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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 2358 59	Press
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Dated 5 8	1867.

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59

Proceedings of the Madras Government, Public Works Department.
5th August 1867.

No. 98. Read the following letter from the Superintending Engineer, 2nd Division, to the Secretary to Government, Department Public Works, dated Masulipatam, 23rd July 1867, No. 55:—

Agreeably to G. O. No. 2,150, of the 17th instant, I have the honor to forward a copy of a Memorandum by Mr. R. Smith, Executive Engineer, in which explanation is given of the data on which the project is based, for extending the cultivation in the Pennair delta, approved of in G. O. No. 1,844, dated 20th June 1867.

MEMORANDUM.

SURVAPULLY PROJECT.

1. This project for the extension of irrigation in the delta of the Pennair has been planned with reference to the short and uncertain freshes that generally occur in this river; the sections of the channels and the waterway allowed at the different masonry works are, therefore, *considerably* in excess of what would suffice had we a regular supply to depend on; that this arrangement is necessary will, I think, be evident from the accompanying synopsis and statement showing the general state of the Pennair from 1861 to 1865 inclusive.

2. By referring to the former, it will be observed that during the years under review the water was, on the average, only flush with and above the crest of the anicut for sixty-one days; we may, therefore, reasonably expect that for sixty-one days in each year there will be a fair supply of water in the river; on this data and the principle of carrying an increased quantity for storage in the tanks during the freshes the project now submitted is based.

3. The proposed extension of the irrigation in a southern direction, will in no way be prejudicial to the existing cultivation; it will in fact be of great benefit to it, as the estimate for the improvement of the main channels provides for discharging an additional 6,313 cubic yards per hour for the Jaffer Saib channel, and 8,772 for the Kistnapatam canal.

4. Head-sluiques for these branches, as suggested by Captain Smith, are also included in this project.

5. The main channel from the anicut to the Survapully reservoir is designed to discharge a depth of ten feet of water (it could however carry eleven with safety) when the state of the Pennair will admit of it; this is a precautionary measure to guard against a deficiency in exceptional years, such as 1863, when the water was flush with the crest of the anicut for forty-seven days only; I may be underrating the capabilities of this river, if so, it is an error on the right side and will not entail loss to the Government, or disappointment to the people; if the supply is found in excess of the demand the Idagaly branch channel could, at a trifling cost, be extended westward, and bring the land in the Potella valley under the influence of the anicut to the extent of the available water.

6. From the records of this Office I gather the main feeder was originally planned to discharge 1,45,000 cubic yards per hour; the water required, for one hundred and fifty days, for the irrigable area of the Pennair delta, which is calculated at 64,000 acres, the estimate now submitted provides for increasing the discharge to 255,900 cubic yards per hour; the details of the original and proposed distribution of the supply are annexed:—

	Original.					Proposed.
Jaffer Saib channel	...	49,727	...	...	...	53,100
Survapully channel	...	69,119	...	...	...	164,875
Kistnapatam channel	...	26,153	...	...	...	31,925

To secure this addition of 110,900 cubic yards per hour, the bed of the channel will be lowered two feet; and the capacity of the head-works increased by lowering four feet in breadth of each vent in the existing head-sluique two feet, and constructing an auxiliary one of six vents of three and a half feet span, at the site of the old head, which was closed some years ago. The estimate provides for pitching the side slopes of the main feeder and Survapully channel, where the soil is sandy and

*Proceedings of the Madras Government, Public Works Department,
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likely to suffer from the velocity of the stream, which will be with a depth of eight feet about 3,600 yards an hour; it would be somewhat cheaper, in the first instance, to dispense with the pitching; this could be done by reducing the fall and increasing the section, but this would entail a heavy excavation, and consume so much labour that could be more profitably employed on other parts of the scheme, that it would not be economical to adopt it.

7. A new bridge over the Survapally channel near Stonehousepet will have to be built, as the floor of the present one cannot be lowered; it cracked badly some time ago in attempting to do this

8. It is proposed to substitute aqueducts for the three syphons that carry the Nellore tank water to the lands east of the Survapally channel; these were, I believe, designed to present no obstruction to boats in the event of the canal being used for navigation, but as there is no likelihood of this being carried out, and one aqueduct has been already constructed over it, I see no objection to extending the arrangement.

9. The local drainage that falls into the Survapally channel, at its junction with the old Ramerreddy, will be discharged, by the proposed surplus sluice, into the present Survapally tank supplying channel, which will become the main drain for that portion of the country.

10. The Survapally reservoir branch channel will have no embankment on the upper side, where the water stands above the surface of the country, except for some distance in the first mile, where valuable land would be submerged were the water allowed to stand back to the contour line; an aqueduct will be constructed in this portion to allow the surplus from the Kanapartipadu tank and the local drainage to flow under the channel into the main drain.

11. The irrigable area commanded by this branch is estimated to be 23,900 acres, 19,900 of which will be watered from the proposed reservoir.

12. The Survapally tank in its present state is capable of storing (approximately) 19,270,000 cubic yards of water, by raising the high water mark 6 feet, as proposed, the capacity would be increased to (approximately) 52,530,000 cubic yards.

13. The Survapally branch channel is planned to discharge, when the water is flush with the crest of the anicut, 131,125 cubic yards per hour; of this quantity 9,000 cubic yards will be required for the land between Kanapartipadu and Anikapally, and 44,775 for the constant supply to the 19,900 acres under the reservoir and its subsidiary branch channels; the other 77,350 cubic yards would be available for storage hourly, being at the rate of 1,856,400 cubic yards daily; this would fill the reservoir in 28½ days, excluding the loss by evaporation which, however, has not been omitted in the general calculation. As the direct daily supply for the 19,900 acres, commanded by the Survapally channel, can only be depended on for 61 days annually, the reservoir must supply any deficiency that may arise during the other 89 days; the total quantity required during this period would be 95,639,400 cubic yards of water, or 9,520,600 cubic yards less than the reservoir would contain on being filled a second time each season.

14. When the Survapally reservoir is full, or nearly so, and water from the river is available, advantage should be taken of the opportunity to fill the Idagaly tank, in a short time, by allowing its supply channel to flow seven feet deep; the works connected with it have been planned to admit of this being done, in addition to the water required for the regular daily supply to the lands under the Idagaly branch channel; when the tank has received its full supply, the depth in the channel may be reduced to its ordinary level four feet, and to prevent the water returning into the channel a regulating sluice has been provided.

15. The irrigation comprehended under the Survapally project is classed as follows:—
Under the Survapally reservoir ... 19,900 Acres
Between Kanapartipadu and Anikapally ... 4,000 ..
Under Valluru branch channel ... 6,100 ..
In connection with this project I would recommend an endeavour being made to do away with the Ipuru, Kaminini, Pudeparty, and Bramhadayam Tuti tanks, especially the two former, as the

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Survapally reservoir will command the whole land under them; increasing the capacity of the latter will submerge 1,285 acres, and the few huts known as the hamlet of Nappaturu, and it would be a great point to reclaim a similar or greater area of valuable land to compensate for this; the Collector has informed me, with reference to this subject, that he "would strongly object to any change till the improvements have been carried out, and have proved that the existing works referred to are unnecessary," in this view I fully concur, and would suggest that when the works are sufficiently advanced a trial be made with the land under one of those tanks, and test, practically, the capabilities or otherwise of the proposed arrangement.

16. From a copy of the "Pennair Anicut Return for 1864-65," kindly furnished by the Collector, it appears 17,272 acres was the total area irrigated under the Survapally and Kristnapatam channels in that official year, (I take both branches, as some of the lands are watered partly by the Survapally and partly by the Kristnapatam channels,) taking the irrigable area under these as 42,050 acres we have 24,778 to bring under wet cultivation. It is impossible to state the actual increase of revenue that will result from the proposed scheme, as the assessment on the land and the water-rate are lumped together; assuming the latter at Rupees 1-13-0, the actual increase per acre shown by the Irrigation return, on the 40,345 acres already watered in the delta, the annual profit would be Rupees 44,910, or 10·70 per cent on the outlay; this is, I believe, much less than will be realized, as the country traversed by the proposed channels will benefit, as far as I can learn, more than the portion of the delta already irrigated, which derived, previous to the construction of the anicut, a larger supply of water from the old river channels during the freshes, than the locality now intended to be brought under the influence of the Pennair anicut.

RATES.—The rates entered for the masonry works have been fixed with reference to the distance the materials have to be carried, and the style of work proposed; the probability of a slight rise in prices has been anticipated, and a trifling allowance made for this. The rate for cutting appears high, but it would not, I consider, be safe to calculate on doing it for less; in many instances the spoil has to be raised a considerable height, and in portions of the country, traversed by the canal, laterite and hard gravel are met with.

(Signed) R. SMITH,
Ex Engr., 1st or Nellore Range.

NELLORE,
3rd April 1867.

ORDER THEREON, 5th August 1867, No. 2,358.

No. 99.

IRRIGATION, No. 1.

Ordered that a copy of the Memorandum submitted with this letter be forwarded to the Government of India.

(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

Exd. S T Augustin.

3

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16. From a copy of the "Pennair Anicut Return for 1864-65," kindly furnished by the Collector, it appears 17,272 acres was the total area irrigated under the Survapally and Kristnapatam channels in that official year, (I take both branches, as some of the lands are watered partly by the Survapally and partly by the Kristnapatam channels,) taking the irrigable area under these as 42,050 acres we have 24,778 to bring under wet cultivation. It is impossible to state the actual increase of revenue that will result from the proposed scheme, as the assessment on the land and the water-rate are lumped together; assuming the latter at Rupees 1-13-0, the actual increase per acre shown by the Irrigation return, on the 40,345 acres already watered in the delta, the annual profit would be Rupees 44,910, or 10·70 per cent on the outlay; this is, I believe, much less than will be realized, as the country traversed by the proposed channels will benefit, as far as I can learn, more than the portion of the delta already irrigated, which derived, previous to the construction of the anicut, a larger supply of water from the old river channels during the freshes, than the locality now intended to be brought under the influence of the Pennair anicut.

RATES.—The rates entered for the masonry works have been fixed with reference to the distance the materials have to be carried, and the style of work proposed; the probability of a slight rise in prices has been anticipated, and a trifling allowance made for this. The rate for cutting appears high, but it would not, I consider, be safe to calculate on doing it for less; in many instances the spoil has to be raised a considerable height, and in portions of the country, traversed by the canal, laterite and hard gravel are met with.

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Ex. Engr., 1st or Nellore Range.

NELLORE,
3rd April 1867.

ORDER THEREON, 5th August 1867, No. 2,358.

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IRRIGATION, No. 1.

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(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

Docket No. 2,359, dated 5th August 1867.

No. 100.

Copy forwarded to the Secretary to the Government of India in the Public Works Department, with reference to his Telegram of the 16th July 1867.

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

Exd. S. T. Augustin.

Memorandum
Surveying Project.

This project for the extension of Irrigation, in the Delta of the Pennair, has been planned with reference to the short and uncertain freshes that generally occur in this River; the sections of the Channels, and the waterway allowed at the different masonry works, are therefore considerably in excess of what would suffice; had we a regular supply to depend on; that this arrangement is necessary will, I think, be evident from the accompanying Synopsis and statement showing the general state of the Pennair from 1861 to 1865 inclusive.

By referring to the former it will be observed that during the years under review, the water was, on the average, only flush with, above the Crest of the dam that for 61 days, we may therefore reasonably expect that, for 61 days in each year, there will be a fair supply of water in the River; on this data and the principle of carrying an increased quantity for storage in the Tanks, during the freshes, the Project now submitted

is based.

The proposed extension of the Irrigation, in a southern direction, will in no way be prejudicial to the existing Cultivation; it will in fact be of great benefit to it, as the Estimate, for the improvement of the Main Channels, provides for discharging an additional 6,373 Cubic Yards per hour for the Jaffersaile Channel; and 8,772 for the Kristnapatam Canal.

Head sluices for these Branches, as suggested by Captain Smith, are also included in this Project.

The Main Channel from the Anikhat to the Survapally Reservoir is designed to discharge a depth of 10 feet of water. It could however carry 11 with safety when the state of the Pennair will admit. This a precautionary measure to guard against a deficiency in exceptional seasons such as 1863; when the water was flush, with the crest of the Anikhat; for 47 days only. I may be underrating the capabilities of this River, if so, it is an error on the right side and will not entail loss to the Government or disappointment to the people; if the supply is found in excess

of the demand the Idagaly Branch Channel could, at a trifling cost, be extended westward, and bring the land, in the Potetta Valley, under the influence of the Anikhat to the extent of the available water.

From the records of this Office I gather the Main Feeder was originally planned to discharge 145,000 Cys. per hour; the water required, for 150 days, for the irrigated area of the Pennair Delta which is calculated at 64,000 acres, the Estimate now submitted provides for increasing the discharge to 255,900 Cys. per hour; the details of the original and proposed distribution of the supply are annexed.

Original	Proposed
Jaffersaile Channel 49,727	56,100
Survapally Channel 69,119	164,875
Kristnapatam Channel 26,153	34,925

To secure this addition of 110,900 Cys. per hour, the bed of the Channel will be lowered 2 feet; and the capacity of the Head works increased by lowering 4 feet in breadth, of each vent, in the existing

A. New Bridge, over the Survafully Channel,
Stonehouse & c. mill, have to be built, "
the floor of the present one cannot be
lowered; it cracked, badly, some time ago
in attempting to do this.

of the Sumapally Channel; these were
I believe, designed to present no obstruction
to boats in the event of the Canal being
used for navigation, but as there is no likeli-
hood of this being carried out, and some
Agreement has been already constructed over
it, I see no objection to extending the
arrangement.

The local drainage that falls into
the Survapally Channel, at its junction
with the old Ramireddy, will be dis-
charged by the proposed surpluses sluice
into the present Survapally Tank bed,
which will become the dra-
ining channel for that portion of the Country.
The main Branch.

The Sumasfully Reservoir Branch Channel will have no embankment on the upper side, where the water stands at the surface of the Country except for some distance in the 1st mile, where valuable land would be submerged were the water allowed to stand back to the contour line; an Aqueduct will be constructed in this portion to allow the surplus, from the Kaniapartipaei Tank, and the local drainage, to flow under the Channel into

the main Drain.

The irrigable area commanded by this Branch is estimated to be 23,900 acres - 19,900 of which will be watered from the proposed Reservoir.

The Surasully Tank, in its present state, is capable of storing (approximately) 19,270,000 Cubic Yards of water; by raising the high water mark 6 feet, as proposed, the capacity would be increased to approximately 52,580,000 C.Y.s.

The Surasully Branch Channel planned to discharge, when the water flush with the crest of the Nikkat, 3,125 Cubic Yards per hour; of this quantity 2,000 C.Y.s will be required for the run between Kammartapadu and Nikkat hally; and 44,775 for the constant supply to the 19,900 acres under the Reservoir and subsidiary Branch Channels; other 77,350 C.Y.s would be available for storage; hourly, being at the rate of 1,856,400 C.Y.s daily; this would fill the Reservoir in 28 $\frac{1}{2}$ days, excluding the loss by evaporation which, however, has not been omitted in the general calculations. As the direct daily supply for the 19,900 acres

acres commanded by the Surasully Channel, can only be depended on for 81 days annually, the Reservoir must supply any deficiency that may arise during the other 89 days; the total quantity required during this period, would be 95,639,400 Cubic Yards of water; or 9,520,600 Cubic Yards than the Reservoir would contain on being filled a second time each season.

When the Surasully Reservoir is full, or nearly so, and water from the River is available, advantage should be taken of the opportunity to fill the Vajaly Tank, in a short time, by allowing its supply Channel to flow 7 feet deep; the works connected with it have been planned to admit of this being done; in addition to the water required for the regular daily supply to the land & under the Vajaly Branch Channel; when the Tank has received its full supply, the depth in the Channel may be reduced to its ordinary level 4 feet; and to prevent the water returning into the Channel a Regulating Sluice has been provided. The Irrigation Comprehended under the Surasully Project is classed

as follows:-
Under the Survaipally Reservoir 19900 acres
Between Kanaparthipalli
and Anikapally 4000 acres
Under Vallur Branch Channel 6100 do
In connection with this project, I would
recommend an endeavour being made
to do away with the J. P. Raminivini,
Puduparthi, and P. Ramhadiram Inti
Tanks; especially the two former, as the
Survaipally Reservoir will command
the whole land under them; increasing the
capacity of the latter will submerge 1285
acres and the few huts known as the
hamlet of Kappaturu, and it would
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or greater, area of valuable land to
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that he "would strongly object to any change
all the improvements have been carried
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works referred to are unnecessary" in this
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Survaipally and Kristnapatam Channels
in that official year. I take both
branches as some of the lands are watered
partly by the Survaipally and partly by
the Kristnapatam Channels, taking the
irrigable area under these as 42050 acres
we have 47780 acres under water.
It is impossible to state the actual
increase of Revenue that will result
from the proposed scheme, as the assess-
ment on the land, and the water rate, are
lumped together, assuming the latter at
Rs 1-13-0, the actual increase, per acre
shown by the irrigation Return, on the 4034
acres already watered in the Delta, the
annual profit would be Rs 44910, or 107
cents on the outlay; this is, I believe, much
less than will be realized as the Country,
traversed by the proposed Channels, will
benefit, as far as I can learn, more than
the portion of the Delta already irrigated

which derived, previous to the construction
of the sluiceway, a larger supply of water,
from the old River Channel giving the
freshes, than the locality more intimate
to be brought under the influence of the
Dunair Sluiceway.

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Public Works Office
14th April 1867
Signed / R. Smith
Executive Engineer
14th or 15th May
For Copy /

Wm Mitchell Esq
Superintendent

No 55. Superintending Office
Mar 23rd 1867

From
Saml Collyer, Wm. R. C.
Sup Engineer 2nd Div.

To Col. C. A. Brown R. C.
Secretary to Government
D. P. L. Madras.

Sir,
In reply to L. O. No. 1021
of the 17th instant, I have the
honor to forward a copy of
a Memorandum by Mr. R. H.
Lynch, Engineer, in which ex-
planation is given of the do-
on which the project is based
for extending the Cultivation
in the Pennar Delta, app-
of in L. O. No. 1844 dated 20
June 1867.

I have the honor to
Sir

Your most Obedt Servt

Commissioner L. C. R. C.

Sup Engineer 2nd Div.

Enclosure in

Letter No 55 of 23

July 1867. to the

Secretary to Govt

Madras

24th 20/6/67

Memorandum
by Mr. R. H. Lynch
Saml Collyer R. C.

22-
The Sunday of

James D.

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July 1869

1874

a pleasure in doing so

W. Smith Esq

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Frank S. Hays

5-11 Aug 7867

Feb 16 11.