M.L.O.1—2563—19-11-46

MADRAS RECORD OFFICE.

Government of Madras.

Public (Works) DEPARTMENT.

G.O. No.	1287	Proc. Mis.
Copy of		
Dated	14	18 53

Not to be folded or roughly handled

No. 100. Read the following Minute by the Right Honorable the President, dated Kotagherry, 23rd August 1858.

I beg to call the particular and early attention of Government to the report of the Sanitary state of the Cantonment of Jackatalla lately furnished to me, by my direction, by Dr. Macpherson.

Having had ocular proof of the offensive state of the localities and buildings described by him, I can fully testify to the necessity of immediate action on the part of Government in order that disease may be prevented, and that no risk may be run, that this costly and naturally healthy Station should lose its character for salubrity from causes, which proper precautions would eventually extirpate.

Doctor Macpherson calls attention to four points.

1st. The Sewage of the Cantonment, which would appear to have been entirely omitted in the original plan.

There can be no question in my mind that the fourth plan mentioned is the best, in fact the only complete one and though undoubtedly the most costly, I am of opinion it should be adopted.

Immediate measures should be taken for procuring the Iron piping required from England.

2nd. He recommends that the Resident Engineer should be appointed Cantonment Officer, with power to enforce Sanitary Rules, and should have under his order a Scavenger Gang.

I think this is an excellent suggestion, my only doubt being, how far Government have the power to adopt it at once.

3rdly. He advises the enclosure of a swamp and its formation into a Garden and Orchard under the supervision of Major Campbell, this I also recommend for adoption.

4thly. The necessity for requiring the Bazaar to be built in regular order, and on a fixed plan is urged.

This has my full approval, and I cannot but think, that serious blame is to be attached to the authorities, whoever they may be, who have neglected to ensure this being done from the commencement.

The suggestions now brought before Government are measures of precaution, which I believe to be absolutely necessary to prevent serious evil at the Important Station in question.

I sincerely hope, that it may be found possible to carry them out without delay: In a Minute which I wrote not long since respecting my tour to the Northern Circars, I suggested, when remarking on some of the buildings at Vizagapatam, that a report should be required annually from the Public Works Department, of the state of Ventilation of all public buildings. I omitted, I think, to add that the state of the Sewage should also be given, and I would beg now to rectify that omission and to propose that the Chief Engineer should be directed to make an Annual Report on these subjects which shall include all Government buildings and localities, such as Military Stations, Cantonments, Bazaars &c., which are more directly under the supervision and control of Government.

(Signed) HARRIS,

From Doctor MACPHERSON, Inspector General of Hospitals on the Sanitary Condition of the Cantonment of Jackatallah; to the Private Secretary to the Right Honorable the Governor, dated Ootacamund, 20th August 1858.

Sir,

In obedience to the orders of the Right Honorable the Governor, I have the honor to forward to you for submission to His Lordship, the result of my observations with reference to certain matters bearing on Sanitary details at Jackatallah, which appear to me to require the prompt interposition of authority; in order to prevent this great Sanitarium from becoming so polluted by human ordure and other causes, as to establish a Malarious atmospheric taint, which indeed has already begun to exhibit a noxious influence of a specific nature partly Scorbutic and partly Malarious.

2. The following are the schemes proposed for the removel of the Sewerage from the buildings erected at this Station.

1st.—The formation of one or more Lakes in the Ravine and Valley through which the Coonoor river flows and which would receive the night Soil conveyed by pipes.

2nd.—The removal of the night Soil (deodorized by Peat Charcoal) by means of Carts to a distance from the Barracks.

3rd.—The removal of the sewage by means of pipes into the Coonoor river, from whence it would be carried onwards by the Stream.

4th—The removal of the sewage by pipes into the Ravine (but not into the Stream) and from thence on by a closed main conduit, to a point beyond the station of Coonoor, a distance of about two Miles, there to discharge its contents into a Cascade. The river from this point flows by a steep decline down the ghaut, through an uninhabited country, a distance of twelve miles, receiving in its course several tributaries, and finally empties itself into the "Bowanee."

To adopt the first plan would be merely to create Endemic sources of disease, for the proposed Lakes would in time become Cess-pools.

The difficulty of removing the night soil by carts to a sufficient distance, and the danger of impregnating another position by impure exhalations, are sufficient reasons for not putting the second plan into force.

The third plan would pollute the pure Mountain Stream which alone affords a water supply to hundreds of followers in the Bazaar of Jackatalla and to the inhabitants of the Settlement of Coonoor. This plan has been already, I understand, sanctioned and to a certain extent carried out. I ascribe the Guinea-worm amongst the Natives, a disease which has only recently appeared at Coonoor and Jackatalla, to the impurity of the water. But apart from this, the currents of air blowing over this deep Ravine towards the Barracks and in the vicinity of the Bazaar must be pernicious.

The fourth of the above plans is without doubt the perfect system to adopt, consistent with Sanitary considerations. By it the night soil will be received in a closed main conduit by a system of intercepting pipes from the Barracks, Hospital, Sanitarium Depot, Married Men's and Officers Quarters, and will be forced by the pressure of water from above, through a large culvert, to a point far beyond the reach of doing injury by contaminating the stream or the atmosphere (vide Minutes of Consultation No. 1431, dated 23rd July last.)

3. Nothing can be more obnoxious or offensive than the present no system. There have been nearly 3,000 people daily at work at Jackatalla for many months past. There is no permanent Officer in Command or Commissariat Officer, so that there has been no local responsible supervision. The consequence is, that the immediate neighbourhood is tainted with a foecal atmosphere. Go where you will, in the unfinished buildings, in Court Yards, even in the very rooms, human ordure is found. Already the result of this neglected conservancy is exhibited in low fevers in European children and grown up people. The coercive interference of Government is therefore immediately required to preserve the character of the Station or Salubrity.

4. I beg therefore to propose, that an Officer who has a permanent Office at Jackatalla, should have local responsible supervision and be vested with Magisterial Authority to enforce his orders.

That a body of Coolies be hired forthwith to cut down Brushwood and clean away filth. That latrines be dug, to which the natives should be forced to resort, Peat Charcoal, and earth to be thrown into these two or three times a week.

That immediate measures be adopted for cleaning out the privy for Europeans and,

Finally as all these measures are but make shifts, until the great plan for the removal of the sewage by pipes is carried out, that the Executive Engineer be instructed to procure immediately from England the length of piping already sanctioned, and in the mean time he proceed with the constuction of the Channels so that the piping can be laid down on arrival.

5. There are other two measures which I would earnestly urge for the consideration of the Right Honorable the Governor with the view to the Hygeian of the station.

First, the enclosure of the extensive Ravine, situated to the south side of the Barracks, and lying between the Barrack hill and that selected for the convalescent Depot (which is at present the most offensive spot in Cantonment) with the view to its conversion into a Soldier's Orchard and vegetable garden. Captain Campbell, the Engineer in charge, who takes the warmest interest in the improvement of this important Sanitarium, and who has already accomplished so much in the formation of a Forest in the neighbourhood informs me, that if vested with authority and furnished with a small monthly sum to expend on the place, * he will cheerfully undertake to convert this piece of waste land into a beautiful Orchard and garden intersected with paths and fountains.

* From Rs. 150 to Rs 170 per mensem for 12 months.

Secondly, that the Bazaar now in course of formation contiguous to the Barracks should be erected on a distinct plan, with houses as much as possible of an uniform pattern and with streets so formed as to permit of free ventilation and drainage. The space allotted for the Bazaar is too circumscribed, but it is capable of being extended on a piece of waste land situated to the west of its present site.

6. In the centre of the Barrack square two rows of trees with a path between and a fountain in the centre would induce the Soldiers to leave the Barracks and take exercise under their shade, where seats would be placed.

7. In conclusion I would submit that all Sanitary arrangements be vested in the Resident Engineer in Council with the Resident Medical Officer, so long as the station is under construction and Public works going on. Giving the former the means and holding him responsible for the efficient conservancy of the Cantonment, and giving him also control over the roads, water courses, and channels.

From natural causes it is obvious that ever changing Commanding Officers and Police Superintendents, of whom there have been no fewer than 15 since May 1854, will never take that interest in the station which is so imperatively necessary and the neglect of which is the cause of my present address.

No. 101. ORDER THEREON, No. 1889; dated 14th September 1858.

Para. 1. With the above Minute is laid before Government, a report from the Inspector General of Hospitals on the Sanitary condition of the Cantonment of Jackatallah, and on the measures to be adopted, to remedy the offensive state of certain localities and buildings. The Right Honorable the President at present on the Hills, having had ocular proof of the state of matters represented by Doctor Macpherson, fully testifies to the necessity of immediate action on the part of Government, in order that disease may be prevented, and that no risk may be run, that this costly and naturally healthy Station should lose its character for salubrity, from causes which proper precautions would certainly obviate.

2. The Government proceed accordingly to consider the several points to which Doctor Macpherson has called attention. The first relates to the Sewage of the Cantonment, which would appear to have been entirely omitted in the original plan. Of the four Schemes proposed for the removal of the nuisance, it appears to the Government, that the fourth is by far the best as being the only complete plan, though it would undoubtedly be the most expensive. The Scheme is thus described by Doctor Macpherson. "The removal of the sewage by pipes into "the Ravine (but not into the stream) and from thence on by a closed main conduit, to a point "beyond the Station of Coonoor, a distance of about two miles, there to discharge its contents "into a Cascade." The Inspector General of Hospitals, suggests several other measures which he afterwards describes, as make shifts until the great plan for the removal of the Sewage by pipes is carried out; he therefore recommends that the Executive Engineer be instructed to procure immediately from England, the length of piping already sanctioned and in the mean time he proceed with the construction of the channels, so that the piping can be laid down on arrival. The Government are of opinion that the plan proposed should be adopted and carried out as early as circumstances will permit; they resolve accordingly to direct the Officiating Chief Engineer, to have an estimate and plan prepared for this work, and to submit the same for their orders. As regards the piping it is observed from the Officiating Chief Engineer's letter of the 2nd Ultimo, that this has just been ordered.

Fort Saint George, Public Works Consultation of 14th September 1858.

3. Doctor Macpherson makes three other suggestions :—

First, that the resident Engineer should be appointed Cantonment Officer, with power to enforce Sanitary Rules, and that he should have under his order a Scavenger Gang.

Secondly, that an extensive Ravine to the south of the Barracks be enclosed, with the view of forming a Soldier's Orchard and Vegetable Garden; and

Thirdly, that the Bazaar now in course of formation contiguous to the Barracks, should be built in regular order and on a fixed plan.

These suggestions will be considered in the Military Department. As regards the last, a reference will also be made to the Central Office with the view of ascertaining whether the Bazaars in course of formation are Government buildings, and whether they are so or not why they have not been properly laid out and constructed on a fixed plan.

4. In Extract Minutes Consultation 9th August 1858, No. 1559, the Government called for annual reports from the District Engineers, on the state of the Ventilation of all public buildings. They now desire, that the Officiating Chief Engineer will instruct those Officers to furnish information on the state of Sewage also. The reports should include all Government buildings and localities, such as Military Stations, Cantonments, Bazaars, &c., which are more directly under the supervision and control of Government.

(Signed) T. PYCROFT,
Chief Secretary.

Octacamund 20th August 1858.

To
The Private Secretary
to the Right Honble the Governor

Sir,

In obedience to the orders of the Right Honorable the Governor, I have the honor to forward to you for submission to His Lordship, the result of my observations with reference to certain matters bearing on Sanitary details at Jackatalla, which appear to me to require the prompt interposition of Authority, in order to prevent this great sanitarium from becoming so polluted by human exuviæ and other causes as to establish a Malarious atmosphere, which indeed has already begun to exhibit a noxious influence of a specific nature partly scorbutic and partly malarious

2. The following are the schemes proposed for the removal of the sewerage from the buildings erected at the Station.

1st. The formation of a sewer or more likely in the ravine and valley through which the Coonoor river flows and which would receive the night soil conveyed by pipes.

2nd. The removal of the night soil (deodorized by Peat Charcoal) by means of Carts to a distance from the Barracks.

3rd The removal of the Sewage by means of pipes into the Coonoor River, from whence it would be Carried away and out by the Stream.

4th The removal of the Sewage by pipes into the Ravine (but not into the Stream) and from thence on by a Closed Conduit, to a point beyond the Station of Coonoor, a distance of about two Miles, there to discharge its Contents into a Cascade. The sewer from this point flows by a steep decline down the ghaut, through an uninhabited Country a distance of twelve miles, receiving in its course several tributaries, and finally emptied itself into the "Bavanee".

To adopt the first plan would be merely to Create endemic sources of disease, for the proposed Tanks would in time become Cesspools.

The difficulty of removing the night-soil by Carts to a sufficient distance, and the danger of impregnating another position by impure exhalations, are sufficient reasons for not putting the second plan into force.

The third plan would pollute the pure Mountain Stream which alone affords a water supply to hundreds of followers in the Paraan of Jackatalla, and to the inhabitants of the Settlement of Coonoor. This plan has been already, I understand, sanctioned, and to a certain extent Carried out. Describe the Guinea worm amongst the Natives, a disease which has only recently appeared at Coonoor

and Jackatalla, to the impurity of the water. But apart from this, the Currents of Air blowing over this deep ravine towards the Barracks and in the vicinity of the Paraan must be pernicious.

The 4th of the above plans is without doubt the perfect System to adopt, Consistent with Sanitary Considerations. By it the night soil will be received in a Closed main Conduit by a System of intercepting pipes from the Barracks, Hospital, Sanitarium, Depot, Married Quarters, Officers Quarters and will be flowed by the pressure of water from above, through a large Culvert, to a point far beyond the reach of doing injury by Contaminating the Stream or the Atmosphere (vide Minutes of Consultation No 1131 dated 23rd June last)

3rd Nothing Can be more obnoxious or offensive than the present no system. There have been nearly 3000 people daily at work at Jackatalla for many months past. There is no permanent Officer in Command or Commissariat Officer, so that there has been no local responsible Supervision. The Consequence is, that the immediate neighbourhood is tainted with a fecal atmosphere. Go where you will, in the unfinished buildings, in Court Yards, even in the very rooms, human ordure is found. Already the result of this neglected Conservancy is exhibited in low fevers in European Children and grown up people. The coercive interference of Government is therefore immediately required

to preserve the Character of the Station for Salubrity.

4. I beg therefore to propose, that an Officer who has a permanent Office at Packatalla should have local responsible supervision and be vested with magisterial authority to enforce his orders.

That a body of Coolies be hired forthwith to cut down brushwood and clean away filth. That latrines be dug to which Criminals should be forced to resort; peat Charcoal and earth to be thrown into these two or three times a week.

That immediate measures be adopted for cleaning out the privy for Europeans and.

Finally as all these measures are but a Make Shift, until the great plan for the removal of the Sewage by pipes is carried and, that the Executive Engineer be instructed to procure immediately from England the length of piping already sanctioned; and in the mean time he proceed with the Construction of the Channels so that the piping, can be laid down on arrival.

5. There are other two measures which I would earnestly urge for the Consideration of the Right Honorable the Governor with the view to the Hygiene of the Station.

First the enclosure of the extensive ravine, situated to the South side of the Barracks, and lying between the Barrack hill and that selected for the Convalescent Depot (which is at present the most offensive spot in Cantonment) with the view to its Conversion into a Soldiers Orchard and vegetable garden. Captain Campbell the Engineer in Charge, who takes the warmest interest in the improvement of this important Sanatarium, and who has already accomplished so much in the formation of a Forest in the neighbourhood; informs me that if vested with authority and furnished with a small monthly sum to expend on the place, he will cheerfully undertake to convert this piece of waste land into a beautiful orchard and garden interseted with paths and fountains.

Secondly, That the Bazaar now in Course of formation Contiguous to the Barracks should be erected on a distinct plan, with houses as much as possible of an uniform pattern and with Streets so formed as to permit of free ventilation and drainage. The space allotted for the Bazaar is too Circumscribed but it is Capable of being extended on a piece of waste land situated to the west of its present site.

6 In the Centre of the Barrack Square two rows of trees with a path between and a fountain in the centre would induce the Soldiers to leave the Barracks and take exercise under their shade, where seats would be placed.

x from Rs 150 to Rs 170 per memorem for 12 months

7. In Conclusion I would submit that all Sanitary arrangements be vested under Resident Engineer in Cawnpore with the Resident Medical Officer, so long as the Station is under Construction and Public works going on. Giving the former the means and holding him responsible for the efficient Conservancy of the Cantonment, and giving him also Control over the roads, water Courses, and Channels.

From natural Causes it is obvious that ever Changing Commanding Officers and Police Superintendents of whom there have been no fewer than 12 since May 1857 will never take that interest in the Station which is so indispensable, any and the neglect of which is the Cause of any present Address.

I have the Honor to be
Sir
Your most obedient Servant
Duncan Macpherson M.D
Inspector General of Hospitals.

From Doctor Packheiser
Inspector General of
Hospitals with the sanitary
Condition of the Cantonments
& Barracks -
To the Private Secretary
to the Right Honorable
the Governor in Chief
20th August 1808

How many more
Hospitals have
been erected - or
Preparations
made for
Increasing the
accommodation
Are there Patients that
are now in Tents
How many
Men to the Rooms of Wards
How are they
Supplied with
Provisions
Are there
any Convalescents sleep
ing under the
Same Roof

Memo

The Inhabitants of this
Province will have
a considerable part
in the Defence
hitherto

may occur to the Members
of Govt on the matters
to which it relates.

20/10/15

We must accept the Reply
for help: Resp. supported us
in his Pers. absence of
the Rt Hon. the P.C.

We can bring this
to a close.

"It appears to be quite within
the province of the next Lecture
for Sir Sidney to the charge of
the Government & to mention arrangements
for such Schools as may be necessary
to establish - for the Religious Instruction

be delivered from time to time
relevant -

"It appears that the Rest Govt can
safely draw the march with
their own people

That we should be guarded
about the necessity of building
the Bazaar on a regular
plan of Newport. That
Sleepers be framed & laid
down.

The Govt's wishes can
be given to the Rest Govt
for the towards relocation of
Public places, Cantonments &c

The Head Letter
will be attached to

immediate attention on the part of Govt - in order that disease may be prevented - & that no risk may be run that this worthy & luxuriously healthy station should loose its character for salubrity from causes - which proper precautions would [illegible] -

Dr Macpherson - called attention to town-pontii -

1. the Sewage of the encampment - which did appear to have been actually omitted in the original plan -

There can be no question in any mind - that the fourth plan - recommended the best - in fact the only complete one - & undoubtedly the most costly - I am of opinion it ought to be adopted - immediate measures ought to be taken - for removing the whole existing nuisance from England -

2.dly Dr recommends - that the Assistant Engineer who is appointed Cantonment Officer - with power to enforce sanitary rules - & who have under his order a Scavenger party -

I think this is an excellent suggestion

my only doubt being - how far Sir Lan- his power to adopt it at once - Paul

3rdly he advises the inclosure of a branch ~~brick~~ & its formation into a garden & orchard - under the superintendence of Messrs Campbell - this I also recommend for adoption -

4thly the impurity for beginning the bridge to be built in regular order - & on a fixed plan is urged -

This has my full approval - & I cannot but think - that Lemaire blame is due to Sir Lan- & the Authorities - whoever they

may be - who have neglected to inclose the two being done from the Commissariat -

The suggestions now brought before Govt - are measures of precaution which I believe to be absolutely necessary to prevent serious evil at the important station in question

I sincerely hope - that it may be found possible to carry them out without delay -

in a hurricane - which I wrote not long since suspecting they were to be hurricane seasons - I suggested - when remarking on damage of the buildings at Vizagapatam that a report shd be required annually from the P.W. Dept. of the state of fortifications of all public buildings - I omitted I think - to add that the state of the drainage shd also be given - & I would by preference that arrangements should be made that the Chf Engineer shd be directed to send in annual reports - on the

buildings - which shall include all Govt buildings & barracks - such as building stations - cantonments - bungalows - &c. which are more directly under the supervision & control of Govt. -

Thanks.

Rotaghevy -

Sept 23/58.

Public Works 1858 No 2
Com. 14th Sept 58.
No 1756

Minute by the Right
Honble the President
Dated 20th August 58
Received 28th August 58

Submitting a report
from the Inspector general
of Hospitals on the Sani-
tary condition of the Canton-
ment of Jacktatalla and
on the measures to be adopt-
ed to remedy the offensive
state of certain localities
and buildings.

No 1889. 11th September 1858.

No. 100.

Rec'd Sept 14th

P. W. Dept

No 1889.

Extract from the Minutes of Consultation
Under date the 11th September 1858

Read the following
Minute by the Right Hon-
able the President.

(Camp Ootacamund 20th August 1858)

P.S. With the above Minute is
laid before Government a report
from the Inspector General of
Hospitals on the Sanitary Condition
of the Cantonment of Jacktatalla
and on the measures to be adopt-
ed to remedy the offensive state
of certain localities and buildings.
The Right Honorable the President
at present on the Hills having
had ocular proof of the state of
matters represented by Dr Mac-
pherson fully testifies to the neces-
sity of immediate action on the
part of Government, in order that
disease may be prevented & that
no risk may be run that this
costly and naturally healthy
Station

station should lose its character for salubrity from causes which proper precautions would certainly obviate.

2 The Government proceeds accordingly to consider the several points to which Dr. Macpherson has called attention. The first relates to the sewage of the Contonment which would appear to have been entirely omitted in the original plan. Of the four Schemes proposed for the removal of the nuisance, it appears to the Government that the fourth is by far the best as being the only complete plan, though it would undoubtedly be the most ~~costly~~ expensive. The scheme is thus described by Dr. Macpherson. "The removal "of the sewage by pipes into the "ravine but not into the "stream and from thence on "by a closed main conduit, "to a point beyond the station of

"of Coonoor, a distance of about "two miles, there to discharge its "contents into a Cascade. The Inspector General of Hospitals suggests several other measures which he afterwards describes as make shifts until the great plan for the removal of the sewage by pipes is carried out; he therefore recommends that the Executive Engineer be instructed to procure immediately from England the length of piping already sanctioned & in the meantime he proceed with the construction of the Channels so that the piping can be laid down on arrival. The Govt. are of opinion that the plan proposed should be adopted & carried out as early as circumstances will permit, they resolve accordingly to direct the Offg. Chief Engineer to have an Estimate & plan prepared

for

for this work and ~~including the cost of the Report~~ to submit the same for their orders - As regards the piping it is observed from the officiating Chief Engineer's letter of the 2d instant that this has just been ordered -

3 In their despatch of the 21st October 1857 the Honorable Court have directed that all articles required for public purposes from England should be obtained on Indent through them. Major Sanford will instruct the Executive Officer of the Sheikhery Barracks to furnish an Indent for the piping required, specifying the quantity & description of pipe, whether of iron or lead, the dimensions & such other particulars as may be necessary to guard against mistake. The Court observe from the Bill which accompanied this despatch that Major Campbell has already procured a large supply of lead pipes from England from Mr. Geo. Jennings - it is desirable therefore to ascertain what has become of the ~~stuff~~ pipes & how it has been applied

4 Dr. Macpherson makes three other suggestions - First that the resident Engineer should be appointed Cantonment Officer, with power to enforce Sanitary rules, and that he should have under his order a scavenger gang; Secondly that an extensive ravine to the South of the Barracks be enclosed with a view of forming a Soldiers Orchard and Vegetable garden, and thirdly that the Bazaar now in course of formation contiguous to the Barracks should be built and regular order and on a fixed plan. These suggestions will be considered in the Military Department. As regards the last reference will also be made to the Central Office with a view of ascertaining whether the Bazaars in course of formation are Government Buildings, and whether they are or not, why they have not been properly laid out and constructed on

on a fixed plan.

3. In Extract Minutes Consultation 9th August 1858 No 1559 the Government called for annual reports from the District Engineers on the state of the Ventilation of all public buildings. They now desire, that the Officiating Chief Engineer will instruct those Officers to furnish information on the state of Sewage also. The reports should include all Government buildings and localities, such as Military Stations, Cantonments, Bazaars &c. which are now directly under the supervision and Control of Government.

10 Copies to the Offg Chief Engr & Surveyor &c.
4 — " — " Secy Govt &c.

Public Works 1858 Depart.t
Cons: 14th September

No. 1889.

Extract Mins. of Cons:
Dy 14th Septr 58.

From Military Dpatch 21 March 59
C No 741 in Cons: 12th April Back No 46
From Do 14th April 59 C. No 1900 47
Cons: 19th 100-101.

Measures of the nature
recommended by the Inspector
General of Hospitals for im-
proving the Sanitary Condition
of the Cantonments of Jacko-
datta, call for Estimate for
the works specified. Refer certain
points to bearing upon the subject
for consideration in the Civil
Department.

From Chief Engr 19th Novr 59
C No 3053 in Cons.

No 100 & 101

From Chief Engr 19th February 60
C No 359 (Ventilation to Public Buildings)