**LOCAL AREA NETWORK (LAN) & WI-FI SYSTEM REPLACEMENT**
Report of the Deputy Chief Executive

1. INTRODUCTION AND PURPOSE OF REPORT

1.1 This report seeks approval and authorisation to commission a capital scheme that enables the replacement of the existing Local Area Network (LAN) and Wi-Fi system. The current WiFi equipment is over ten years old and about five years beyond the industry standard expected working life. Some of the LAN equipment is approaching 20 years old.

1.2 The Wi-Fi and LAN are well defined pieces of our critical IT infrastructure. They are in effect the middle link in the chain which connect one end, the user and their laptop, to the other end, the WAN (GM One), services and the internet.

| End user | Local Area Network (LAN) | Wide Area Network (WAN) |
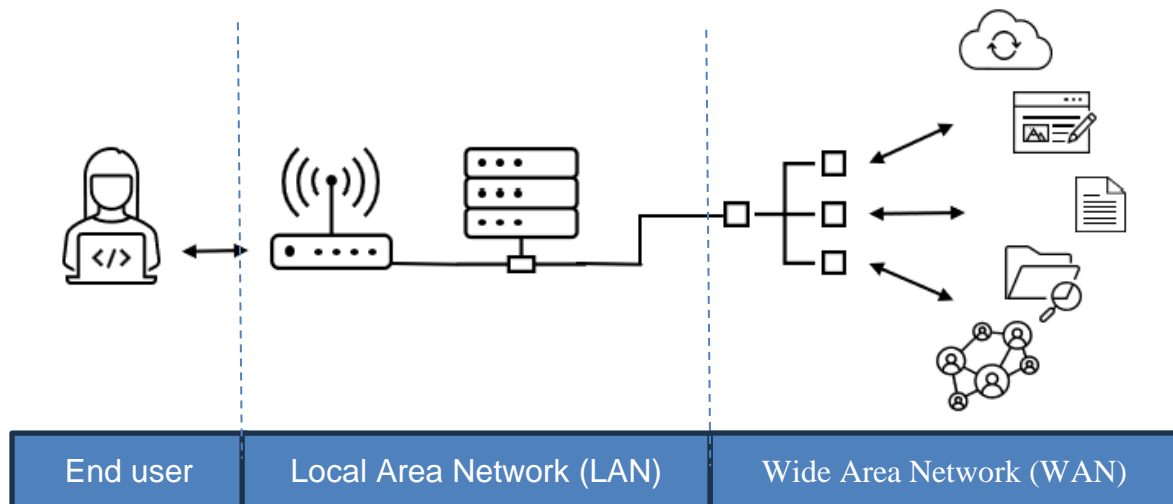
2. BACKGROUND

Wi-Fi
2.1 Stockport Council have run an Aruba based Wireless (Wi-Fi) network for over 10 years, the network has proved flexible and reliable.

2.2 The Wi-Fi system delivers several Wi-Fi networks (known as SSID's) including the Stockport Council network, public access and NHS partner networks. This allows staff to wirelessly connect to the network they need using laptops and mobile devices such as tablets and phones.

2.3 Public areas such as libraries and building reception areas are also covered by the Wi-Fi network,. This provides public access to free, council provided, 'Public Hotspot' Wi-Fi connectivity.

2.4 Wi-Fi is a complex and fast moving area of networking technology with performance and reliability upgrades emerging each year. To provide a modern ubiquitous, high speed, high capacity Wi-Fi service we need to replace our current system with newer technology. This is required to underpin the new flexible workspaces such as Stopford House and general mobility of staff and data throughout the estate.

2.5 A new Wi-Fi service will support the Wi-Fi first approach of Stopford House and other office locations, provide the increased bandwidth for new hybrid working patterns using MS Teams video/voice communications and MS Surface devices, it will also increase security of wireless data.

2.6 Further expansion of the current Wi-Fi infrastructure is no longer possible. Older compatible components are no longer available and newer more secure, higher capacity components are not backwards compatible.

LAN (Local Area Network)
2.7 The LAN is the network infrastructure within each council building. Each buildings LAN equipment connects to the councils Wide Area Network (WAN) which is the optic fibre network that links all council buildings together across the borough. The LAN accepts the WAN connection and distributes connectivity across each floor and to every network point and WiFi access point in the building.

2.8 The LAN equipment has been in operation for almost 20 years. The equipment consists of a mix of old 3com and Cisco Switches and Routers. This old equipment has limitations on the speed and capacity of data transfer. When the council moves to the new GM One Network (WAN) in 2024 the old LAN equipment will represent a significant bottleneck in overall network performance. The old LAN will connect to the new WAN and will continue to provide connectivity to office spaces. However it won't allow the council to take advantage of the higher speeds and bandwidth available with the new GM One Network WAN.

2.9 The LAN is many years beyond it's expected life span and requires a refresh regardless of the new WAN. However fortuitously the timing is such that a coordinated programme of works, both WAN and LAN, will ensure we capitalise on the synergistic benefits to maximise performance and minimise cost.

3. OPTIONS FOR Wi-Fi

3.1 There are two options relating to Wi-Fi:

1. Upgrade the current solution. Upgrade the current Aruba solution, the controllers and a large number of now end of life or outdated Access Points

2. Replace the current solution. Replace the current Aruba solution with a completely new Cisco solution, this would tie in more with the strategic direction of the GM One network.

3.2 Moving to a cisco Wi-Fi has additional advantages in that this fits with the standards based approach to the GM One Network. This allows for interoperability, automation and orchestration and sharing of services across the region.

3.3 It is worth noting most manufactures are having difficulties in sourcing the components required to produce their products leading to longer than expected lead times. This could mean the money is spent over more than one financial year.

3.4 The preferred option for W-Fi is **Option 2**,

4. OPTIONS FOR LAN

4.1 There are three options relating to the LAN

1. Replacing all local Area Network (LAN) equipment with new cisco switching infrastructure. This will ensure we have a network that meets the higher performance and bandwidths that the new GM One Network. This also fits with the standard based approach adopted by GM One Network partners. It would allow the council to take advantage of the additional security features the newer hardware can provide. As a GM One Network Partner there are significant discounts available on Cisco technology which make this high performance LAN equipment very cost effective.

2. Replacing the LAN equipment with non-Cisco switching infrastructure. This is possible but carries significant risk and down sides. In house skills, knowledge and qualifications are all Cisco hardware related. A move away from Cisco hardware will push the council outside the common standard for the GM One Network. Whilst other hardware supplier LAN equipment will work with the GM One Network it will place limitations on the council's ability to leverage full value from the GM One investment.

3. Doing nothing. This is less costly, however this would not allow us to take full advantage of the higher connectivity speeds offered by the GM One Network. However of more significance it would leave the council exposed to a higher level of cyber security risk due to running non-supported, less reliable hardware in the heart of our network.

4.2 The preferred option for the LAN is **Option 1**, full replacement of LAN network equipment with new Cisco switching infrastructure.

5. BENEFITS

5.1 There are several identified benefits of undertaking the proposed preferred options for Wi-Fi and LAN:

- Security of the data network is increased using the latest technologies and software versions.
- Compatibility and extensibility of Wi-Fi services. The existing Wi-Fi infrastructure is not compatible with currently available 'new' Wi-Fi Access Points and hardware. The new infrastructure will be compatible and there

by allow extensions and additions to the service (such as adding Wi-Fi to a new location or building)

- Increased capacity and speeds for higher digital workloads which will include Artificial Intelligence, automations and cloud based services.
- Supporting our in Office IT offering, flexible workspaces, better connectivity etc
- Capability to match the GM One network speeds and bandwidth. Strengthening the current weak middle link between users and their data and services (see diagram section 8)
- Standardisation with GM One partners now and in the future to share services such as ubiquitous public Wi-Fi
- Potential to leverage the investment for usage beyond the data network such as smart building sensing and monitoring.
- Reduction in failure rate of equipment with the new equipment increasing network stability and reducing demand for maintenance and support time.
- CAN reduction on CO_2 footprint. New equipment has greater thermal efficiency and reduced power consumption.

6. RISKS

6.1 The risks of a the 'do nothing' option are set out below:

- Running an out of support network and Wi-Fi service means that security updates are no longer provided by the supplier. Therefore the network becomes increasing vulnerable to new exploits and viruses which arise over time.
- Replacement of failed network equipment such as access points becomes increasing difficult as there is no backward compatibility with current versions of the hardware
- Extending the network and Wi-Fi to new locations also becomes more difficult due to the lack of compatible hardware on the market.
- The limited capability of the LAN and W-Fi to support a Wi-Fi first, flexible office space.
- The lack of capability to deliver future enhanced data requirements of a local area network when considering AI, Automations and increased data flows.
- Not being able to deliver the full benefits of the new GM One WAN network, which is super high speed and very low latency. The LAN and Wi-Fi connect end users to all their data and services on the GM One WAN. The existing old infrastructure would at as a bottleneck.
- Missing an opportunity to standardise our infrastructure to interoperate within the GM One reginal network.

7. LIFECYCLE REPLACEMENT MANAGEMENT

7.1 Core infrastructure components like Wi-Fi and LAN equipment have an industry standard lifecycle for refresh of 5 years. The 5 year period accounts for advances in technology, maintaining resilience in relation to cyber security threats and the general wear and tear of equipment that is constantly active with no down time.

7.2   It is recommended that the council moves to an industry standard 5 year lifecycle management programme for this critical network infrastructure.

8.   FINANCIAL IMPLICATIONS

8.1   Based on the industry standard 5 year time frame for IT infrastructure renewal, the new Wi-Fi and LAN solution is estimated to cost in the region of £0.9m. This is a pre-procurement estimation based on the preferred option.

8.2   For the both the Wi-Fi and LAN most of the expenditure would be capital procurement of the hardware. A small amount of revenue cost would be incurred on licencing costs.

8.3   **Capital**: the capital cost is £0.9m for the procurement and installation of the new hardware required by the preferred options. This will be funded as follows:

- £0.412m revenue contribution from one-off gainshare monies received. This relates to an investment made by the Council alongside 7 of the other Greater Manchester councils in the Get Digital Faster (GDF) programme led by Broadband Delivery UK (BDUK) as part of the Department for Culture, Media and Sport. The programme has now completed and due to take-up of broadband exceeding the 26% target set, the councils have received a gainshare on their investment. The conditions on the use of the gainshare require it to be ringfenced to fund digital capital schemes investment.
- £0.488m to be funded by available capital receipts.

8.4   **Revenue:** the preferred options have an annual revenue cost of £0.030m for maintenance. This has been provided for within the 24/25 Technology cash limit budget.

8.5   This project is expected to be fully completed during this financial year, 2024/25.

8.6   Future lifecycle replacement costs will be considered by the council's Capital Board as part of the Capital Gateway and Capital Programme governance before formal Member governance and approval. The lifecycle is based on a industry standard 5 year refresh term.

9.   LEGAL CONSIDERATIONS

9.1   The contract will be over threshold for the purposes of the public contract regulations, and therefore an appropriate framework will be used or competition will run, with STAR procurement helping to determine the best competition/evaluation method to determine the most advantageous contract.

10.   EQUALITIES IMPACT

10.1 Equality Impact Assessments (EqIAs) are used by the Council as an equality monitoring tool to ensure and demonstrate that our proposals comply with the requirements of the Public Sector Equality Duty (PSED) to protect individuals from unfair treatment and to promote a fairer and more equal society.

10.2 There are nine protected characteristics defined by law. These are age, disability, gender reassignment, marriage or civil partnership status, pregnancy and maternity, race, religion or belief, sex (gender) and sexual orientation.

11. CONCLUSIONS AND RECOMMENDATIONS

11.1 CRMG are asked to note and comment on the report.

11.2 Cabinet is recommended to approve:

- **Option 2 Wi-Fi:** Replace the Aruba solution with a completely new Cisco solution, this would tie in more with the strategic direction of the GM One network.
- **Option 1 LAN:** Replacing all local Area Network (LAN) equipment with new cisco switching infrastructure.
- The council moves to an industry standard 5 year lifecycle management programme for this critical network infrastructure.
- The funding of the capital and revenue costs of the recommended options as set out in section 8.