

<b>Committee(s):</b>	<b>Date(s):</b>
Markets	4 March 2015
<b>Subject:</b> Smithfield Market – Condenser Water Cooling System – update	<b>Public</b>
<b>Report of:</b> The City Surveyor (Ref. CS 050/15)	<b>For Information</b>

### **Summary**

This report provides Members with an update on the performance of Smithfield Markets' Condenser Water Cooling System, which serves Tenants' refrigeration equipment, and the works currently being undertaken to improve the system.

The performance of the condenser water cooling system since the last report in January 2015 has been satisfactory with no incidents recorded.

Phase 3 of the City's improvement works has been completed, a final inspection of the works has been undertaken, and new filtration equipment is in operation.

Following the Phase 3 works, the City had hoped to increase the operating temperature of the system to reduce operating costs and wear to cooling towers. However, in view of comments expressed by the Tenants Association and the terms of the new leases, which require that due regard is paid to the views of the Association, it will not be possible to proceed with this at the present time. The City is preparing a description of operation of the cooling system for review and discussion at a meeting of the 'Joint Specification Committee' in March at which any further actions should be determined. The City will continue to seek agreement to increase the system operating temperature.

The City will continue to monitor the system closely, and respond to Tenants' request for advice concerning refrigeration and cooling matters.

### **Recommendation(s)**

Members are invited to note the contents of this report.

## **Main Report**

### **Background**

1. The Market's condenser water cooling system removes waste heat from 120 tenants' refrigeration units in East, West and Poultry Markets and dissipates it to the atmosphere via five cooling towers located in the Poultry Market. The system is operated and maintained by the City Corporation.
2. Over the last five years the City Corporation has been undertaking a programme of works to improve the system in the three Markets. A third phase of the work, aimed at removing dirt contamination carried around the system, has recently been completed.

### **Current Position**

3. The cooling system is currently working well and supplying water to the Tenants' fridge condensers at 20°C. There have been no operating issues to report since the last report in January 2015.
4. The final third phase of the City's improvement programme aimed at removing dirt contamination carried around the system has recently been completed. A final inspection of the works by the City, the Contractor and the City's Consultant (Aecom) took place on 4 February. The new filtration equipment is in service and seen to be capturing dirt in circulation. Photographs of the completed works are included in the Appendix to this report.
5. A proposal to increase the low temperature setting of the system, currently 20°C, in gradual steps to 25°C was discussed by the Superintendent and Property Facilities Manager at a meeting with the Smithfield Market Tenants' Association on 15 January. The City believes the higher temperature would still be sufficient to meet the cooling needs of the fridges, provided these have correctly sized condensers. The City had hoped to commence this trial during cold weather.
6. This proposal would reduce the City's operating costs and reduce wear to cooling tower components. It is difficult to be precise about the extra running costs being incurred, but in hot summer weather, it is felt the additional costs of power, water, salt, chemicals and maintenance may well be in the order of £1,000 a week, and perhaps around £100 a week in winter.
7. However, at the meeting, the Association requested that no change be made to the system without first understanding the conditions under which it is operating and clarification of the available water supply. In view of the terms included in the new leases signed in April 2013, the City agreed to this. It was also requested that an update of the Refrigeration Expert's report provided in 2011 be commissioned to comment on the system's fitness for purpose for both current and future needs.

8. The new leases include the obligation that '.....the landlords will provide sufficient volume and temperature of condenser water subject to prior consultation with and having due regard to the views of the Association.....'
9. At the request of the Superintendent, the City Surveyor's Principal Engineer is drafting a written description of the operation of the system detailing its current state and the historical background. It is anticipated that a formal meeting of the 'Joint Specification Committee' will then be convened in March to review the description and decide what further action should be taken.
10. No further fridge condensers have been replaced with updated units by Tenants since the last report. The City has been advised two more condensers will be replaced shortly.
11. Since the last report one further meeting with a Tenant has taken place, on 10 February 2015. A report on this is given in the Non-Public Annex.

### **Proposals**

12. The City will provide the description of operation of the cooling system requested by the Tenants Association. It is anticipated that a formal meeting of the 'Joint Specification Committee' will then be convened in March and any further actions determined. The terms of reference for any updated report required by the Refrigeration Expert will be agreed.
13. The City will continue to seek agreement to increase the system operating temperature.
14. Further replacements of fridge condensers by Tenants' contractors will be monitored and encouraged. The replacement of undersized fridge condensers will address historic problems with stall temperatures.

### **Corporate & Strategic Implications**

15. The system supports the following Strategic Aims:
  - To provide modern, efficient and high quality local services and policing within the Square Mile for workers, residents and visitors with a view to delivering sustainable outcomes.
  - To provide valued services to London and the nation.

### **Implications**

16. The cooling system operated by the City provides a critical service for Tenants' refrigeration equipment. A failure of the system could expose the City to claims for loss or damage suffered by tenants if refrigeration equipment broke down as a result.
17. In line with the new leases, the City will give "due regard" to any logical and factual views put forward by the Tenants' Association. In respect of the system operating temperature, the City believes the higher temperature would

still be sufficient to meet the heat rejection of the fridges, provided these have correctly sized condensers, whilst achieving significant savings in operating costs, and reducing wear to cooling tower components.

### **Conclusion**

18. The performance of the condenser water cooling system since the last report in January has been satisfactory.
19. Phase 3 of the City's improvement works has been completed, a final inspection of the works has been undertaken, and the new filtration equipment is in operation.
20. Whilst the City would have liked to increase the system operating temperature under a trial, in view of comments expressed by the Tenants Association and the terms of the new leases, it will not be possible to proceed with this at the present time. The City is preparing a description of operation of the cooling system for review and if required discussion at a meeting of the 'Joint Specification Committee'. This should determine the next actions.
21. The City will continue to monitor the system closely, and respond to Tenants' request for advice concerning refrigeration and cooling matters.

### **Background Papers:**

Report of the City Surveyor (ref CS014/15) dated January 2015 to Markets Committee: 'Smithfield Market – Condenser Water Cooling System - update'

### **Appendix 1:**

Photographs of the completed Phase 3 improvement works

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**Appendix 1: Photographs of the completed Phase 3 improvement works**



*New duplex strainer units serving North West and South West fridge decks. The dirt collection baskets within each can be inspected and emptied without interrupting the flow to the fridges.*



*New sidestream filtration unit. This is a cyclone type cleaner; dirt collects in a bag within the container on the right and requires periodic emptying. The green pump seen at the rear is one of the two main cooling tower pumps.*



*New duplex strainer and (top left) electronic flow meter serving Poultry Market. The flow meter is linked to the City's Building Management System, allowing the flow rate to be monitored and recorded continuously. There are separate meters for East and West Markets.*