



**HAMPSHIRE
FIRE AND
RESCUE
AUTHORITY**

Purpose: Noted

Date: 17 July 2019

Title: **OCADO FIRE CONTRIBUTORY FACTORS**

Report of Chief Fire Officer

SUMMARY

1. At the beginning of February 2019 Hampshire Fire and Rescue Service (HFRS) responded to a commercial industrial fire at the Ocado Customer Fulfilment Centre (CFC), Walworth Industrial Estate Andover. The building was a warehouse used to store food and other supermarket goods prior to delivery.
2. Processes inside the building were highly automated with over 500 robots picking customer shopping ordered online. At the time the building was commissioned in 2015, the technology used was unique within the United Kingdom (UK).
3. As this was the first fire in UK involving a building of this nature, HFRS commissioned a review of the incident to examine the performance of both HFRS as responders and occupancy (Ocado plc) in respect of the fire. Separately, the Building Research Establishment (BRE) have been tasked with reviewing the performance of the building in relation to fire.
4. The review process has identified significant findings that were contributory factors in fire development.
5. The purpose of this report is to provide details of these significant factors and in doing so, assurance to Fire Authority Members of the extant Hampshire Fire and Rescue Authority (HFRA) sprinkler position statement of 2012.
6. This report is the first of two related to the Ocado Fire, a second and full report will be presented at the September 2019 HFRA meeting.
7. The report additionally requires the Authority to reaffirm its position on the HFRA Position Statement for Sprinklers, contained within **Appendix A**.

BACKGROUND

8. Ocado plc are a UK based technology company who have developed a highly automated process for facilitating online shopping orders.
9. The Ocado Andover CFC was a refurbishment of an existing high bay warehouse. During refurbishment the building was extended to the rear and five mezzanine levels created. The finished building volume was

approximately 500,000 m³ and was considered within the parameters of the 2010 Building Regulations Fire Safety Approved Document B volume 2 as a large and complex building.

10. The warehouse was designed around the concept of vertical picking. Within the warehouse were two areas approximately 120 m long by 80 m wide by 6 m high, known as grids. One grid was at ambient temperature, the other chilled. The grids were not designed for human access. Goods were picked by robots travelling autonomously on the upper surface of each grid. To protect the supermarket goods located within the grids from external influences, the warehouse had no openings at high level. The warehouse had its own private mobile data network to wirelessly transmit data to the robots.
11. This contrasts with traditional horizontal picking warehouses with aisles for forklift trucks that provide separation between the racking.
12. The CFC had an air sampling fire detection system designed to provide an early indication of a fire starting within the building. It also had a sprinkler system designed by the building's insurers (FM Global) to suppress a fire and hold it in check prior to the arrival of the FRS.
13. The fire was deep seated and located in a fuel dense area, impossible to access. Despite the collective efforts of HFRS and six supporting Fire and Rescue Services over four days the building was a total loss. All tactical options available to HFRS including ultra-high-pressure lance, compressed air foam and traditional hose lines were tried with no success. A major incident was declared during this period with residents requiring evacuation to local rest centres.

SUMMARY OF HFRS OCADO REVIEW FINDINGS

14. The review team has had access to Ocado owned CCTV footage from within the CFC that shows the ignition sequence and development of the fire.
15. Ignition occurred at 0141hrs due to arcing occurring in the charging process of a robot.
16. The air sampling fire detection system did not detect the fire as designed. The fire was detected visually by an engineer at 0215hrs, after approximately 30 minutes of sustained combustion and fire spread.
17. HFRS were not called at this point. Efforts are made by the Ocado engineers to deal with the fire themselves. The sprinkler system operated at 0226hrs.
18. During this period of activity, the sprinkler system is turned off by Ocado staff for a period of 5 minutes
19. When it is established that the fire is not extinguished, the sprinkler system is turned back on again by Ocado staff and HFRS are called via 999.

20. There was a period of 30 minutes from ignition to discovery and a further 30 minutes from discovery to first call.

ANALYSIS OF FINDINGS

21. Early intervention at this incident by HFRS was not achievable due to the time delay of 60 minutes between ignition, discovery and first call.
22. The absence of effective automatic fire detection allowed the fire to develop before discovery. This was then compounded by the subsequent unsuccessful attempts to tackle the fire before calling HFRS.
23. The sprinkler system was turned off for a period of five minutes. Fire growth during this period is significant. The deactivation of the sprinkler system can be considered a significant factor in its failure to effectively perform as designed.
24. Through the team dedicated to reviewing the Ocado Fire, HFRS have been working to clarify the evidence of cause and fire growth and are now able to report on this (as described in paragraph 22).
25. In reporting the cause of fire and fire growth, HFRS have identified the balance of public interest and policy setting against the commercial interests of Ocado. The publication of cause of fire and fire growth sets out that the HFRA Sprinkler Statement of 2012 remains valid as does advice and communications to the public on the use of installation and use of sprinklers within domestic and commercial premises.

SUPPORTING OUR SERVICE PLAN AND PRIORITIES

26. HFRS has a duty to support both the HFRA and that of the National Fire Chiefs Council's position on sprinkler system provision. In making this information publicly available it can be used both locally and nationally to assist in the championing of sprinkler systems to buildings
27. The 2012 HFRA Sprinkler position statement continues to be central means for the HFRA to assist in meeting their obligations to prevent and protect within the 2018 National Fire & Rescue Service framework document.
28. Furthermore, the 2012 HFRA Sprinkler position statement is a component of the Service Plan for a safer Hampshire.

CONSULTATION

29. The consultation strategy followed has been in line with the stakeholder engagement analysis conducted at the project outset. Although there is no statutory duty to consult efforts to maintain a continued dialogue through face to face, telephone and video conferencing have been made.
30. Key external stakeholders include Ocado plc and the Buildings Research Establishment (BRE).
31. There is the potential to further the relationship established with Ocado plc that would improve the fire safety design and features within future CFCs.

RESOURCE IMPLICATIONS

32. There are no additional resource implications associated with this report outside of business as usual activities.

ENVIRONMENTAL AND SUSTAINABILITY IMPACT ASSESSMENT

33. There are no negative impacts for environment or sustainability identified within this report.

LEGAL IMPLICATIONS

34. The Fire & Rescue Framework for England places high level expectations on Fire and Rescue Authorities to promote public safety.
35. Specifically, the framework places a requirement to share details to improve the evidence base of what works best and what is cost effective in prevention and protection activities.
36. Within this context sharing the knowledge of how the sprinkler system was utilised can be viewed as legislative compliance by the authority.

EQUALITY IMPACT ASSESSMENT

37. The proposals in this report are considered compatible with the provisions of equality and human rights legislation.

OPTIONS

38. This report provides a mechanism for HFRA to make an informed, continued endorsement of their Sprinkler position statement.
39. In relation to the report there is one option:
 - (a) Note the contents of the report and to reaffirm the 2012 Sprinkler Position statement documented in Appendix A.

RISK ANALYSIS

40. As detailed in paragraph 24, the balance that exists between public interest and policy settings, against the commercial interests of Ocado has been identified. The priority identified of public interest of national and local promotion of sprinkler systems over commercial interests has the potential to impact on future relationship with other commercial organisations.

EVALUATION

41. HFRS has effectively managed all stakeholders identified within the scope of the review commissioned. This has resulted in co-operation and information exchanges that would not have been possible otherwise.
42. This has in turn, helped inform HFRS post incident understanding of fire ignition, fire growth and development and HFRS response performance.

43. The learning identified by the review to date has been fed back into the organisation, where it has been used to drive improvement where necessary and to recognise exemplary practice.

CONCLUSION

44. The system failure and human factors described within this report are important in understanding the overall effectiveness of the sprinkler installation within the CFC building. They can be viewed as contributory to the eventual outcome of this incident.
45. A full report of the Ocado fire, including all organisational learning, will be made available to the FRA on conclusion of the review in September 2019.

RECOMMENDATION

46. That the contents of this report be noted by Hampshire Fire and Rescue Authority.
47. That the Authority reaffirm its position statement as outlined in the HFRA Position Statement for Sprinklers contained in Appendix A.

Appendices:

Appendix A: HFRA Position Statement for Sprinklers – September 2012

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