

Committee(s):	Date:
Markets	20 September 2017
Subject: Smithfield Market – Condenser Water Cooling System - Update	Public
Report of: The City Surveyor (Report no. CS413/17)	For Information
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Summary

This update report informs Members of recent developments on Smithfield Market's refrigeration condenser water cooling system.

Work to replace East and West Market condenser water pumps is now complete and the new pumps are providing about 10-15% more flow to fridges.

The City has received reports that dirt contamination is still present in the system. Investigations are underway to determine the cause.

Future work will include a survey of the fridge operating conditions in East and West Markets later this year and preparation of plans to replace system pipework over the next 2-3 years under the maintenance programme.

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 as Landlord.
2. In 2014 the City Corporation completed a programme of works to improve the water circulation in the three Market buildings and remove dirt contamination in the system. As a result performance has significantly improved.
3. The cooling system was originally specified to provide water to Tenants' fridges at 30°C. Over the years this was gradually reduced and for approximately five years was set at 20°C. This was done to assist fridges at a time when there were issues with water flow, dirt contamination, system balancing, and Tenants' condenser under-sizing.
4. Since 4 April the system operating temperature has been set at 23°C pending completion of the City's pump replacement project (part of the City's Cyclical Works Programme). The plan is to raise the temperature to 25°C, which will allow more economical operation in the future.

Current Position

5. Installation and commissioning of the City's new East and West condenser water pumps and control panels was completed in mid-July 2017. The new pumps have been in operation since then and provide about 10-15% more flow than previously, with the capability to give more flow if required.
6. In recent hot weather, as in previous years, the water supply temperature has risen up to 26.5°C. However, under their original specifications, all fridges should be capable of working with water at 28.5-30°C.

Incidents since last report

7. Over the last month there have been reports of fridge problems, in particular a few fridges tripping. Those said to have had problems are the G Lawrence Hanging Room Chiller and G & E Meats Railed Chiller. Co-incidentally reports have been received of further dirt contamination in the water. No fault has been notified with the City's water softener and its salt supply has been maintained. Investigations to determine the cause are continuing.

Investigation into refrigerant gas releases

8. The inspection of records related to use and release of refrigerant gases from Tenants' fridges by the Superintendent and Principal Engineer has been arranged for w/c 25 September 2017. The results will be reported to your Committee.

System Operating Specification

9. In August 2017 further comments were received from the Market Tenants Association on the latest draft of the City's proposed Operating Specification for the cooling system. This specification sets out the agreed standard to which the system will be operated and maintained in the future. The comments are currently being assessed and incorporated where acceptable.

Further work planned

10. Completion of the pump replacement works marks a further stage in the system improvement works. Later this year it is intended to carry out a full survey of all 97 fridges in East and West Markets to record fridge and water supply conditions, check correct operation of Tenants' equipment, and identify any on-going issues. The last such survey was undertaken in 2013-14.
11. Under the City's Forward Maintenance Plan for the Market, replacement of condenser water system pipework (as well as heating and chilled water systems pipework, all of which are up to 23 years old) is planned over the next few years. Plans will need to be developed with the Superintendent, Asset Manager, Facilities Management Team, and Tenants Association. As the value of the work for condenser water pipework alone is over £0.5 million, proposals will be required to follow the Gateway process.
12. The total length of the City's condenser water pipework to be replaced in East and West Markets is roughly 1.2 kilometres. The opportunity will be taken to increase pipe diameters where needed and improve the pipe configuration, which will provide better distribution of water to fridge condensers.

Proposals

13. With the agreement of the Tenants Association, the system operating temperature will be raised, a degree at a time to 25°C, as soon as possible.
14. A survey of the 97 fridges in East and West Markets will be carried out later this year to record fridge and water supply conditions, check correct operation of Tenants' equipment, and identify any on-going issues. The City will encourage Tenants to replace any fridge condensers considered undersized and any faulty water control valves.
15. The City will review fridge maintenance records with Tenants' maintenance contractors later this month.
16. Plans will be developed for the replacement of the cooling system pipework over the next 2-3 years.

Corporate & Strategic Implications

17. The system supports the meat trade at Smithfield Market and 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

18. The cooling system operated by the City provides a critical service for Tenants' refrigeration equipment. A failure of the system could potentially expose the City to claims from Tenants for loss of product. The City therefore needs to monitor and control the system closely and ensure it provides a reliable service that meets the needs of the Tenants.

Conclusion

19. Work to replace East and West Market condenser water pumps was completed in mid-July 2017 and the new pumps are providing about 10-15% more flow.
20. Dirt contamination would still appear to be present in the system. Investigations are underway to determine the cause.
21. Future work will include a survey of the fridge operating conditions in East and West Markets later this year and preparation of plans to replace system pipework under the maintenance programme.

Background Papers

Report of the City Surveyor 'Smithfield Market – Condenser Water Cooling System – update' to Markets Committee, July 2017 (Report ref. CS291/17).

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