OPM.528/63 No.356

Memorandum to Cabinet

Memorandum on the problem of water supplies for Gozo and Comino by the Hon. Minister of Agriculture, Power and Communications

In their report of March 1964 Italconsult made proposals involving three possible solutions to the problem, namely:

(A) supplying Gozo and Comino from Malta by submarine pipline,

(B) installation of independent seawater distillation plants in Gozo and Comino,

(C) installation of a seawater distillation plant in Gozo with a submarine pipeline to Comino.

2. Before consideration is given to each of the proposals, it must be underlined at the outset that additional groundwater from the Lower Water Table cannot be obtained either in Malta or in Gozo, and any attempt to increase the current yield is bound to aggravate the already high salinity of the water which is above the accepted rate of 500 p.p.m. with serious possible permanent damage to the aquifer. In the Upper Water Table a relatively small addition of groundwater (about 200 million gallons annually) was estimated by other former consultants to be available but the cost of extraction was worked out to be uneconomic. It may therefore be stated that the point of maximum economic exploitation in the perched aquifer has been reached. It was this assessment of the situation, coupled with the growing need for more water in Malta to meet the increasing demand in the domestic field (due to higher living standards) and in the industrial and tourist sectors, that led the Administration to go ahead with the combined power-generating and seawater-distillation project. The position can be evaluated from the following Table:

T a B L E

		MALTA	GOZO	COMINO
Estimated Maximum Annual Yield of groundwater in a hydrological year based on a 20 inch rainfall and on maintenance of salinity rate of 500 p.p.m.	M.G.A.	2,500	100	3
Estimated Safe Annual Yield taking account of dry periods and of maintenance of salinity rate of 500 p.p.m.	M.G.A.	2,000	80	2-3
Current Annual Consumption	M.G.A.	3,160	150	0.5
Estimated Annual Requirements in				
1974/75	M.G.A.	5,000(a)	400(a)	36.5
2016/17	M.G.A.	-	800(a)	70-80
Deficiency to be made good by seawater distillation by (b)				
1974/75	M.G.A.	3,000	320	34.5
2016/17	M.G.A.	-	720	78

(a) based on a demographic increase of 1.02% in Malta and of 0.5% in Gozo plus increased demand for domestic use and tourist needs but EXCLUDING IRRIGATION REQUIREMENTS.

(b) the commissioning of the distillers is scheduled: one distiller capable of producing 1 m.g.d. or approximately 300 m.g.a. by 1965/66 ending up with 6 m.g.d. or 1,800 m.g.a. by 1972/73.

(A) Supplying Gozo and Comino from Malta by submarine pipeline.

3. The laying of a submarine pipeline linking up Gozo and Comino with Malta (the project is estimated to cost £535,000 exclusive of the cost of pipework from Mgarr, Gozo, to Ta' Cenc Reservoir, and the cost of redistribution of existing mains from Marsa to Mellieha) presupposes that the total water requirements of Gozo and Comino can be supplied from Malta. From the projection

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shown above, the power generating/water distillation station being constructed in Malta will, when in full commissioning in 1974/75, be barely sufficient to meet Malta's total water needs. The solution must, therefore, lie either (a) in extending the power generating/water distillation project under construction in Malta and conveying the distillate to Gozo via an undersea pipeline or (b) in having a separate seawater desalination plant in Gozo. The alternative at (a) assumes the need for additional power generating capacity in Malta; even if such an increase in the electrical energy demand is necessary, the cost to supply water to Gozo through the submarine pipeline has been calculated at 10/1d per 1,000 gallons, (exclusive again of charges in connection with some water mains in Malta and Gozo). Apart from the cost aspect, serious consideration must be given to the maintenance and reliability of the submarine pipeline. In the alternative at (b), Italconsult have calculated the total water cost to supply Gozo at 10/9d.per 1,000 gallons in the case of the installation of a plant consisting of two units each producing 500,000 gallons of distillate per day or 11/10d in the case of one unit producing 500,000 gallons of distillate. To carry the water to Comino, the cost would be increased to 19/5d. per thousand gallons. From the economic and reliability and flexibility points of view, therefore, the Malta-Gozo-Comino submarine pipeline should be dismissed in favour of an independent desalination plant in Gozo and this is the conclusion reached by Italconsult.

(B) Installation of independent seawater distillation plants in Gozo and Comino

4. While the position in Malta from the ground-water yield point of view has been shown to be serious until the distillation of seawater is in operation, that in Gozo can be said to be critical. The mere fact that in the financial year 1963/64 consumption rose to 150 million gallons requires no elaboration when a safe yield has been reckoned at 80 million gallons annually. The development of the Ghajnsielem Basin and Trough on which Italconsult suggested that a series of geophysical prospecting and hydrological investigations are still

necessary to/.....

necessary to establish the actual water storage and net yield - after due consideration of private extraction - would not serve to increase the yield of groundwater in Gozo to any particular significance. The basin's importance is as a natural reservoir to store rain water on the catchment area and additional recharge - from distillation etc. - water. Italconsult have stressed this point.

5. As has already been indicated under (A) above, the short-term (4-5 years) solution for Gozo favoured by Italconsult is the installation in Gozo of an independent seawater conversion plant with one distilling unit capable of producing 500,000/550,000 gallons a day with the possibility of further future unit extensions. The type of plant recommended by Italconsult is the single-purpose since it was considered that Gozo, would, for a number of years to come, be able to get its electricity requirements from Malta through the submarine electricity cable. For the reasons given under (C) below, the water problem of Comino need not, at least until the position becomes clearer, be tied up with that of Gozo.

(C) Installation of a seawater distillation plant in Gozo with a submarine pipeline to Comino

6. The solution to Comino's problem can be met in either of three ways:-

(i) installation of a separate desalination plant at Comino,

(ii) installation of a desalination plant in Gozo sufficient to meet Comino's needs through a submarine pipeline Gozo-Comino,

(iii) sea transportation of water from Malta to Comino.

The cost of water produced by a distiller as at (i) was estimated by Italconsult at 27/- to 32/- per 1,000 gallons and that at (ii) at 19/5d. per 1,000 gallons. The expense being incurred at present to carry water to Comino from Malta by sea transport on a contract basis is 18/- per 1,000 gallons. It would therefore be advisable to keep the current arrangements of transporting water to Comino

by sea/.....

by sea from Malta so long as the overall cost (cost of groundwater production, exclusive of capital charges, in Malta at 1/3d per 1,000 gallons plus cost of sea transportation to Comino at 18/- per 1,000 gallons) is below the rates at (i) and (ii) above and until the water supply requirements at Comino come to be more clearly known. It should be stressed that the present water supply arrangement to Comino involves Government in no capital investment. Should the current overall cost to convey water to Comino from Malta increase, approaching either of the costs at (i) or (ii), and the permanent water requirements in Comino come to be more realistically known the position could be reviewed.

The Hon. Ministers may, therefore, wish to agree that the following recommendations made by Messrs. Italconsult be adopted:

(i) Erection of an independent desalination plant in Gozo.

(ii) Continuation of the present system of supplying Comino by ship so long as the cost is below that of erecting a separate distillation plant in Comino or supplying the Island with water from a plant in Gozo.

These solutions would result in the smallest investment, the lowest unit cost of water (over a short term) and maximum flexibility should future demand unpredictably fall outside the value estimated today.

22nd December, 1964.