

FEATURE

Finding long-term solutions to waste management problems

At a conference on waste management solutions earlier this month, AX Holdings chairman **ANGELO XUEREB** proposed the establishment of four construction and demolition waste disposal depots for Malta and Gozo, among other long-term solutions to waste management problems. The following are excerpts from his paper presented at the conference.

The long-awaited draft solid waste management plan has finally been published. Upon receiving this draft plan my first thought was: Why have we wasted all these years? – especially the last seven years, that is, since the Metap Report on the same subject was prepared by RH&H Consult during February 1993.

We have all been watching the building of Mount Magtab, we have all been smelling the odour, besides the other risks. Sometimes I feel that we miss the wood for the trees! While we make a fuss on minor aspects, we let go of the major issues. But I am optimistic by nature and therefore I say, "It is never too late".

In front of us we have Malta's major environmental issue which has to be solved for our benefit and for the benefit of future generations. If we take the wrong decisions now, future generations would put us on the history records for today's action.

It is high time that we start concentrating on action more than words. Keep in mind that every day we are rubbing salt into the wound.

At least we should be grateful that, on this issue, we have a consensus by all the political players. So let us put all our heads together and think, and act with our feet firmly on the ground.

We have to remember that, whatever plans we implement, there are definitely going to be both pros and cons. We all wish to have no negatives, we all wish to have a heaven on earth. However, we must be realistic in our thinking and actions. We should be aiming towards those methods that would do the least harm to us human beings and to the environment.

But I appeal to all those who are interested in this subject and who mean well to our country's future, to concentrate on solutions rather than talk about problems and do nothing to solve them. We have a national problem and the entire nation should contribute to solve this problem.

After reading through the draft plan, I must say that I was concerned that the gov-

ernment was proposing an engineered landfill as an extension to the Mag tab dump. We all know that the existing dumping site was not the right choice and an extension to this would only add insult to injury. Two wrongs do not make a right.

I shall explain later why this is not the best location. In my opinion, after consulting with the general public and all the entities concerned, the government should evaluate which methods of waste disposal should be adopted, and only then come to a conclusion where the sites should be located.

Our islands are very small; over-populated in proportion to the size of the land. Thus we have to be more careful on land use. Any decision should be taken in the light of many years to come, say 50 or 100 years and over. We should take a closer look at waste disposal methods which other small islands with similar climatic conditions have adopted. I am sure these islands have already gone through this exercise and we should therefore be able to evaluate their results and concerns.

I shall concentrate on construction and demolition (C&D) waste. Although this type of waste amounts to over 80 per cent by weight of all the solid waste, it is my opinion that this type of waste is the least problematic since its bulk is 100 per cent inert material. The C&D waste in EU countries varies from zero to 55 per cent, so let us take an average of 28 per cent of the solid waste in EU countries. This proves that, since our country exceeds 80 per cent, this type of waste is distorting all our percentages and therefore C&D waste should be treated as a separate category.

There are various ways how this material can be disposed of or reused. Due to the economies of scale, we cannot allow dumping of this waste everywhere and therefore such waste needs to be well controlled. This waste is inert material and therefore there is no danger of any possible contamination to the water table.

Around four C&D waste disposal depots



should be identified to cover the north, central and south of Malta and another one in Gozo. This is necessary in order to minimise the transportation costs and inconvenience to the public. These depots must be properly licensed and controlled to ascertain that only C&D waste is being handled.

It is also important to create competition within these depots by way of service and discounts. Three of these depots would be best located within used quarries while another on large barges to dispose of waste within an identified sea basin far away from our shores. This waste must be 100 per cent inert material, which comes out from excavated material and thus should not do harm to the underwater flora and fauna. Rather, in time it could create more breeding areas for marine life. This type of disposal operation would not leave any marks or murky water except for a few minutes and is a safe operation.

The other C&D depots within used quarries have already been hinted upon in the draft plan under clause 10.2.2. I agree with this concept and have in fact commented several times on this issue during the last seven years. I would now like to elaborate on this method.

These depots should incorporate a segregation system in order to reuse this resource as much as possible, like boulders for landscaping, smaller sized stones for construction of road foundations, stone for rubble walls, smaller sized stones for unreinforced mass concrete or *torba* as well as the finer material to be used for soil.

Another section could contain the stone material from demolished buildings to be made available from the facing buildings, giving the old character look. This operation requires proper investment in equipment and management. Therefore, in order

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to make such a project financially viable, it is important that all of this C&D waste be diverted to these depots.

These depots would have to construct a simple steel grate made up of strong steel beams, fixed into an angle of around 60° over a number of bins to contain the various sizes of the material.

The supply is definitely greater than the demand for this graded material. This would allow the management of that particular depot to divert the truck loads at the entrance to this segregation area or direct them towards the backfilling of the used quarry. Once the quarry is backfilled to say around 10 metres below the original level, this could be covered with a layer of soil and could be transformed into an orchard, thus producing another added value to the local product.

Alternatively, depending on the location, the rehabilitated quarry could be utilised for the development of industrial activities. After this used quarry is rehabilitated, this depot with its equipment would move to another used quarry repeating the same operation.

This method would open up another new industry in the construction sector. Once these various graded materials are on the market, I feel confident that other by-products would be developed, thus increasing the added value.

In order to render such an operation successful, it is important to have a competent management team who can shoulder the responsibility. Therefore, I would propose that such an operation could be developed and managed in the form of a joint venture between the government and the private sector, better known as Public Private Partnership (PPP).

The government would lease the used quarry from the owners on behalf of the joint venture at an agreed rent or, as proposed on the report, by offering a percentage on turnover or a free shareholding in the joint venture.

Alternatively this could be operated completed by the private sector under conditions specified by the authorities within agreed terms and conditions with the owners of the used quarry.

The appointed company would manage the depot on a commercial basis and after completion would move to another site. I would propose to have a separate company for every depot in order to create competition. We have to keep in mind that there are hundreds of these used quarries scattered around our islands and it could take many years to rehabilitate all of them.

A separate exercise could be carried out to quantify the availability. While carrying out such an exercise it has to be kept in mind that certain quarries are not yet exploited to the maximum and therefore could not form part of this stock.

The operation of dumping C&D waste by barges into the identified site at sea could be operated solely by the private sector since it does not involve third party properties.

The best location for this depot would probably be in the area known as Ras QanQir below the Corradino Heights, since it has to be in an area protected from rough seas, away from residents, and close to the centre of Malta in order to be easily accessible from most localities.

Should the government opt for an engineered landfill to cater for a substantial amount of solid waste, as the best method for the disposal of the solid waste, then the issue would depend on how much construction waste is needed to be used in tandem with this type of solid waste disposal.

But this clearly indicates that within the foreseeable future, we should need huge areas for this type of landfill.

An engineered landfill requires layers of graded C&D waste. By "graded" I mean that the C&D waste has to be segregated by some process, which means added costs. The average cost for graded material would have to be around Lm1.50 per Lm3 delivered to site. This indicates that although as a norm, having a landfill is the least expensive method, it is definitely the method with the highest land use which our country cannot afford in the long term.

Architects and engineers should also play a role in reducing this C&D waste. In their tender specifications they should encourage use of graded recycled material where it may be sufficient, instead of specifying hard stone, say for example, in unreinforced concrete, sub-bases, etc. This would also encourage the strengthening of the sales of another byproduct.

I would now like to hint on some other issues related to other solid wastes.

Disposing of construction and demolition waste

Construction and demolition waste	80%	962,872 tonnes
Municipality solid waste	11.5%	138,076 tonnes
Industrial & other	8.5%	102,555 tonnes

The disposal rates as specified in the draft plan, clause 11.6.5, seem reasonable. But one question whether we are sure that these rates would be maintained over the projected 10-year forecast.

It is justifiable to adopt the polluter pays principle on all types of waste, but we have to keep in mind that these added costs would add up to the costs which the consumer has to pay. Unfortunately, or fortunately, depending from which angle you see it, due to the strong political influence, waste taxes and other taxes are still very low in our country.

For example, in Germany they charge about Lm43 per ton or Lm60 per household per year. If one has to adopt this charge for the Maltese family, it would definitely be unaffordable vis-a-vis the local cost of living. Due to these charges the Germans became, and are still becoming, more conscious of the amount of waste they generate. For example, in the Bavarian area during 1990, each inhabitant was producing around 230Kg of waste per year - during 1997 each inhabitant was producing around 125Kg per year. These waste disposal costs have also helped this nation to become more conscious of recycling.

This clearly indicates that the Maltese cannot just continue producing such a high rate of waste with no sense or culture for recycling!! Similarly, the Maltese have to be made aware and conscious that we have to start paying for our waste. Whether we join the EU or not, the government just cannot afford to subsidise all these costs.

As a start one has to accept a small charge which will be gradually increased as our gross yearly income increases. There is an immediate need for an intensive programme to instil a cultural change towards the 3R's principle i.e. Reduce, Re-use and Recycle.

A new legal framework needs to be in place so as to allow the local councils to use enforcement measures. In the coming years the local councils will play a vital role in this waste disposal issue, since most probably these would be collecting the waste charges to their account.

The following table shows the recorded solid waste statistics for Malta & Gozo from 1990 to 1999.

The waste disposed at Malta's and Gozo's official landfills in 1999 amounted to 1,203,503 tons which could be generalised as the above table shows.

Statistics in Gozo seem to vary substantially. For example C&D waste is only 32.26 per cent. The RH&H Consult Report and that of the Project and Development Department (PDD) as seen on clause 3.4.4 and 3.5.5 vary by around 50 per cent.

Furthermore, there seems to be a mistake in the analysis as shown on page 46 whereby it states that C&D waste in Gozo during 1997 was 250,000 tons, while on page 42, it states 6,300 tons. This also makes the total C&D waste of 1997 incorrect, and should read 750,000 and not 994,210 tons.

During 1992 the C&D waste amounted to 2,431,500 tonnes or 90 per cent of the total solid waste. During 1997, when a 35 cents per ton was being charged at the landfills, this figure dropped to 750,510 tonnes.

This indicates that during the last three years a substantial amount of C&D waste has been disposed of in private properties without being accounted for. Other considerations should be taken into account. Statistics before 1997 were not properly taken and C&D waste changes in volume from year to year, as it depends on the construction activity.

This proves that the C&D waste is distorting all percentages each year and thus

"We have a national problem and the entire nation should contribute to solve this problem."

must be treated as a separate category.

In my opinion, a possible solution to the solid waste disposal should be catered for by different methods. As I have explained in detail the C&D waste should not be difficult to solve.

The issue of municipality solid waste (MSW) is more complex since we have not yet started the basic separation at source. This means that any compost being produced from this waste is not going to be of good quality. We are therefore producing cheap quality compost at a very high cost, even without considering the additional costs for separation at source.

As indicated in the report on page 72, the composting plant at Sant'Antnin cost us Lm306,106 in 1999. This is just the operational cost excluding any interest on capital or repayment of any capital investment. All this cost to produce only 2,350 tonnes during the last year (1999). The income from this sale represents only Lm8,195 in 1999.

In this simple operation we are losing nearly Lm300,000 on recycling 9.33 per cent of the total MSW. This shows that as things stand, the more we produce compost the more we lose, while having an inferior product.

The Germans produce good quality compost in large volumes that exceed their demand. One can get this good quality compost free of charge from the plant and all one has to pay for, is its transportation. This indicates that even if we have to introduce a new culture for separation at source and produce good quality compost, we would end up with no market for it, and not even for export!!

With such a scenario, we have to think and act while keeping our feet to the ground. Similar islands like Mallorca, Bermuda, Sardinia, and others, have all adopted the incineration method. With the latest technology, the new incineration plants are very well built with a high grade of filtration, such that as one can notice from the attached photograph, one hardly notices that these are waste incinerators.

Even the Solid Waste Management Strategy for Malta prepared by RH&H Consult during February 1993 and financed by EU, proposed the use of incineration for Malta under clause 7.2.

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Solving waste management problems

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The area for such an incineration plant would take up not more than 20,000 square metres of land. A used quarry could be the best location. Such a plant would be able to recycle the waste to generate about 20 megawatts of electricity.

I continue on the recommendations:

- We should retain the Sant' Antnin composting plant in order to produce for local requirements.

- Clinical and other toxic material would still be treated either by an incinerator or microwave system.

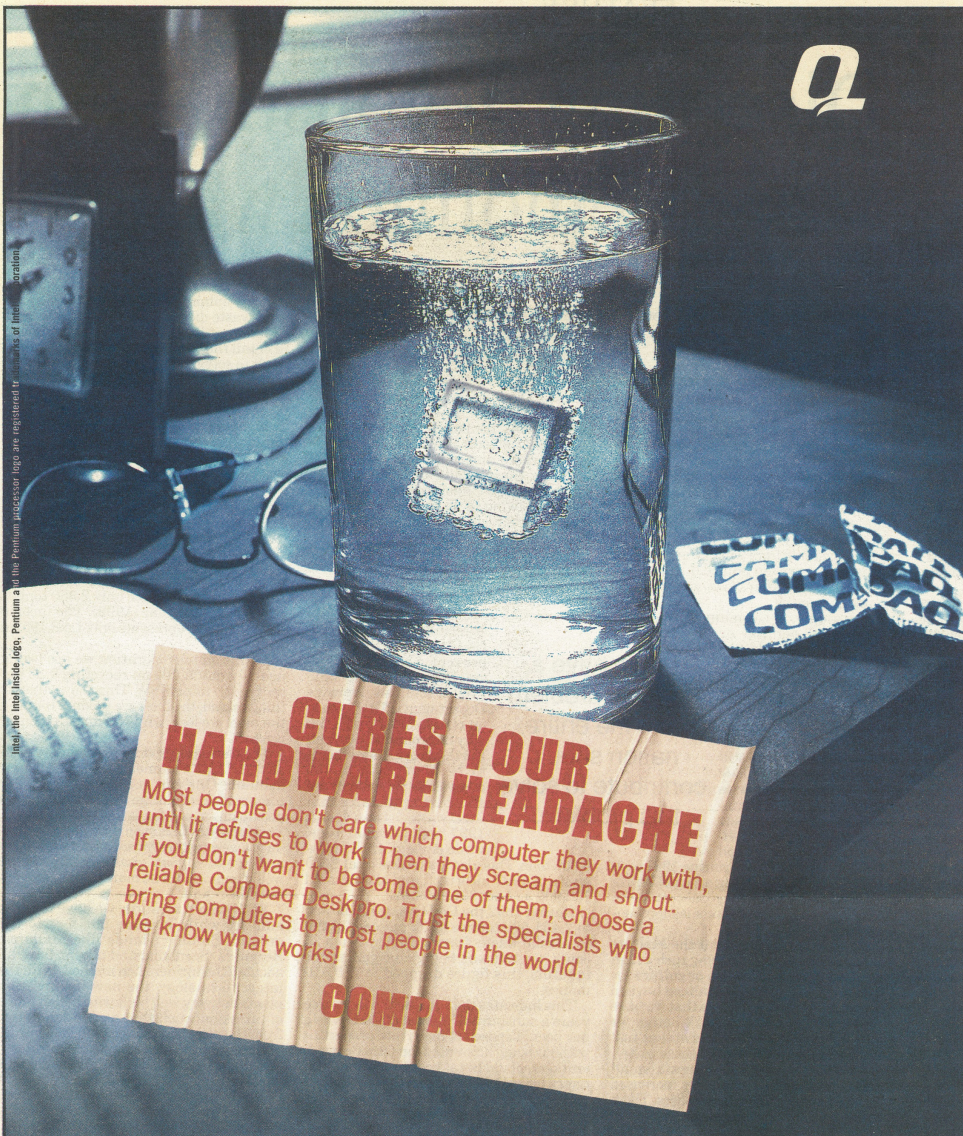
- A small-scale sanitary landfill would still be required to handle the residue from the incinerator and other waste which could not be disposed of otherwise. The best location would be within a used quarry having solid retaining walls in order to retain the settlement over a number of decades.

- The existing Maghtab landfill should be restored, with afforestation as soon as possible, to minimise the negative impact on our tourism industry which plays a vital role in our economy. The present income from the waste disposal should be invested on proper management for the rehabilitation of the landfill and for constructing a silting tank at the landfill entrances in order to avoid pollution being spread in the nearby fields.

The draft solid waste management plan for Malta clearly indicates the urgent need for a total overhaul of all the waste management system. This includes separation at source, door to door collection, handling of waste separation, recycling, and professional management at each waste disposal centre.

Concurrently with waste disposal charges, we need to introduce incentives for those entities who reduce, re-use and recycle their products. We need to have a more accurate waste data collection and need to change our culture and attitude towards the generation of waste, we need to instil more civic pride in our country if we want this little gem in the Mediterranean to flourish.

The public and private sectors as well as all the community need to work hand in hand, in order to generate enough public awareness of these issues. We have to think and act with our feet on the ground in order to solve this national problem for the benefit of this generation and the many generations to come.



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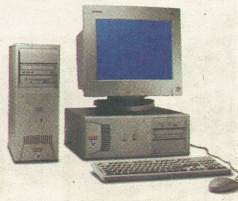
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