

Committee(s):	Date(s):	Item
Barbican Residents' Consultation Committee	10 th September 2012	
Barbican Residential Committee	24 th September 2012	
Subject: Review of the Garchey Waste Disposal System		For Decision
Report of: Director of Community & Children's Services		Public
<p><u>Summary</u></p> <ol style="list-style-type: none"> 1. A Working Party consisting of Officers and Residents was set up in October 2011 to carry out a review of the Garchey System. 2. The working party could not find sound financial arguments in favour of removal of the Garchey System. 3. A significant number of Garchey Units have already been removed and the usage of remaining units has declined in recent years (and continues to do so). 4. In the past, suggestions for removal of the Garchey System have provoked strong reactions amongst of residents. 5. Access would be required to all properties without exception before the Garchey could be fully decommissioned. Legal advice is that whilst the lease may allow the City access to flats for the purpose of removing the Garchey sink units it is by no means a certainty if the matter were to go to court. <p>Recommendation</p> <ol style="list-style-type: none"> 6. It is recommended that the removal of the Garchey System is deferred and that a further review is carried out in 5 years. This is subject to any change on the legal position with regard to access into properties or a change in the financial position or in parts availability. Consideration should also be given by the Barbican Estate Office to develop a methodology to record Garcheys that have been removed but are not on records held by the Estate Office. 		

Main Report

Background

7. In December 2006 the Barbican Residential Committee approved a report from the Garchey Working Party recommending that the Garchey continued to operate and that a further review would take place in 3 years.
8. In October 2011 a Working Party of officers and resident representatives was set up to carry out a further review of the Garchey System, its condition, usage and relevance to the modern day Barbican, and to evaluate the costs of maintaining or removing the system.
9. The Garchey system was built as an integral part of the Barbican Estate. Its pipe work removes rain water; waste water from washing machines/dish washers (grey water); as well as other kitchen wet waste material. For over 40 years this system has worked well due to high standards of maintenance carried out by the Barbican Estate Garchey team.
10. The Barbican Estate comprises 2073 flats which includes 69 properties in Frobisher Crescent that do not have a Garchey System and two converted properties in Thomas More House that are not connected to the Garchey System. There are also 2 Garcheys contained within the YMCA. These are fully maintained by the YMCA. Of the remaining 2002, approximately 932 of which have had their Garchey removed, replacing them with a sink or macerating Waste Disposal Unit. It is perceived that these changes have caused siphoning of the Garchey's U-trap from time to time in Tower Block flats, resulting in backflow, noise and smells which have led to numerous complaints from residents.
11. Wear and tear of the pipe work is negligible and the overall condition of the system is sound. Currently spare parts are manufactured at acceptable cost, although it is not possible to say how much longer this will remain the case. Appendix A details the current condition of the Garchey.
12. Because it is an original feature and an efficient means of the disposal of wet waste in particular, some residents are in favour of keeping it to preserve a unique feature of the Estate.
13. In the survey carried out in 2006, 841 residents responded. The votes were close, with 440 (52.32%) voting to keep the Garchey and 390 (46.37%) to remove it. 11 (1.31%) voters didn't know. It was recommended to the

Barbican Residential Committee the Garchey was retained and a further review carried out in 3 years.

14. A food waste collection trial commenced in 2008 and was rolled out across the Barbican Estate in 2009.

15. A working party was formed in October 2011 whose remit was to review the Garchey System and update the various elements of the 2006 review.

Non-Financial Considerations

Keeping The Garchey sink unit – Option A

16. If the Garchey system is retained the current annual maintenance and salary costs will continue and will be subject to a rise with inflation.

17. The Working Party noted that there are however considerations beyond financial ones. The impact of recycling on the Estate reduces the wear and tear on the Garchey, which will prolong its life. Since the last review, collections from the Garchey have reduced by almost 50% by weight. This is in part due to the amount of waste that is now recycled across the estate. The table below details the volume of waste collected from the Garchey. It also takes into account the number of known Garcheys that have been removed during the period.

Table 1

Year	Total Weight Collection (Tonnes)	No. Garcheys Remaining *	Average (Kg/ Flat/ Annum)
2006	30.7	1256	24
2007	27.89	1212	23
2008	25.37	1171	22
2009	19.17	1152	17
2010	15.71	1124	14
2011	11.94	1084	11

*The number of Garcheys remaining is calculated as the total number of Garcheys less the total number that the Barbican Estate Office knows have been removed. It is commonly known that there is an unknown number that have been removed without Landlord's consent.

It should also be noted that whilst the calculations are based on the number of Garcheys in operation, they do not take account of the fact that there is an unknown number of Garcheys that operate but are not used for the disposal of waste.

18. Considerations were noted which are very difficult to quantify in comparative terms. Firstly, the fact that the Garchey is a “sealed” system means there are virtually no problems with rats and other rodents. No other collection system is equally pest free. Secondly the Garchey is an original design feature of the Barbican Estate and some would feel integral to its character. However, English Heritage have confirmed the Garchey system is not “listed” so could be removed subject to certain items being retained within a set number of flats for historic purposes. Thirdly, the significant benefits of a waste disposal system which disposes of putrescibles direct from the kitchen, without the environmental unsightliness of caddies/ bins in evidence in lobbies and round the estate, contributing to a "wheelie-bin" culture. Furthermore, the latter may lead to smells, and possibly, an increase of vermin.

Remove the Garchey System – Option B

19. If the Garchey were to be removed, it would mean removing the bowl from under the sink. It is possible that the existing sinks can be adapted so that the sink unit can remain. It is estimated that removal across the whole Estate would take three years and in that time the Garchey system would have to be kept running until the last unit was removed.
20. In addition to the removal of the Garchey bowls, the Garchey pits that hold the waste until it is removed by a specially adapted tanker, will have to be filled and converted into a conventional sewer.
21. It will not be possible to ‘switch off’ the Garchey until all Garchey bowls have been removed. This presents a potential problem should access be denied into just one property. Legal advice and Counsel’s opinion has been sought and have concluded:-
- that it is permissible to decommission the Garchey *so long as another method of rubbish collection is provided*. Counsel takes the view that this is envisaged by the terms of the standard lease;
 - that whilst clause 4(7) of the lease *may* be wide enough to allow the City access to flats to remove the Garchey sink units it is by no means a certainty if the matter were to go to Court;

- that if the Garchey were decommissioned, access to some flats for the purpose of removing the Garchey sinks could not be obtained (see 2. above) and certain residents then continued to use the Garchey sinks which they refused to have removed, the City would likely have powers under the Environmental Protection Act 1990 to order removal.

Financial Implications

Keeping The Garchey sink unit – Option A

22. The current estimated cost to the service charge account for operating the Garchey System is £179,659 per annum. Using the average increase of operating the Garchey over the past 5 years, this cost is expected increase by 1.30% per annum. Therefore the cost of operating the Garchey will rise to £229,630 per annum by 2032. These costs are recharged estate-wide based on the percentages within individual leases.

Table 2

Year	Annual Cost of Operating the Garchey System
2013	£179,659
2014	£181,995
2015	£184,360
2016	£186,757
2017	£189,185
2018	£191,644
2019	£194,136
2020	£196,660
2021	£199,216
2022	£201,806
2023	£204,429
2024	£207,087
2025	£209,779
2026	£212,506
2027	£215,269
2028	£218,067
2029	£220,902
2030	£223,774
2031	£226,683
2032	£229,630

Remove the Garchey System – Option B

23. The estimated cost for removing the Garchey system is based on an estimate that was produced in 1995 following a 2 week detailed survey. The 2006 committee report inflated these figures by 2.5% per annum to bring them to 2006 prices. For the purposes of this report, the same methodology has been adopted in that 2006 prices have been inflated by 2.5% per annum to bring them to 2013 prices.

24. Table 3 details the costs of removing the Garchey along with the additional costs for continued maintenance during removal and redundancy costs.

Table 3

Year	Capital Cost	Running Costs During Removal	Running Costs After Removal	Redundancy Costs	Total
2013	£1,511,728	£179,659			£1,691,387
2014		£181,995			£181,995
2015		£184,360		£176,826	£361,186
2016			£10,875		£10,875
2017			£11,146		£11,146
2018			£11,425		£11,425
2019			£11,711		£11,711
2020			£12,003		£12,003
2021			£12,304		£12,304
2022			£12,611		£12,611
2023			£12,926		£12,926
2024			£13,250		£13,250
2025			£13,581		£13,581
2026			£13,920		£13,920
2027			£14,268		£14,268
2028			£14,625		£14,625
2029			£14,991		£14,991
2030			£15,365		£15,365
2031			£15,750		£15,750
2032			£16,143		£16,143

25. Table 4 shows the cost of removing the Garchey system alongside the cost of maintaining it. None of the costs incurred by the City of London arising from disposal of the Garchey generated waste have been included. The table shows the difference between the two cost streams and this difference was used to derive the Internal Rate of Return (IRR), which to 2032, showed a return of 8.1%. The working party concluded that this return was unlikely to be attractive to residents. A reduction of the capital costs by approximately £500,000 would change the IRR to 12.5%, which the working party felt might be attractive to residents.

Table 4

Year	Retain Garchey	Remove Garchey	Difference
2013	£179,659	£1,691,387	-£1,511,728
2014	£181,995	£181,995	£0
2015	£184,360	£361,186	-£176,826
2016	£186,757	£10,875	£175,882
2017	£189,185	£11,146	£178,039
2018	£191,644	£11,425	£180,219
2019	£194,136	£11,711	£182,425
2020	£196,660	£12,003	£184,657
2021	£199,216	£12,304	£186,912
2022	£201,806	£12,611	£189,195
2023	£204,429	£12,926	£191,503
2024	£207,087	£13,250	£193,837
2025	£209,779	£13,581	£196,198
2026	£212,506	£13,920	£198,586
2027	£215,269	£14,268	£201,001
2028	£218,067	£14,625	£203,442
2029	£220,902	£14,991	£205,911
2030	£223,774	£15,365	£208,409
2031	£226,683	£15,750	£210,933
2032	£229,630	£16,143	£213,487

26. The final table below gives an indicative point at which the cost of maintaining the Garchey is equal to or greater than the cost of removing the Garchey. The table shows that during 2025 the cumulative cost of continuing to maintain the Garchey exceeds the cumulative cost of removing the Garchey.

Table 5

Year	Retain Garchey	Remove Garchey	Cumulative Difference
2013	£179,659	£1,691,387	-£1,511,728
2014	£181,995	£181,995	-£1,511,728
2015	£184,360	£361,186	-£1,688,554
2016	£186,757	£10,875	-£1,512,672
2017	£189,185	£11,146	-£1,334,633
2018	£191,644	£11,425	-£1,154,413
2019	£194,136	£11,711	-£971,989
2020	£196,660	£12,003	-£787,332
2021	£199,216	£12,304	-£600,420
2022	£201,806	£12,611	-£411,225
2023	£204,429	£12,926	-£219,721
2024	£207,087	£13,250	-£25,884
2025	£209,779	£13,581	£170,314
2026	£212,506	£13,920	£368,900
2027	£215,269	£14,268	£569,901
2028	£218,067	£14,625	£773,343
2029	£220,902	£14,991	£979,254
2030	£223,774	£15,365	£1,187,663
2031	£226,683	£15,750	£1,398,596
2032	£229,630	£16,143	£1,612,083

27. The working party concluded that the financial attractiveness of removing the Garchey system was marginal. The IRR, almost identical to the AER standard of the base project was 8.1%. The working party felt that this would not be attractive to residents. Comparisons were made to domestic solar panel installations, where IRRs of over 11% were necessary before householders would make an investment. The Garchey removal is a much

less attractive project. The capital costs of removing the system are uncertain, whereas in solar panel installations they are guaranteed; further, solar panel installations have an intangible allure, which the Garchey removal does not.

28. A major uncertainty in the capital costs of removing the Garchey system is the number of remaining Garcheys. Some members of the working party felt that there were more units that had been removed than the official records showed. It was agreed that the Barbican Estate Office should give consideration to adopting a methodology to establish a more accurate number of Garcheys in operation. This could then be logged as a central record to establish a sound sample over 5 years.
29. Should the Garchey System be removed it will be necessary to enter every flat that has a Garchey bowl. If every unit is not removed the modified system would not cope with extracting waste from a unit still in use. It has not been possible to enter all flats on previous projects for example the installation of the television IRS in 2005.
30. Tower Block residents currently suffer from backflow, noise and smells in the flats. Although there is not a ban on removing units in tower blocks, any requests for their removal are looked at on an individual basis before permission is granted. It should be noted that the removal of the Garchey System will not resolve all smells such as those that manifest from cooking etc.
31. The waste that previously went down the Garchey will have to be collected at the flat front door. The Corporation already operates a recycling scheme which many residents utilise. It is not anticipated there will be a significant overall increase in volume of rubbish collected if the Garchey is removed. However, current users of the Garchey will be forced to use the existing door to door collection service for waste removal which if not collected on a regular basis could lead to environmental issues.

Consultees

32. The Comptroller & City Solicitor and The Chamberlain have been consulted in the preparation of this report and their comments have been included.

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Garchey Condition Report

Pumping Stations

Andrewes House Pumping Station.

The control panel in the Andrewes House Station, and all associated wiring and isolators, stop buttons, etc, to all equipment within the station was completely replaced in February 2004.

The 2 x Hick Hargreaves liquid ring vacuum pump and motor sets, were replaced in June 2008 with 2 x Edwards SHR 2500 series liquid ring pump and motor sets.

This was due to failing performance and leakage, also the replacement was part of the recommendation from the previous Garchey survey. Both pumps run at the same time when on duty, there is no standby, however if there were to be a fault with one of the pumps, we could operate on one only but this would greatly increase the amount of time needed to complete the work.

There are no compressors in the Andrewes House pumping station.

Beech Street Pumping Station

The controls for the Vacuum pumps, Compressors and other minor pumps in the panel in the Beech street station was completely refurbished in 1990; this involved replacing all the internal components, contactors, relays, fuses for MCBs, timers, etc. At the time the best equipment available on the market was used.

The original outer casing of the panel, and the controls for the supply and extract fans and heaters were not. A sum of £25,000 was put in the budget for the coming year to completely replace the whole panel and all associated wiring; however this has been put on hold due to the forthcoming Garchey survey.

At the time of the last survey it was decided that if the Garchey were to be kept for another 5 years, it would be necessary to replace the 2 x existing pump and motor sets, as they were showing signs of wear and poor performance.

In August 2009 both pump and motor sets were replaced with, Edwards SHR 2750 series liquid ring vacuum pump and motor sets. The pumps in Beech street

station are on a duty and standby situation, this is possible because they are much bigger pumps and one will give sufficient vacuum to carry out the work. Full sets of wiring diagrams are available for both control panels.

Compressors

In the Beech street station there were two Broome and Wade 2BWL compressors, one duty, and one standby. These were both original and were around 38 years old, though still functioning enough to come up to required pressure they were beginning to struggle.

It was decided along with the pump replacement program at the last survey, that if the Garchey was going to be kept for another 5 years they would need to be replaced.

So in October 2009 they were replaced with 2 x New Ingersoll Rand Model UP5-22-7 Rotary Screw Air Cooled Compressors.

Since 2008 all the compressed air pneumatic actuators within the Beech street station have been replaced on a rolling program.

Air Receivers and Retention vessels

In the Beech street station are 2 air receivers for holding the compressed air made by the compressors, these and the pressure release valves are inspected internally one year and externally the next year by the C.O.L. insurers. The insurers have reported that the equipment is showing absolutely no sign of wear.

Also covered by the insurance inspections are the 2 retention vessels, into which the contents of the Garchey pits are drawn. These also are showing little sign of wear apart from minor surface blister rust on the inside, which is to be expected.

Air Scrubber units

In each pumping station there are two Air Scrubber units, these are used to wash and clean the fowl air that is drawn in when emptying the Garchey pits. They are injected with chemicals from the chemical dosing plant, one with Sodium Hypochlorite the other with Sodium Hydroxide.

Two of the units are original; the other two coming approximately twenty five years ago, after the chlorine gas that was originally used in conjunction with the original air scrubber was banned. All the units are made of fibre glass and P.V.C plastic and therefore easily maintained.

A plastics firm that specialises in Scrubber units, are called in to complete a major service every three years. This entails stripping the units down, replacing filters, broken or blocked jets, de-scaling of the internals, O rings and washers.

The only problems we experience with the units are leaking joints and pump seals.

Chemical Dosing Plants

There are two small chemical dosing plants, one for each station, that inject the chemicals in to the scrubber units. Each plant comprises of, two dosing pumps and 2 x 200 litre polyurethane holding tanks, the plants are serviced every six months by the Garchey staff.

This comprises of de-scaling the tanks and all associated pipe work, the plants have operated almost trouble free since their introduction 20 years ago, the only problem being one of the pumps needing to be replaced.

Wey Valves

There are 150 quick release Wey valves attached to the Garchey pits, these are taken out once a year by the Garchey staff and stripped down for maintenance and cleaning, including the internal slides in the vacuum pipe which are de-scaled and greased, glands re-packed and shafts greased.

We have had to replace only four valve blades in over thirty five years due to wear, this is owing to the fact that the valves are of a very simple and robust nature. We also hold 10 replacement valves in stock.

Garchey Pits

There are 150 Garchey pits on the estate, these were constructed from reinforced concrete and have an indefinite lifespan, the pits and internal overflow and external overflow pipe work are cleaned by high pressure jets every three months by outside contract staff.

As of today we have only had to replace two bends to a pit overflow due to wear.

Garchey Stack Pipes

There are 400, 150mm BS437 drain weight cast iron vertical Garchey stacks and 200, 54mm BS437 drain weight overflow stacks on the estate. Since the commissioning of the Garchey system we have replaced a total of 18, 150mm duckfoot bends due to impact damage, and 4, 54mm straight sections of pipe due to cracks.

Approximately sixty per cent of stack pipes are vertical from roof level to entry in to the Garchey pit. The remaining forty per cent contain one or more reinforced duckfoot bends, these will be showing more sign of wear than the vertical ones.

All visible stack pipes are checked on a regular basis for sign of leakage by the Garchey staff.

At the last survey a thickness and wear testing program using ultra sound equipment, was undertaken by an outside contractor. The results showed an average of between 10 – 15% wear on most of the stack pipes.

Garchey Traps

There are a known 1070 flats that still contain a Garchey unit, part of this unit is a 150mm spun cast iron P trap that connects to a branch on to the main down stack. Some of these are showing signs of wear and we know of one or two that have pinhole leaks, we have up to now been successful in repairing these, unfortunately this casting is now obsolete.

In the event that we were unable to make a repair that was waterproof, the Garchey system in the flat would have to be removed by the C.O.L.

Vacuum Line

The 200 mm spun cast iron vacuum line is divided into five separate areas, and totals approximately one and a half miles in length. There are minor leaks from time to time due to a small amount of movement the pipeline suffers when in use, these are easily remedied by the Garchey staff on routine maintenance.

The section of line that serves, Speed House, Gilbert House, Willoughby House and Cromwell Tower, was the very first line to be commissioned and contains more bends than any other.

We have on this line, over the last 7 years experienced, a series of leaks due to internal wear; this has occurred on six of the 45 degree bends on this section of pipeline. Each leak has turned out to be of a pin hole type and not major wear.

Three of the bends have been replaced, the other three have been repaired by contract staff using a new repair system that carries a ten year guarantee which is significantly cheaper and quicker than replacing the bend.

We have not experienced this problem on any of the other vacuum lines, again at the time of the last survey, a wear and thickness testing program was carried out by the same external contractor who reported an average of 10 -18% wear on most of the vacuum lines.

Spare Parts

The Original installers of the Garchey System on the Estate were Matthew Hall. They continued to supply spare parts for the units within the flats until 12 years ago, at this time another supplier Linbrook and Son, come into the market and offered spare parts to us at a twenty per cent reduction on Matthew Halls prices.

We have been purchasing from Linbrooks since this time, and apart from giving an excellent service 2004 was the first price rise they have introduced. Their current price listing is now only 10% above the price Matthew Hall were charging us in 1996, They currently hold a stock of 500 of every Garchey item.

Linbrooks have recently been taken over by a large national building maintenance company called, Wates, we have had an assurance from the new company that they will continue to make and supply Garchey parts to us.

Matthew Hall have now been taken over by AMEC and the Garchey division is no longer in existence.