(1) பக்கங்களின் எண்ணிக்கை 48
(2) புதுக்கித் திருப்பிய நாள் 28.4.90
(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W.D துறை

⑦

அரசாணை எண். 3616
மு. கோப்புத் தாள் எண்.

அச்சகம்
பலவகை

நாள் : 19-12-1889 ~~198~~.

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

24 Sheets

ஆவண. கா-1—18,006—15-6-87.

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

READ the following

From the Supdg Engineer III Circle. H.E. No 749 d/. 18th June 1889)

3616

Sees 3 July

It would appear from the Note of the Chief Engineer for Irrigation recorded with G.O. 239 I d/. 14th April 1888. that the information ~~has~~ ~~been~~ collected in regard to the Tungabhadra Project will enable an officer to work up the details in about three or four months. A draughtsman on Rs 100, and a Clerk 4th Class 2nd Grade, Rs 30-40, with 2 messengers on Rs 7 and 6 respectively, will, it is thought, be a sufficient Establishment to aid the Executive Engineer

This Establishment is accordingly Sanctioned for a period of 4 months.

This sanction has been registered as Provincial No. 18 of 1889-90 and Classified as Establishment Temporary.

1.7.89

1/7/89

1 July

To
The Supdg Engineer III
" " Chief Engr for Irrigation.
" " Examiner P. W. Accounts.

15

R.S. P.S. 127/16.

No. 22

Bellary
3rd July 1889

~~From~~

3616

The Executive Engineer
Tungabudra Project

To

The Superintending Engineer
3rd Circle

Sir,

In continuation of my letter No. 7 and 16 dated 15th and 16th June respectively, I have the honor to request that a Head Clerk with 40 Rs and Assistant Clerk with 20 Rs may be substituted in place of those proposed in the Proposition statement accompanying my letter No. 7 quoted above, as I find it impossible for less pay to procure competent clerks for my office in this District for a short period as 6 months.

I have &c

(Sd) A. S. Russel
Ex. Engineer on Spl. Duty

Forwarded to the Chief

No. 1004.   Dy 6 July/89

Copy forwarded to the Chief Engineer in continuation of this Office No. 749 dated 10th June 1889 with a recommendation that salary be sanctioned to clerks as proposed

2885 Caf
21/6/89

H Smalley Col. R.E.
Superintending Engineer
III Circle

To the Chief Engineer
P. W. Department
Madras

R.S. P.S. 127/6.

3616

3

Forwarded to the Chief

G.O. Bus. 1826 W d/ 9.7.89
Memo No. 3070 C d/ 4.7.89
" " 2393 d/ 14.4.88

P.W.C. No. 6306

From

The Superintending Engineer
III^d Circle
Bellary

To

The Chief Engineer
P. W. D.
Madras

Dated 6th July 1889
R 9.7.89

No. 1004

Clerk — Forwards Copy of letter from the Ex. Engineer Toongabudra Project with a recommendation that salaries of — as proposed may be Sanctioned

With order

3616

B

Recorded with reference to G.O. No. 1826 W d/ 9th July 1889.

2. A further report may be submitted hereafter, if it be found impracticable to secure the establishment sanctioned in the above quoted order.

10.7.89

12.7.89

S.E. III Circle.

15/7

Desp. 6577 12/7

0/10/7

R.S.

Desp. 127/16.

Copy of letter no. 16 d/ 26 June 1889 from A. S. Russell Esqre Exec. Engineer on special duty to the Superintg. Engineer 3^d Circle

3616

In continuation of para 1 of my letter No 7 d/ 15th Instant, I have the honor to report that I have just learnt that Mr Lawrence one of the surveyors attached to the Canal Project Division, drew a salary of Rs 150 per mensem while employed on the Toongabudra Project.

2. As Mr Lawrence knows the Country well and will therefore be of much use in reinvestigating the project, I have the honor to request that he may be again employed at a salary of Rs 150 per mensem, and would request that this figure may be substituted in place of Rs 100 entered in the proposition statement accompanying my letter already quoted.

No. 896 (Copy) 4

Forwarded to the Chief

Engineer P.W. Department in continuation of this Office No 749 d/ 18th June 1889 with a recommendation that Rs 150 may be allowed as previously —

H Smalley Col R.E.

Superintg: Engineer 3rd Circle

27th June 1889

To the Chief Engineer
P.W. Department
Madras

3616

5

~~Palin~~ 5/7/89

Sent to E.I. on 24/6/89

To. 10 E.I. on 4 8/7/89

~~8/7~~

No. 3070 C d/4 July 1889

To

E. I.

For favour of remarks, in continuation of No. 2885 C dated 21 June 1889.

C139 –

3.7.89

D.W.

No 203.

The Tank Restoration Surveyor in the same district [illegible] Rs 60 [illegible] for 300 [illegible] months [illegible] Surveyor [illegible] Rs 150 [illegible]

14/7/89

1. [illegible]

2. [illegible]

Former Case

R/30 J 22-6-89

[illegible]

1/8/89

8.7

From 7104 ~~6025~~

The Superintg Engineer
3rd Circle
Bellary

(1)

To

The Chief Engineer
P. W. Department
Madras

Bellary 27th June 1889.

Recd. 01 7/7/89

In 11051 d/5th August 1889

No 896

Surveyors for the Toongabudra Project Division

Forwarding copy of Mr Russel's letter with recommendation that Rs 150 may be allowed for one of the —

18971 15-7-89
1826 9-7-89
2394 14-4-88

36/6
6

0

6

3616/1

②

Statement of proposition for Establishment required for Toongabudra Project Division

Order sanctioning present establishment Govt of Madras P.W.D. No.	Date	Office to which proposition relates	Nature of change: Present scale No.	Designation	Pay			Proposed scale No.	Designation	Pay Minimum	Increment	Maximum	Average or fixed	Proposition Permanent Increase per month Amount	Decrease per month Amount	Temporary Increase per month Period	Amount	Decrease per month Period	Amount	Remarks
239 I.	14th April /88	Toongabudra Project Division		Nil				1	Head Draftsman			100				6	600			Required for the re-investigation of Toongabudra Project.
								1	Asst. Do	35		50				6	255			
								1	Clerk 4th Class 2d Grade	30		40				6	210			
								1	Do 5th Class 1st Grade	15.		20.				6	105			
								2	Surveyors 100 Rs @ ea			200.				6	1200			
								3	Lascars 6 Rs @ ea			18				6	108			
								1	Messenger			7				6	42			
								1	Do.			6.				6	36.			

No. 749

Supg Engrs Office
Bellary 18th June/89

Submitted to the Chief Engineer P.W.D. for sanction.

H Smalley
Col. R.E.
Supg. Engr. 3d Circle

15. 6. 89.

A. S. Russel C.
Executive Engineer

6/11

P.W.D. 6243 ~~5597~~

SUPERINTENDING ENGINEER, III CIRCLE, BELLARY P.W.D.
Dy. No. [illegible]
15 JUN 89

No. 2885C d/ 21st June 1889

To
E. E.

R130

For favor of remarks

21.6.89
D.W.

To E.E.
[illegible]

[illegible]

From
The Superintdg Engineer
3rd Circle

To
The Chief Engineer
P. W. Department
Madras

Dated 18 } June 1889
Recd ~~20~~ }
R 6.7.89

No. 1826 W d/ 9 July [illegible]

No. 749

"Proposition statement for Establishment required for Toongabudra Project Division"

Urgent

Copy of letter No. 57 dated Bellary 18th July 1889 from A. S. Russell Esquire Executive Engineer on Special duty Toongabadra Project to the Superintending Engineer 3rd Circle.

3616

In acknowledging the receipt of your endorsement No. 1043 dated 13th instant, on G. O. No. 1826 W dated 9th July 1889, I have the honor to say that the establishment sanctioned is quite inadequate, and will not enable the Project to be got up at all.

II A large amount of field work, surveying and levelling, has yet to be done, and will occupy 2 surveyors for at least 6 months. This will be apparent from the following:—

(a) Several diversions of the Canal line above the Darojee Tank will be necessary. Some of these were recommended by Colonel Mullins years ago, and others are now obviously required to avoid running through wet lands, and construction of expensive walling &c

(b) Below the Darsjee Tank the Canal has to be run on an entirely new line, as the Chief Engineer for Irrigation has ordered that the bed level be taken 7 ft. lower than formerly proposed

(c) Surveys and levels have to be carried over several square miles of country in order to ascertain what area of land can be commanded by the canal. Nothing whatever has yet been done in this respect, vide Colonel Meads remarks on this head

(d) Several mistakes in the survey plans, and numerous omissions therein have to be made good.

(e) Longitudinal and cross sections have to be taken at the sites of all masonry works.

III In several places on the line of canal deep borings will have to be made, as the nature of the ground the canal runs through in deep cutting or in tunnel has never yet been ascertained. Years ago Col. Mullins recommended that trial shafts 15 ft. in diameter, should be sunk down to canal bed level, or until solid rock was reached. This has never yet been done and is obviously required if anything like an accurate estimate is to be made. As pointed out by Mr Gordon and Col. Mullins, the Project involves great and unusual difficulties as regards the estimate of its cost.

IV The surveys, sections, and drawings of the Project, amounting in all to over 100 plans, will have to be redrawn. Col. Mead examined Mr. Horsfor's report, surveys, Longitudinal and cross sections and has made remarks on them all; but do not think he could have examined the designs some of them are clearly opposed to the recommendations by Col. Mullins. I shall have in due course to propose for the sanction of the Chief Engineer for Irrigation, numerous modifications of the designs for masonry works. This will take up much time and labor, as the Longitudinal and Cross sections formerly taken at the sites of masonry works are not forthcoming, nor is there sufficient information on record to enable the foundations to be properly designed.

V. In several parts of the line the canal is taken, in single embankment, through most rugged and difficult ground at the foot of low ranges of hills. Mr Gordon and Col. Mullins devoted much

time and attention to designing suitable sections for the bank where the head of water against it, as is very frequently the case, is considerable. For the most part these sections consisted of (1) a masonry wall (2) an earthen bank with a masonry core (3) an earthen bank with a core of specially selected earth where the latter was procurable. From the reports by Mr Gordon and Col. Mullins there would appear to be upwards of 8 different types of bank sections; but as the sections are not forthcoming the work will have to be done over again and careful detailed enquiries will be necessary before the designs can be made. Mr Horsfor proposed one universal type of bank section, viz: a masonry wall, 2 feet wide at top, with a front batter of 1 in 6 backed by an earthen bank 6 ft wide at top and with a slope of 2 to 1 in rear. This was condemned by Col. Mead, but no indication was given by him of what would be approved."

VI As will be apparent from Col. Mead's remarks, there are several omissions in the estimate, and from what I have stated above it will be evident that the estimate will require revision to a very considerable extent. I have to day returned to Head Quarters after making a thorough inspection of the whole line and shall shortly be in a position to draw up, for the information of the Chief Engineer for Irrigation, a detailed report. So much field work has to be done that I have filled a note book with instructions for surveyors, and until the surveyors are at work I can obviously do very little to expedite the preparation of the Project.

VII As regards the time the preparation of the Project will take, I cannot estimate it under 9 months, viz: 6 months for survey and other out door work and 3 months for drawing up the plans report &c. When Col. Mead estimated the time at 4 months, he had not the information before him to base an accurate estimate, as he could only judge by the Project as sent up. As I have gone carefully over the ground and have looked carefully through all records and plans, I have been able to collect, I am in a position to say that the work still remaining to be done will take double the time calculated by Col. Mead. Unless an adequate establishment is provided the work will linger on for an indefinite period.

VIII The following establishment is the minimum necessary to enable the

the work to be done properly and expeditiously:-

1 Head surveyor at Rs 150 per mensem ✓
1 Asst — do — at Rs 80 — do — ✓
1 Head draftsman at Rs 100 — do — ✓
1 Asst — do — at Rs 50 — do — ✓
1 Clerk —— at Rs 40 — do — ✓
1 Asst Clerk —— at Rs 25 — do — 15 & 20
1 Head Lascar — at Rs 7 — do —

4 Lascars at Rs 6 each for Executive Engineer
10 Lascars for surveyors at Rs 6 each.

Anticipating that a surveyor would be sanctioned, I have, with your permission, already engaged Mr Lawrence. He was formerly engaged on the Project under Mr Porfor on a salary of Rs 150, and possesses local knowledge which is invaluable. I have lately been all over the canal line with him and have given him detailed instructions both orally and in writing. If his services are now dispensed with, a months work will be absolutely wasted and it will be exceedingly difficult to replace him.

The 15 lascars I have applied for are necessary if survey work is to be properly conducted. I have lately had some experience of surveying in the Hospett Taluq with village coolies, in rainy boisterous weather and have no hesitation in saying it is a perfect farce to attempt such work unless aided by men of some training and intelligence.

An assistant Clerk is necessary to examine and put in order a considerable quantity of records, to make copies of various documents, and to assist as a copyist.

As I am only asking for the minimum establishment necessary, I do not apply for the services of an Overseer to superintend the work of trial borings, take measurements to estimate for various small items of the estimate and other work which is usually delegated to an Overseer. With the assistance of the Head Surveyor, I will attend to such work myself though it will of course take time which might be more profitably employed.

IX I would ask that the two draftsmen I apply for may be sent to me from the permanent establishment. It is very difficult here to get good men for a short time. I advertised some weeks ago, but have had no replies. The Head Draftsman must be a thoroughly good draftsman and estimator, as I must necessarily be out in camp a good deal and he will therefore be left much to himself.

X In accordance with your orders I shall, unless I hear from you to the contrary, dispense at once with all establishment except that sanctioned by Government. My work will then be completely at a stand still. As much time has already been lost owing to the unavoidable delay that has occurred in getting establishment, I would ask, to avoid further delay, that either you will authorise me to retain the establishment I already have, or will telegraph to Government to say that work cannot go on unless the establishment I formerly asked for is granted. I did not apply for this establishment until I had satisfied myself it was required,— and with further knowledge of what has to be done I have asked in this letter that it may be supplemented.

No 1127.

(Copy)

Forwarded to the Chief Engineer P.W. Department

with reference to G.O. 1826 W d/ 9 July 1889
with a request that Mr. Russell's reasons
for the establishment he considers necessary
to reinvestigate the Tongabaddra Project
may be considered favorably and that
he may be authorized to entertain the
establishment he proposes — If approved
a telegram to that effect direct to
the Executive Engineer on special duty
is solicited in the absence of the
Superintending Engineer on circuit —
To prevent work coming to a stand still
Mr. Russell has been authorized to
retain the establishment he has already
got together pending orders on this
reference

H Smalley Col R.E.

Supd. Engineer 3 Circle

Camp. Lokhwala

22nd July 1889

E.1
PW7103/89

B.No 1897 W 7/5/71.89

No. 3395 C d/ 26 July 1889

To E. I.

I am favour of
very early remarks.

MW
26.7.89

DW

To E D

Allw
26.7

Ro. 202 d/ 29-7-89

Of course
Surveyors will
be required –
When I put my remarks
on the previous
forward I still they
dealt only with
the draftsmen & Clerks
part of the proposition,
I did not say that
Surveyors would not be
wanted – & some days
ago I wrote an official
note saying that I could
not see that Surveyors
had been sanctioned! I
think the Surveyors Mr
Russell E1 asks for may be
given – better telegraph
sanction for them – the
Surveyors part of the
B/C be carried at once

D. 1-8-89

---

(1) 7/183
From P.W.C. 873

The Supdg Engineer
R/ 31-7-89
E1
3rd Circle

To

The Chief Engineer
P. W. Dept
Madras

Dated 22
Recd 29 July 1889

No 1127

Toongabadra Project
Establishment

No 2105 W d/ 5 August 1889

Forwarding copy of
letter from Mr Russell
asking to increase the [illegible]
and giving reasons for
doing so.

TW

P. W. D
3616

Deferred Telegram

To the S. E. III Circle
Bellary

Your 1127 twenty
second July –
Two Surveyors
Rupees 150 and
80 sanctioned.
Further orders
follow –

MW
1.8.89

To issue if the
S.G. is passed

Tell(defd.) desp. 3.VIII.89.

Jo
3/8/89

14

Cn

the

M

Ret. 19/8. Hm 3/8. M 3/8.
O 1-8-89

No. 2105

Public Works Department.

3646

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

~~Read the following~~

Read again –

Pro. of Govt. No 1826 W dd 9. 7. 89.

Read also –

Letter from the S. E. III Circle No 896 dd 27. 6. 89 –
Note by the Ch. E. for I. – 203 dd 29. 7. 89
Letter from the S. E. III Circle No 1127 dd 22. 7. 89
Note by the Ch. E. for I. – 202 dd 29. 7. 89.

15

On reconsideration, the Govt. sanctions the employment of the following establishment under the Officer on special duty, Tungabhadra Project.

✓ 1 Head Surveyor	on Rs 150	per mensem
✓ 1 Asst – do	– " – 80	– " –
✓ 1 Draftsman	– – 100	– " –
1 Clerk	– – 30-40	– " –
1 messenger	– " – 7	– " –
1 – do	" – 6	– " –
3 lascars	– – 6 each	– " –
10 – do – for 2 Surveyors	– 6 each	– " –

Hes
3 Aug

The

2. The Ex. Engr. cannot at once require the services of two draftsmen and two clerks, and application may therefore be made for an additional draftsman & clerk when the work is so far advanced as to make it clear that their services are necessary.

3. The number of lascars (ten) sanctioned for the two surveyors must be regarded as a maximum. Three men under each surveyor should be sufficient for levelling only, & five should only be employed when levelling & chaining are carried on at the same time.

4. As regards the time for which the establt. is sanctioned, the period of four months mentioned in G.O. No. 1826 W. d/ 9th July 1889 will stand for the present. It will be easy, before the expiration of that time, for the Ex. Engr. to apply for such extension as may be necessary.

5. This sanction has been registered as Provl. No. 27 W of 1889-90, & classified as Establt: Temporary.

Despd
5/8

Ch. E. for E.
S. E. III Circle
Ex. E. Bza

W.H.B.
1.8.89

R.W.S.
1.8.89

3/8/89

Cl.

Special

8-1-8-89

E. I. Form No. 5.

OFFICE OF THE CHIEF ENGINEER FOR IRRIGATION,
Madras, 1st November, 1889

361b

No. $\frac{\text{IV}}{21 BL}$

Irrigation.

MEMORANDUM.

Enclosures.

Tungabhadra Channel Project -

With reference to endorsement No 2006 d/ 8th October 1889 of the Supg/ Engineer 3 Circle, the undersigned has the honor to say that orders having issued to stop any further investigation or other work connected with the Tungabhadra Channel project the establishment is to be dispensed with as soon as possible -

See No 204 d/ 3-10-89 from Mr Russell

2. The head Surveyor was it appears engaged for a definite period of 4 months which period will expire on 8th November and the engagement will not be renewed; any others who were engaged by the month must at once have a months notice given to them and be dispensed with at the end of it.

17

3. Such of the establishment as may have under these orders to be kept on after its receipt will be employed in

putting into form any investigation, survey work &c. not yet tabulated or plotted and in arranging and cataloguing for future reference all the plans, estimates, reports &c now in Mr Russell's hands.

4 This work may well be done at the Division office which is now Mr. Russell's office and the present arrangement of hiring part of his bungalow for the "Project" office will cease on 15th Instant -

5. The dates on which employment of the various members of the party ceases will be reported and application made for any extension of the sanction given in G.O. No 2105 W. dated 5th August 1889 which cannot be avoided.

(sd) G. T. Walch.
Ag. Chief Engineer for Irrign

To,
The Supg Engineer. 3 Circle.

No. 34 W.

Copy forwarded to the Joint Secretary to Govt. P.W.D. for information

Ag Chief Engr for Irrign

N/580

18 W C No. 10437

From

THE CHIEF ENGINEER FOR IRRIGATION,

Dated

Despatched

Received 4.11.89

ENCLOSURES.

No.

Subject.

No. 3780 W. d/ 8th Nov. 1889

B

Recorded

Recorded.

6.11.89

Russell 6.11.89

To the Exr. P.W. Accts.

The Exr. P.W.A.

D 8/11

13/11

14/11

Subject

Forwards for information Copy of memo to the Supdg Engr 3rd Circle stating that orders having issued to stop any further investigation or other work connected with the Toongabudra chl Project the establishment is to be dispensed with as soon as possible

---

29TH OCTOBER 1889, No. 521 I., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

Endorsement of Superintending Engineer, III Circle, forwarding preliminary report on the Tungabhadra Channel Project by Mr. Russell, dated 24th August 1889, No. 1497.

No. 128 I.

Note after inspection by the Acting Chief Engineer for Irrigation.

TUNGABHADRA CHANNEL PROJECT.

In 1866 the Madras Irrigation and Canal Company submitted for approval of Government a project worked out in detail for a canal to and beyond Bellary from the Valavapur anicut on the Tungabhadra river about 12 miles above Hospet; this was called the "Upper Bellary project," and a future extension was suggested, though not worked out in detail, to be called the "Lower Bellary project." The cost of the former was estimated at Rs. 143,88,000, and it was designed to irrigate 150,000 acres of first crop and 100,000 acres of second crop. The "Lower" project was assumed to be likely to cost from 125 to 174 lakhs and to irigate some 300,000 acres.

2. A full report on the "Upper" project, by General (then Captain) Mullins, is printed with Proceedings of Madras Government, No. 518, dated 21st February 1867, and a complete "History of the project" and of the suggestions which proceeded and led to it, and of the reasons which caused its abandonment, will be found with Proceedings of Madras Government, No. 955 I., dated 13th November 1885. With Proceedings of Madras Government, No. 108, Revenue, dated 26th January 1885, will also be found the opinion of the then Chief Engineer for Irrigation and of the Secretary to Government, Public Works Department, on the project.

3. In it was included the improvement of the water-supply of Bellary town and cantonment, and as this was considered of importance apart from the irrigation portion of the scheme, it was in 1884 (see para. 2 of note by Acting Chief Engineer for Irrigation with Proceedings of Madras Government, No. 924 W., dated 4th April 1884) proposed to investigate the "Bellary Water-supply project."

4. The officer (Mr. C. Norfor) who was entrusted with the work sent in (25th March 1885) a "Preliminary Report" in which he advocated the investigation of the "Upper Bellary project" on a greatly reduced scale, to irrigate about 50,000* acres, and the Chief Engineer for Irrigation having, in his memorandum No. III/7B.L., dated 24th April 1885, made certain remarks on the suggestions, the work proceeded.

5. In 1886 the result was submitted and commented on by the then Chief Engineer for Irrigation in his note with Proceedings of Madras Government, No. 239 I., dated 14th April 1888, and he considered that further "investigation," which would occupy an officer with a proper establishment only some "three or four months," was

---

* 20,000 west of the Daroji hills, 30,000 east of them.

necessary; the Government order on this directed that when an officer could be spared for the purpose "the project should be prepared and sanctioned so that it may be put in hand whenever funds may be available."

6. In accordance with this, Mr. A. S. Russell, Executive Engineer, 3rd Grade, was sent for the work in May last with a special establishment, and in August he submitted a "Preliminary Report" (herewith) from which it was evident that many times the "three or four months" would be required to do all that he understood the Government order to intend, and I found it impossible to issue definite orders on the subject without personal knowledge from inspection of the conditions of the case, for it was not apparent what further "investigations" were wanted. All idea of "construction of reservoirs to supplement the supply to the river" had long ago been given* up, it was clear that there was no possibility of efficient storage tanks in connection with the proposed channel except the Daroji tank at its end, raising the full supply level of which is not advisable†; and any further knowledge of the water available from the river in years of deficient rainfall, and it is such years that are of importance in connection with the subject, could only be gained by long continued registration which could be carried out by the ordinary establishments. On the other hand if it was not merely further "investigation" that was required but a preparation of the project so that it might be "put in hand" at any time, the work of Mr. Russell and his party would resolve itself into laying out afresh parts of the line, in preparing revised detail plans, and so on, and when this was all done we should not have a better knowledge of the general conditions which would govern decision on the matter except to the extent of probably having a closer estimate of the cost, which however we know would not be *less* than 50 lakhs.

* See memorandum of Chief Engineer for Irrigation, No. III/7B.L.

† See para. 3 of note of Acting Chief Engineer for Irrigation, Proceedings of Madras Govt., No. 239 I., dated 14th April 1889.

7. Having now gained the personal knowledge in which I was before deficient, I am constrained to say that irrespective even of the sufficiency of supply from the river in bad years, which is extremely doubtful, I consider the scheme to be one on which it is inadvisable to spend more money in any way. It is certain that it will be very costly, not less than 50 lakhs, and it is uncertain how much more it may not cost, and the results to be obtained even if it were carried out satisfactorily are in the highest degree uncertain.

8. The parents of the present project, as explained above, are the gigantic schemes of the Madras Irrigation and Canal Company for taking water from the Tungabhadra river, replenished from large reservoirs on it and its feeders, to extensive black cotton plains lying around and far to the east of Bellary. To get the canal to those plains necessitated taking it along and through the Daroji hills with great difficulty and at great cost, and no other line is possible.

9. Whether had such a scheme been carried out it would have had any happier results than those of the kindred work, the Kurnool-Cuddapah canal, need not here be discussed, but at all events the great results anticipated at the end of the intended canal after it had passed through the hills were such as warranted the proposal to deal with the serious difficulties and to incur the great cost of getting through those hills; when, however, the proposal is reduced to carrying to beyond the water-shed water for only some 30,000 acres, and the supply of water even for that area is by no means certainly available from the river in bad years, the difficulties and relative cost of getting through the hills assume very different proportions, and in my opinion become prohibitory.

10. For 18 miles of the 35 the canal has to be taken along the slopes of rugged rocky hills such as form the distinctive feature of the Bellary district, over and through fields of boulders lying on shattered gneiss where no soil is available for banks and where the water must be retained by miles of continuous walling; it has to be taken across ridges by cuttings of great depth and through hills by tunnels some three miles in length.

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11. I do not know of any canal that has been taken through so difficult a country; that in the first sections of the Kurnool canal which cost so much, is child's play compared with it.

12. The difficulties are of course not beyond the possibilities of engineering skill to overcome, but the cost of overcoming them we cannot forecast, because not only would much of the work be of an unusual character, but because we do not know that having made our canal we may not find, indeed it seems very likely we may find, that along the hill slopes, in the cuttings, and in the tunnels, the water will escape through the fissures and faults of the shattered gneiss which is a leading geological characteristic of the country, and this would necessitate lining at great cost the whole trough of the canal with water-tight masonry or cement. All that can be said is that the work would not cost less than 50 lakhs, would probably cost considerably more.

13. As the result of such expenditure the most that would be *possible* is the irrigation of 50,000 * acres during 6 or 7 months of the years in which there was sufficient water in the river; but it is extremely doubtful whether, even were water successfully brought for that area, the land would all be taken up for wet cultivation; the soil, the climatic conditions, the nature of the crops which find favor with the people, and the people themselves, are in many ways similar to those in the Kundar valley through which the Kurnool canal carries its volume of water almost unused; on this portion of the subject Mr. Russell has some very pertinent remarks in the last part of section 80 and section 89 of his "Preliminary Report."

* 20,000 west of Daroji hills, 30,000 east of them.

14. The work would not even be a good one to take up for famine relief because out of the 36 miles about half would be unsuited† for famine labor, as it would consist of walls requiring very careful building, deep rock cuttings, and tunnelling.

† See also para. 3 of note by Chief Engineer for Irrigation with G.O., No. 108, Rev., dated 26th January 1885.

15. For the reasons given, I am, after careful thought and consideration of the project in all its aspects, reluctantly compelled to recommend its final abandonment.

16. Of course I have not, in anticipation of the orders of Government, stopped the work on which Mr. Russell and his party are engaged, but I have altered its direction from laying out channels in detail to general ascertainment of areas commanded, &c. The sanction given in G.O., No. 2105 W., dated 5th August 1889,‡ shortly expires and will require renewal with some alterations for at least another six months should it be decided that the project is to be prepared even to the extent necessary simply to enable work to be at once started on it at any time for employment of famine labor, whilst if the project is to be completely elaborated with plans for all the masonry works, &c., a further very considerable extension of sanction will be necessary.

‡ Much of the establishment was engaged considerably before this date.

17. Connected with this Tungabhadra Channel project is the proposed supply of Bellary town and cantonment from the Daroji tank. The level of the full supply in the tank is but little more than 3 feet higher than full water level in the Fort ditch, which it is proposed to use as the town reservoir, some 18 miles distant, so that the supply by gravitation is only just possible when the tank is quite full, and to raise its full supply level is not advisable. If Government accepts my view of the Tungabhadra Channel project, of course there is an end of the idea of supplying Bellary from the Daroji tank which only in exceptional years fills by its natural sources of supply and would be almost empty in years when water would be most needed; and even if it be decided to still entertain the idea of at some future time carrying out the Tungabhadra channel, the uncertainty as to the time of its execution and the imperfect command of Bellary even then obtainable make it advisable to no longer look to proposed channel and the Daroji tank as the means of supply for the town and

cantonment, but to turn attention to improvement of other possible sources nearer at hand and with greater command, or to obtaining the supply required by pumping up from wells or reservoirs in the valley of the Huggri.

Chepâk,
25th October 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department.

Order—dated 29th October 1889, No. 521 I., Public Works.

The Government accepts the view of the Acting Chief Engineer for Irrigation that the "Tungabhadra Channel project" is not one which it would be advisable to undertake and that further special investigation or elaboration of plans in connection with it is unnecessary.

2. The plans, estimates, reports, &c., already prepared will be catalogued and carefully recorded.

3. The Chief Engineer for Irrigation will arrange for the fixing of proper gauges for arriving at discharges over the Valavapur and Hossur anicuts, and for the daily registration of readings on those gauges, so that should the subject be reopened at any time hereafter there may then be more certain information available than is now the case, to show how far the river may be depended on, especially in years of deficient rainfall, for a supply of water over and above that to which the many existing irrigation works along it have the first claim.

4. A copy of these Proceedings will be sent to the Government of India with reference to its letters No. 38 I., dated 19th February 1885, and No. 328 I., dated 31st December 1885.

(Here enter No. 522 I., dated 29th October 1889.)

(True Extract.)

(Signed) G. T. WALCH,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

Endorsement—dated 29th October 1889, No. 522 I., Public Works.

Forwarded.

(By Order.)

(Signed) G. T. WALCH,
Ag. Secretary to Govt., P.W.D.

Exd. J. Moses.
Spare Copies

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated October, 29th.

Recd. Encl.

G.O., 29th Oct. 1889, Nos. 521 I., 522 I.

OCTOBER.

Tungabhadra Channel Project

Forwarding copy of Proceedings considering that further special investigation of the — unnecessary.

Statement shewing the individuals employed in the Tungabudra Project Division beyond the period of four months sanctioned in G. O. No. 2105 W dated 5 August 89.

Number	Designation of Individual	Salary	Date of Engagement	Termination of Engagement	Excess period for which sanction is necessary		Remarks.
					Month	Days	
1	Clerk	30	17th June 89	30th Novr 89	1	14	
1	Messenger	7	13 June 89	15th Novr 89	1	3	
1	do	6	13 June 89	2d Novr 89	-	21	
3	Lascars	6 Each	13 June 89	2d Novr 89	-	21	

Exec. Engineer's office
Tungabadra Project Dn
Bellary 25 Novr 1889

22

CWR

Supt. Engineer
3 Circle

3616

Exec. Engineer
on Special duty Tungabadra
Project Dvn

Statement showing the
individuals employed in the
Tungabadra Project Dn beyond
the period of 4 months sanctioned
in G. O. No 2105 W d/ 5 Augt /89

Dy. No. 1/6756
8 NOV 89

Accompaniment to No 263
from the Superintg Engineer 3d C

Ex [redacted] letter No 249 dated
26th N from A. S. Russell
Esqui e Engineer on
specia Tungabhadra
Project to the Supdg Engr
3 Circle

916

erence to your
endo 2496 dated 18th
Nove I have the honor
to fo statement showing
date ent and termina
tion ent of the indivi-
-dua ed in the Tunga-
-bha Division for a
long than four months
san G. O. No 2105 W dated
5th A

23

2. ted in my letter
No 24 t instant, I dis-
-pens services of the Head
Surv lascars immediately
I pe order closing the
prop n 2nd instant. In
orde he project, and in
acc ith the sanction

accorded in para 2 of memo No. $\frac{III}{21B.L}$ dated 1st instant from the Chief Engineer for Irrigation, the services of a clerk and one messenger had to be retained as shown in the statement. Renewed sanction for establishment shown in the accompanying statement was, I may remark, applied for by me sometime back (immediately after the inspection of the Chief Engineer for Irrigation) in my letter No. 204 of 3rd October 1889.

3. The complete plans and records of the project have been neatly catalogued, docketted and packed in boxes, and will be available for examination whenever required.

× × × ×

(Extract) Encl. 1 Statement

No. 2630.

Forwarded to the Chief Engineer for Irrigation with reference to his memorandum No. $\frac{III}{29B.L}$ of

13 h [redacted] is requested that
sanc mment be obtained
to t od of employment
of th nt as shown in
the of the enclosed
sta

3616

t Smalley Col. R.E.
ty Engineer
3rd Circle

Sup e
Bel 89

hief Engr
r Irrigation
Madras

3180 W.d/ 8-11-89
521-29 - 29-10-89
2105 W - 5-8-89
1897 W - 15-7-89
1826 W - 9-7-89

24

From

The Supdg Engineer

3rd Circle

Bellary

CHIEF ENGINEER
FOR IRRIGATION.
6 Dec 89
No. 521

To

The Chief Engineer

for Irrigation

Madras

Enclo 1

Dated Bellary 5 Decr/89

No 2630

Requesting to obtain the sanction of Govt to the excess period of employment of a part of the Toongabhadra project establishment.

24

m. 14-12-89 R. 17-12-89

21/12

O.M. No 11921

Enclo 1

Recd 13.12.89

No. 45 E.W.

Forwarded to the Chief Engineer, Roads and Buildings Branch, with the request that the Examiner of P.W. Accounts may be authorized to pass the pay of temporary Establishment employed in connection with the Toongabudra Channel project.

24

Chief Engineer for Irrgn:

Chepak
10 Decr 1889

G.O. No. 361 I W d/19 Sept 1889

~~Hon~~

15 Dec

Sanctioned.

Recd 13.12.89

13.12.89

S.E. III circle ✓
Exr P.W. Accts ✓
with statement.

D 20/12