

(1) Number of pages _____

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(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No.	2840-41	Press
B.P. No.		Mis.
Dated	24-10-195	1876

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
24th October 1876. No. 2,841.*

Read the following papers:—

No. 367. Proceedings of the Board of Revenue, dated 7th September 1876, No. 2,283.

From J. HOPE, Esq., Acting Collector of the Godavery District, to C. A. GALTON, Esq., Acting Secretary to the Board of Revenue, dated Rajahmundry, 18th July 1876, No. 211.

With reference to the Board's Miscellaneous Proceedings of the 7th April last, No. 2,969, calling for a report on the correct area of Guttindivi and an explanation of the discrepancy in the area pointed out by the Chief Engineer, I have the honor to forward herewith a statement (No. 1) showing the area of the land situate within and without the Polaveram embankment. The total area, exclusive of Poramboke, is acres 30,761 which is less by 13 than the area shown in the statement sent with this office letter of the 30th June 1873, No. 208. The difference is explained in the memorandum attached to the statement which accompanies this letter.

2. The information has been obtained from the accounts available. The differences between the District Engineer's statement and mine are shown at the foot of my statement. The only items calling for explanation are the area of the Guttindivi estate (column 4), which is situated beyond the embankment and the area (column 8) of the Kesanakurru estate enclosed by the embankment. Copy (No. 2) of Major Beatty's letter of the 7th December last in regard to the differences is enclosed for information.

3. In regard to the difference in column 4 it may be observed that Major Beatty entered in his account only "land outside of bank in river margin;" and he clearly says in his letter above quoted that the excess lies elsewhere than in Polaveram Island. This office statement included all the area of the Guttindivi estate which has not been enclosed by the embankment.

4. Then, as regards the difference in the land of the Kesanakurru estate enclosed by the embankment, Major Beatty explains that it is due to "growth on lunkas," and that his statement "is only approximate, being the result of a rough survey and information given by the Curnams of the villages." The Curnams say, however, that there is no new growth in lunkas, but I think the figures given by Major Beatty may safely be adopted as they were arrived at by a rough survey, which is much better than the entries made in the old accounts by mere estimate. The difference is 1,672 acres.

5. With reference to their endorsement of the 13th November 1875 on G.O. of the 2nd October 1875, No. 2,840, Public Works Department, I beg to inform the Board that the information therein asked for about the Inams in the island is given in the present statement.

ENCLOSURE No. 1.

From Major J. BEATTY, R.E., Officiating Superintending Engineer, Godavery District, to the Sub-Collector in charge of the Godavery District, dated Dowlaishweram, 7th December 1875, No. 2,708.

I have the honor to reply to the Collector's letters, Nos. 134 and 143, of the 4th and 24th November, respectively.

*Proceedings of the Madras Government, Public Works Department,
24th October 1876. No. 2,841.*

2. I have shown in the subjoined statement the causes of difference between the figures of villages according to your accounts, and the statement I furnished so far as to ascertain them. My statement is only approximate, being the result of a rough information given by the Curnams of villages:—

	As per Accounts in this Office.	As per present Statement.	Difference.	
Pasuvallanka...	933 11	832 93	100 18	Due to error
Kottapalli ...	3,258 30	3,262 91	4 61	Do.
Kesanakurru estate ...	5,226 63	6,940 14	1,713 51	Growth on land
Guttindivi ...	13,665 6	1,635 75		Excess lies elsewhere in Polaveram

3. As regards particularising in each of the columns 2, 3, 4, and 5, the areas under Government, Inam, and Zemindari, I regret to inform you that it is quite out of my power to afford such information, as it could only be obtained by a special survey of the whole island such as the Revenue Survey Department are accustomed to make; and I would recommend you to apply to Government for a party of Revenue Surveyors to compile the information you require.

4. I should have thought however that, if a rough approximation only is required, the Tahsildar could furnish it with the aid of the Curnams.

5. As regards the land occupied by the embankment, new and proposed, I have directed the Range Officer to furnish land-plans and schedules of all the land to be so occupied, showing the extent and nature of each holding, whether Government, Inam, or Zemindari; this will be a work that will occupy some time. But I cannot undertake a survey of the whole island, that is properly the work of the Revenue Survey Department.

(True Copy.)

(Signed) J. HOPE,
Acting Collector.

ENCLOSURE No. 2.—Statement.

SUBMITTED to Government, with reference to G.O., dated 17th March 1876, No. 698, Public Works Department, and G.O., dated 2nd October 1875, No. 2,840.

2. From the explanation furnished it will be observed that the differences between the figures given by the Collector and the District Engineer have arisen (1) from the Collector having taken the entire area of the estate whether enclosed within the embankment or not, and (2) from the District Engineer's figures being based on a rough survey, while the Collector's figures are based on the entries in the Curnam's accounts made on mere estimate. The Collector thinks that the District Engineer's figures may be accepted which are as shown below:—

	Acres within the Embankment.
Government ...	13,427
Zemindari—	
Kesanakurru ...	6,312
Guttindivi ...	1,378
	7,690
	21,117

*Proceedings of the Madras Government, Public Works Department,
24th October 1876. No. 2,841.*

No. 367. *Pr* is unable to give the particulars without a survey, and the figures of the Collector cannot be accepted as absolutely correct, because the aggregate of the District Engineer do not correspond with each other as follows:—

	As given by the Collector.	As given by the District Engineer.
WITH reference to the inquiry of Government in the latter Government Order to the extent of Inams in the tract within the embankment, the		
No. 2,969, calculated by the Collector.	13,767	13,427
of the District Engineer.	4,640	6,312
forward by the District Engineer.	1,331	1,378
Total ...	19,738	21,117

4. The Board do not, however, consider it necessary to cause the Inam lands to be measured until the liability of the Inamdars and Zemindars to contribute to the cost of the embankment is finally settled. As will be seen from G.O., dated 2nd September 1875, No. 1,316, the Government Pleader has given it as his opinion that the Guttindivi Proprietor cannot be compelled to contribute, and the Board have in separate Proceedings, in reply to G.O., dated 2nd October 1875, No. 2,840, expressed the opinion that the Inamdars also cannot be called upon to bear any share of the cost. If so, Kesanakurru should in fairness only be called upon to pay a proportionate share of the cost calculated with reference to the ratio which its Ayen and Poramboke lands bear to the whole area benefited, the rest of the cost being borne by Government. The whole area enclosed within the embankment according to the District Engineer is 21,117 acres, of which 6,312 belong to Kesanakurru. The District Engineer does not give the extent of Inam, but, according to the Collector's account, 3,053 acres

only, including Inam lands granted subsequent to the permanent settlement but exclusive of old Inams, out of a total of 4,640 acres, or about two-thirds, can be taken into account. Assuming that the Inams will be found on measurement to bear the same proportion to the total area according to the District Engineer's figures, and deducting from 6,312 acres one-third, there will remain only 4,208 acres belonging to the Kesanakurru estate for which the Proprietrix is liable, and the proportionate share of the cost debitable to that estate will be one-fifth and not one-third as originally settled. The exact area of the Inams can be ascertained by actual measurement if necessary.

(True Copies and Extract.)

(Signed) H. E. STOKES,
Acting Secretary.

No. 229-W.

Note by the Chief Engineer for Irrigation.
Polaveram Island Embankments.

No. 367-A.

In G.O., No. 698, of the 17th March 1876, a revision of the estimate* for these embankments was ordered to be made with especial reference to the flood-levels of 1875 and the probable maximum flood-levels, and information was called for also as to (1st) the levels of existing village sites;

582-8-72 1825
 17-1-73 252
 22-10-73 2558
 5-12-73 24
 25-2-74 477
 1-5-75 1227+1228
 14-8-75 112
 24-9-75 2765
 2-10-75 2840
 17-3-76 698
 23-6-76 1684

P.W.D.
 19 SEP 76
 No. 5-1-1

Polavaram Embankment—in Godavary District.
 —Submitting to Government statement of the
 area of land within and without the — and
 Collector's explanation of the discrepancy in the
 area pointed out by Chief Engineer, and passing
 remarks regarding the proportionate share of the
 cost of the embankment debitable to Kesarakurum
 estate.

SEPTEMBER
 No. 2,283.

Received

24-11-76

Encl

PROCEEDING, 7TH SEPTEMBER 1876, No. 2,283.

1876.
 Board of Revenue,
 MADRAS.

× R-D to Board

12367

in 7-10-76 Ptd 11-10-76
 Depd to R-D 24-9-76

B. V. S. S. S.
 24-9-76

N. 229-W
 Note by the Chief Engineer for Irrigation.
 Polavaram island embankments.

Sum. 29.
 + Rs 62,100

In G.O. No. 698 of the 17th
 March 1876 a revision of the estimate
 for these embankments was ordered
 to be made with special reference
 to the flood levels of 1875 and the
 probable maximum flood levels,
 and information was called for
 as to

1st the levels of existing village
 sites.

2nd the probable effect on adjacent
 lands of embanking the island.

3rd the reason for embanking
 one island of the group and leaving
 the others unembanked.

4th the capacity of the channels
 of the river to discharge flood
 waters.

5th the mode and cost of irrigating
 the lands supplied by the inundation.

82-8-72 1875

channels and their circumstances.

In G.O. No. 1584 of the 23rd June 1876 particulars of survey works were directed to be reported.

2. The Executive Engineer in charge of the District has transmitted a report affording information on the points referred for investigation and consideration, together with revised estimates.

3. From para 4 of Lt. Campbell's letter it will be seen that the principal island for the protection of which the embankments are intended has an area of about 33 square miles, that

there are eleven villages most of which are built on mounds of earth raised above flood level, that the population is estimated at 13,000, that the soil is generally rich and that there is a great deal of waste land in the interior. Also that there is very little wet cultivation

noted
R.A.A.O. 25 Aug 1876

* 38 formerly supposed.
3 1/2 according to Lt. Engineer Ellis.

From para 15 of the latter letter 33 miles would seem to be the area within the embankment.

and what there is is carried on by baling water onto the land. Lt. Campbell remarks that when he visited the island last July there was a very large extent of cultivation (dry) between the recently constructed flood bank and the river and that there was a great extent of land left waste in the interior of the island.

4. The deductions which Lt. Campbell has made from these facts are that, notwithstanding the risk, the ryots consider it more profitable to cultivate with dry crops the lands still liable to periodical submergence, because the deposit of silt therefrom makes the crops the more valuable and that irrigation must always have been extremely difficult and can not have exceeded a few hundred acres. There is however probably a good reason to be found for

the preference shown for cultivating
at any rate the western and northern
margins of the island, in that
the ground there, as is usually the
case with deltaic formations, is
on the average considerably higher
than in the interior and to the
eastward, and the ryots have
probably had ample experience
of the additional risk of loss
of crops incurred when the land
occupied by these happened to
be a foot or two lower than
the higher parts of the island.
This risk would be due to two
causes.

- 1st The lower level involving
a greater duration of submergence.
- 2nd The higher velocity of the
water due to the depth and concen-
tration of the spill.

The embankments already thrown
up have tended to obviate
the risk from the latter cause.

11 5
but the former will remain operative
unless the embankments be made
continuous.

5. The successful maturing of
irrigated crops of the descriptions
under the delta canals by inunda-
tion channels without tanks may
be admitted to be to any great
extent impracticable, but there are
descriptions of wet crops which are
differently cultivated, and which
thrive fairly if flooded to a moderate
depth 2 or 3 times during the period
they are in the ground, which period
is much shorter than that of the
superior rice crops.

6. With regard to the extent
to which the island should be
embanked, it will be seen that
Sub Engineer Ellis recommends
the leaving unembanked of the
part from D to E a distance of a
little over 3 miles, while Lt. Campbell
thinks that from E to bench mark X1

and to close the latter, but it would seem to be best to retain the outfall at which the river water is at the much lower level, and if as suggested the embankments be not continued across the Tupper Calwa perhaps the outfall at B will not be necessary.

7. The alignment of the embankments which have already been partly thrown up is much less regular than is desirable, and the line has the appearance of never having been laid out at all. The part from Keenakwun to the 711 B.M. stone is particularly bad. Possibly the line of an old bank has been followed, but if so this should not have been done.

8. The level of the embankments is intended to be 4 feet above the high of July 1875, and it is supposed that this will leave a margin of about 1 foot above a maximum fresh. At

present the embankments, especially at the west end of the island where they are of the most importance, are dangerously low and the sections do not convey an impression that the work was properly laid out for the work people.

9. It will be very necessary to take care that erosion of the river banks are not allowed to endanger the embankments. The sketch map, which is part of a Riverine Survey sheet, shows many places which are liable to destructive action.

10. With regard to the level at which the sills of the head sluices of the irrigation (inundation) channels should be placed it is considered

that Sub Engineer Ellis' proposal to fix their level at 3 feet below that of the adjacent ground would be likely to lead to inefficiency. A much better rule would be a fixed level

Letter No 159. 17th
August 1876 page 13

below the fresh level of 1875, and still better a fixed level below the surface of water in the river when the latter is high enough to supply the lands to be irrigated. It will do no great harm to place the sluices somewhat low, but to place them too high would be a fatal mistake, seeing that a fresh of sufficient level to supply the channels might in the latter case be of rare occurrence. It will probably not be difficult to ascertain from the villagers concerned the level at which they desire to have the sills placed, and if this be not below the channel beds as they are prepared to clear them to, any reasonable level may be adopted.

11. The amount of the estimate for the arrangements now recommended will be about as follows, the particulars given in para 17 of Lt. Campbell's letter being modified

14. 8

to agree with the altered terminus and the land compensation being separately shown	
Land A to B	2300
Earthworks do	7300
Land A to C	2700
Earthworks	13300
Land B to Tipka Calwa	900
Earthworks do	2850
Expenditure to end of 1875-76 - 19586	48925
10 head sluices for old channels	14200
	<u>63,135</u>

Rupies 62,000 have been already sanctioned, and there appears to be no necessity to make any alteration in that sanction at present, but the District Engineer may be instructed to submit a final estimate for the arrangements which may be approved by Government.

12. The levels of the village sites are indicated on the Plan marked A (a tracing) and for the most part

They stand above the general level of the country in their neighbourhood.

13. The river waterway above side bank of the islands taking No. 7 as the lowest section, index of the cross sections is about 196,500 square feet; that of the two rivers below the head of the island is about 157,000 square feet, but to this some addition appears to be necessary for the Coringa river which has not been taken into account and which probably provides for some 25,000 square feet of waterway. The totals will then be about 196,500 and 182,000 square feet respectively and the decrease in the lower part of the river would be about 7 per cent on the waterway of the upper part. The natural adjustment of the beds of the lower rivers to carry the water well, it is considered, be pretty sure to follow.

The lands on the left bank of the

See sketch map B

15. Goutami Godavery and on the right bank of the Nridha Goutami are already protected by embankments, and the Polavaram Island having been embanked to nearly the recommended extent prior to the high fresh of 1875, there is experience to show that the water of a nearly maximum fresh can be disposed of.

14. With regard to the incidence of the cost of the embankments it will be seen from the Proceeding Board of Revenue No. 2283 of the instant that only an approximate estimate of the area protected and of the area of Government lands and Proprietary Estates is practicable. The extent of Government lands under Government is about $\frac{1}{3}$ of the whole; in Kresnakurum about $\frac{1}{3}$ and in Guttindivi about $\frac{1}{5}$. The District Engineer's statement of areas is considered to be more reliable, as

the being based on a rough survey
of them is that which the collector
13 has been able to prepare from the
the Accounts, and from the former it
of will be seen that the areas are
196 supposed to be

Government lands ————— acres 13,427
Kesanakurum Estate ————— do 6,312
Guttindivi ————— do 1378

It is not quite clear why the Board
suggest the omission of Inam areas
from the area for the protection
of which the Kesanakurum Estate
should be called upon to contribute.
If Inam areas were to contribute the
areas of Inam would be deducted
from all the estates by Government
and otherwise, but if the Govern-
ment share be based on a total
area including Inams as must, it
is thought, the other shares be settled
Guttindivi is situated on the east
side of the island and will benefit
in all probability from

1st the exclusion of water with a
strong current,
2nd the more rapid silting up of
swampy lands which will result
from the channels which now carry
off both spill and rainfall drain-
age having to deal with only the
latter. This estate however is not
so much interested as is the rest
of the island and probably were
the benefits assessed they would
be deemed to be covered by a very
small contribution so that the im-
willingness of the Proprietor to
contribute is not of much consequence.
The Kesanakurum Estate and the
Government lands will benefit equally
in proportion to their areas. It has
to be decided whether the Govern-
ment and Kesanakurum Estate
shares are to be in direct proportion
to the relative total areas of the lands
belonging to each, whether the Inams in
both cases are to be omitted from the

the areas in which the charges are
to be based; or whether, as ap-
pears to have been suggested
by the Board, the Inams in Kesana-
of known are to be deducted from
that estate and added to the
Government share. The results

1st	Government share 0.68	1:00	Govt assessed & Brambika 8800
	Kesankurum do 0.32		
2nd	Government do 0.68	1:00	do - Inam - 4627
	Kesankurum do 0.32		Kesankurum S & P - 4154
3rd	Government do 0.79	1:00	do - Inam - 2158
	Kesankurum do 0.21		

With regard to the estimates it
is to be noticed that

1st The general rate of $1\frac{1}{2}$ annas
per cubic yard for earthwork appears
to be high, and the remarks in para
2 of this office memo. No 217 of the 17th

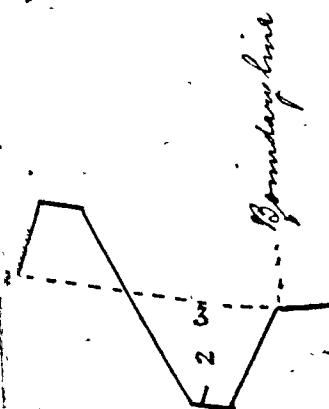
February last would seem to indicate
that the actual rate for the work
already done has been less.

2nd That gravelling the cattle crossings
at 3 Rupees a cubic yard would be an
uneconomical way of maintaining them

Only 17th March
1876. No 698.

17 11
saying that 36 cubic yards of earth-
work could be executed for a cubic
yard of gravel. Probably on the
section A to B 20 or 30 Rupees a year
would suffice to make good the
embankments at the crossings about
the beginning of July, and it may
be assumed that at least as much
would be needed to repair the
gravilled ramps. If so the expenditure
on gravel would be all wasted.
Gravel at 4 annas a cubic yard
would be economical perhaps,
but the reverse is the case when
that material is to cost 3 Rupees.
The items for gravel amount to
about 7500 Rupees and should all
be struck out.

3rdly Some fencing will be necessary
or desirable and the boundaries of
the lands should be demarcated.
A V trench and bank will suffice
for demarcation and if one yard
deep and 5 feet wide at top and



4th 3 feet abutment walls are not needed. for 4 and 6 feet vents.
5th The form of the rear wings is not as good as it might be.
6th There should be no shoulder at the junction of wings and abutments.

7th A screw gear is not very suitable to sluices which are to be managed by villagers, but if the female screw be fixed in the bearing beams, the lubrication will be very simple. 15. as oil need then be applied only to the screw. The lift should be confined to that needed to admit a full supply to the channel.
2 and the lifting bar should not be threaded for a greater length than is absolutely necessary. A stop should be placed to prevent the shutter being lifted too much or the female screw may be injured.

W. H. Williams

Rotterdam 25th Sept 1873
Chief Engineer for Dredging
at Colvildt
Dred. Sheet 57 Scheldt

P.W.S.
24 OCT 76
From No. 2640
The Chief Engineer for Irrig.
To The Secy. to Govt. P.W.D.

Dated 25 Sep. 76

Enclm. 29

No. 229-W.

Polavaram Island Embankment
— Godavery District — note
submitting revised estimates
for — with observations.

No. 367

222nd

No. 2040

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 24th Oct. 76.
Read the following:—

From Board of Revenue { M.O. No. 2283 of 7 Sept. 1876.
Note by the Ch. Engr. " " 229 W of 25th do —
for Engr. " " 229 W of 25th do —

His Grace the
Governor in Council approves
of the embankment of the
Polavaram island to the
extent recommended by the
Chief Engineer for Irrigation,
which will prevent the
island being swept by
high freshes in the Godavery,
and at the same time allow
of the continued submergence
from time to time of the lower
parts of the island which
will

11/11
8/11

will thus not only be fertilized but also raised by the deposit.

2. A final estimate should be submitted for the embankment with the termini at the Tappa drain on the North East and at or near the Amerla drain on the South side, which latter should be kept open. The ends of the embankment should be adequately protected by grass plantments or otherwise. In preparing the estimate the observations of the Chief Engineer for Irrigation should be attended to, and the item for travelling cattle crossings should be omitted.

3. It is observed from the longitudinal section that the embankments partially constructed at the head of

22 15-
of the island are dangerously low while in the 5 to 8 miles on the North side they have been thrown up above the line required. This indicates that the work was not properly laid out for the work people, and greater attention should be paid in the future to the construction of the flood bank to full and regular section from the head in both directions, it being of great importance that the Western or upperside should be first and completely protected. The work may now be proceeded with from

the provision in Part III
of the Budget Item
No. 295, it being observed
that the final estimate
will be less than that of
Rs 62,000 already sanctioned.

4. With regard to the
incidence of the cost of
the protective works His
Excellency in Council con-
siders that the benefits
which will be conferred
on the Guttendivi Estate
are not such as make it
necessary to call upon the
Proprietors for any contri-
bution, and that ~~the~~
proportion of lands held
by Inamdars under
Govt and in the Kesana-
kurra Estate is almost
identical

in accordance with the recom-
mendations of the Board of Revenue,
which has been based on the
best data available, the share
of the Kesankurra Estate should
be fixed at one fifth, Government
bearing the remaining four fifths
of the whole cost of the works.

It will be seen from S.O. R.D.

No 1309 N. No 21 Sep 1876

that there are four reasons
for concluding that Inam-
dars are not liable for any
share of the cost of the works.

My. 19/10

identical, and the benefits
to be derived in both cases
are in proportion to the area
of the lands concerned, if
indeed from the higher
assessment on the Kesankurra
lands the interest of the
Proprietor be not really
greater, the required outlay
should be divided between
Govt and the Kesankurra
Estate in the proportion of
 $\frac{7}{10}$ to the former and $\frac{3}{10}$
to the latter which shares
approximate sufficiently
closely to the relative areas.

5. The sluices required
to enable the wet cul-
tivation under the irri-
gation channels to be
resumed in 1877 should
be completed before the
floods of that year.

6. A copy of these
Proceedings will be for-
warded for the information
of the Govt of India with
reference to the ^{papers} ~~reference~~
as per margin.

+
G.O. No. 1227 - 1st May 1875.
Letter " 1228 - - do -
G.O. " 2840 - 12 Octr 1875
Para 12 of Budget orders of
Govt. of India of 27 March 76

No. 2841 of 24th Oct 76.

Copy of the above
forwarded to the Govt of
India, together with a copy of G.O. No. 2841 of 24th Oct 76
by 4/10

12367/69

D. E. Sodanay
Collection - do
C. Apr 9
Ex P. to do
Rev Sept.

Drpd - 8-11-76

No 7549

Board's Proceedings No 228
dated 7th Sept 1876 was
sent with Memo 1502
to the Revenue Dept.
and is in C.O.

Submitted.
There are no papers
connected with this sub-
ject in E. I. Office. Only
the subject appears to have
been disposed of.
30/10
31/10