

Fibre Infrastructure Report

DHL SKELMERSDALE
ZICAM SYSTEMS GROUP

FIBRE INFRASTRUCTURE REPORT

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Executive Summary

The fibre network at Skelmersdale, which supports both the CCTV and Paxton access control systems, comprises a mixture of Singlemode (OS2) and Multimode (OM3) cabling installed prior to Zicam taking over the system. In recent months, the site has experienced an increasing number of reliability issues affecting both security and access operations. This assessment was carried out to evaluate the condition of the existing fibre infrastructure, determine the root causes of these disruptions, and outline the steps required to restore the network to a stable and supportable standard.

Our investigation identified that all fibre routes terminate at the gatehouse, where the main servers and network equipment are located. Fibre links extend from this point to multiple external poles along the perimeter fence line, as well as to several internal locations within the warehouse and car park. During the assessment, several factors were found to be contributing to the ongoing instability of the network. These include ageing fibre assets, environmental damage caused by bird ingress to pole-mounted equipment, dependence on media converters throughout the warehouse, and the operational complexity created by a mixture of Netgear and Comnet switching hardware.

Additionally, the main aggregation switch located within the gatehouse is an end-of-life Comnet device, making it increasingly difficult to source compatible replacement parts. Any future failure of this unit could result in prolonged downtime due to limited supportability and uncertain compatibility with modern switching platforms.

Following this assessment, Zicam has prepared a detailed quotation outlining the recommended remediation works. These measures are designed to improve system reliability, simplify ongoing maintenance, and provide a stable foundation for future network expansion and monitoring enhancements.

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Visit Objectives

- Identify and document all existing fibre cabling routes, terminations, and interconnects.
- Record installed networking equipment, including switches, patch panels, and SFPs.
- Map the intra-site fibre connectivity.
- Highlight opportunities for remediation or upgrades.

Site Overview

Skelmersdale is a multi-area facility comprising a gatehouse, perimeter fencing, warehouse spaces, and associated external areas such as the car park. The fibre network that supports both the CCTV and Paxton access control systems originates and terminates within the gatehouse, which acts as the main control point for all security-related network infrastructure.

From the gatehouse, fibre routes extend primarily to poles positioned around the perimeter fence line, where cameras and access control equipment are located. Additional fibre routes run internally to locations within the warehouse and outwards to the car park.⁴ Fibre Infrastructure Audit

Findings & Observations

During the assessment of the fibre network at Skelmersdale, several issues were identified that are contributing to the ongoing instability and operational challenges experienced across the CCTV and Paxton systems.

- **Damage to External Fibre Routes:** Inspection of the external poles around the perimeter fence line revealed evidence of bird ingress, resulting in damaged cabling and equipment. This environmental impact is affecting the reliability of several fibre links and is likely to worsen without remediation.
- **Condition of Internal Warehouse Fibre:** The internal fibre routes within the warehouse were found to be in generally good physical condition. However, many of these routes are

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connected via media converters, adding unnecessary complexity to the network and increasing points of failure.

- **Mixed Vendor Switching Infrastructure:** The site currently utilises a combination of Netgear and Comnet switches. The differences between these platforms—particularly regarding diagnostics and reporting—make troubleshooting more difficult and contribute to inconsistent monitoring.
- **Ageing and Unsupported Aggregation Switch:** The main fibre aggregation switch in the gatehouse is an end-of-life Comnet device. Replacement would require matching SFP modules and may result in extended downtime due to compatibility limitations.

Overall, these findings highlight the impact of ageing infrastructure, environmental damage, and design limitations, elevating the risk of service interruptions.

Networking Equipment Documentation

Switch Inventory

Switch Location	Manufacturer	Number of Ports
Gatehouse	Comnet	26
PIPP	Netgear	24
PIPP Rear	Netgear	24
Fenceline 4	Netgear	8
Fenceline 5	Netgear	8
Fenceline 6	Netgear	8
Fenceline 7	Netgear	8
Fenceline 8	Netgear	8
Fenceline 9	Netgear	8
Carpark 1	Netgear	8
Car Park 2	Netgear	8
Hub	Netgear	8
Wetherspooos	Netgear	24
Charging Area	Netgear	8
Beauty Bay	Netgear	24
Mezzanine	Comnet	8
Mezzanine 2	Netgear	8

Recommendations

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Replacement of Switches at Fence-Line Poles

All switches located on the external poles around the perimeter should be replaced with new, environmentally protected hardware. These replacements will be installed inside IP-rated enclosures, providing robust protection against weather conditions, bird ingress, and other external environmental factors that have previously caused damage to both cabling and equipment. This will significantly improve resilience and reduce the likelihood of recurring failures.

Standardisation and Upgrade to Ubiquiti Switching Hardware

The current mix of Netgear and Comnet switches should be replaced with a unified platform using Ubiquiti switching hardware. Migrating to a single vendor will improve cross-compatibility, simplify network management, and ensure greater availability of replacement parts in the event of an outage. In addition, Ubiquiti provides enhanced monitoring capabilities, centralised management through UniFi, and expanded remote support options. These improvements will streamline troubleshooting, reduce downtime, and offer clearer visibility into network performance.

7. Conclusion

The assessment of the fibre infrastructure at Skelmersdale has highlighted several critical factors contributing to the ongoing instability of the CCTV and Paxton access systems. Ageing fibre routes, environmental damage to external cabling and equipment, inconsistent switching hardware, and reliance on unsupported legacy devices have collectively introduced significant operational risks. These issues not only affect day-to-day performance but also increase the likelihood of extended outages and hinder effective troubleshooting.

The recommended remediation measures—replacing external switches with protected units in IP-rated enclosures and standardising all switching hardware to Ubiquiti—will provide substantial improvements in reliability, maintainability, and future scalability. By implementing a modern, unified hardware platform with improved monitoring and remote support capabilities, Skelmersdale will benefit from a more resilient security network with reduced downtime and clearer visibility across all connected systems.

Overall, these upgrades will help ensure the long-term stability of the fibre infrastructure and support the continued operation of critical security functions