0.000	141.348	134.848	6.500
8	K- Buildings	89.816	17.000	106.816	89.816	17.000
9	L- Canals	3023.380	1162.010	4185.390	2419.560	1765.830
10	M- Plantation	2.201	0.000	2.201	0.001	2.200
11	O- Misc.	87.143	0.000	87.143	80.543	6.600
12	P- Maintenance	117.200	17.940	135.140	99.310	35.830
13	Q- Special T&P	19.402	0.000	19.402	3.492	15.910
14	R- Communications	233.340	54.740	288.080	233.340	54.740
15	S- Elect. Systems	5248.000	-77.800	5170.200	3108.650	2061.550
16	U- Distributaries	61.970	54.799	116.769	10.889	105.880
17	Y- Losses on stock	29.300	4.230	33.530	0.000	33.530
	<b>II- Establishment</b>	1172.100	197.280	1369.380	160.420	1208.960
	III- Ord. T&P	10.380	-5.640	4.740	0.380	4.360
	IV- Suspense	0.000	0.000	0.000	0.000	0.000
	V- R & R	-3.890	-12.130	-16.020	0.000	-16.020
	<b>B Indirect charges</b>	166.170	76.120	242.290	0.000	242.290
	<b>Grand total</b>	<b>14075.622</b>	<b>2974.378</b>	<b>17050.000</b>	<b>9923.640</b>	<b>7126.360</b>

Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

Executive Engineer,  
Irrigation Division, Tral

Chief Engineer,  
Kashmir IB & FC Department, Srinagar

5.2 Detailed Abstract of Cost

DETAILED WORKS ABSTRACT OF TRAIL LIFT IRRIGATION SCHEME (Rs. in lacs)								
S. No.	Sub head of Project	Original cost	Revised Cost	Cum Expd. ending 03/2016	Balance Cost	Name of Works	Allotted/ Estimated cost	Status of work
1	2	3	4	5	6	7	8	9
A	<b>DIRECT CHARGES</b>							
1	A- Preliminary	37.409	37.409	37.489	3.92	a) Spillover works 1. Consultancy charges for various structures & photographic records <b>Total (Spillover works)</b>	2.17	Completed
						b) New works 1. Consultancy charges for various structures & photographic records <b>Total (New works)</b> Sub total	1.75 3.92 950.00	Proposed
2	B- Land	806.601	1756.776	805.776	950.00	Land compensation		
3	C- Works	1769.447	2296.297	1769.447	520.85	a) Spillover works 1. Constn. of manifold for stage 3 <sup>rd</sup> pump house <b>Saddles/Anchor blocks/thrust blocks</b> 2. Constn. of anchor block at RD 10m & saddle block at RD 100m for 3 <sup>rd</sup> stage rising main 3. Constn. of anchor block at RD 40m and saddle blocks at RD 32m and RD 48m for 2 <sup>nd</sup> stage rising main 4. -do- at RD 72m and constn. of saddle blocks at RD 56m, 64m, 80m & 88m 5. -do- at RD 114 m and saddle blocks at RD 112m & 120m 6. -do- at RD 110m & saddle blocks at RD 128m & 144m 7. -do- at RD 161m and saddle blocks at RD 152m, 160m, 176m, 184m & 192m 8. -do- at RD 200m and constn. of saddle blocks at RD 208m and 216m 9. Constn. of anchor block at RD 232m & saddle blocks at RD 224m and RD 240m 10. -do- at RD 264m and constn. of saddle blocks at RD 248m and 256m 11. -do- at RD 296m and constn. of saddle blocks at RD 304m, 312m & 320m 12. -do- at RD 328m and at RD 300m & saddle blocks at RD 336m, 344m & 352m	2.35	853 Comp
							5.05	Allotted
							5.11	-do-
							6.55	-do-
							4.83	-do-
							5.12	-do-
							5.96	-do-
							4.81	-do-
							5.11	-do-
							4.93	-do-
							4.65	-do-
							6.33	-do-

13. do- at RD 392m and saddle blocks at RD 368m, 376m, 384m, & 400m	5.66	- do -
14. do- at RD 420m & saddle blocks at RD 408m, 412m, 428m & 436m	7.33	- do -
15. do- at RD 452m & saddle blocks at RD 444m, 460m & 468m	4.81	- do -
16. do- at RD 484m and constn. of saddle blocks at RD 476m and 482m	5.10	- do -
17. do- at RD 516 m and 548m & saddle blocks at RD 500m, 508m, 534m & 532m	12.39	- do -
18. do- at RD 580m and saddle blocks at RD 564m, 572m, 588m, 596m & 602m	8.66	- do -
19. Constn. of anchor block at RD 642m, 610m & saddle blocks at RD 618, 626, 634, 650, 658 & 666m for 3rd stage rising main	12.18	- do -
20. Constn. of anchor block at RD 674m & saddle blocks at RD 682m, 692m & 698m	4.86	- do -
21. do- at RD 706m and 738m & saddle blocks at RD 714m, 722m & 730m	9.23	- do -
22. do- at RD 770m and 812m for 3rd stage rising main	4.19	- do -
23. Constn. of anchor block at RD 822m and RD 842m for 3rd stage rising main	4.29	- do -
24. do- at RD 852m and RD 862m for 3rd stage rising main	4.47	- do -
25. Constn. of thrust block at RD 862 m for 3rd stage rising main	6.51	- do -
26. do- at RD 832m for 3rd stage rising main	8.82	- do -
27. do- at RD 872m for 3rd stage rising main	6.32	- do -
28. Constn. of saddle blocks at RD 272m, 280m & 288m for 3rd stage rising main	3.37	- do -
29. Constn. of saddle blocks at RD 746m, 754m, 762m, 778m, 786m & 794m	5.25	- do -
30. Constn. of thrust blocks at RD 1300m & 1450m on 2nd rising main for 2nd stage rising main	1.70	- do -
31. Constn. of thrust block at RD 1850m on stage 2nd rising main	3.84	- do -
32. Laying of saddle/anchor blocks on 2nd stage rising main at RD 160m 275m, 350m-450m and RD 560m-715m	8.10	- do -
<b>Allied works</b>		
33. Railing to manifold/park 3 <sup>rd</sup> stage pump house.	2.25	50% Comp.
34. Sanitary fitting for 3 <sup>rd</sup> stage pump house	4.25	30% Comp.
35. Ornamental railing to intake 3 <sup>rd</sup> stage pump house	3.14	50% Comp.
36. Flooring for 3 <sup>rd</sup> stage pump house	4.90	Allotted
37. Providing ramp towards electric substation premises at pump house 3rd	8.04	Completed

					36. Constn. of main gate to the premises of 3 <sup>rd</sup> stage pump house	4.88	-do-
					39. Providing MS gate to pump house building 3rd stage.	0.77	-do-
					40. Providing and fixing of steel railing over intake of 2 <sup>nd</sup> stage pump house and delivery tank 1 <sup>st</sup> stage and culverts	0.20	90% Comp.
					41. Constn. of ramp on rising main 2 <sup>nd</sup> at RD 6.00m	1.54	40% Comp.
					42. Constn. of RCC PIV chamber 1 <sup>st</sup> and 2 <sup>nd</sup> stage rising mains	3.85	30% Comp.
					43. Constn. of protection toe wall along rising main 2 <sup>nd</sup>	7.80	90% Comp.
					44. Constn. of retaining wall on Ganshibal approach road	4.22	Completed
					45. Constn. of retaining wall on 2nd stage canal right branch from RD 4.0m to 9.3m	4.96	Not taken up
					46. Constn. of breast wall toe wall from RD 15.00m to 15.45m on 2nd stage canal right branch	4.47	-do-
					47. Constn. of cross-over bridges at RD 15.80 & RD 17.00 of 2 <sup>nd</sup> stage rising main	2.67	Completed
					48. Constn. of breast wall and retaining walls at RD 13.44m to RD 14.10m of right branch 2 <sup>nd</sup> stage canal	3.80	-do-
					<b>Total (Spillover works)</b>	<b>350.12</b>	
					<b>a) New works</b>		
					<b>Saddles/Anchor blocks/thrust blocks etc.</b>		
					1. Construction of anchor blocks for 2nd rising main of stage 2nd	156.02	Proposed
					2. Construction of saddle blocks for 2nd rising main of stage 2nd	37.37	-do-
					3. Constn. of anchor block at RD 0 to RD 4.3m including piers across nullah behind pump house 3rd and cumette along rising main 3rd at spaces between saddles/anchor blocks	33.11	-do-
					4. Constn. of 10 no saddle blocks for 3rd stage rising main at RD 16, 24, 34, 44, 56, 62, 86, 88, 904 and 912m	10.19	-do-
					5. Constn. of 3 no thrust blocks at RD 248, 312 and 344m for 3rd stage rising main	21.98	-do-
					<b>Allied works</b>		
					1. Face lifting of pump house 3 <sup>rd</sup>	3.80	Proposed
					2. RCC chambers along rising main stage 3 <sup>rd</sup>	2.00	-do-
					3. Balance work of roof sheeting to 3 <sup>rd</sup> stage pump house	1.80	-do-
					4. Provision for laying macadam of 3rd p/house premises	10.00	-do-
					5. Provision for unforeseen items	0.66	-do-
					<b>Total (New works)</b>	<b>276.73</b>	
					<b>Sub total</b>	<b>526.85</b>	
4	F-CD Works	875.319	863.349	69.70	<b>a) Spillover works</b>		
					1. Constn. of super passage at RD 8027m of 3rd stage canal	9.00	Allotted
					2. Constn. of flume at RD 9820m of 3rd stage canal	20.96	-do-

						2.55 9.95 5.34	Completed 50% Comp. Allotted
						3.10 9.70 3.30 6.80 69.70 0 69.70	Completed 50% Comp. 80% Comp. 50% Comp. <b>Total (Spillover works)</b> <b>Sub total</b>
5	G- Bridges	188.986	219.76	180.03	30.73	11.92 7.65 4.21 4.75 2.20 30.73 0 30.73	Completed Allotted Completed Allotted Completed <b>Total (Spillover works)</b> <b>Sub total</b>
6	H- Escapes	141.348	141.348	134.848	6.50	3.50 3.00 6.50 6.50	Proposed - do - <b>Total (New works)</b> <b>Sub total</b>
7	K- Buildings	89.816	106.816	89.816	17.00	14.50 2.50 17.00 17.00	Proposed - do - <b>Total (New works)</b> <b>Sub total</b>
8	L- Canals	3023.38	4185.39	2419.56	1765.83	30.390 6.240 7.800	Allotted - do - - do -

4.	do - from RD 5845m to RD 5875m	11.930	- do -
5.	do - from RD 5875m to RD 5935m	7.600	- do -
6.	do - from RD 5935m to RD 5995m	1.920	- do -
7.	do - from RD 6150m to RD 6410m	29.50	- do -
8.	do - from RD 8400m to RD 8485m	1.99	- do -
9.	do - from RD 8575m to RD 8605m	3.00	- do -
10.	do - from RD 8805m to RD 8860m	15.10	- do -
11.	Constn. of plate form RD 8180m to RD 8440m	9.08	- do -
12.	Constn. of balance part of 3rd stage canal by way of stone pitching with grouting from RD 0 to 2600m at spots	15.71	- do -
13.	Providing irrigation facility to orchards of village Ratsuna	19.25	60% Comp.
14.	Balance work of 3rd stage canal from RD 5200-5220m by way of constn. of masonry wall with jacking	24.12	40% Comp.
15.	do - from RD 5520-5240m	23.27	45% Comp.
16.	Balance work of 3rd stage canal from RD 1557-1576m by way of stone pitching with cement concrete grouting section 1st	7.86	35% Comp.
17.	Constn. of retaining wall from RD 4550m to RD 4570m of 3rd stage canal	33.70	40% Comp.
18.	Constn. of retaining wall from RD 4660m to RD 4690m of 3rd stage canal	10.49	- do -
19.	Constn. of balance work of 3rd stage canal from RD 1680-1880m by way of stone pitching with cement concrete grouting	10.55	35% Comp.
20.	Constn. of retaining wall on right side of approach road at village Saimeh near masjid Shunif leading to 2 <sup>nd</sup> stage canal	10.90	45% Comp.
21.	Constn. of 3rd stage canal by way of cumette cutting and stone pitching with cement concrete grouting from RD 4875m to RD 4935m	19.120	25% Comp.
22.	Constn. of retaining wall from RD 4690m to RD 4720m of 3rd stage canal	10.50	45% Comp.
23.	Raising of height of toe wall of 3rd stage canal from RD 3845m to RD 3895m	14.79	60% Comp.
24.	Constn. of balance work plate form cutting, cumette cutting, stone pitching with cement concrete grouting from RD 4790m to RD 4870m of 3rd stage canal.	10.65	45% Comp.
25.	Constn. of retaining wall at RD 1600m of left branch 2 <sup>nd</sup> stage canal	4.50	50% Comp.
26.	Constn. of retaining wall at RD 1600m of left branch 2 <sup>nd</sup> stage canal	9.12	70% Comp.
27.	Constn. of breast wall and retaining walls at RD 670m to RD 724m of left branch of 2 <sup>nd</sup> stage canal	4.21	Completed
28.	Constn. of breast wall and retaining walls at RD 820m to RD 850m of left branch of 2 <sup>nd</sup> stage canal	2.40	- do -



29. Constrn. of breast wall and retaining walls at RD 850m to RD 910m of left branch of 2 <sup>nd</sup> stage canal	4.32	- do -
30. Constrn. of breast wall and retaining walls at RD 100m to RD 160m of right branch 2 <sup>nd</sup> stage canal.	4.89	- do -
31. Constrn. of breast wall and retaining walls at RD 220m to RD 280m of right branch 2 <sup>nd</sup> stage Canal	4.89	- do -
32. Constrn. of breast wall and retaining walls at RD 340m to RD 400m of right branch 2 <sup>nd</sup> stage canal	4.89	- do -
33. Constrn. of breast wall and retaining walls at RD 630m to RD 700m of right branch 2 <sup>nd</sup> stage canal	4.16	- do -
34. Constrn. of breast wall and retaining walls at RD 725m to RD 800m of right branch 2 <sup>nd</sup> stage canal	4.16	- do -
35. Constrn. of retaining wall on Dadon approach road	2.31	- do -
36. Constrn. of CWD at RD 1600m stage 2nd canal right branch	5.80	- do -
37. Constrn. of surface drain along Ganshibal approach road leading to delivery tank 2nd RD 634m to 759m	4.93	- do -
38. Constrn. of surface drain along Ganshibal approach road leading to delivery tank 2nd RD 332M to 387m & RD 759m to 814m	4.34	- do -
39. Restoration of 2 <sup>nd</sup> stage left branch from RD 1600m to RD 1850m by way of removal of over burden from hill side slope from RD 1620 to 1800m	1.68	60% Comp.
40. Constrn. of 2nd right branch canal by way of cunnette cutting, pitching and grouting from RD 850 - RD 970m	9.30	60% Comp.
41. - do - RD 970 - RD 1155m	18.50	- do -
42. - do - RD 1404 - RD 1464m	4.77	- do -
43. - do - RD 1404 - RD 1500m	1.84	70% Comp.
44. - do - RD 1500 - RD 1600m	4.84	30% Comp.
45. - do - RD 1650 - RD 1820m	1.50	70% Comp.
46. - do - RD 1830 - RD 2038m	2.84	30% Comp.
47. - do - RD 2040 - RD 2140m	3.00	50% Comp.
48. - do - RD 2140 - RD 2350m	5.81	80% Comp.
<b>Total (Spillover works)</b>	<b>427.480</b>	
<b>b) New works</b>		
1. Constrn. of pipe conduit on stage 3rd canal from RD 650-7520m	779.51	Proposed
2. Constrn. of plate form, cunnette cutting and providing of stone pitching and cement concrete grouting of stage 3rd canal from RD 7520 to RD 12500m at left over stretches (3675m)	172.76	- do -
3. Constrn. of pipe conductor on stage 3rd canal from RD 125000m to RD 13000m	234.83	- do -

					4. Constn. of inspection/cleaning manholes along stage 3rd canal from RD 6500m to RD 7520m (8 no)	35.16	- do -
					5. Balance work of 3 <sup>rd</sup> stage canal from RD 8400-8550m at spots.	6.97	- do -
					6. Channelization of Watal/A/a at RD 8750m of 3 <sup>rd</sup> stage canal	4.84	- do -
					7. Constn. of retaining wall on 3rd stage canal	42.20	- do -
					8. Development of approach road to dumping site at Pushad Trail	4.66	- do -
					9. Constn. of retaining walls on 2 <sup>nd</sup> stage canal at spots from RD 2350-2700m	21.10	- do -
					10. Constn. of pipe conductor on stage 2nd canal from RD 2400m to RD 3000m	31.07	- do -
					11. Provision for RD stones, controlling arrangement on canals at outlets and other unforeseen jobs	5.35	- do -
					<b>Total (New works)</b>	<b>1338.350</b>	
					<b>Sub total</b>	<b>1765.830</b>	
					<b>Sub total</b>	<b>2.20</b>	
					Provision for plantation work	2.20	
9	M- Plantation	2.201	2.201	0.001	2.20		
					<b>a) Spillover works</b>	6.60	
					1. Fixing of sign boards on pump house Stages 1 <sup>st</sup> & 2 <sup>nd</sup>	80.543	
10	O- Misc.	87.143	87.143	80.543	6.60		
					<b>a) New works</b>	99.31	
					1. Provision for inaugural ceremony etc.	35.83	
					<b>Total (New works)</b>	35.83	
					<b>Sub total</b>	2.99	Proposed
					<b>Total (New works)</b>	2.99	
					<b>Sub total</b>	6.60	
11	P- Maintenance	117.20	135.14	99.31	35.83		
					<b>a) New works</b>		
					1. Reconstruction of deteriorated canal reaches by way of stone pitching and lining including removal of slips and debris from hill slope from RD 0 to RD 4500m on 3rd stage canal (effective length of 1280m)	31.33	Proposed
					2. Widening of water way on U/S side of intake channel of 1 <sup>st</sup> stage pump house by way of removal of hump	4.50	- do -
					<b>Total (New works)</b>	35.83	
					<b>Sub total</b>	35.83	
12	Q- Special T&P	19.402	19.402	3.492	15.91		Proposed
					Provision for concrete mixer, concrete vibrator, compressor & accessories *	15.91	
					<b>Sub total</b>	15.91	
13	R- Communications	233.34	288.08	233.34	54.74		
					<b>a) Spillover works</b>		
					1. Constn. of inspection road from RD 3000-3500m of 3rd stage canal	9.68	50% Comp.
					2. Constn. of inspection road from RD 4000-4500m of 3rd stage canal	7.00	- do -
					3. Constn. of inspection road from RD 3500m - 4000m of 3rd stage canal	8.53	- do -

						4. Improvements to approach road to Divisional office	2.76	- do -
						<b>Total (Spillover works)</b>	27.91	
						<b>b) New works</b>		
						1. Const. of inspection road RD 6900-12500m of 3rd stage canal	26.83	Proposed
						<b>Total (New works)</b>	26.83	
						<b>Sub total</b>	54.74	
15	S- Elect. Systems	5248.00	5170.20	3108.65	2061.55	Details as per annexure		
16	U- Distributaries	61.97	116.769	10.889	105.88	<b>a) Spillover works</b>		
						1. P/F of outlets at spots from RD 0 to RD 1400m 2 <sup>nd</sup> stage canal	3.00	Completed
						<b>Total (Spillover works)</b>	3.00	
						<b>b) New works</b>		
						1. P/F outlets on stage 3rd canal RD 0- RD 12500m at spots	24.00	Proposed
						2. - do - stage 2 <sup>nd</sup> right branch from RD 1400m - RD 3300m and 2 no on left branch	3.50	- do -
						3. Constn. of intercepting manholes/outlets along stage 3rd canal from RD 12500m to RD 17000m (94 no)	62.61	- do -
						4. Constn. of intercepting manholes/outlets along stage 2nd canal from RD 2400m to RD 3000m (12 no)	7.69	- do -
						5. Provision for pipes for outlets	5.08	- do -
						<b>Total (New works)</b>	102.88	
						<b>Sub total</b>	105.88	
17	Y- Losses on stock	29.30	33.53	0	33.53	Provision @ 0.25% of I-Works - A, B, C, M, P & Q as per norms	33.53	
	II- Establishment	1172.10	1369.38	160.42	1208.96	Provision @ 10% of I-Works minus B-L and as per norms	1208.96	
	III- Ord. T&P	10.38	4.74	0.38	4.36	Provision for purchase of computers for Divisional and Sub divisional offices including accessories/peripherals	4.36	Proposed
	IV- Suspense	0	0	0	0			
	V- R & R	3.89	16.02	0	16.02	Provision @ 15% of K-Buildings as per norms	16.02	
	B Indirect charges	166.17	242.29	0	242.29	Provision @ 5% of B-Land for abatement of land revenue plus 1% of I-Works for audit & accounts charges as per norms	242.29	Proposed
	<b>Grand total</b>	14,075.622	17,050.00	9923.64	7126.36		7126.36	

  
 Assistant Ex. Engineer,  
 Irrigation Sub Division, Tral I

  
 Assistant Ex. Engineer,  
 Irrigation Sub Division, Tral II

  
 Executive Engineer,  
 Irrigation Division, Tral

**Abstract of cost for construction of anchor blocks for 2nd rising main of stage 2nd**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	191.52	28393
2	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3092.70	38.38	118736
3	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement. All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4810.70	1260.46	6063695
4	Centring and shuttering including strutting, propping etc. and removal of form work for: Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	1685.30	577721
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	817.00	5800700
6	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	a) 40mm aggregate from Bohu av. 14 km	cum	218.09	34.54	7533
	b) 20mm aggregate from Bohu av. 14 km	cum	200.62	1134.41	227586
	c) Sand from Sangam av. 8 km	cum	153.90	584.48	89951
	d) Cement/steel from Div. stores av. 14 km	cum	178.35	491.57	87672
	<b>Total</b>			Rs.	<b>13001987</b>
	Add appreciation 25% over all items			Rs.	<b>2600397</b>
	<b>Grand Total</b>			Rs.	<b>15602385</b>
			Say Rs.	<b>156.02</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral I

  
Executive Engineer,  
ID, Tral

**Abstract of cost for construction of saddle blocks for 2nd rising main of stage 2nd**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by manual means over areas (exceeding 30 cm and upto 1.5 m in depth, as well as 10 sqm in plan) including disposal of excavated earth upto 1m from cutting edge, disposed earth to be levelled and neatly dressed in all kinds of soils.	Cum	240.45	162.00	38953
2	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed in: All kinds of soil.	cum	148.25	108.00	16011
3	Demolishing RCC work incl. stacking of serviceable material and disposing unserviceable materials.	cum	1187.30	148.50	176314
4	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement- All work upto plinth level.1:2:4 (1cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4810.70	280.85	1351085
5	Centring and shuttering including strutting, propping etc. and removal of form work for:				0
	a) Foundation, footings, bases of columns etc. for mass concrete.	Sqm	179.25	892.50	159981
6	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	178.20	1265220
7	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				0
	a) 20mm aggregate from Bohu. av. 14 km	cum	200.62	249.96	50146
	b) Sand from Sangam av. 8 km	cum	153.90	133.65	20569
	c) Cement/steel from Div. stores av. 14 km	cum	178.35	107.69	19207
	<b>Total</b>			Rs.	<b>3097486</b>
	Add appreciation 20% over all items			Rs.	619497
	<b>Grand Total</b>			Rs.	<b>3716983</b>
			Say Rs.	37.17	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral I

  
Executive Engineer,  
ID, Tral

**Abstract of cost for Widening of water way on U/S side of intake channel of 1st stage pump house by way of removal of hump**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	1547.84	229467
2	Disposal of earth by mech. transport through 2 km	cum	120.01	1238.27	148605
	<b>Total</b>			Rs.	<b>378072</b>
	Add appreciation 20% over all items			Rs.	75614
	<b>Grand Total</b>			Rs.	<b>450387</b>
			<b>Say Rs.</b>	<b>4.50</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral I

  
Executive Engineer,  
ID, Tral

Abstract of cost for construction of thrust blocks on 3<sup>rd</sup> stage rising main of Tral LIS

S. No.	Particulars of item	Unit	Rate	Quantity	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: In all kinds of soils	cum	148.25	86.36	12803
2	Dumping stones including cost of stones: in horizontal on level	cum	344.05	10.29	3540
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement: 4 coarse sand: 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	3.43	10611
4	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement. All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4810.70	60.00	288642
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	36.00	255600
6	Centring and shuttering including strutting, propping etc. and removal of form work for:				0
	Walls (any thickness) including attached pilasters, buttresses, plinth & string courses	sqm	342.80	45.00	15426
7	Carriage of materials from source to road site by mechanical transport				0
	a). Stones av. 15 Km from source	cum	244.51	10.29	2516
	c) 40mm aggregate from Lalgam av. 11 km	cum	194.57	3.09	601
	c) 20mm aggregate from Lalgam av. 11 km	cum	178.99	54.00	9665
	d) Sand from Chursoo av. 20 km	cum	243.88	28.54	6961
	e) Cement from Div. stores av. 15 km	ton	184.76	23.38	4320
	<b>Total</b>			Rs.	<b>610686</b>
	Add appreciation 20% over all items			Rs.	122137
	<b>Grand Total</b>			Rs.	<b>732823</b>
	Cost of one structure		Say Rs.	7.33	lacs
	Cost of 03 structures		Say Rs.	21.98	lacs

Junior Engineer


Assistant Executive Engineer,  
ISD, Tral II


Executive Engineer,  
ID, Tral

Abstract of cost for construction of saddle blocks on 3<sup>rd</sup> stage rising main (10 no)

S. No.	Particulars of item	Unit	Rate	Quantity	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: In all kinds of soils	cum	148.25	407.00	60338
2	Dumping stones including cost of stones: in horizontal on level	cum	344.05	26.20	9014
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	8.75	27070
4	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement. All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4810.70	85.90	413239
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	42.95	304945
6	Centring and shuttering including strutting, propping etc. and removal of form work for: Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	8.63	2960
7	Carriage of materials from source to road site by mechanical				
	a) Stones av. 15 Km from source	cum	244.51	26.20	641
	c) 40mm aggregate from Lalgam av. 11 km	cum	194.57	7.88	1532
	c) 20mm aggregate from Lalgam av. 11 km	cum	178.99	77.31	13838
	d) Sand from Chursoo av. 20 km	cum	243.88	42.59	10387
	e) Cement/steel from Div. stores av. 15 km	ton	184.76	33.27	6147
	<b>Total</b>			Rs.	<b>849470</b>
	Add appreciation 20% over all items			Rs.	169894
	<b>Grand Total</b>			Rs.	<b>1019364</b>
			Say Rs.	10.19	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral




Abstract of cost for Construction of RCC chambers along rising main 3rd for Tral LIS

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	9.09	1348
2	Dumping stones including cost of stones: in horizontal on level	cum	202.30	0.34	69
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	0.40	1237
4	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4575.70	3.25	14871
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	2.93	20768
6	Centring and shuttering including strutting, propping etc. and removal of form work for: Foundations, footings, bases of columns etc. for mass concrete.	sqm	179.25	11.13	1995
7	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				0
	a) Stones from Jawbiara av. 18 km	cum	149.42	0.34	51
	b) 40mm aggregate from Lalgam av. 11 km	cum	194.57	0.36	70
	c) 20mm aggregate from Lalgam av. 11 km	cum	178.99	2.93	524
	d) Sand from Chursoo av. 20 km	cum	243.88	1.64	401
	e) Cement from Div. stores av. 15 km	MT	184.76	1.11	205
	f) Steel from Div. stores av. 15 km	MT	184.76	0.29	54
	<b>Total</b>				Rs. 41591
	Add appreciation 20% over all items				Rs. 8318
	<b>Grand Total</b>				Rs. 49909
	Cost for one structure				Rs. 49909
	Cost for 04 structures				Rs. 199638
				<b>Say Rs.</b>	2.00 lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral

  
Executive Engineer,  
ID, Tral

**Abstract of cost for providing facelift to pump house 3rd for Tral LIS**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Applying one coat of water thin able cement primer of approved brand	sqm	32.85	607.74	19964
2	Finishing walls with water proof cement paint of approved brand and manufacture and of required shade: New work two or more coats	sqm	56.90	607.74	34580
3	Providing and applying white cement based putty of average thickness 2 mm, of approved brand and manufacture, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	121.50	1095.12	133057
4	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade: new work two or more coats over and including priming coat with cement primer	sqm	85.15	1095.12	93249
5	Painting with aluminum paint of approved brand and manufacture to give an even shade: two or more coats on new works	sqm	68.90	256.63	17682
	<b>Total</b>				Rs. 298533
	Add appreciation 30% over all items				Rs. 81500
	<b>Grand Total</b>				Rs. 380033
		<b>Say Rs.</b>	<b>3.80</b>		<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for Construction of escape at RD 2400m of 2nd stage right branch**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	90.04	13348
2	Dumping stones including cost of stones: in horizontal on level	cum	202.30	4.07	823
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	2.26	6992
4	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4575.70	15.26	69825
5	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate (20mm, nominal size) crushed.	cum	3707.40	25.88	95948
6	Centring and shuttering including strutting, propping etc. and removal of form work for: Foundations, footings, bases of columns etc. for mass concrete.	sqm	179.25	13.30	2384
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	41.42	14199
7	Providing and fixing MS gate with winch machine	sqm	9000.00	3.60	32400
8	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				0
	a) Stones from Jawbiara av. 18 km	cum	149.42	4.07	608
	b) 40mm aggregate from Lalgam av. 11 km	cum	194.57	2.03	396
	c) 20mm aggregate from Lalgam av. 11 km	cum	178.99	37.03	6627
	d) Sand from Chursoo av. 20 km	cum	243.88	19.53	4763
	e) Cement from Div. stores av. 15 km	MT	184.76	10.96	2025
	<b>Total</b>			Rs.	<b>250338</b>
	Add appreciation 20% over all items			Rs.	50068
	<b>Grand Total</b>			Rs.	<b>300406</b>
			Say Rs.	3.00	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral I


  
Executive Engineer,  
ID, Tral

**Abstract of cost for Construction of escape at RD 6100m of 3rd stage canal for Tral LIS**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	60.09	8908
2	Dumping stones including cost of stones: in horizontal on level	cum	202.30	3.27	662
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	1.66	5136
4	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4575.70	10.26	46947
5	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate (20mm, nominal size) crushed.	cum	3707.40	14.88	55166
6	Centring and shuttering including strutting, propping etc. and removal of form work for:				
	Foundations, footings, bases of columns etc. for mass concrete.	sqm	179.25	9.30	1667
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	20.42	7000
7	Providing and fixing MS gate with winch machine	sqm	9000.00	3.60	32400
8	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	a) Stones from Jawbiara av. 18 km	cum	149.42	3.27	489
	b) 40mm aggregate from Laigam av. 11 km	cum	194.57	1.49	291
	c) 20mm aggregate from Laigam av. 11 km	cum	178.99	22.63	4050
	d) Sand from Chursoo av. 20 km	cum	243.88	12.06	2941
	e) Cement from Div. stores av. 15 km	MT	184.76	6.84	1264
	<b>Total</b>			Rs.	166919
	Add appreciation 20% over all items			Rs.	33384
	<b>Grand Total</b>			Rs.	200303
			Say Rs.	2.00	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

Abstract of cost for providing and fixing of sheet roofing to 3<sup>rd</sup> stage pump house  
(balance work)

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Providing and fixing high profile color coated laminated sheets duly fitted with GI limpet washers, screws etc. 0.63mm thick	sqm	1400.00	125.82	176148
2	Carriage of materials from source to work site by mechanical transport including loading, unloading and stacking.	trip	4000.00	1.00	4000
	<b>Grand Total</b>				<b>180148</b>
			<b>Say Rs.</b>	<b>1.80</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for Providing truss & roof sheeting to inspection hut at 3rd stage pump house for Tral LIS**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Providing hoisting and fixing trusses/purlins rafters/posts/post-plates or like components including cost of screws etc. complete; First class Budlao/Fir wood	cum	84760.20	3.14	266147
2	Providing corrugated G. S. sheet roofing including vertical/curved surface fixed with polymer coated J or L hooks, bolts and nuts 8mm diameter with bitumen and G. I limpet washers or with G. I. limpet washers filled with white lead and including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (upto any pitch in horizontal/vertical or curved surface)excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required. 0.63mm thick with zinc coating not less than 275gm/m <sup>2</sup>	sqm	757.00	154.11	116661
3	Providing ridges or hips of width 60cm overall width plain G.S. sheets fixed with polymer coated J. or L hooks, bolts and nuts 8mm dia G. I. limpet and bitumen washers complete 0.63mm thick with zinc coating not less than 275gm/m <sup>2</sup>	m	490.40	10.17	4987
4	Providing valleys of 90cm wide overall in plains G.S. sheets fixed with polymer coated J. or L hooks, bolts and nuts 8 mm dia G I. limpet and bitumen washers complete. 1.60mm thick with zinc coating not less than 350gm/m <sup>2</sup>	m	990.00	3.78	3742
	<b>Total</b>				Rs. 391538
	Add appreciation 15% over all items				Rs. 58731
	<b>Grand Total</b>				Rs. 450269
					Say Rs. 4.50 lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for Providing truss & roof sheeting to gang hut at 2nd stage canal**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Providing hoisting and fixing trusses/purlins rafters/posts/post-plates or like components including cost of screws etc. complete; First class Budloo/Fir wood	cum	84760.20	1.93	163587
2	Providing corrugated G. S. sheet roofing including vertical/curved surface fixed with polymer coated J or L hooks, bolts and nuts 8mm diameter with bitumen and G. I limpet washers or with G. I. limpet washers filled with white lead and including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (upto any pitch in horizontal/vertical or curved surface)excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required. 0.63mm thick with zinc coating not less than 275gm/m <sup>2</sup>	sqm	757.00	63.10	47767
3	Providing ridges or hips of width 60cm overall width plain G.S. sheets fixed with polymer coated J. or L hooks, bolts and nuts 8mm dia G. I. limpet and bitumen washers complete 0.63mm thick with zinc coating not less than 275gm/m <sup>2</sup>	m	490.40	6.07	2977
4	Providing valleys of 90cm wide overall in plains G.S. sheets fixed with polymer coated J. or L hooks, bolts and nuts 8 mm dia G I. limpet and bitumen washers complete. 1.60mm thick with zinc coating not less than 350gm/m <sup>2</sup>	m	990.00	3.08	3049
	<b>Total</b>			Rs.	<b>217380</b>
	Add appreciation 15% over all items			Rs.	32607
	<b>Grand Total</b>			Rs.	<b>249987</b>
			Say Rs.	2.50	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for construction of pipe conduit on stage 3rd canal from RD 6580m to RD 7520m**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	28140.75	4171866
	Ordinary rock	cum	263.65	6030.16	1589852
	Hard rock (blasting prohibited)	cum	697.00	6030.16	4203022
2	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	169.20	523454
3	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement. All work upto plinth level. 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate; 20 mm nominal size) crushed.	cum	5504.20	505.72	2783584
4	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	253.00	1796300
5	Centring and shuttering including strutting, propping etc. and removal of form work for:				0
	Fdns, footings, bases of columns etc. for mass conc.	Sqm	179.25	752.00	134796
6	Disposal of surplus excavated earth by mechanical transport through 05 km	cum	158.85	36180.97	5747347
7	Carriage of earth by mech. transport through 5 km	cum	159.85	38101.30	6090493
8	Providing and laying MS pipe including all connected operations, carriages and charges complete	MT	130000	347.87	45223100
9	Carriage of materials from source to road site by mech. transport i/c loading, unloading & stacking.				
	a) 40mm aggregate from Lalgam av. 11 km	cum	194.57	152.28	29629
	b) 20mm aggregate from Lalgam av. 11 km	cum	178.99	455.15	81467
	c) Sand from Chursoo av. 20 km	cum	243.88	303.71	74070
	d) Cement/steel from Div. stores av. 15 km	ton	184.76	256.35	47364
	<b>Total</b>				<b>Rs. 72496344</b>
	Add appreciation 20% over all items except no 8				Rs. 5454649
	<b>Grand Total</b>				<b>Rs. 77950992</b>
			<b>Say Rs.</b>	<b>779.51</b>	<b>lacs</b>



Junior Engineer



Assistant Executive Engineer,  
ISD, Tal II



Executive Engineer,  
ID, Tal



**Abstract of cost for construction of pipe conductor on stage 3rd canal from RD 125000m  
to RD 17000m**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	4908.60	727700
2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50m and lift upto 1.5m.	cum	102.20	3762.45	384522
3	Providing and laying DI pipe K-7 including all connected operations, carriages and charges complete				
	600mm diameter	Rm	9615.00	885	8509275
	500mm diameter	Rm	6814.00	885	6030390
	400mm diameter	Rm	3840.00	885	3398400
	300mm diameter	Rm	2442.00	885	2161170
	150mm diameter	Rm	1124.00	885	994740
4	Provision for pipe specials @ 5% of item 3				1054699
	<b>Total</b>			Rs.	<b>23260896</b>
	Add appreciation 25% over all items except 3 & 4			Rs.	222444
	<b>Grand Total</b>			Rs.	<b>23483341</b>
			Say Rs.	<b>234.83</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Trail

  
Executive Engineer,  
ID, Trail

**Abstract of cost for construction of pipe conductor on stage 2nd canal from RD 2400m to RD 3000m of Tral Lift Irrigation Scheme**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	723.60	107274
2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50m and lift upto 1.5m.	cum	102.20	612.9	62638
3	Providing and laying DI pipe K-7 including all connected operations, carriages and charges complete				
	600mm diameter	Rm	9615.00	116	1115340
	500mm diameter	Rm	6814.00	116	790424
	400mm diameter	Rm	3840.00	116	445440
	300mm diameter	Rm	2442.00	116	283272
	150mm diameter	Rm	1124.00	116	130384
4	Provision for pipe specials @ 5% of Item 3				138243
	<b>Total</b>			Rs.	<b>3073015</b>
	Add appreciation 25% over all items except 3 & 4			Rs.	33982
	<b>Grand Total</b>			Rs.	<b>3106997</b>
			<b>Say Rs.</b>	<b>31.07</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral I

  
Executive Engineer,  
ID, Tral

**Abstract of cost for Construction of retaining wall on 3rd stage canal for Tral LIS**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in; All kinds of soil.	cum	148.25	625.79	92773
2	Dumping stones i/c c/o stones: in horizontal on level	cum	202.30	21.99	4449
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	12.94	40020
4	- do - 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4575.70	25.87	118383
5	- do - 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate (20mm, nominal size) crushed.	cum	3707.40	306.54	1136481
6	Centring and shuttering including strutting, propping etc. and removal of form work for:			0.00	0
	Fdns, footings, bases of columns etc. for mass conc.	sqm	179.25	23.52	4216
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	360.64	123627
7	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	12.94	91846
8	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50m and lift upto 1.5m.	cum	102.20	339.51	34698
9	Carriage of materials from source to road site by mech. transport i/c loading, unloading & stacking.				0
	a) Stones from Jawblara av. 18 km	cum	149.42	21.99	3286
	b) 40mm aggregate from Lalgam av. 11 km	cum	194.57	11.64	2265
	c) 20mm aggregate from Lalgam av. 11 km	cum	178.99	299.17	53549
	d) Sand from Chursoo av. 20 km	cum	243.88	155.41	37901
	e) Cement from Div. stores av. 15 km	MT	184.76	77.92	14396
	f) Steel from Div. stores av. 15 km	MT	184.76	1.29	239
	<b>Total</b>			Rs.	<b>1758129</b>
	Add appreciation 20% over all items			Rs.	351626
	<b>Grand Total</b>			Rs.	<b>2109755</b>
			Say Rs.	21.10	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for Re-construction of deteriorated sections of 3rd stage canal by way of stone pitching with cement concrete grouting from RD 0 to RD 4500m for Tral LIS (effective length = 2813m)**

Abstract of cost for Re-construction of deteriorated sections of 3rd stage canal by way of stone pitching with cement concrete grouting from RD 0 to RD 4500m for Tral LIS (effective length = 2813m)					
S. No.	Particulars	Unit	Rate	Qty	Amount
1	Dismantling of existing stone pitching by manual labour including stacking of serviceable material and removal of unserviceable material	cum	188.95	767.77	145070
2	Dry stone pitching (any thickness) excluding cost of stones : On slopes	cum	337.40	767.77	259045
3	Grouting of stone pitching using M-10 nominal mix concrete (max. size of aggregates 20mm nominal) @ 6.0 cum per 100 sqm on horizontal/side slopes complete including curing:	sqm	149.85	13677.56	2049583
4	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	a) 20mm aggregate from Lalgam av. 11 km	cum	97.16	738.59	71761
	b) Sand from Chursoo av. 20 km	cum	135.50	369.29	50039
	c) Cement from Div. stores av. 15 km	MT	101.54	180.54	18332
	<b>Total</b>			Rs.	<b>2593830</b>
	Add allotted appreciation 20% over all items			Rs.	518766
	<b>Grand Total</b>			Rs.	<b>3112596</b>
		<b>Say Rs.</b>		<b>31.13</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for construction of inspection/cleaning manholes along stage 3rd canal  
from RD 6580m to RD 7520m of Tral Lift Irrigation Scheme (8 no)**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	0.90	2784
2	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement. All work upto plinth level. 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate; 20 mm nominal size) crushed.	cum	5504.20	29.169	160552
3	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	17.50	124250
4	Centring and shuttering including strutting, propping etc. and removal of form work for:				
	a) Foundation, footings, bases of columns etc. for mass concrete.	Sqm	179.25	4.80	860
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	183.60	62938
5	Provision for steel grating at top of manhole	no	5000.00	1.00	5000
6	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	a) 40mm aggregate from Lalgam av. 11 km	cum	194.57	0.81	158
	b) 20mm aggregate from Lalgam av. 11 km	cum	178.99	26.25	4699
	c) Sand from Chursoo av. 20 km	cum	243.88	13.53	3300
	d) Cement/steel from Div. stores av. 15 km	ton	184.76	13.57	2507
	<b>Total</b>			Rs.	<b>367049</b>
	Add appreciation 25% over all items except item no 5			Rs.	72410
	<b>Grand Total</b>			Rs.	<b>439458</b>
	Cost of one structure			Rs.	439458
	Cost of 08 structure			Rs.	<b>3515666</b>
			<b>Say Rs.</b>	<b>35.16</b>	<b>lacs</b>

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for construction of intercepting manholes/outlets along stage 3rd canal from RD 12500m to RD 17000m of Tral Lift Irrigation Scheme (94 no)**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.25	6.07	900
2	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	0.20	619
3	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement. All work upto plinth level. 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate; 20 mm nominal size) crushed.	cum	5504.20	4.57	25154
4	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	2.75	19525
5	Centring and shuttering including strutting, propping etc. and removal of form work for:				
	Foundation, footings, bases of columns etc. for mass conc.	Sqm	179.25	1.96	351
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	sqm	342.80	7.78	2667
6	Provision for steel grating at top of manhole	no	2000.00	1.00	2000
7	Provision for RCC pipe for outlet	no	750.00	1.00	750
8	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50m and lift upto 1.5m.	cum	102.20	1.77	181
9	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	a) 40mm aggregate from Lalgam av. 11 km	cum	194.57	0.18	35
	b) 20mm aggregate from Lalgam av. 11 km	cum	178.99	4.11	736
	c) Sand from Chursoo av. 20 km	cum	243.88	2.15	523
	d) Cement/steel from Div. stores av. 15 km	ton	184.76	2.14	395
	<b>Total</b>				Rs. 53837
	Add appreciation 25% over all items except item no 5				Rs. 10217
	<b>Grand Total</b>				Rs. 64054
	Cost of one structure				Rs. 64054
	Cost of 94 structure				Rs. 6021063
					Say Rs. 60.21 lacs

Junior Engineer

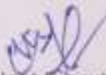
Assistant Executive Engineer,  
ISD, Tral

Executive Engineer,  
ID, Tral

**Abstract of cost for construction of intercepting manholes/outlets along stage 2nd canal from RD 2400m to RD 3000m of Tral Lift Irrigation Scheme (12 no)**

S. No.	Particulars	Unit	Rate	Qty	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: All kinds of soil.	cum	148.35	6.07	900
2	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	0.20	619
3	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement- All work upto plinth level. 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate; 20 mm nominal size) crushed.	cum	5504.20	4.57	25154
4	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. TMT bars.	qt	7100.00	2.75	19525
5	Centring and shuttering including strutting, propping etc. and removal of form work for: Foundation, footings, bases of columns etc. for mass concrete Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	Sqm sqm	179.25 342.80	1.96 7.78	351 2667
6	Provision for steel grating at top of manhole	no	2000.00	1.00	2000
7	Provision for RCC pipe for outlet	no	750.00	1.00	750
8	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50m and lift upto 1.5m.	cum	102.20	1.77	181
9	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	a) 40mm aggregate from Lalgam av. 11 km	cum	194.57	0.18	35
	b) 20mm aggregate from Lalgam av. 11 km	cum	178.99	4.11	736
	c) Sand from Chursoo av. 20 km	cum	243.88	2.15	523
	d) Cement/steel from Div. stores av. 15 km	ton	184.76	2.14	395
	<b>Total</b>				Rs. 53837
	Add appreciation 25% over all items except item no 6				Rs. 10217
	<b>Grand Total</b>				Rs. 64054
	Cost of one structure				Rs. 64054
	Cost of 12 structure				Rs. 768646
					Say Rs. 7.69 lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral

**Abstract of cost for construction of inspection road along 3rd stage canal**

S. No.	Particulars	Unit	Rate	Qty	Amount
2	Supplying and stacking at site:				
	Supply, stacking of stone aggregates: 90 - 45mm	cum	431.20	1080.00	465696
	Supply, stacking of stone aggregates: 63 - 45mm	cum	435.00	720.00	313200
3	Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, hand picking, rolling with 3 wheeled road /vibratory roller 8-10 tonne capacity in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density.	cum	435.00	1800.00	783000
4	Supply, stacking and spreading of screening 11.2mm	cum	418.55	57.60	24108
5	Carriage of materials from source to road site by mechanical transport including loading, unloading and stacking.				
	b) 40mm aggregate from Bohu av. 14 km	cum	218.09	1800.00	392562
	d) Sand from Sangam av. 8 km	cum	153.90	1671.14	257188
	<b>Total</b>			Rs.	<b>2235755</b>
	Add appreciation 20% over all items			Rs.	<b>447151</b>
	<b>Grand Total</b>			Rs.	<b>2682906</b>
		<b>Say Rs.</b>	<b>26.83</b>	<b>lacs</b>	

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tral II

  
Executive Engineer,  
ID, Tral



**Abstract of cost for construction of outlets on 3rd stage canal**

S. No.	Particulars of item	Unit	Rate	Quantity	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30cm and upto 1.5m in depth, 1.5m in width as well as 10 sqm. on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed in: In all kinds of soils	cum	148.25	35.56	5272
2	Dumping stones including cost of stones: in horizontal on level	cum	344.05	1.05	361
3	Providing and laying in position cement concrete of specified grade excluding cost of centring and shuttering. All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate (40mm, nominal size) crushed.	cum	3093.70	0.62	1918
4	Providing and laying in position cement concrete of specified grade excluding cost of centering and shuttering, All works up to plinth level. 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregates ) 20 mm nominal size) crushed	Cum	3707.40	5.25	19464
5	Providing and laying in position specified grade of reinforced cement concrete excluding cost of centring, shuttering, finishing and reinforcement- All work upto plinth level. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate; 20 mm nominal size) crushed.	cum	4406.80	0.96	4231
6	Centering and shuttering including strutting , propping etc and removal of formwork for: Walls (any thickness) including attached pilasters, buttresses, plinth and string courses	Sqm	342.80	17.57	6023
7	Providing & laying RCC spun pipes	no	625	3	1875
8	Carriage of materials from source to site by mechanical transport				0
	a) Stones av. 15 Km from source	cum	244.51	1.05	257
	b 40mm aggregate from Lalgam av. 11 km	cum	194.57	0.558	109
	c) 20mm aggregate from Lalgam av. 11 km	cum	178.99	5.589	1000
	d) Sand from Chursoo av. 20 km	cum	243.88	3.0735	750
	e) Cement from Div. stores av. 15 km	ton	184.76	1.5676	290
	<b>Total</b>				Rs. 41548
	Add appreciation 20% over all items				Rs. 8310
	<b>Grand Total</b>				Rs. 49858
	Cost of one structure		Say Rs.	0.50	lacs
	Cost of 48 structures		Rs.	24.00	lacs

  
Junior Engineer

  
Assistant Executive Engineer,  
ISD, Tal I

  
Executive Engineer,  
ID, Tal

**CHAPTER 6**

**Benefit Cost Ratio**


**6.1 Benefits-Quantitative Approach**

For quantitative analysis of benefits, "Gross Inputs Statements" and "Gross Yield Statements" for Pre and Post stages have been framed in light of information provided by Chief Agricultural Officer, District Pulwama (copies enclosed) and are given as under:-


**GROSS YIELD STATEMENT**

<b>(A) Pre- Construction Stage</b>					
S. No.	Crop	CCA	Produce per ha	Value of produce per ha	Total value of produce
		(ha)	(qt)	(Rs.)	(Rs.)
<b>Kharif:</b>					
1	Potatoes	600.00	140.00	140000.00	84000000
2	Pulses	600.00	7.00	42000.00	25200000
3	Maize	2200.00	60 qt grain, 250 qt straw	109000.00	239800000
4	Orchards	600.00		206000.00	123600000
	<b>Sub total</b>	<b>4000.00</b>			
<b>Rabi:</b>					
1	Wheat	1200.00	30 qt grain, 20 qt straw	49000.00	58800000
2	Oil seeds	400.00	15.00	45000.00	18000000
3	Peas	400.00	150.00	300000.00	120000000
	<b>Sub total</b>	<b>2000.00</b>			
	<b>Grand total</b>				<b>669400000</b>
			<b>Say Rs.</b>	<b>6694.00</b>	<b>lacs</b>

<b>(B) Post- Construction Stage</b>					
S. No.	Crop	CCA	Produce per ha	Value of produce per ha	Total value of produce
		(ha)	(qt)	(Rs.)	(Rs.)
<b>Kharif:</b>					
1	Potatoes	483.91	200.00	200000.00	96782000
2	Vegetables	120.96	110.00	187500.00	22680000
3	Pulses	794.99	8.50	51000.00	40544490
4	Maize	557.20	72 qt grain, 250 qt straw	125800.00	70095760
5	Lucerne	404.06	10,000 bundles	100000.00	40406000
6	Orchards	1053.88	800 boxes	480000.00	505862400
	<b>Sub total</b>	<b>3415.00</b>			<b>0</b>
<b>Rabi:</b>					
1	Wheat	304.17	40 qt grain, 20 qt straw	64000.00	19466880
2	Oil seeds	859.12	20.00	60000.00	51547200
3	Peas	543.71	200.00	400000.00	217484000
	<b>Sub total</b>	<b>1707.00</b>			<b>0</b>
	<b>Grand total</b>				<b>1064868730</b>
			<b>Say Rs.</b>	<b>10648.69</b>	<b>lacs</b>

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

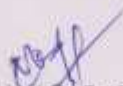
  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II


  
Executive Engineer,  
Irrigation Division, Tral


**INPUT STATEMENTS**

<b>(A) Pre- Construction Stage</b>				
S. No.	Crop	CCA	Inputs per ha	Total value of inputs
		(ha)	(Rs.)	(Rs.)
<b>Kharif:</b>				
1	Potatoes	600.00	85500.00	51300000
2	Pulses	600.00	30300.00	18180000
3	Maize	2200.00	47600.00	104720000
4	Orchards	600.00	206000.00	123600000
	<b>Sub total</b>	<b>4000.00</b>		
<b>Rabi:</b>				
1	Wheat	1200.00	36600.00	43920000
2	Oil seeds	400.00	22400.00	8960000
3	Peas	400.00	32400.00	12960000
	<b>Sub total</b>	<b>2000.00</b>		
	<b>Grand total</b>			<b>363640000</b>
			Say Rs.	3636.40 lacs

<b>(B) Post- Construction Stage</b>				
S. No.	Crop	CCA	Inputs per ha	Total value of inputs
		(ha)	(Rs.)	(Rs.)
<b>Kharif:</b>				
1	Potatoes	483.91	85500.00	41374305
2	Vegetables	120.96	45700.00	5527872
3	Pulses	794.99	30300.00	24088197
4	Maize	557.20	47600.00	26522720
5	Lucerne	404.06	38700.00	15637122
6	Orchards	1053.88	206000.00	217099280
	<b>Sub total</b>	<b>3415.00</b>		<b>0</b>
<b>Rabi:</b>				
1	Wheat	304.17	36600.00	11132622
2	Oil seeds	859.12	22400.00	19244288
3	Peas	543.71	32400.00	17616204
	<b>Sub total</b>	<b>1707.00</b>		<b>0</b>
	<b>Grand total</b>			<b>378242610</b>
			<b>3782.43</b>	<b>lacs</b>

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

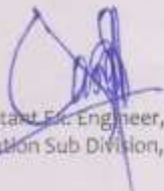
  
Executive Engineer,  
Irrigation Division, Tral


## 6.2 CALCULATION OF BENEFIT COST RATIO

(Rs. in lacs)

Estimated cost of scheme		17050.00	
Cost of land development @ Rs. 1000.00 per ha (3415.00 ha)		34.15	
<b>Total</b>		<b>17084.15</b>	
S. No.	Particulars	Pre-Const.	Post-Const.
<b>A</b>	<b>Gross Receipts</b>		
1	Gross value of produce	6694.00	10648.69
2	Dung value	0	0
3	<b>Total</b>	<b>6694.00</b>	<b>10648.69</b>
<b>B</b>	<b>Expenses</b>		
1	Basic expenditure on seeds, manure and hired labour	3636.40	3782.43
2	Fodder Expenses		
	@ 15% of A-3 (Pre)	1004.10	
	@ 10% of A-3 (Post)		1064.87
3	Depreciation on implements		
	@ 2.7% of A-3	180.74	287.51
4	Share & cash rent		
	@ 5% of A-3 (Pre)	334.70	
	@ 3% of A-13 (Post)		319.46
5	Land revenue @ 2% of A-3	133.88	212.97
6	Total inputs [B-1 to B-5]	5289.82	5667.24
<b>C</b>	<b>Net value of Produce</b>		
	(A-3) - (B-6) = C-1	1404.18	4981.44
<b>D</b>	<b>Annual Benefits</b>		
	C-1(Post) - C-1 (Pre) = (D-1)		3577.26
<b>E</b>	<b>Annual costs</b>		
1	Interest on capital @ 10% of estimated c/o scheme		1708.42
	Depreciation		
	2% on civil works (Rs. 8208.81 lacs)		164.18
	3.33% on rising main (Rs. 2231.27 lacs)		74.30
	8.33% on mechanical & electrical works (Rs. 2938.93 lacs)		244.81
3	Administrative charges @ 1200.00 per ha on gross annual irrigated area [Kharif + Rabi] (5122 ha)		61.46
4	Electricity charges of pumps (as per annexure)		382.33
5	Maintenance and repairs charges @ 2% of capital cost		341.00
6	Total annual costs (E1 to E5)		2976.50
<b>G</b>	<b>Benefit Cost Ratio</b>		
1	Annual Benefits (D-1)	(A)	3577.26
2	Annual costs (E-6)	(B)	2976.50
3	<b>Benefit Cost Ratio</b>	= A/B : 1	1.20 : 1

  
Assistant En. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant En. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

<b>CHAPTER 7</b>
------------------

<b>Construction programme and planning</b>
--

**7.1 Sources of construction materials**

The key construction materials requisite for execution of works are cement, sand, crushed stone aggregate, stone and steel.

There are no sources of sand/ crushed stone aggregate available around Trail. The material has to be carried from Awantipora area.

Cement and steel will be made available to the executing agencies from Divisional stores. In absence of stores, the agencies will have to procure the approved brands from open market.

**7.2 Availability of machinery**

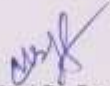
Open competitive contract system is being followed by the department in consonance with codal procedures. Contractors are asked to arrange for the equipment, machinery and plant required for execution of works as department does not have the requisite T & P viz. compressors, jack hammers, drilling rods, concrete mixers, concrete vibrators, shovels or dozers, dumpers etc. Neither the department is intending to acquire the same as such things cannot be put to use for other projects owing to the fact that no such project is readily in hand to be taken up for execution and such things are sure to become liability for the department for want of O & M costs. Nowadays, such T & P are readily available with agencies or can be hired.


**7.3 Period of completion**


The period of completion of the project in totality is 3/2017.

**7.4 Source of funds**

The scheme is proposed to be funded under AIBP on 90:10 basis. The state government shall bear 10% cost of the project and Central government will invest 90% cost of scheme as CLA once the scheme is approved.

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Trail I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Trail II

  
Executive Engineer,  
Irrigation Division, Trail

## 8.1 Specifications of works

The technical aspects of some important structures yet to be constructed in the scheme have been discussed sub head wise in the following paras:

### 8.1.1 C-Works

#### 01. Construction of anchor/saddle and thrust blocks

The remaining anchor/saddle/thrust blocks along 2<sup>nd</sup> rising main of 2<sup>nd</sup> stage and all such structures along 3<sup>rd</sup> stage canal are to be constructed in RCC M-20 grade concrete. The appended drawings depict the salient features of such structures.

### 8.1.2 G-Bridges

#### 01. Construction of canal crossings on main conductor

A comfortable, convenient and smooth transportation is right of public. Besides, the agricultural activities too have become partially mechanical. The zamindars often through the department for construction of culverts/crossings on main canal to take their agricultural implements to the fields. It is proposed to construct RCC canal crossings across the canal at needed spots. The RCC deck slab 200mm thick in M-15 grade concrete shall rest on the canal section. The spans of the crossings shall be adopted as per the individual locations depending upon canal/distributary waterway. The other details can readily be read from the concerned proposed drawings.

#### 02. Construction of tractor crossings on main conductor

Culverts are essentially required on the canal whereat a trafficable road crosses the conductor. Such locations are encountered at a number of spots on the canal. It is proposed to construct RCC culverts across the canal at the needed spots. The RCC deck slab 400mm thick in M-15 grade concrete shall rest on mass concrete abutments to be built along the two flanks of the canal treated at its base with lean concrete of 150mm thick M-7.5 grade as bedding. The abutments shall be built in M-10 grade mass concrete of appropriate parameters. The waterway under the deck slab portion shall be treated with 100mm thick in M-15 grade concrete over 150mm thick M-7.5 grade as sub grade. The approaches to the culvert shall be achieved by laying rammed/rolled soling. The spans of the crossings shall be adopted as per the individual locations depending upon

02. Construction of breast walls on right side at spots.

In a number of segments of the proposed canal, the right side hill slope may become unstable subsequent to platform excavation, which may result in occurrence of slips. In order to arrest character of sliding, it is proposed to construct breast walls with mass concrete M-10 at needed spots. The average height of the walls has been proposed as 4.00m. The front batter of the wall shall be 1:3 same as slope of the back cut of the left side hill slope of the platform. The wall shall rest on a lean concrete bedding of M-10 grade of 100mm thickness. The other salient features of the structure are detailed in the enclosed drawing.

03. Construction of retaining walls on left side at spots.

The proposed canal mostly runs across the slope of hillocks in various reaches. The back slope of right embankment in these reaches has a slope depth of 15-20 feet and has is prone to erosion and sloughing caused by weathering with passage of time. This slope can deteriorate day by day and can transform into vertical cliffs. There is apprehension of collapse if this embankment is not guarded against further erosion/sliding. It is proposed to construct retaining walls of requisite parameters in mass concrete M-10 to obviate the vulnerability of the canal shoulder to fail. The alternative like detouring the canal towards hillside may prove too costly an affair. The average height of the walls is 3.60m. The front batter of the wall shall be 1:4. The wall shall rest on a lean concrete bedding of M-10 grade of 100mm thickness. The salient features of the structure are detailed in the enclosed drawing

#### 8.1.7 U-Distributaries

01. Construction of out lets on main conductor at spots.

In order to distribute the irrigation water to command area, outlets are necessary along the course of the conductor of the canal. This distribution needs to be controlled by means of appropriate outlets of sizes proportionate to the water requirement of the area commanded by each outlet. The outlets need to be constructed permanently in such a manner that no tampering is allowed. As such, it is proposed to construct the outlets with cement concrete pipes of requisite diameter (4"/5"/6") embedded in mass concrete lining wall on outer face of the shoulder of the canal. The supplies shall be dropped directly into a sump at the toe of the wall wherefrom it shall be

carried over to the command via earthen or concrete minors as per site conditions. The other salient features of a typical outlet structure are detailed in the enclosed drawing.


#### 8.1.8 Other provisions


As the scheme is at its last leg of completion, no provisions for O-Miscellaneous, P-Maintenance, Y-Losses on stock, Ordinary T&P and Audit & accounts charges have been provided in the abstract of cost. No establishment charges have been proposed as the department has adequate staff to carry out the project.


#### 8.2 Quality control management

Quality control is a process to be managed by a government authorized agency (viz. State Directorate of Inspections and Quality Control) or a wing framed by the implementing department to ensure compliance with the specifications for construction as detailed in the contract specifications. Quality control emphasizes testing of works to uncover defects and reporting to management who make the decision to accept or reject such works or a part thereof. For contract work, particularly work awarded by government agencies, quality control issues should index among the top reasons for not renewing a contract.

While executing works, standard testing procedures for testing the suitability of materials (viz. sand, stone aggregate), cube testing etc. shall imperatively be resorted to reach the acceptance criterion of executed works. A record of such tests shall be preserved for future reference of monitoring agencies. All testing shall be borne by the executing agencies; a mention thereof shall be made in the contract documents. Any work found wanting in minimum acceptance criteria shall be rejected and redone at the sole expense of the executing agency. Repeated substandard execution should lead to termination of contract with penalties.

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

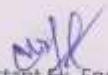
  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral




### 9.1 Formation of water user association and procedure for handing over the MI scheme to WUA


Jammu and Kashmir Water Resources (Regulation & Management) Act, 2010 details in Sections 63, 64 and 65 (with certain exception as outlined therein) formation of Water Committees. In these committees, role of panchayats is significantly prominent. As the establishment of panchayats and devolution of powers to them is picking up, the handing-over of MI schemes shall proceed in due course of time. However, adhoc water committees stand formed and are working the supervision of Command Area Development Department, Kashmir.



Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I




Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II



Executive Engineer,  
Irrigation Division, Tral

#### 10.1 Command Area Development of scheme

The project in hand does not incorporate the provision for command area developmental activity as the same is being implemented by Command Area Development Agency under their program. The matter of inclusion of the command of this scheme in their program and its paripassu implementation has been taken up with the concerned department. A lot of CAD-WM activity stands executed in 2<sup>nd</sup> stage canal of the scheme in Buchoo, Saimoh areas under the earlier exhausted project of Dachnipora Rajpora project. The DPR for CAD-WM works for the scheme has been submitted by the said department incorporating balance left over command and other minor irrigation schemes of Tral area. Its salient features are appended herewith. A command of 1998 ha of Tral LIS is incorporated in this DPR of CAD-WM submitted by Command Area Development Department, Kashmir. A copy of salient features of the DPR of the command activities is enclosed with this manuscript.

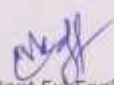
  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II


  
Executive Engineer,  
Irrigation Division, Tral

## DESIGNS:-

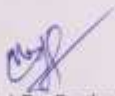
SECTION OF CANAL FROM RD 6600m OF STAGE 3RD CANAL OF TRAL LIS			
Design discharge of stage 3rd canal			
1) From RD 0 to RD 6000m		60	cusec
2) From RD 6000m to RD 12500m		30	cusec
3) From RD 12500m to RD 17000m		5	cusec
Calculation of Full Supply Depth in canal			
a) From RD 0 to RD 6000m	Constructed	90	cusec
b) From RD 6000m to RD 12500m			
Design discharge of canal	Q	30.00	cusec ✓
		or, 0.849	cumec
Water depth corresponding to Q:			
Manning's coefficient	n	0.018	
Bed width of main canal	b	0.90	m
Side slope (H:V as k:1) (H:V as 0.75:1) (Fig 1)	k	0.75	
Longitudinal slope of canal	S	1/3000	
Discharge Q	$AV$	$A n^{-1} (A/P)^{2/3} (1/S)^{1/2}$	0.849 cumec
	d	By trial & error	0.9024 m
	d	Adopted	0.90 m
	A	$(b+kd)d$	1.4175 m <sup>2</sup>
	V	Q/A	0.60 m/s < 2.00 m/s
Silt constant		K	0.41
Critical velocity	$V_c$	$K d^{0.64}$	0.38 m/s < V

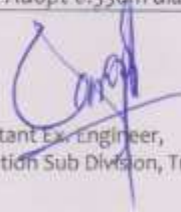
  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

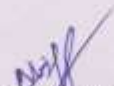
DI PIPE PROPOSAL FOR STAGE 2ND CANAL RIGHT BRANCH BEYOND RD 2350m				
<b>Case 1 (by head loss equation)</b>				
Longitudinal slope		1-2000		
Length of pipe	L		48.00	m
Head difference in 50m length	h		0.024	
Bed gradient	i	h/L	0.00050	
Discharge through pipe	Q		6.50	cusec
			Or,	0.18395 cumec
Dia of pipe	d	Assumed	0.60	m
Area of pipe	A	$22 d^2/28$	0.2829	m <sup>2</sup>
Mean velocity of flow	V	Q/A	0.65	m/s
Kinematic viscosity of water	v		0.0152	cm <sup>2</sup> /s
			Or,	0.00000152 m <sup>2</sup> /s
Reynolds Number	R	Vd/v	256709	
Friction factor	f	$0.079/Re^{1/4}$ (Re = 4000 - 10 <sup>6</sup> )	0.00351	
Head loss	hf	$4fLV^2/2gd$	0.024	m
which is less than the available head difference of conduit extremes, Hence OK.				
<b>Case 2 (By Chezy's equation using Kutter's constant)</b>				
Kutter's constant	N	for concrete surfaces	0.011	
	d	Assumed	0.60	m
Hydraulic radius	m	d/4	0.15	
	C	$\frac{[23+0.00155/l+1/N]}{1+(23+0.00155/l)N/\sqrt{m}}$	80.070	
Velocity of flow	V	$\sqrt{mi}$ C	0.69	m/s
	A	Q/V	0.265	m <sup>2</sup>
	d	$(28 A/22)^{0.5}$	0.58	m, OK
<b>Case 2 (By Chezy's equation using Manning's constant)</b>				
	C	$m^{1/6}/N$	66.266	
Velocity of flow	V	$\sqrt{mi}$ C	0.57	m/s
	A		0.321	m <sup>2</sup>
	d	$(28 A/22)^{0.5}$	0.64	m, OK
Adopt 0.550m dia RCC pipe NP3				


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I


  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

MS PIPE PROPOSAL FOR 3RD STAGE CANAL RD 6680m to RD 7520m				
<b>Case 1 (by head loss equation)</b>				
Longitudinal slope		$1 \sim 3000$		
Length of pipe	$L$		100.00	m
Head difference	$h$		0.033	m
Bed gradient	$i$	$h/L$	0.00033	
Discharge through pipe	$Q$		30.00	cusec
			Or,	0.849 cumec
Dia of pipe	$d$	Assumed	1.16	m
Area of pipe	$A$	$22 d^2/28$	1.057	m <sup>2</sup>
Mean velocity of flow	$V$	$Q/A$	0.80	m/s
Kinematic viscosity of water	$\nu$		0.0152	cm <sup>2</sup> /s
			Or,	0.00000152 m <sup>2</sup> /s
Reynolds Number	$Re$	$Vd/\nu$	612832	
Friction factor	$f$	$0.079/Re^{1/4}$ ( $Re = 4000 - 10^6$ )	0.00282	
Head loss	$hf$	$4fLV^2/2gd$	0.032	m
which is less than the available head difference of conduit extremes, Hence OK.				
<b>Case 2 (by Chezy's equation using Kutter's constant)</b>				
Kutter's constant	$N$	for MS pipes	0.013	
	$d$	Assumed	1.16	m
Hydraulic radius	$m$	$d/4$	0.29	
	$C$	$\frac{[23+0.00155/i+1/N]}{1+(23+0.00155/i)N/\sqrt{m}}$	70.192	
Velocity of flow	$V$	$C \sqrt{mi}$	0.69	m/s
	$A$	$Q/V$	1.230	m <sup>2</sup>
	$d$	$(28 A/22)^{0.5}$	1.25	m
<b>Case 2 (by Chezy's equation using Manning's constant)</b>				
	$C$	$m^{1/6}/N$	62.583	
Velocity of flow	$V$	$C \sqrt{mi}$	0.62	m/s
	$A$		1.380	m <sup>2</sup>
	$d$	$(28 A/22)^{0.5}$	1.33	m
Adopt 1.50m dia ms pipe				

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

  
Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

  
Executive Engineer,  
Irrigation Division, Tral

DI PIPE PROPOSAL FOR 3RD STAGE CANAL BEYOND RD 12500m				
<b>Case 1 (by head loss equation)</b>				
Longitudinal slope			1-3000	
Length of pipe	L		48.00	m
Head difference in 50m length	h		0.016	
Bed gradient	f	h/L	0.00033	
Discharge through pipe	Q		5.00	cusec
			Or,	0.1415 cumec
Dia of pipe	d	Assumed	0.60	m
Area of pipe	A	$22 d^2/28$	0.2829	m <sup>2</sup>
Mean velocity of flow	V	Q/A	0.50	m/s
Kinematic viscosity of water	v		0.0152	cm <sup>2</sup> /s
			Or,	0.00000152 m <sup>2</sup> /s
Reynolds Number	Re	Vd/v	197468	
Friction factor	f	$0.079/Re^{1/4}$ (Re = 4000 - 10 <sup>6</sup> )	0.00375	
Head loss	hf	$4fLV^2/2gd$	0.015	m
which is less than the available head difference of conduit extremes, Hence OK.				
<b>Case 2 (By Chezy's equation using Kutter's constant)</b>				
Kutter's constant	N	for concrete surfaces	0.011	
	d	Assumed	0.60	m
Hydraulic radius	m	d/4	0.15	
	C	$\frac{[23+0.00155/(i+1/N)]}{1+(23+0.00155/i)N/\sqrt{m}}$	79.638	
Velocity of flow	V	$C \sqrt{mi}$	0.56	m/s
	A	Q/V	0.251	m <sup>2</sup>
	d	$(28 A/22)^{0.5}$	0.57	m, OK
<b>Case 2 (By Chezy's equation using Manning's constant)</b>				
	C	$m^{49}/N$	66.266	
Velocity of flow	V	$C \sqrt{mi}$	0.47	m/s
	A		0.362	m <sup>2</sup>
	d	$(28 A/22)^{0.5}$	0.62	m, OK
Adopt 0.60m dia DI pipe				

Assistant Ex. Engineer,  
Irrigation Sub Division, Tral I

Assistant Ex. Engineer,  
Irrigation Sub Division, Tral II

Executive Engineer,  
Irrigation Division, Tral

**REPORT OF THE COMMITTEE FRAMED FOR ASSESSMENT OF NEED AND FEASIBILITY OF  
REVISED DPR OF TRAL LIS**

\*\*\*

As a sequel to the constitution of a committee comprising of DC Pulwama, CE I&FC Department, Srinagar and Director CWC, Jammu or his representative framed vide letter No: PW/Hyd/P&S/27/2013-14 dated:- 29-04-2016, the following members of the committee jointly visited Awanpora and tail portion of Tral LIS on 13-05-2016:

1. District Development Commissioner, Pulwama
  2. Chief Engineer, I&FC Department, Srinagar
  3. Assistant Director as representative, Monitoring & Appraisal Directorate, CWC, Jammu
- DPR of Tral LIS framed in the year 1979 for irrigating 4000 ha command area. The scheme Tral LIS consisting 3 stage pumping to irrigate the Nil command area in first stage, 2000 ha in 2nd stage & 2000 ha in 3rd stage. Upto 2nd stage, project is completed as reported by State Project Authorities. The project was included under AIBP in 2000-2001. MoU was signed in year 2000-2001 with Government of India for completion of project in 2004-05 and subsequently time extension was granted from time to time. Now the State Government has committed to complete the Scheme by March 2017. The same is also included under priority-1 and is also being monitored by the Prime Minister Office of India.

The State Government has reported **loss of 585 ha of command area in 3rd stage** out of the committed command area of 2000 ha while committing to Central Government for completion of project by March 2017. State Government has desired to compensate the lost **command area of 585 ha from 3rd Stage of Tral LIS by including Awanpora Plateau** having equivalent command area.

For the realistic assessment of above proposal by Irrigation & Flood Control Department of Government of J& K, Secretary to Government of J&K for Irrigation & Flood Control Department, under the direction of Honorable Minister PHE / Irrigation & Flood Control Department, Government of J&K constituted above committee. To assess the actual site conditions, above committee visited following spots:-

1. Awanpora Plateau
2. Stage 2nd pump house, of Tral LIS
3. Lorrow Jagir village
4. Hundura village
5. Kawa Khul reaches

The committee members were also accompanied by SDM Tral, ACR Pulwama, Executive Engineer, Irrigation Division, Tral, Tehsildar Tral /Aripal.

During visit to stage 2nd pump house of Tral LIS it was found that only 07 pump units have been installed out of originally proposed 10 units. It was also apprised to the committee that the pump house at 3rd stage has also been constructed to house only 4 pumping units out of originally proposed 6 pumping units. It has been informed by the State Project Authorities that 4 pumping units installed at 3rd stage PH will be able to serve the left over Command Area.

The visit to village Lorrow Jagir revealed that area is populated. A considerable chunk of land is also cultivable in the area. It is also observed that the canal alignment is also passing near the inhabited area of the village.

During the visit to the village Hundoora, the locals who came forward were contacted, they more or less expressed their unwillingness due to apprehension of their land acquisition on construction of the proposed Tral Canal which passes through their fields and they will get deprived of the meagre land available with them. This land is fertile as standing crop was visible at site. However at the same time locals wanted some assured irrigation system also. However, as per original DPR, the commitment was for providing irrigation to then declared command area of certain villages. Now even as observed by the committee also, lot of habitation has come up in Command area and Project Authorities apprehended lot of land acquisition and compensation thereof if canal is further constructed beyond already constructed canal of 3rd stage. To ward of such fear, the committee was of the opinion that instead of construction of canal, water should be conveyed through embedded pipes of appropriate diameter which may require very less acquisition of land. Even MoWR, RD & GR, Government of India is also actively encouraging piped irrigation wherever feasible to minimize land acquisition and water losses. This may even increase the speed of completion of project and State Government will be finally able to honour its commitment to complete Tral LIS by March 2017.

The saving in water from Tral LIS due to various reasons such as loss in command area and minimizing loss due to piped irrigation can further be utilized to serve the command area of Awanpora Plateau as a separate scheme. During visit to the Awanpora plateau, the team observed that land is cultivable as crop (grass-Lucerne) was being harvested. Moreover, the land appears to be fertile also as almond and walnut plantation is quite prevalent. The officers of the irrigation department informed that there is no irrigation system / network existing in the plateau. The land is dependent on natural precipitation as such, the land can be brought under an appropriate irrigation system.

Here it is pertinent to mention that Irrigation & Flood Department, GoJ&K has already conceived Awanpora Project as Minor irrigation scheme in the year 2009 and same was also cleared in 10th State Level TAC held on 26-8-2009.

As reported by CWC representative, CWC (HQ), New Delhi is pressing hard for submission of Central assistance proposal of 2016-17 in respect of Tral LIS in the month of May 2016 itself. Keeping in view of the above, it is requested to complete this process at the earliest and submit Central assistance proposal to CWC, Jammu, so that the same can be further processed for completion of project by March 2017 as agreed by State Government.

Sd/-  
(Rakesh Gupta)  
Assistant Director  
M & A, Directorate,  
RD&GR, CWC, MoWR,  
GoJ, Jammu

Sd/-  
(Mir Javed Jaffer)  
Chief Engineer,  
I&FC Department,  
Srinagar

Sd/-  
(Neeraj Kumar, IAS)  
District Development Commissioner,  
District Pulwama (J&K)



**MECHANICAL ESTIMATES**  
**LIFT IRRIGATION SCHEME TRAL STAGE 1<sup>ST</sup> FOR THE YEAR 2016-17**

S.No.	Name of the works.	Estimated Cost.	Cumulative Expenditure Ending 03/ 2016	Cost of works to be taken up.	Remarks
A]	<b>Electrical sub-station:</b> Cost on account of 1.63 MVA distribution transformer with allied electrical works incl. Cost on account of bus bar conductor from transformer to panel for smoothening of power supply.			12.00	
	<b>Total A</b>	252.50	240.50	12.00	
B]	<b>Pumping Equipment:</b> <b>Total B</b>	190.00	190.00		
C]	<b>Rising Main:</b> Cost on account of 600 mm diameter M.S Slip-on joint.			1.50	
	<b>Total C</b> =	100.35	98.85	1.50	
D]	<b>Intake Gates:</b> Cost on account of summer / winter gates, M.S trash racks incl. liability a/c of servicing of mechanical equipments.			2.50	
	<b>Total D</b> =	20.00	17.50	2.50	
E]	<b>Miscellaneous mechanical and electrical works:</b> Servicing/ Maintenance of Electro-mechanical equipments incl. pumps, motors, starters, etc.			02.00	
	<b>Total E</b> =	155.985	153.985	2.00	
F]	<b>Cost on account of establishment / contingencies.</b> <b>Total F</b> =	15.00	3.42	11.58	
	<b>Grand Total [A+B+C+D+E+F] =</b>	733.835	704.255	29.58	

*[Signature]*  
 Superintending Engineer  
 Mech. Circle, I & F.C. Deptt.,  
 Srinagar.

*[Signature]*  
 Executive Engineer  
 Mech. Irr. Const. Division,  
 Srinagar.

*[Signature]*  
 Asstt. Ex. Engineer,  
 Mech. New Lift Sub Division,  
 Srinagar.

LIFT IRRIGATION SCHEME TRAL STAGE 2<sup>ND</sup> FOR THE YEAR 2016-17.

S.No:	Description of the works:	Estimated Cost	Cumulative Expenditure Ending 03/ 2016	Cost of works to be taken.	Remarks
A]	<b>Creation of 2x6.3 MVA Electric Receiving Station:</b>				
01.	Cost on account of 1x6.3 MVA AVR for regulating grid voltage to 33 KV receiving station for smooth operation for pumping machinery including cabling etc.	-		125.00	
02.	Cost on account of improvements/ restoration of damages to 2x6.3 MVA distribution Sub-station including Auxiliary side, P/Filling of T-oil with other allied works.	-		10.00	
	<b>Total A] =</b>	<b>361.00</b>		<b>135.00</b>	
B]	<b>Pumping Equipment:</b>				
01.	Cost of vertical Turbine Pumps of 15 Cusec capacity and capable of lifting water at 130 M Head, 780 KW, 11 KV, 1500 RPM vertical solid shaft slip-ring Induction Motor and allied electrical and mechanical equipment such as rubber flexible joint, L.R. starter, Shunt capacitors etc. [01 Unit]			120.00	
02.	Cost on account of fabrication, providing and fitting of M.S. I-section and channel support to the pumps,			5.50	
03.	Cost on account of fabrication, providing and fitting of mild steel expansion joints to pumping units.			11.50	
04.	Servicing, maintenance, repairs, improvements to pumps, motors, HT/ LT panels, starters, Cranes and other allied equipments incl. liabilities.			8.00	
05.	Cost of vertical Turbine Pumps of 15 Cusec capacity and capable of lifting water at 130 M Head, 780 KW, 11 KV, 1500 RPM vertical solid shaft slip-ring Induction Motor and allied electrical and mechanical equipment such as rubber flexible joint, L.R. starter, H.V. panel etc.			40.00	Balance cost a/c 10. No's pumping units after commissioning of remaining 05 No. pumping units & other liabilities to M/S. UEE Electrical Engineering limited.

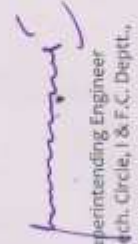
C1	<b>Total B] =</b> Rising Main No. 01 [1300 mm dia.]:		793.00	185.00	
01.	Providing and installation of 01 No. additional 1300 mm diameter Dual plate check Valve to rising main including installation of By-pass arrangement.			14.00	To neutralize/ minimize the back pressure / water hammering generated during stoppage of pumping units.
02.	Providing and fitting of fitting material to 1300 mm diameter mild steel expansion joints/ flange joints for stopping of leakages to 1300mm rising main.			3.00	
03.	Providing and installation of 1300mm dia. dismantling joints alongside Dual plate check valve.			4.90	
04.	Providing and installation of 08 No. PN 2.5 rating cast steel/ D.I. 400 mm dia Non return valves with bypass arrangements.			45.50	
05.	Providing and installation of 05 No. PN 2.5 rating D.I and balance cost of 03 No. 400 mm dia Sluice Valves incl. improvements to delivery side with allied works.			35.50	
05.	Providing and installation of 400 mm diameter Sluice Valve to wash out arrangement with allied works.			8.50	
06.	Strengthening of pipe joints of 1300 mm diameter rising main [left over portion]			4.50	
07.	Servicing/ maintenance of 1300 mm dia. dismantling/ Expansion joints/ flange joints.			8.00	
	<b>Rising Main No.02 [1050 mm Dia.]:</b>				
08.	Cost on account of supply of 1050mm dia M.S Rising main. [2225 Meters]			498.00	
09.	Cost on account of laying of 1000mm dia M.S Rising main [2225 Meters]			138.00	
10.	Installation/ completion/ improvements to delivery manifold of Rising mains with all allied works.			8.50	
11.	Cost on account of Supply and Installation of 08 Nos. 1050mm Dia Expansion/dismantling Joints to 1050mm dia M.S Rising main.			45.00	

12.	Cost on account 1000 mm diameter butterfly Valve with allied works.			14.00	
13.	Cost on account of 04 No. zero velocity Dual plate check valves with allied works.			60.00	
13	Cost on account of Bye-pass arrangement to Non-return/ Check Valves.			5.00	
14.	Cost on account of Installation and fabrication of wash out arrangement to Rising main incl. Sluice valve & all allied works.			8.50	
15.	Cost on account of fabrication and fitting of M.S Clamps, plates, foundation bolts etc. to Rising main.			16.50	
16.	Cost on account of Epoxy painting of Rising main.			12.00	
18.	Cost on account of fittings of Anti Surge / Air cushion valves to rising main.			10.50	
19.	Cost on account of M.S bolts, plates for Clamps.			4.50	
20.	Cost on account of strengthening of pipe joints.			9.50	
	<b>Total C ] =</b>			<b>953.90</b>	
<b>D]</b>	<b>Intake Gates:</b>				
	Cost on account of M.S Trash Racks and walk way at intake channel on suction side/ Intake gate.			3.00	
	<b>Total D] =</b>			<b>3.00</b>	
<b>E]</b>	<b>Miscellaneous mechanical and electrical works:</b>				
01.	Cost on account of Fab./ erection of 03 Ton capacity OHT crane on manifold side along with M.S clamps for delivery manifold.			3.50	
02.	Cost on account of M.S trash guard with overhead gantry, walkway incl. improvements/ strengthening of existing trash guard and allied mechanical works.			3.00	
03.	Cost of M.S expansion joints to delivery side of pumping units.			11.50	
04.	Cost on account of angle iron framed mesh to soffits for closing of bird openings incl. improvements to roof for stopping of leakages.			3.50	
	<b>Total C ] =</b>			<b>1333.81</b>	
	<b>Total D] =</b>			<b>20.00</b>	

05.	Cost on account of improvements to battery bank, cable tray, gland openings incl. replacement of batteries.				2.75
06.	Cost on account of improvements to distribution system of 33/11 KV H.T supply system/ strengthening of earthing system of motors, Starters, Panels and other electrical equipments.				3.00
07.	Cost on account of 11 KV XLPE Aluminum cable for connecting of motors, starters, panel etc.				8.00
08.	Cost on account of installation of lightening arrestor system.				1.75
09.	Cost on account of strengthening/ improvements to electrical automation system of HT equipments.				1.50
10.	Cost on account of Fabrication/ erection of operators quarter with kitchen facilities.				3.50
11.	Cost on account of servicing of Electro-mechanical equipment incl. HV/LV panels, Pumps, motors, Starters, EOT cranes & other equipments.				4.50
					46.50
				257.20	
F]	Cost on account of contingencies/ Establishment.				8.83
				2790.875	1380.845
	Grand Total [A+B+C+D+E+ F] =				1332.23

  
Asstt. Ex. Engineer,  
Mech. New Lift Sub Division,  
Srinagar.

  
Executive Engineer,  
Mech. M. Const. Division,  
Srinagar.

  
Superintending Engineer  
Mech. Circle, I & F.C. Deptt.,  
Srinagar.

LIFT IRRIGATION SCHEME TRAL STAGE 3<sup>RD</sup> FOR THE YEAR 2016-17.

S.No :	Description of the works:	Estimated Cost [ in lacks ]	Cumulative Expenditure Ending 03/ 2016	Cost of works to be taken up.	Remarks
<b>A]</b>	<b>Creation of Receiving Station:</b>				
01.	Cost of Creation of 6.3 MVA, receiving station, erection of transmission lines and allied Electrical work at Laribal Pump House (Being executed by PDD)			180.00	11 KV tap line laid and Auxiliary Transformer fitted. Receiving Station being created.
	<b>Total A]=</b>	<b>342.65</b>		<b>180.00</b>	
<b>B]</b>	<b>Pumping equipment:</b>				
01.	Cost of vertical Turbine Pumps of 15 Cusec capacity and capable of lifting water at 130 M Head, 780 KW, 11 KV, 1500 RPM vertical solid shaft slip-ring induction Motor and allied electrical and mechanical equipment such as rubber flexible joint, L.R. starter, H.V. panel etc.	-	-	160.00	
02.	Shifting and Installation of pumping units with allied accessories from stage 2 <sup>nd</sup> , their erection and servicing at stage 3 <sup>rd</sup> .	-	-	02.00	
3-	Cost on account of base plates to pumping units, and their anchoring etc.	-	-	1.35	Balance cost.
	<b>Total B] =</b>	<b>601.00</b>		<b>163.35</b>	
<b>C]</b>	<b>Rising Main[ 1300mm &amp; 1200mm dia.]:</b>				
01.	Cost of 1200 mm dia, 10 mm thick 650 Meters Mild Steel Spirally welded pipe for rising main.[650M]	-	-	155.00	
02.	Cost a/c laying of 1200 mm dia, 1300mm dia 950 Meters Rising main and its testing/ commissioning.[950M]	-	-	50.00	

03.	Cost of Dual plate check valves to Rising main.	-	-	40.00	
04.	Cost on account of supply and installation of Expansion Joints to M.S Rising main incl. increasers/reducers.	-	-	35.00	
05.	Cost on account of Bye-pass arrangement to Zero Velocity/Non-return Valves	-	-	2.00	
06.	Cost on account of Installation and fabrication of wash out arrangement incl. sluice valve.	-	-	7.00	
07.	Cost on account of fabrication and fitting of M.S Clamps to Rising main.	-	-	09.00	
08.	Cost on account of fittings of Air cushion valves	-	-	2.50	Balance cost.
10.	Cost on account of Epoxy painting of Rising main.	-	-	05.00	
11.	Cost on account of jacketing of pipe joints.	-	-	05.00	
12.	Cost on account of flap valves, short piece etc.	-	-	1.50	
	<b>Total C] =</b>	<b>523.34</b>	-	<b>312.00</b>	
<b>D]</b>	<b>Intake gates:</b>				
01.	Cost of M.S trash racks, gates, platform etc			02.00	
	<b>Total D] =</b>	<b>10.00</b>	-	<b>2.00</b>	
<b>E]</b>	<b>Miscellaneous Mechanical and Electrical Works:</b>				
01.	Cost of EOT crane of 15 Ton capacity, 40 Mtrs travel	-	-	2.50	Balance cost.
02.	Cost of EOT of 7.5 Ton capacity, 40 Mtrs travel	-	-	1.50	Balance cost.
03.	Cost on account of tools and plants	-	-	2.00	
04.	Cost on account of fabrication of Delivery manifold.	-	-	2.50	
05.	Cost on account of cable for auxiliary transformer.	-	-	3.50	
06.	Cost of HV service line and its allied equipment.	-	-	3.00	Balance cost.
07.	Cost 03 Ton cap. OHT Crane on delivery side & M.S Clamps for delivery manifold etc.	-	-	2.50	Balance cost.
08.	Cost of electrification of pump house and illumination of premises.	-	-	2.50	Balance cost.
09.	Cost on account of LV panel.	-	-	1.50	Balance cost.

10.	Cost on account of operating console.	-	-	4.50	
11.	Cost on account of Earthing of electrical and mechanical equipments.	-	-	1.50	
12.	Cost on account of fabrication, providing and installation of M.S Walk Way for operation of sluice valves on delivery side.	-	-	2.00	
13.	Cost on account of 50 KVA automatic voltage regulator with all allied works.	-	-	1.50	Balance cost.
14.	Cost on account of approach to 15/ 7.5 ton capacity travelling cranes for maintenance/ operation.	-	-	1.50	
15.	Cost on account of Anti-skid rubber matting	-	-	1.50	Balance cost.
16.	Cost on account of signage boards	-	-	1.00	
	<b>Total E] =</b>	<b>231.30</b>	<b>-</b>	<b>35.00</b>	
F]	Cost on account of Contingencies / Establishment:				
	<b>Total F] =</b>	<b>15.00</b>	<b>-</b>	<b>7.39</b>	
	<b>Grand Total [A+B+C+D+E+F] =</b>	<b>1723.29</b>	<b>1023.55</b>	<b>699.74</b>	

  
Asst. Ex. Engineer,  
Mech. New Lift Sub Division,  
Srinagar.

  
Executive Engineer  
Mech. Irr. Const. Division,  
Srinagar.

  
Superintending Engineer  
Mech. Circle, I & F.C. Deptt.,  
Srinagar.



**ABSTRACT OF FUNDS REQUIRED FOR COMPLETION OF LIFT IRRIGATION SCHEME TRAL [STAGE -WISE] for 2016-17.**

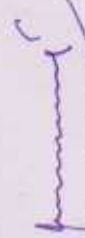
Estimated cost= 5248.00 Lacs.

Revised cost= 5170.203

S. No:	NAME OF THE STAGE:	ESTIMATED COST.	Funds received Ending 03/2016.	Balance cost Ending 03/2016. [As per original]	Revised balance Cost of works for completion of scheme.	Revised Total Estimated cost.
		03	04	05	06	07.
01.	LIS TRAL STAGE 1 <sup>ST</sup>	733.835	704.255	29.58	29.58	733.835 [original]
02.	LIS TRAL STAGE 2 <sup>ND</sup>	2790.875	1380.845	1410.03	1332.23	2713.078 [revised]
03.	LIS TRAL STAGE 3 <sup>RD</sup>	1723.290	1023.550	699.74	699.74	1723.290 [original]
	<b>Grand Total =</b>	<b>5248.000</b>	<b>3108.650</b>	<b>2139.35</b>	<b>2061.55</b>	<b>5170.203</b>

  
Asst. Ex. Engineer,  
Mech. New Lift Sub Division,  
Srinagar.

  
Executive Engineer,  
Mech. Irr. Const. Division,  
Srinagar.

  
Superintending Engineer  
Mech. Circle, I & F.C. Deptt.,  
Srinagar

Financial Progress And Program for Completion of Tral Lift Irrigation Scheme for 2016-17

S. No:	Component description.	Original approved Cost.	Total expenditure ending 03-2016.	Balance Cost as per Original.	Total Revised cost.	Revised Balance Cost.
1.	2.	3.	4.	5.	6.	7.
	Mechanical/Electrical works:-					
A.	Electric sub-stations	957.00	520.00	437.00	847.00.	327.00
B.	Pumps	1584.00	1035.00	549.00	1383.35	348.35
C.	Rising Mainis	1957.50	963.87	993.63	2231.27	1267.40
D.	Gates	50.00	40.00	10.00	47.50	7.50
E.	Misc. elect/ Mech. Equip.	644.45	499.73	144.72	583.23	83.50
F.	Contingencies	55.050	50.05	5.00	77.85	27.80
	<b>Total =</b>	<b>5248.00</b>	<b>3108.65</b>	<b>2139.35</b>	<b>5170.20</b>	<b>2061.55</b>

  
Asst. Ex. Engineer,  
Mech. New Lift Sub Division,  
Srinagar.

  
Executive Engineer,  
Mech. Irr. Consl. Division,  
Srinagar.

  
Superintending Engineer,  
Mech. Circle, I & F. C. Deptt.,  
Srinagar.

Ten Daily Delta Statement of Crops										
Month	Ten Daily period	Kharif crops						Rabi crops		
		Vegetables	Potatoes	Maize	Orchards	pulses	Lucerne	Oil seeds	Wheat	Peas
April	I	0	0	0	0	0	0	1	1	1
	II	1/2	0	0	0	0	0	1	1	1
	III	1/2	0	0	0	0	0	0	1	1
May	I	1/2	0	1	1.5	0	1	0	0	0
	II	1	0	1	1.5	0	1	0	0	0
	III	1	0	1	1.5	0	1	0	0	0
June	I	1	4	2	1.5	1/3	2	0	0	0
	II	2	5	2	1.5	1/3	2.5	0	0	0
	III	1.5	5	1	1.5	1/3	1.5	0	0	0
July	I	1	4	1	1.5	1/3	1	0	0	0
	II	1	0	1	1.5	1/3	1	0	0	0
	III	1	0	1	1.5	1/3	1	0	0	0
August	I	1	0	1		1/3	1	0	0	0
	II	1	0	1		1/3	1	0	0	0
	III	1	0	1		1/3	1	0	0	0
September	I	0	0	0	0	0	0	0	0	0
	II	0	0	0	0	0	0	0	0	0
	III	0	0	0	0	0	0	0	0	0
October	I	0	0	0	0	0	0	0	1	1.5
	II	0	0	0	0	0	0	1.5	1.5	1.5
	III	0	0	0	0	0	0	1.5	1.5	1.5
November	I	0	0	0	0	0	0	1	1	1
	II	0	0	0	0	0	0	1	1	1
	III	0	0	0	0	0	0	1	1	1
December	I	0	0	0	0	0	0	0	0	0
	II	0	0	0	0	0	0	0	0	0
	III	0	0	0	0	0	0	0	0	0
January	I	0	0	0	0	0	0	0	0	0
	II	0	0	0	0	0	0	0	0	0
	III	0	0	0	0	0	0	0	0	0
February	I	0	0	0	0	0	0	0	0	0
	II	0	0	0	0	0	0	0	0	0
	III	0	0	0	0	0	0	0	0	0
March	I	0	0	0	0	0	0	1	1	1
	II	0	0	0	0	0	0	1	1	1
	III	0	0	0	0	0	0	1	1	1

(Source: State Agriculture Department)

Month	Ten Daily period	Water requirement of crops										[CCA in hectares/acres & discharge in cusec]			
		Kharif crops					Rabi crops					NIR	FIR	GIR	
		Vegetables	Potatoes	Maize	Orchards	Pulses	Lucerne	Oil seeds	Wheat	Peas					
April	I	120.96	483.91	557.20	1053.88	794.99	404.06	859.12	304.17	543.71					
	II	0.63	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28	65%	90%
	III	0.63	0	0	0	0	0	8.92	3.16	5.64	18.34	28.22	31.35	cusec	cusec
May	I	0.63	0	5.78	16.40	0	4.19	0	0	0	9.43	14.50	16.11		
	II	1.26	0	5.78	16.40	0	4.19	0	0	0	27.01	41.55	46.17		
	III	1.26	0	5.78	16.40	0	4.19	0	0	0	27.64	42.52	47.24		
June	I	1.26	20.09	11.56	16.40	2.75	8.39	0	0	0	60.45	93.00	103.33		
	II	2.51	25.11	11.56	16.40	2.75	10.48	0	0	0	68.82	105.88	117.64		
	III	1.88	25.11	5.78	16.40	2.75	6.29	0	0	0	58.22	89.57	99.52		
July	I	1.26	20.09	5.78	16.40	2.75	4.19	0	0	0	50.47	77.65	86.28		
	II	1.26	0	5.78	16.40	2.75	4.19	0	0	0	30.39	46.75	51.94		
	III	1.26	0	5.78	16.40	2.75	4.19	0	0	0	30.39	46.75	51.94		
August	I	1.26	0	5.78	0	2.75	4.19	0	0	0	13.98	21.51	23.90		
	II	1.26	0	5.78	0	2.75	4.19	0	0	0	13.98	21.51	23.90		
	III	1.26	0	5.78	0	2.75	4.19	0	0	0	13.98	21.51	23.90		
September															
October	I	0	0	0	0	0	0	0	3.16	8.46	11.62	17.88	19.86		
	II	0	0	0	0	0	0	13.37	4.73	8.46	26.57	40.88	45.42		
	III	0	0	0	0	0	0	13.37	4.73	8.46	26.57	40.88	45.42		
November	I	0	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28		
	II	0	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28		
	III	0	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28		
December to February															
March	I	0	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28		
	II	0	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28		
	III	0	0	0	0	0	0	8.92	3.16	5.64	17.71	27.25	30.28		


Peak discharge requirement: Kharif = 117.64 cusec say 120.0 cusec, Rabi: 45.42 cusec say 46.00 cusec/1.30 cume

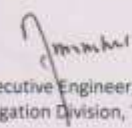
Assistant Executive Engineer,  
ISO, Tral 1<sup>st</sup>/2<sup>nd</sup>

Executive Engineer,  
Irrigation Division, Tral

### Annual Water Utilization of crops

Month	Ten Daily period	GIR		Annual Water Utilization
		cusec	cumec	Mcum
<b>Kharif:</b>				
April	I	30.28	0.857	0.740
	II	31.35	0.887	0.767
	III	16.11	0.456	0.394
May	I	46.17	1.307	1.129
	II	47.24	1.337	1.155
	III	47.24	1.337	1.155
June	I	103.33	2.924	2.527
	II	117.64	3.329	2.877
July	III	99.52	2.816	2.433
	I	86.28	2.442	2.110
	II	51.94	1.470	1.270
August	III	51.94	1.470	1.270
	I	23.90	0.676	0.584
	II	23.90	0.676	0.584
		23.90	0.676	0.584
		<b>Sub total</b>		<b>19.579</b>
September		Nil requirement		
<b>Rabi:</b>				
October	I	19.86	0.562	0.486
	II	45.42	1.285	1.111
	III	45.42	1.285	1.111
November	I	30.28	0.857	0.740
	II	30.28	0.857	0.740
	III	30.28	0.857	0.740
December		Nil requirement		
January		Nil requirement		
February		Nil requirement		
March	I	30.28	0.857	0.740
	II	30.28	0.857	0.740
	III	30.28	0.857	0.740
		<b>Sub total</b>		<b>7.149</b>
		<b>Grand total</b>		<b>26.728</b>

  
Assistant Executive Engineer,  
ISD, Tral 1<sup>st</sup>/2<sup>nd</sup>


  
Executive Engineer,  
Irrigation Division, Tral

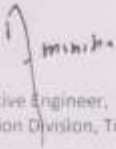
GOVERNMENT OF JAMMU & KASHMIR  
KASHMIR IRRIGATION & FLOOD CONTROL DEPARTMENT, SRINAGAR  
\*\*\*\*\*


CERTIFICATE REGARDING APPRECIATION IN RATES

(for civil works)

Certified that the proposed rate of appreciation of 20 % over the J&K Schedule of Rates, 2012 adopted for evaluation of cost of the balance works of Tral Lift Irrigation Scheme in the RCE (Revised cost = ₹ 170.50 Cr, 2016 PL) is appropriate and justified with due consideration of prevailing market rates.

  
Assistant Executive Engineer,  
I/D, Tral 1<sup>st</sup>/2<sup>nd</sup>

  
Executive Engineer,  
Irrigation Division, Tral


  
Chief engineer,  
Kashmir I& FC Department, Srinagar


Annexure-

GOVERNMENT OF JAMMU & KASHMIR  
KASHMIR IRRIGATION & FLOOD CONTROL DEPARTMENT, SRINAGAR  
\*\*\*\*\*

BUDGET CERTIFICATE

Certified that the Government of Jammu and Kashmir has made a budget provision of ₹ 1800.40 lacs (Central Assistance = ₹ 1411.54 lacs & State Share = ₹ 388.86 lacs) in the state budget 201-18 under AIBP for Tral Lift Irrigation Scheme for the financial year 2017-18. Moreover, the project is not getting any assistance from any other agency like NABARD etc.

  
Deputy Director Planning,  
Kashmir IB & FC Department, Srinagar

  
Chief Engineer,  
Kashmir IB & FC Department, Srinagar

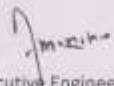
STATEMENT SHOWING FINANCIAL RATE OF RETURN										
S.No.	Year	Outlay		Simple Interest @ 5.50 % pa		Net Revenue		Sum of charges	[in lacs]	
		Amount	cum	Amount	cum	Amount	cum	(4+6-8)	% Return	
		3	4	5	6	7	8	9	(7/9) X 100	10
1	1980-81	17.500	17.500	0.963	0.963	0	0	18.463	0%	
2	1981-82	40.750	58.250	3.204	4.166	0	0	62.416	0%	
3	1982-83	50.749	108.999	5.995	10.161	0	0	119.160	0%	
4	1983-84	61.593	170.592	9.383	19.544	0	0	190.136	0%	
5	1984-85	74.494	245.086	13.480	33.023	0	0	278.109	0%	
6	1985-86	66.684	311.770	17.147	50.171	0	0	361.941	0%	
7	1986-87	55.006	366.776	20.173	70.344	0	0	437.120	0%	
8	1987-88	110.000	476.776	26.223	96.566	0	0	573.342	0%	
9	1988-89	20.510	497.286	27.351	123.917	0	0	621.203	0%	
10	1989-90	26.000	523.286	28.781	152.698	0	0	675.984	0%	
11	1990-91	26.000	549.286	30.211	182.908	0	0	732.194	0%	
12	1991-92	26.000	575.286	31.641	214.549	0	0	789.835	0%	
13	1992-93	26.000	601.286	33.071	247.620	0	0	848.906	0%	
14	1993-94	26.000	627.286	34.501	282.121	0	0	909.407	0%	
15	1994-95	26.000	653.286	35.931	318.051	0	0	971.337	0%	
16	1995-96	26.000	679.286	37.361	355.412	0	0	1034.698	0%	
17	1996-97	26.000	705.286	38.791	394.203	0	0	1099.489	0%	
18	1997-98	26.000	731.286	40.221	434.423	0	0	1165.709	0%	
19	1998-99	26.000	757.286	41.651	476.074	0	0	1233.360	0%	
20	1999-00	24.714	782.000	43.010	519.084	0	0	1301.084	0%	
21	2000-01	99.890	881.890	48.504	567.588	0	0	1449.478	0%	
22	2001-02	162.000	1043.890	57.414	625.002	0	0	1668.892	0%	
23	2002-03	174.500	1218.390	67.011	692.014	0	0	1910.404	0%	
24	2003-04	1128.600	2346.990	129.084	821.098	0	0	3168.088	0%	
25	2004-05	264.500	2611.490	143.632	964.730	0	0	3576.220	0%	
26	2005-06	650.700	3262.190	179.420	1144.150	0	0	4406.340	0%	
27	2006-07	294.500	3556.690	195.618	1339.768	0	0	4896.458	0%	
28	2007-08	393.000	3949.690	217.233	1557.001	0	0	5506.691	0%	
29	2008-09	1560.000	5509.690	303.033	1860.034	0	0	7369.724	0%	
30	2009-10	875.870	6385.560	351.206	2211.240	0	0	8596.800	0%	
31	2010-11	80.000	6465.560	355.606	2566.846	0	0	9032.406	0%	
32	2011-12	1067.760	7533.320	414.333	2981.178	0	0	10514.498	0%	
33	2012-13	953.680	8487.000	466.785	3447.963	0	0	11934.963	0%	
34	2013-14	15.500	8502.500	467.638	3915.601	0	0	12418.101	0%	
35	2014-15	1421.140	9923.640	545.800	4461.401	0	0	14385.041	0%	
36	2015-16	0	9923.640	545.800	5007.201	-14.400	-14.400	14945.241	-0.096%	
37	2016-17	410.230	10333.870	568.363	5575.564	-14.400	-28.800	15938.234	-0.090%	
38	2017-18	3318.050	13651.920	750.856	6326.420	-33.840	-62.640	20040.980	-0.169%	
39	2018-19	3316.130	16968.050	933.243	7259.663	-53.280	-115.920	24343.633	-0.219%	
40	2019-20		16968.050	933.243	8192.905	-61.464	-177.384	25338.339	-0.243%	
41	2020-21		16968.050	933.243	9126.148	-61.464	-238.848	26333.046	-0.233%	
42	2021-22		16968.050	933.243	10059.391	-61.464	-300.312	27327.753	-0.225%	
43	2022-23		16968.050	933.243	10992.634	-61.464	-361.776	28322.460	-0.217%	
44	2023-24		16968.050	933.243	11925.876	-61.464	-423.240	29317.166	-0.210%	
45	2024-25		16968.050	933.243	12859.119	-61.464	-484.704	30311.873	-0.203%	
46	2025-26		16968.050	933.243	13792.362	-61.464	-546.168	31306.580	-0.196%	
47	2026-27		16968.050	933.243	14725.605	-61.464	-607.632	32301.287	-0.190%	
48	2027-28		16968.050	933.243	15658.847	-61.464	-669.096	33295.993	-0.185%	
49	2028-29		16968.050	933.243	16592.090	-61.464	-730.560	34290.700	-0.179%	
50	2029-30		16968.050	933.243	17525.333	-61.464	-792.024	35285.407	-0.174%	
51	2030-31		16968.050	933.243	18458.576	-61.464	-853.488	36280.114	-0.169%	
52	2031-32		16968.050	933.243	19391.818	-61.464	-914.952	37274.820	-0.165%	
53	2032-33		16968.050	933.243	20325.061	-61.464	-976.416	38269.527	-0.161%	
54	2033-34		16968.050	933.243	21258.304	-61.464	-1037.880	39264.234	-0.157%	



1	2	3	4	5	6	7	8	9	10
55	2034-35		16968.050	933.243	22191.547	-61.464	-1099.344	40258.941	-0.153%
56	2035-36		16968.050	933.243	23124.789	-61.464	-1160.808	41253.647	-0.149%
57	2036-37		16968.050	933.243	24058.032	-61.464	-1222.272	42248.354	-0.145%
58	2037-38		16968.050	933.243	24991.275	-61.464	-1283.736	43243.061	-0.142%
59	2038-39		16968.050	933.243	25924.518	-61.464	-1345.200	44237.768	-0.139%
60	2039-40		16968.050	933.243	26857.760	-61.464	-1406.664	45232.474	-0.136%
61	2040-41		16968.050	933.243	27791.003	-61.464	-1468.128	46227.181	-0.133%
62	2041-42		16968.050	933.243	28724.246	-61.464	-1529.592	47221.888	-0.130%
63	2042-43		16968.050	933.243	29657.489	-61.464	-1591.056	48216.595	-0.127%
64	2043-44		16968.050	933.243	30590.731	-61.464	-1652.520	49211.301	-0.125%
65	2044-45		16968.050	933.243	31523.974	-61.464	-1713.984	50206.008	-0.122%
66	2045-46		16968.050	933.243	32457.217	-61.464	-1775.448	51200.715	-0.120%
67	2046-47		16968.050	933.243	33390.460	-61.464	-1836.912	52195.422	-0.118%
68	2047-48		16968.050	933.243	34323.702	-61.464	-1898.376	53190.128	-0.116%
69	2048-49		16968.050	933.243	35256.945	-61.464	-1959.840	54184.835	-0.113%
70	2049-50		16968.050	933.243	36190.188	-61.464	-2021.304	55179.542	-0.111%
71	2050-51		16968.050	933.243	37123.431	-61.464	-2082.768	56174.249	-0.109%
72	2051-52		16968.050	933.243	38056.673	-61.464	-2144.232	57168.955	-0.108%
73	2052-53		16968.050	933.243	38989.916	-61.464	-2205.696	58163.662	-0.106%
74	2053-54		16968.050	933.243	39923.159	-61.464	-2267.160	59158.369	-0.104%
75	2054-55		16968.050	933.243	40856.402	-61.464	-2328.624	60153.076	-0.102%
76	2055-56		16968.050	933.243	41789.644	-61.464	-2390.088	61147.782	-0.101%
77	2056-57		16968.050	933.243	42722.887	-61.464	-2451.552	62142.489	-0.099%
78	2057-58		16968.050	933.243	43656.130	-61.464	-2513.016	63137.196	-0.097%
79	2058-59		16968.050	933.243	44589.373	-61.464	-2574.480	64131.903	-0.096%
80	2059-60		16968.050	933.243	45522.615	-61.464	-2635.944	65126.609	-0.094%
81	2060-61		16968.050	933.243	46455.858	-61.464	-2697.408	66121.316	-0.093%
82	2061-62		16968.050	933.243	47389.101	-61.464	-2758.872	67116.023	-0.092%
83	2062-63		16968.050	933.243	48322.344	-61.464	-2820.336	68110.730	-0.090%
84	2063-64		16968.050	933.243	49255.586	-61.464	-2881.800	69105.436	-0.089%
85	2064-65		16968.050	933.243	50188.829	-61.464	-2943.264	70100.143	-0.088%

Note: Date of completion is 2018-19


  
Assistant Executive Engineer,  
ISD, Tral 1<sup>ST</sup>/2<sup>ND</sup>


  
Executive Engineer,  
Irrigation Division, Tral

## Expenditure Statement

(₹ in lacs)

Year	CA	SS	Total	Expdt.	Remarks
1980-81	0	17.500	17.500	17.500	
1981-82	0	40.750	40.750	40.750	
1982-83	0	50.749	50.749	50.749	
1983-84	0	61.593	61.593	61.593	
1984-85	0	74.494	74.494	74.494	
1985-86	0	66.684	66.684	66.684	
1986-87	0	55.006	55.006	55.006	
1987-88	0	110.000	110.000	110.000	
1988-89	0	20.510	20.510	20.510	
1989-90	0	26.000	26.000	26.000	Due to non-availability of records of these years, average expenditure values have been taken into account
1990-91	0	26.000	26.000	26.000	
1991-92	0	26.000	26.000	26.000	
1992-93	0	26.000	26.000	26.000	
1993-94	0	26.000	26.000	26.000	
1994-95	0	26.000	26.000	26.000	
1995-96	0	26.000	26.000	26.000	
1996-97	0	26.000	26.000	26.000	
1997-98	0	26.000	26.000	26.000	
1998-99	0	26.000	26.000	26.000	
1999-00	0	24.714	24.714	24.714	
2000-01	100.00	0	100.00	99.89	
2001-02	96.50	65.50	162.00	162.00	
2002-03	1016.60	95.00	1111.60	174.50	
2003-04	0	191.50	191.50	1128.60	
2004-05	155.00	156.00	311.00	264.50	
2005-06	442.08	162.01	604.09	650.70	
2006-07	184.50	110.00	294.50	294.50	
2007-08	1254.00	40.00	1294.00	393.00	
2008-09	1221.03	156.00	1377.03	1560.00	
2009-10	0	157.84	157.84	875.87	
2010-11	630.00	80.00	710.00	80.00	
2011-12	1252.30	0	1252.30	1067.76	
2012-13	0	139.14	139.14	953.68	
2013-14	0	15.50	15.50	15.50	
2014-15	1421.14	0	1421.14	1421.14	
2015-16	1927.88	0	1927.88	0	
2016-17	0	0	0	410.23	
<b>Total</b>	<b>9701.03</b>	<b>2150.49</b>	<b>11851.52</b>	<b>10333.87</b>	

  
Assistant Executive Engineer,  
ISD, Tral 1<sup>ST</sup>/2<sup>ND</sup>

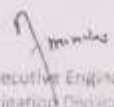
  
Executive Engineer,  
Irrigation Division, Tral

## Annexure-

PHASING OF REVENUE							(₹ in lacs)
S. No.	Year	ICA (ha)	Revenue	Administrative charges @ ₹ 1200.00 per ha	Net Revenue (4-5)	Remarks	
1	2	3	4	5	6	7	
1	2015-16	1200	0	14.400	-14.400		
2	2016-17	1200	0	14.400	-14.400		
3	2017-18	2820	0	33.840	-33.840		
4	2018-19	4440	0	53.280	-53.280		
5	2019-20	5122	0	61.464	-61.464		
6	2020-21	5122	0	61.464	-61.464		
7	2021-22	5122	0	61.464	-61.464		
8	2022-23	5122	0	61.464	-61.464		
9	2023-24	5122	0	61.464	-61.464		
10	2024-25	5122	0	61.464	-61.464		
11	2025-26	5122	0	61.464	-61.464		
12	2026-27	5122	0	61.464	-61.464		
13	2027-28	5122	0	61.464	-61.464		
14	2028-29	5122	0	61.464	-61.464		
15	2029-30	5122	0	61.464	-61.464		
16	2030-31	5122	0	61.464	-61.464		
17	2031-32	5122	0	61.464	-61.464		
18	2032-33	5122	0	61.464	-61.464		
19	2033-34	5122	0	61.464	-61.464		
20	2034-35	5122	0	61.464	-61.464		
21	2035-36	5122	0	61.464	-61.464		
22	2036-37	5122	0	61.464	-61.464		
23	2037-38	5122	0	61.464	-61.464		
24	2038-39	5122	0	61.464	-61.464		
25	2039-40	5122	0	61.464	-61.464		
26	2040-41	5122	0	61.464	-61.464		
27	2041-42	5122	0	61.464	-61.464		
28	2042-43	5122	0	61.464	-61.464		
29	2043-44	5122	0	61.464	-61.464		
30	2044-45	5122	0	61.464	-61.464		
31	2045-46	5122	0	61.464	-61.464		
32	2046-47	5122	0	61.464	-61.464		
33	2047-48	5122	0	61.464	-61.464		
34	2048-49	5122	0	61.464	-61.464		
35	2049-50	5122	0	61.464	-61.464		
36	2050-51	5122	0	61.464	-61.464		
37	2051-52	5122	0	61.464	-61.464		
38	2052-53	5122	0	61.464	-61.464		
39	2053-54	5122	0	61.464	-61.464		
40	2054-55	5122	0	61.464	-61.464		
41	2055-56	5122	0	61.464	-61.464		
42	2056-57	5122	0	61.464	-61.464		
43	2057-58	5122	0	61.464	-61.464		
44	2058-59	5122	0	61.464	-61.464		
45	2059-60	5122	0	61.464	-61.464		
46	2060-61	5122	0	61.464	-61.464		
47	2061-62	5122	0	61.464	-61.464		
48	2062-63	5122	0	61.464	-61.464		
49	2063-64	5122	0	61.464	-61.464		
50	2064-65	5122	0	61.464	-61.464		

Water Usage Rates abolished since 2016

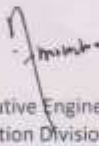
  
Assistant Executive Engineer,  
100, Trail 17/20

  
Executive Engineer,  
Irrigation Division, Trail

STATEMENT SHOWING INTERNAL RATE OF RETURN							
(₹ in lacs)							
S.No.	Year	Outlay	O & M Cost	Total cost (3+4)	Benefit	Net cash inflow (C <sub>n</sub> ) (6-5)	$\sum_{n=1}^n C_n/(1+r)^n$
1	2	3	4	5	6	7	8
1	1980-81	17.500		17.50		-17.50	-16.323
2	1981-82	40.750		40.75		-40.75	-35.453
3	1982-83	50.749		50.75		-50.75	-41.183
4	1983-84	61.593		61.59		-61.59	-46.622
5	1984-85	74.494		74.49		-74.49	-52.595
6	1985-86	66.684		66.68		-66.68	-43.914
7	1986-87	55.006		55.01		-55.01	-33.788
8	1987-88	110.000		110.00		-110.00	-63.024
9	1988-89	20.510		20.51		-20.51	-10.961
10	1989-90	26.000		26.00		-26.00	-12.960
11	1990-91	26.000		26.00		-26.00	-12.089
12	1991-92	26.000		26.00		-26.00	-11.276
13	1992-93	26.000		26.00		-26.00	-10.517
14	1993-94	26.000		26.00		-26.00	-9.810
15	1994-95	26.000		26.00		-26.00	-9.150
16	1995-96	26.000		26.00		-26.00	-8.535
17	1996-97	26.000		26.00		-26.00	-7.961
18	1997-98	26.000		26.00		-26.00	-7.426
19	1998-99	26.000		26.00		-26.00	-6.926
20	1999-00	24.714		24.71		-24.71	-6.141
21	2000-01	99.890		99.89		-99.89	-23.151
22	2001-02	162.000		162.00		-162.00	-35.021
23	2002-03	174.500		174.50		-174.50	-35.186
24	2003-04	1128.600		1128.60		-1128.60	-212.264
25	2004-05	264.500		264.50		-264.50	-46.401
26	2005-06	650.700		650.70		-650.70	-106.475
27	2006-07	294.500		294.50		-294.50	-44.948
28	2007-08	393.000		393.00		-393.00	-55.948
29	2008-09	1560.000		1560.00		-1560.00	-207.148
30	2009-10	875.870		875.87		-875.87	-108.483
31	2010-11	80.000		80.00		-80.00	-9.242
32	2011-12	1067.760		1067.76		-1067.76	-115.060
33	2012-13	953.680		953.68		-953.68	-95.855
34	2013-14	15.500		15.50		-15.50	-1.453
35	2014-15	1421.140		1421.14		-1421.14	-124.273
36	2015-16	0	14.40	14.40	581.36	566.96	46.244
37	2016-17	410.230	14.40	424.63	581.36	156.73	11.924
38	2017-18	3318.050	33.84	3351.89	1366.20	-1985.69	-140.911
39	2018-19	3316.130	53.28	3369.41	2151.04	-1218.37	-80.645
40	2019-20		402.46	402.46	2481.45	2078.98	128.355
41	2020-21		402.46	402.46	2481.45	2078.98	119.723
42	2021-22		402.46	402.46	2481.45	2078.98	111.671
43	2022-23		402.46	402.46	2481.45	2078.98	104.161
44	2023-24		402.46	402.46	2481.45	2078.98	97.156
45	2024-25		402.46	402.46	2481.45	2078.98	90.622
46	2025-26		402.46	402.46	2481.45	2078.98	84.527
47	2026-27		402.46	402.46	2481.45	2078.98	78.842
48	2027-28		402.46	402.46	2481.45	2078.98	73.540
49	2028-29		402.46	402.46	2481.45	2078.98	68.594
50	2029-30		402.46	402.46	2481.45	2078.98	63.981
51	2030-31		402.46	402.46	2481.45	2078.98	59.678

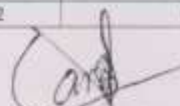
1	2	3	4	5	6	7	8
52	2031-32		402.46	402.46	2481.45	2078.98	55.665
53	2032-33		402.46	402.46	2481.45	2078.98	51.921
54	2033-34		402.46	402.46	2481.45	2078.98	48.429
55	2034-35		402.46	402.46	2481.45	2078.98	45.172
56	2035-36		402.46	402.46	2481.45	2078.98	42.134
57	2036-37		402.46	402.46	2481.45	2078.98	39.301
58	2037-38		402.46	402.46	2481.45	2078.98	36.658
59	2038-39		402.46	402.46	2481.45	2078.98	34.192
60	2039-40		402.46	402.46	2481.45	2078.98	31.893
61	2040-41		402.46	402.46	2481.45	2078.98	29.748
62	2041-42		402.46	402.46	2481.45	2078.98	27.747
63	2042-43		402.46	402.46	2481.45	2078.98	25.881
64	2043-44		402.46	402.46	2481.45	2078.98	24.141
65	2044-45		402.46	402.46	2481.45	2078.98	22.517
66	2045-46		402.46	402.46	2481.45	2078.98	21.003
67	2046-47		402.46	402.46	2481.45	2078.98	19.590
68	2047-48		402.46	402.46	2481.45	2078.98	18.273
69	2048-49		402.46	402.46	2481.45	2078.98	17.044
70	2049-50		402.46	402.46	2481.45	2078.98	15.898
71	2050-51		402.46	402.46	2481.45	2078.98	14.828
72	2051-52		402.46	402.46	2481.45	2078.98	13.831
73	2052-53		402.46	402.46	2481.45	2078.98	12.901
74	2053-54		402.46	402.46	2481.45	2078.98	12.033
75	2054-55		402.46	402.46	2481.45	2078.98	11.224
76	2055-56		402.46	402.46	2481.45	2078.98	10.469
77	2056-57		402.46	402.46	2481.45	2078.98	9.765
78	2057-58		402.46	402.46	2481.45	2078.98	9.108
79	2058-59		402.46	402.46	2481.45	2078.98	8.496
80	2059-60		402.46	402.46	2481.45	2078.98	7.925
81	2060-61		402.46	402.46	2481.45	2078.98	7.392
82	2061-62		402.46	402.46	2481.45	2078.98	6.894
83	2062-63		402.46	402.46	2481.45	2078.98	6.431
84	2063-64		402.46	402.46	2481.45	2078.98	5.998
85	2064-65		402.46	402.46	2481.45	2078.98	5.595
INTERNAL RATE OF RETURN (IRR) = 7.2101655% say 7.21%						SUM	0.000

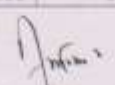
  
 Assistant Executive Engineer,  
 ISD, Tral 1<sup>ST</sup>/2<sup>ND</sup>

  
 Executive Engineer,  
 Irrigation Division, Tral


## Annexure-

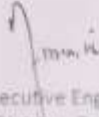
S.No.	Year	O & M Cost (₹ in lacs)				
		Adm. charges @ ₹ 1200/ha on gross annual irrigated area		Maintenance cost @ 2% pa		Total
		ICA	Charges	Amount	Charges	
1	2015-16	1200	14.40	0	0	14.40
2	2016-17	1200	14.40	0	0	14.40
3	2017-18	2820	33.84	0	0	33.84
4	2018-19	4440	53.28	0	0	53.28
5	2019-20	5122	61.46	17050.00	341.00	402.46
6	2020-21	5122	61.46	17050.00	341.00	402.46
7	2021-22	5122	61.46	17050.00	341.00	402.46
8	2022-23	5122	61.46	17050.00	341.00	402.46
9	2023-24	5122	61.46	17050.00	341.00	402.46
10	2024-25	5122	61.46	17050.00	341.00	402.46
11	2025-26	5122	61.46	17050.00	341.00	402.46
12	2026-27	5122	61.46	17050.00	341.00	402.46
13	2027-28	5122	61.46	17050.00	341.00	402.46
14	2028-29	5122	61.46	17050.00	341.00	402.46
15	2029-30	5122	61.46	17050.00	341.00	402.46
16	2030-31	5122	61.46	17050.00	341.00	402.46
17	2031-32	5122	61.46	17050.00	341.00	402.46
18	2032-33	5122	61.46	17050.00	341.00	402.46
19	2033-34	5122	61.46	17050.00	341.00	402.46
20	2034-35	5122	61.46	17050.00	341.00	402.46
21	2035-36	5122	61.46	17050.00	341.00	402.46
22	2036-37	5122	61.46	17050.00	341.00	402.46
23	2037-38	5122	61.46	17050.00	341.00	402.46
24	2038-39	5122	61.46	17050.00	341.00	402.46
25	2039-40	5122	61.46	17050.00	341.00	402.46
26	2040-41	5122	61.46	17050.00	341.00	402.46
27	2041-42	5122	61.46	17050.00	341.00	402.46
28	2042-43	5122	61.46	17050.00	341.00	402.46
29	2043-44	5122	61.46	17050.00	341.00	402.46
30	2044-45	5122	61.46	17050.00	341.00	402.46
31	2045-46	5122	61.46	17050.00	341.00	402.46
32	2046-47	5122	61.46	17050.00	341.00	402.46
33	2047-48	5122	61.46	17050.00	341.00	402.46
34	2048-49	5122	61.46	17050.00	341.00	402.46
35	2049-50	5122	61.46	17050.00	341.00	402.46
36	2050-51	5122	61.46	17050.00	341.00	402.46
37	2051-52	5122	61.46	17050.00	341.00	402.46
38	2052-53	5122	61.46	17050.00	341.00	402.46
39	2053-54	5122	61.46	17050.00	341.00	402.46
40	2054-55	5122	61.46	17050.00	341.00	402.46
41	2055-56	5122	61.46	17050.00	341.00	402.46
42	2056-57	5122	61.46	17050.00	341.00	402.46
43	2057-58	5122	61.46	17050.00	341.00	402.46
44	2058-59	5122	61.46	17050.00	341.00	402.46
45	2059-60	5122	61.46	17050.00	341.00	402.46
46	2060-61	5122	61.46	17050.00	341.00	402.46
47	2061-62	5122	61.46	17050.00	341.00	402.46
48	2062-63	5122	61.46	17050.00	341.00	402.46
49	2063-64	5122	61.46	17050.00	341.00	402.46
50	2064-65	5122	61.46	17050.00	341.00	402.46

  
Assistant Executive Engineer,  
ISO, Trail 1<sup>st</sup>/2<sup>nd</sup>

  
Executive Engineer,  
Irrigation Division, Trail

DEVELOPMENT OF BENEFITS				
(₹ in lacs)				
S. No.	Particulars			Amount
1	Estimated cost of the scheme			17050.00
2	Annual Benefits (Refer BCR sheet)			5051.63
3	Annual costs(Refer BCR sheet)			2570.19
4	Net Annual Benefits			2481.45
5	Year wise benefits			
	Year	ICA	% of ICA	Benefits
	2015-16	1200	23.43%	581.36
	2016-17	1200	23.43%	581.36
	2017-18	2820	55.06%	1366.20
	2018-19	4440	86.68%	2151.04
	2019-20	5122	100.00%	2481.45
	2020-21	5122	100.00%	2481.45

  
Assistant Executive Engineer,  
ISD, Tral 1<sup>ST</sup>/2<sup>(ND)</sup>

  
Executive Engineer,  
Irrigation Division, Tral


LIST OF WORKS


Sl. No.	Description of Works	(Rs. in lacs) Allotted/ Estimated cost
<b>C. Works</b>		
<b>4) Allotted works</b>		
1	Constn. of manifold for stage 3rd pump house	2.35
2	Constn. of anchor block at RD 10m & saddle block at RD 160m for 3rd stage rising main	5.15
3	Constn. of anchor block at RD 40m and saddle blocks at RD 32m and RD 48m for 3rd stage rising main	5.31
4	Constn. of anchor block at RD 72m and constn. of saddle blocks at RD 56m, 64m, 80m & 88m	6.55
5	Constn. of anchor block at RD 104 m and saddle blocks at RD 112m & 120m	4.83
6	Constn. of anchor block at RD 136m & saddle blocks at RD 128m & 144m	5.12
7	Constn. of anchor block at RD 168m and saddle blocks at RD 152m, 160m, 176m, 184m & 192m	5.96
8	Constn. of anchor block at RD 200 m and constn. of saddle blocks at RD 208 m and 216 m	4.81
9	Constn. of anchor block at RD 232m & saddle blocks at RD 224m and RD 240m	5.11
10	Constn. of anchor block at RD 264 m and constn. of saddle blocks at RD 248 m and 256 m	4.93
11	Constn. of anchor block at RD 296m and constn. of saddle blocks at RD 304m, 312m & 320m	4.65
12	Constn. of anchor block at RD 328m and at RD 360m & saddle blocks at RD 336m, 344m & 352m	8.33
13	Constn. of anchor block at RD 392m and saddle blocks at RD 368m, 376m, 384m, & 400m	5.66
14	Constn. of anchor block at RD 420m & saddle blocks at RD 408m, 412m, 428m & 436m	7.33
15	Constn. of anchor block at RD 452m & saddle blocks at RD 444m, 460m & 468m	4.81
16	Constn. of anchor block at RD 484m and constn. of saddle blocks at RD 476m and 492m	5.10
17	Constn. of anchor block at RD 516 m and 548m & saddle blocks at RD 500m, 508m, 524m & 532m	12.39
18	Constn. of anchor block at RD 580m and saddle blocks at RD 564m, 572m, 588m, 596m & 602m	8.66
19	Constn. of anchor block at RD 642m, 610m & saddle blocks at RD 618, 626, 634, 650, 658 & 666m for 3rd stage rising main	12.18
20	Constn. of anchor block at RD 674m & saddle blocks at RD 682m, 692m & 698m	4.86
21	Constn. of anchor block at RD 706m and 738m & saddle blocks at RD 714m, 722m & 730m	9.23
22	Constn. of anchor block at RD 770m and 812m for 3rd stage rising main	4.19
23	Constn. of anchor block at RD 822m and RD 842m for 3rd stage rising main	4.29
24	Constn. of anchor block at RD 852m and RD 862m for 3rd stage rising main	4.47
25	Constn. of thrust block at RD 802 m for 3rd stage rising main	6.53
26	Constn. of thrust block at RD 832m for 3rd stage rising main	8.82
27	Constn. of thrust block at RD 872m for 3rd stage rising main	6.22
28	Constn. of saddle blocks at RD 272m, 280m & 288m for 3rd stage rising main	3.37
29	Constn. of saddle blocks at RD 746m, 754m, 762m 778m, 786m & 794m	5.25
30	Constn. of thrust blocks at RD 1300m & 1450m on 2nd rising main for 2nd stage rising main	1.70
31	Constn. of thrust block at RD 1850m on stage 2nd rising main	3.84
32	Laying of saddle/anchor blocks on 2nd stage rising main at RD 160m -275m, 360m-450m and RD 480m-515m	8.10
33	Railing to manifold/park 3rd stage pump house	2.75
34	Sanitary fitting for 3rd stage pump house	4.25
35	Ornamental railing to Intake 3rd stage pump house	3.14
36	Flooring for 3rd stage pump house	4.90
37	Providing ramp towards electric substation premises at pump house 3rd	8.04
38	Constn. of main gate to the premises of 3rd stage pump house	4.88
39	Providing MS gate to pump house building 3rd stage	0.77
40	Providing and fixing of steel railing over intake of 2nd stage pump house and delivery tank 1st stage and culverts	0.20
41	Constn. of ramp on rising main 2nd at RD 600m	1.54
42	Constn. of RCC IRV chamber 1st and 2nd stage rising mains	3.85
43	Constn. of protection/toe wall along rising main 2nd	7.80
44	Constn. of retaining wall on Garshibal approach road	4.23
45	Constn. of retaining wall on 2nd stage canal right branch from RD 40m to 93m	4.96
46	Constn. of breast wall/toe wall from R/L 1500m to 1545m on 2nd stage canal right branch	1.47



24. Constn. of cross-over bridges at RD 1580 & RD 1700 of 2nd stage rising main	2.67
25. Constn. of breast wall and retaining walls at RD 1344m to RD 1410m of right branch 2nd stage canal	3.80
<b>3d) New works</b>	
1. Construction of anchor blocks for 2nd rising main of stage 2nd	156.02
2. Construction of saddle blocks for 2nd rising main of stage 2nd	37.17
3. Constn. of anchor block at RD 0 to RD 42m including piers across nallah behind pump house 3rd and cunnette along rising main 3rd at spaces between saddles/anchor blocks	33.11
4. Constn. of saddle blocks for 3rd stage rising main at RD 16, 24, 840, 848, 856, 872, 880, 888, 904 and 912m	10.19
5. Constn. of 3 no throat blocks at RD 248, 312 and 344m for 3rd stage rising main	21.98
6. Laxi-lifting of pump house 3rd	3.80
7. RCC chambers along rising main stage 3rd	2.00
8. Balance work of roof sheeting to 3rd stage pump house	1.80
9. Provision for laying macadam of 3rd p/house premises	10.00
10. Provision for unforeseen items	0.66
<b>Sub-total</b>	<b>526.85</b>
<b>3d) Allotted works</b>	
1. Constn. of balance part of 3rd stage canal from by way of stone pitching with cement concrete leading from RD 5399m to RD 5523m	20.39
2. Constn. of 3rd stage canal by way of cunnette cutting and stone pitching with cement concrete leading from RD 5685m to RD 5755m	6.24
a) do from RD 5815m to RD 5845m	7.80
b) do from RD 5845m to RD 5875m	11.93
c) do from RD 5875m to RD 5935m	7.60
d) do from RD 5935m to RD 5995m	1.92
e) do from RD 6150m to RD 6430m	29.50
f) do from RD 8400m to RD 8485m	1.99
g) do from RD 8575m to RD 8605m	3.00
h) do from RD 8805m to RD 8860m	15.10
3. Constn. of plate form RD 8180m to RD 8440m	9.08
4. Constn. of balance part of 3rd stage canal by way of stone pitching with grouting from RD 0 to 2600m	15.71
5. Providing irrigation facility to orchards of village Ratsuna	19.25
6. Balance work of 3rd stage canal from RD 5200-5220m by way of constn. of masonry wall with grouting	24.12
7. do from RD 5520-5240m	23.27
8. Balance work of 3rd stage canal from RD 1557-1576m by way of stone pitching with cement concrete leading section 1st	7.86
9. Constn. of retaining wall from RD 4550m to RD 4570m of 3rd stage canal	13.70
10. Constn. of retaining wall from RD 4660m to RD 4690m of 3rd stage canal	10.49
11. Constn. of balance work of 3rd stage canal from RD 1680-1880m by way of stone pitching with cement concrete grouting	10.55
12. Constn. of retaining wall on right side of approach road at village Saimoh near masjid Sharif leading to 3rd stage canal	10.90
13. Constn. of 3rd stage canal by way of cunnette cutting and stone pitching with cement concrete leading from RD 4875m to RD 4935m	19.12
14. Constn. of retaining wall from RD 4690m to RD 4720m of 3rd stage canal	10.50
15. Raising of height of toe wall of 3rd stage canal from RD 3848m to RD 3893m	14.79
16. Constn. of balance work plate form cutting, cunnette cutting, stone pitching with cement concrete leading from RD 4790m to RD 4870m of 3rd stage canal	10.65
17. Constn. of retaining wall at RD 160m of left branch 2nd stage canal	4.50
18. Constn. of retaining wall at RD 1600m of left branch 2nd stage canal	9.12
19. Constn. of breast wall and retaining walls at RD 670m to RD 724m of left branch of 2nd stage canal	4.21
20. do of breast wall and retaining walls at RD 827m to RD 850m of left branch of 2nd stage canal	3.40

39	Constn. of breast wall and retaining walls at RD 850m to RD 910m of left branch of 2nd stage canal	4.12
40	Constn. of breast wall and retaining walls at RD 100m to RD 160m of right branch 2nd stage canal	4.89
41	Constn. of breast wall and retaining walls at RD 220m to RD 280m of right branch 2nd stage canal	4.89
42	Constn. of breast wall and retaining walls at RD 340m to RD 400m of right branch 2nd stage canal	4.89
43	Constn. of breast wall and retaining walls at RD 630m to RD 700m of right branch 2nd stage canal	4.16
44	Constn. of breast wall and retaining walls at RD 725m to RD 800m of right branch 2nd stage canal	4.18
45	Constn. of retaining wall on Dadoo approach road	2.31
46	Constn. of CWD at RD 1500m stage 2nd canal right branch	5.80
47	Constn. of surface drain along Ganshibal approach road leading to delivery tank 2nd RD 634m to 750m	4.93
48	Constn. of surface drain along Ganshibal approach road leading to delivery tank 2nd RD 332M to 370M & RD 756m to 814m	4.34
49	Reclamation of 2nd stage left branch from RD 1600m to RD 1850m by way of removal of over burden from left side slope from RD 1620 to 1800m	1.68
50	Reclamation of 2nd right branch canal by way of cunnette cutting, pitching and grouting from RD 850 - RD 1155m	9.30
51	do RD 970 - RD 1155m	18.50
52	do RD 1404 - RD 1464m	4.97
53	do RD 1464 - RD 1500m	1.84
54	do RD 1500 - RD 1660m	4.84
55	do RD 1680 - RD 1820m	1.50
56	do RD 1830 - RD 2038m	2.84
57	do RD 2040 - RD 2140m	3.00
58	do RD 2140 - RD 2350m	8.83
<b>(i) New works</b>		
1	Constn. of pipe conduit on stage 3rd canal from RD 6580m to RD 7520m	779.51
2	Constn. of plate form, cunnette cutting and providing of wone pitching and cement concrete grouting stage 3rd canal from RD 7520 to RD 12500m at left over stretches (3675m)	172.76
3	Constn. of pipe conductor on stage 3rd canal from RD 12500m to RD 17000m	234.83
4	Constn. of sequentialy clearing manholes along stage 3rd canal from RD 6580m to RD 7520m (8 no)	35.16
5	Labour work of 3rd stage canal from RD 8400-8550m at spots	6.97
6	Demarcation of Watal Ara at RD 8750m of 3RD stage canal	4.84
7	Constn. of retaining wall on 3rd stage canal	42.20
8	Development of approach road to dumping site at Pushail, Trail	4.66
9	Const. of retaining walls on 2ND stage canal at spots from RD 2350-2700m	21.30
10	Constn. of pipe conductor on stage 2nd canal from RD 2400m to RD 3000m	31.07
11	Provision for RD stones, controlling arrangement on canals at outlets and other unforeseen jobs	5.25
<b>Sub total</b>		<b>1765.83</b>
<b>(ii) Distributaries</b>		
<b>a) Allotted works</b>		
1	Providing & fixing of outlets at spots from RD 0 to RD 1400m 2nd stage canal	3.00
<b>b) New works</b>		
1	Providing & fixing outlets on stage 3rd canal RD 0- RD 12500m at spots	24.00
2	do stage 2nd right branch from RD 1400m - RD 3300m and 2 no on left branch	3.50
3	Constn. of intercepting manholes/outlets along stage 3rd canal from RD 12500m to RD 17000m	62.61
4	Constn. of intercepting manholes/outlets along stage 2nd canal from RD 2400m to RD 3000m	7.69
5	Provision for pipes for outlets	5.08
<b>Sub total</b>		<b>105.88</b>

  
Assistant Executive Engineer,  
S.D. Trail 17/20

  
Executive Engineer,  
Irrigation Division, Trail

