

**HERTFORDSHIRE COUNTY COUNCIL  
STRATEGIC PROCUREMENT GROUP**

**THE PROVISION OF A MANAGED INTERNET AND WIDE AREA NETWORK  
INFRASTRUCTURE FOR HERTFORDSHIRE COUNTY COUNCIL  
CONTRACT REF: HCC0902684**

**SCHEDULE 1.3 – CORPORATE SPECIFICATION**

**1. INTRODUCTION**

All the services defined for the core and Schools HGfL network will also apply to the provision of Corporate Services unless specifically identified as not applying.

Additional services will also be required and defined below.

**Hertfordshire County Council's Wide Area Network**

Since 1989 Hertfordshire County Council (the Council) has owned and operated a wide area network. From its ground breaking beginning as a shared service X.25 single network, sharing its underlying backbone with the Council's voice service, it has grown and expanded beyond all recognition. It now consists of a privately owned high speed Ethernet gigabit core offering a number of services across the county. These networks range from a private corporate network through to a publicly used network. Bandwidth is shared across the different network overlays and at the time of writing this now extends from the authorities standard data network to voice over IP (trunk) services.

In addition to the high speed core, individual sites are connected to a number of nodes around the county offering various connection types from EPS 8/9 services, mega streams and LAN extension services. Speeds range from 640kbps to 100mbps for these symmetrical access services. In addition to the core a number of small sites connect in via broadband (ADSL) services over IPSEC virtual private networks.

Recent organisational initiatives around our property portfolio have seen a re-engineering of network services and several site closures. The high speed backbone now also encompasses 4 main sites (County Hall, Stevenage, Apsley and Mundells). However, services to the small and medium sites still consist of a large number of disparately connected sites.

Developments within the authority and the growth of new systems such as electronic document management are driving up the demand for bandwidth.

The Council wishes to greatly improve the speed of connection to its small to medium sites whilst reducing radically its cost per megabit. A standard offering with options for step changes in bandwidth are available with recent technological changes. The Council wish to capitalise on these commercial offerings by building on the proposed schools managed services and associated underlying distributed and resilient network. The Council would expect to improve services and achieve real cost savings.

Corporate sites, located within the County boundaries, include but are not limited to, Council departments such as Adult Care, Children Schools and Families and associated departments such as Fire and Rescue plus sites occupied by the Council's service delivery partners, Colleges, NHS, Police, charities, CCTV services, telemetry (Traffic lights etc) and District Councils.

The Council continues to bring innovation to the delivery of its services so it is a requirement of this contract that the contractor be willing to integrate other service provider's products and services into the managed services solution in line with the Council's existing developments. This may include the adoption of specific established hardware or service providers, security vendors or software houses.

### **Managed Services**

In addition the contract will need to dove-tail into the authorities managed service contract. The Contractor of this contract will be in daily communication with the new managed service provider, working on service issues and site moves, adds and changes (MACs) and new project provision. Working in tandem on jointly agreed time scales for project work and new service rollouts.

## **2. NETWORK SERVICES**

### **County wide resilient Network**

The contractor will make the fully managed County based wide area broadband network for schools, as detailed in the HGfL element of this tender, fully available to the Council's corporate sites. These include, but are not be limited to, the Council's Corporate, Education, Public Library, Fire and Rescue sites plus sites occupied by the Council's service delivery partners, Colleges, NHS, Police, charities, CCTV services, telemetry (Traffic lights etc) and District Councils.

In order to meet our overall business requirements the network will be based on an "LLU distributed network" approach to the design and implementation allowing the Council to securely operate a number of separate virtual network overlays over a single physical core network infrastructure. The proposed solution will meet the following criteria:

- Value for money enabling high speed network delivery to small / medium sites.
- Network nodes, used to terminate circuits to "end user" sites, will be located in secure, professionally managed and equipped network exchange sites or supplier hosting sites with resilient power supplies, environmental control and controlled 24 x 7 access. These sites will not be moved within the life of this contract.
- IP and Ethernet technology (layer 2 switched and layer 3 switched)
- Resilient design
- High speed broadband circuits to all sites.
- Use copper, fibre optic (10, 100,1000 mbps) and wireless technologies as appropriate
- ADSL and SDSL
- Any combination of services to be made available on any of the different virtual network overlays (see below for further information)
- Differentiated classes of service for different types of traffic.

## **Resilient Core Distribution Network**

As defined within the Schools HGfL section of the tender the requirement is for a single high speed secure resilient fibre core network linking “points of presence” and exchanges. The core network will have no single points of failure and be engineered to provide a minimum of 99.9% availability 365 days 24x7.

Initial core capacity for the corporate requirement is expected to be sufficient to fully load one of the two 1Gbps interconnection points between the new network and the counties existing high speed network.

The contractor will ensure the design of the core adheres to the Council's security principles and policy, please refer to the attached appendices for the Council's security service definition and ICT security policy. The Council will need to agree and sign off any design and reserve the right to carry out penetration and security tests on the network prior to final signoff.

Core network bandwidth upgrades must be capable of being provisioned within 30 working days.

## **Virtual network overlays**

The physical core network must support multiple secure virtual networks that will enable the Council to maintain appropriate and separate networks for a range of different service environments.

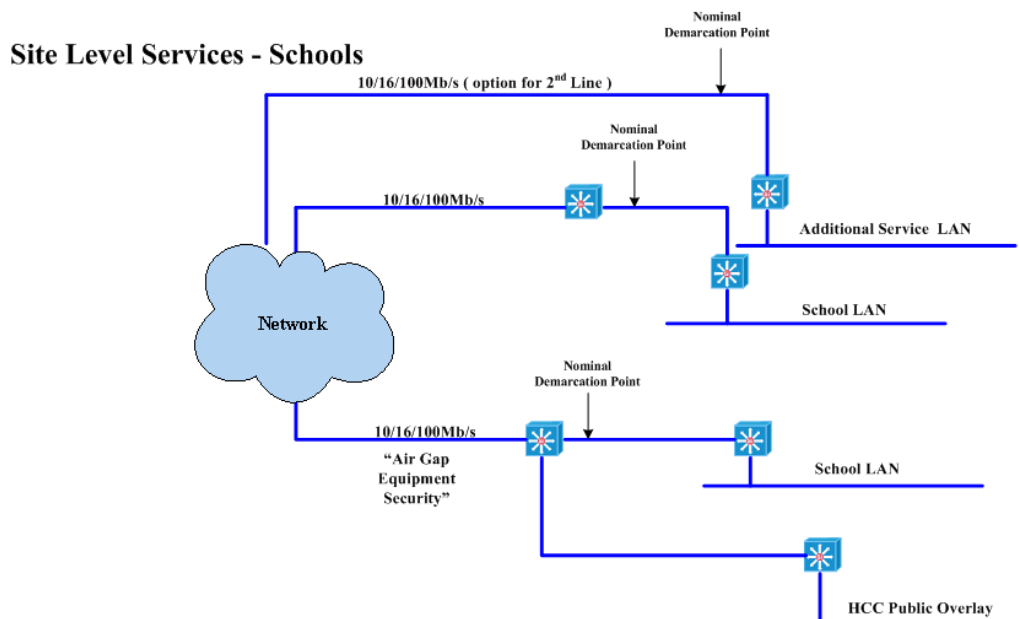
The network must provide separate and secure network services into the Council's existing core network at two demarcation points. Sites designated on each of the Council network overlays must be presented at interconnection points securely into the associated Council overlay.

Security level and techniques used to achieve this segregation across the new network must be equivalent to ‘air gap’ traditional physical security. It is anticipated that MPLS, Ethernet in Ethernet / Q-in-Q type MAN or other suitably accredited technology will be used to achieve this separation.

### **Note:**

**Standard ‘LAN’ based VLAN tagging as a way of achieving this segregation is not acceptable.**

The Contractor must be able to deliver the public, private and other networks to the same site either by separate links or by utilising additional ports on the local wan switch (CPE) on site.



EXAMPLES OF POTENTIAL SERVICES REQUIRED AND HOW IT IS ENVISAGED THESE SERVICES WOULD BE DELIVERED OVER COMMON SERVICES WHILST MAINTAINING SECURITY LEVELS

The network design will include the ability for additional virtual networks to be added or removed at any time during the life of the contract.

Initially it is envisaged that the Council will require the following range of virtual networks for the corporate site base:

### Corporate Private Network

A virtual IP based network overlay that will support the Council business community located in corporate sites, Libraries, partner sites, general social care with some education related sites providing secure access to appropriate corporate services. These consist of desk top applications, Wyse terminals and VDI farms, databases queries, and on-line applications as well as the general Internet.

The private network delivers access to all Council departments' systems including social care as well as all corporate systems such as finance, email and many other departmental systems. It is vital that is kept secure.

### Public Network

A virtual IP based network overlay, which will allow visitors to Council network attached sites to access the Internet via site based wireless networks and cable attached connections. This network will also support the Council's public library sites providing an appropriately filtered Internet services to the public. It also carries traffic for the Library Departmental Management System and PC booking system. This service will require a unique filtering regime that adheres to the Council Library Authorities standards. We will be looking for an opportunity to deliver this via the HGfL filtered service.

### **Highways (Commercial Partners network)**

A virtual IP based network that will enable users located at partner and Council sites to access services that support business partnership in the delivery of a county wide service. This network may be required to link partners to common services or provide the connectivity between partner sites. At present the Council only have one partnership network which supports the "Herts Highways Partnership".

### **Community Network**

This is a virtual IP based network that will allow the different public service organisations operating across the County to work together (6 out of the 10 district councils currently receive services over this network). The Network is like a DMZ between all parties and hosts a number of common services. In addition it delivers some ISP services and some backup services to other local authorities.

### **Schools Network ( HGfL -Hertfordshire Grid for Learning)**

A virtual IP based network overlay comprising 526 schools plus a variety of additional sites as specified in the Schools requirement section of the specification.

There are some 'corporate' sites which will require this service. These should be specified in the schools section of the document however they may be requested as part of the corporate provision for specialist day centre and family centre sites.

### **Other**

It is envisaged that throughout the lifetime of the contract other dedicated and separate overlays will be required. These will range from ADSL low speed utility service Networks to dedicated partner services across the county. There will also be the need for layer 2 direct point to point connections.

### **Site type and requirements**

Currently there are **236** small/medium corporate sites (see site list in appendix XX) with up to 40 staff in each. The Council has a flexible approach to the procurement and leasing of properties so the contractor can expect a 5% p.a. movement in the location of corporate sites.

For corporate sites the Council requires a managed network service to the structured cabling outlet point on the wall, at a predictable cost. Users at Corporate sites will require access to the Public, Private, Community, Highways and possibly other virtual networks. A small number require access to HGfL schools network.

The Council requires a flexible solution to accommodate joint working and will use this network to potentially support the full range of its service partners including, but not limited to, Fire and Rescue, commercial service delivery partners/contractors, Colleges, NHS, Police, charities, CCTV services, telemetry (Traffic light/street control network services.) and District Councils.

### **Note:**

**The Council currently hosts services for Watford & 3 Rivers at the Council site at Apsley, Hemel Hempstead, HP3 9BF. At the time of writing the Council are also negotiating a similar service with St. Albans City and Stevenage Borough Council.**

The Council require a minimum speed of 16 mbps symmetrical provision to every corporate site. This requirement is being driven by an increase in electronic solutions and a drive to significantly reduce the use of paper.

It is anticipated that the demand for network bandwidth to corporate sites will significantly increase during the lifetime of this contract. Where the network service is provided over a technology that allows for an increase in speed by means of configuration changes then we expect these changes to be made without an upgrade charge. All upgrades of this nature must be remotely executable within 3 days of a request.

The Contractor is required to advise the Council of the maximum upgradeable capacity of each installed circuit

Where the Contractor is unable to meet the basic service provision of 16 mbps then they will:

- make an initial proposal explaining the problems and offering the best connection possible for those sites concerned.
- commit to producing a written review of these sites in the light of developing technology and services every 6 months.
- offer a similar service (speed and quality) using bonded or compressed technologies if possible.

The network will initially supply services to Council departments and partner organisations as identified below:

<b>Service description</b>	<b>Numbers</b>	<b>Circuit speed</b>	<b>Virtual Network</b>
Adult Care Services	81	16mbps to 20 mbps	Private & public
Children Schools and Families	46	16mbps to 20 mbps	Private, Schools & public
Environment	10	16 mbps to 20 mbps	Private
Fire and Rescue	31	16 Mbps to 20 mbps	Private & Public
Highways	9	16 mbps to 20 mbps	Highways & public
Libraries	50	16 mbps to 20 mbps	Public
Connections	3	16 mbps to 20 mbps	Private, school & Public
LGOL	7	16 mbps to 20 mbps	Community & public
Magistrates	3	16 mbps to 20 mbps	Private
Registrars	7	16 mbps to 20 mbps	Private
Music Centres	5	16 mbps to 20 mbps	Schools, Private
MECCS	4	16 mbps to 20 mbps	Private
Police HQ Interconnection	1	16 mbps to 20 mbps	Private
Total no of sites	259		

**Note:**

**At the present time the Herts Fire service has a network provided under a different contract. Although interlinked to The Councils corporate network their requirements will not initially be included in this contract.**

### **Access network to User Sites**

Network attached sites must be linked to the core backbone and appropriate overlay network by circuits at a speed appropriate to their needs with a minimum of 16 mbps using LLU copper, fibre and wireless as appropriate.

It is envisioned that any contracted services will be offered in the form of an upgradeable service and offer the following performance options for example-

- |           |  |
|-----------|--|
| Option 1a | Service to users located in domestic or very low speed environments (ADSL) minimum download speed 256kbps. |
| Option 1b | 2 Mbps symmetrical service over traditional TDM technologies.  |
| Option 2. | 16 Mbps LLU symmetric service  |
| Option 4. | 30 Mbps LLU symmetric service over coax cable / Fibre  |
| Option 6  | 100 Mbps over fibre  |
| Option 7  | 1000 Mbps over fibre   |
| Option 8  | 10/100/1000 Mbps point to point circuit over fibre   |

Note: all services Ethernet presented on standard RJ45 presentation.

Performance of these links must be greater or equal to:

For links up to 30Mbps the performance criteria is that they have an availability of 99.5%, 365 days 24 x 7. With latency measured to either Core Data Centre that does not exceed a maximum of 40 ms RTD, with jitter no greater than a maximum 5 ms one way and a packet loss not in excess of 0.1%.

For links with speeds between 30Mbps and 300Mbps the performance criteria is that they have an availability of 99.5%, 365 days 24 x 7. With latency measured to either Core Data Centre that does not exceed a maximum of 25 ms RTD, with jitter no greater than a maximum 5 ms one way and a packet loss not in excess of 0.1%.

For links between 300Mbps and 1Gbps the performance criteria is that they have an availability of 99.5%, 365 days 24 x 7. With latency measured to either Core Data Centre that does not exceed a maximum of 10 ms RTD, with jitter no greater than a maximum 5 ms one way and a packet loss not in excess of 0.1%.

A lack of service fault will be raised if these quality targets, identified above, are not met for 50% of the core day.

Faults, for all link types, resulting in loss of service or significant degradation in the quality of the service to the site will be fixed within 4 hours.

## **Customer Premises Equipment (CPE)**

The Council expects that the Contractor would wish to provide onsite CPE equipment. If provided the Contractor will be responsible for the provision, installation, configuration and ongoing support of the customer premises equipment and any additional services equipment agreed over the life of the contract. All CPE equipment must be capable of 19" rack mounting directly to racking frame. Also some sites will not have suitable racking and so the CPE must either be capable of shelf or desk mounting or have a smaller footprint 'small office' friendly silent variant.

All Customer Premises Equipment must support SNMP standard traffic and error statistics.

All CPE equipment running at 10 mbps and above must support the more detailed traffic monitoring and analysis capabilities of "Sflow" or superior open/multi-vendor standards.

The Contractor will remotely manage all of the corporate CPE equipment. This will include configuration (changes will be handled through the change control process), software upgrades, security, performance & error/fault management.

The Contractor will ensure that CPE equipment software versions are upgraded so that they will support the functionality required to meet the Councils service requirements and always be within two supported releases of the manufacturer's most up to date release.

The CPE equipment should present a standard Ethernet RJ45 connection and be capable of 10/100/1000 Mbps LAN operation dependent on the scale and model required for the site..

The CPE should be capable of L2 transmission and transmission and routing of full L3 traffic in a way that is compatible with the councils existing OSPF Routing network. Any layer 3 routing solution must offer full route summarisation on mixed range IP structures so as to keep the overall number of routes on the Councils overall network to a minimum.

If the CPE itself can not act as an OSPF router the Contractor will need to explain how the authorities Layer 3 network interconnectivity and routing plans will be maintained across the new NW. Where local routing will take place and how sites with multiple resilient connections will achieve automatic routing and auto failover.

Any onsite CPE equipment should contain 5 ports, typically but not necessarily specified for :

- Private clear path for connection to the Council's WAN Private overlay
- Community path for connection to the Council's WAN Community overlay
- Public path for connection to the Council's WAN Public overlay
- Highways path for connection to the Council's WAN Highways overlay
- Schools HGFL (for the Council supplied Firewalled interconnection)

An option for a larger capacity CPE must be offered that would have a minimum of 2 additional ports specified for :

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The Council does not require specific multifunctional / switching or routing CPE equipment to be installed on site. If the Contractor can more cost effectively provide single or multiple Ethernet extension services from a suitably functional nodal device that has the required CPE capability then this is acceptable. If the Ethernet extension option is offered then the terminating unit on site must be fully remotely manageable.

### **Resilience Options**

The Council requires a range of network resilience options to cover the following-

A low cost ADSL resilience option, from the same exchange or node, with full auto cut over and routing scheme integration that can be used in the event of the failure of the access network link to allow access to “key” business services like email, payroll, etc.

A bonded ADSL resilience option, from the same exchange or node, with full auto cut over and routing scheme integration .for all sites with SDSL and higher speed. This offering must have the ability to bond services together to increase link speeds up to a minimum of 8Mbps

A full bandwidth triangulation option using backup links to other exchanges or via other technology and/or network infrastructure suppliers. This option must also have full auto cut over and routing scheme Integration.

The Council will identify what level of resiliency they require for each site to reflect the user population and importance of the services supported at time or order. In addition these resilience options may be required throughout the life of the contract.

### **Circuit Moves and Changes**

The Council will provide the Contractor with at least 3 months notice of site closures and mergers.

These will be handled through the service change process. Charges for circuits will cease on the day of disconnection and cancellations will not incur any penalty charges. .

### **Corporate Sites services – Local cabling support and maintenance (Copper category 5e & fibre optic)**

The Council’s current standard for copper site wiring is Category 5e and a mix of 50/125 and 62.5/125 Fibre Optic cable for exterior and high speed links. The Contractor is required to provide an on-site managed service for installation, moves, patching and repair of site cabling.

This will be managed and charged as a site-wide service, responsive to demand, structured around a catalogue and unit charges with an annual review of requirements, costs and future charges.

This part of the service will also need to include voice/data patching, basic testing and voice handset deployment.

The fault diagnosis and repair of “service affecting” cable faults will be included within the overall service delivery levels. Cable upgrades and enhancements will be handled as changes.

The Council's objective is to include a percentage of upgrades across the whole site count within the annual charge. The Contractor should identify how they will incorporate this requirement within their proposal.

### **Corporate Sites services – LAN equipment maintenance and replacement**

The Council requires the Contractor to propose a solution whereby the Council's existing small to medium site LAN network equipment, including WiFi access points would be transferred to the Contractor.

Site LANs fall into broad categories with sites served by Broadband services, fixed 2Mbps links, EPS unconditioned services and 10Mbps LAN extension services.

The Council has provided a 'snap shot' at the time of this Tender in appendices

Typically Broadband server sites contain either:

No additional Hub, using ports provided in Nortel 222/225 VPN remote router devices (4x RJ45 10/100)

Or a Nortel BES50 12/24 port switch or 1424T 24 port switch.

Typically 2Mbps traditional TDM technology sites contain either:

A Nortel 1424T 24 port switch, Alcatel 6000 series 24 port switch or Nortel 5510 24port switch.

Typically 2-11Mbps EPS Ethernet attached sites contain either:

A Nortel 1424T 24 port switch, Alcatel 6000 series 24 port switch or Nortel 5510 24port switch.

Typically 10Mbps LES/Ethernet attached sites contain:

Multiple Nortel 1424T 24 port switch or Multiple Alcatel 6000 series 24 port or 48 port switches or Multiple Nortel 5510 24 port switch.

WiFi services are typically deployed on sites over the public overlay and would consist on an Airspace manufactured Cisco AP.

The Contractor will undertake to-

- provide a maintenance service, including software upgrades and monitoring where appropriate,
- provide a suitable switch for those sites that do not currently have a switch that can be carried across into the new contract ( some BBand sites use built in router or VPN device Ethernet ports ).
- replace/upgrade equipment as required for support, capacity or performance reasons.
- replace equipment that is no longer capable of support or falls outside of manufacturer's full support.

### **Wireless service**

The solution must provide clear connection to enable the Council's common WIFI platform to run over the core from any site (this is currently tunnelled across the public network overlay). The Council use Cisco wireless controllers and the WIFI network is a single overlay around the county. It offers HTTP interception and fixed SSID + password options. The central controllers are located within the Council's

main networking core and it is expected that these would remain in place supported by the Council. However the Contractor is asked to provide an option for the migration of these into the new managed service network or to provide a public WIFI overlay with filtered access to the Internet as part of the overall solution.

It is envisaged that the site CPE will provide minimum of a single port for WIFI Access Point connections. Those sites requiring more than one AP will need additional ports on a small switch infrastructure.

## **Network design criteria and technical attributes**

### **Network traffic prioritisation (Quality of Service)**

The contractor is required to implement Class of Service (CoS) to ensure prioritisation and bandwidth allocation guarantees supporting at least 5 CoS traffic types across the network. .

The Contractor's network will use IP quality of service (QoS) to prioritise different types of traffic, ensuring that business-critical and real-time data does not suffer degradation regardless of the amount of other traffic on the network. Percentages of the total bandwidth will be reserved for each type of traffic, safeguarding the most important traffic streams.

The Contractor will undertake to define, monitor and modify as appropriate these percentages to ensure each network will deliver the best experience for the end users.

Note: Prioritisation and class of service levels will need to be provided within the core network and for each virtual overlay and within each individual overlay.

The Council wish to be able to prioritise data at network layers 2, 3 and 4.

Traffic shaping facilities may also be required to ensure specific protocols or activities either have sufficient bandwidth or have that bandwidth restricted to ensure these activities do not impinge on core services.

### **Network support for Voice over IP**

The Corporate virtual IP based networks will support all industry standard IPT and voice over IP prioritisation and quality assurance protocols and mechanisms.

Local site and wide area network support for tagged traffic including Diffserve marking and translation between this and other types of QOS must be provided.

The Council's voice network consists of Avaya (formally Nortel) switches and associated equipment/servers that use a combination of H323 and SIP trunking. Both these trunk types with full signalling stack functionality must be supported by the network. This can be provided by either clear channel techniques or full intelligent interworking.

Currently the Council operates a separate voice overlay using a combination of static routing and additional OSPF area 0 routing domain for carrying traffic between sites via IP trunks and also between handsets. This is engineered to deliver sufficient bandwidth for usage levels and any overlay or prioritisation used in this area must inter work with this solution.

## **Management of the Councils current internal IP addressing schemas**

The Council manage the IP address ranges used within the network and will continue to carry out this function. These are predominantly private address space allocations although some legacy public address ranges remain.

The successful supplier will need to work with the existing address ranges maintaining routing relationships and design philosophy.

The Council will retain the existing corporate IP address ranges and any new service must either maintain these or provide 100% migration for all establishments at the Contractor's expense.

The Contractor will implement IP address changes, requested through the change management system, within 2 working days of change acceptance or at the time and date agreed with the originator of the request.

## **Service Demarcation Points**

The Contractor will be responsible for the delivery and support of the wide area network service, local area network services and the structured cabling infrastructure for those corporate sites attached to this network.

The service demarcation point for the Contractor will be the structured cabling wall outlets available to connect data or telephone devices. The cable plugged into the wall outlet will be provided by and supported by the Corporate IT managed service provider.

## **High speed interconnection into the existing Council corporate core network**

The Contractor will provide two high-speed (gigabit circuits/connections) to the Council interconnect points located at Farnham House, Stevenage and County Hall, Hertford presenting on dedicated CPE equipment the following (virtual) network overlays :

- Private clear path for connection to the Council's WAN Private overlay
- Community path for connection to the Council's WAN Community overlay
- Public path for connection to the Council's WAN Public overlay
- Highways path for connection to the Council's WAN Highways overlay
- Schools HGfL (for the Councils supplied Firewalled interconnection )

A another TBA

A another TBA

Interconnectivity and demarcation points will be the physical cat5 interconnections between the Council's core and managed WAN switches. A single physical connection will be required per network overlay.

It is expected that initially one of these interconnection areas will contain the 'Live' interconnections with the other as 'Hot Standby'.

As capacity grows over time the Council would wish to share load across both these interconnection feeds. The design criteria and technical limitations of growth will need to be agreed at a future point in time.

## **Network connections to other networks**

There are from time to time other 3<sup>rd</sup> party networks that the Council needs to connect to. These are typically connected via a demarcation firewall and normally via our community NW overlay.

The new network will need to be able to accommodate these connections and allow for a point to point connection to be 'tunnelled' through the WAN from the supplier's site to a Council interconnect and be presented on a separate physical Ethernet port.

The point to point connection will require the same 'air gap' equivalent security.

## **DHCP**

Currently the Council uses DHCP relay on all it's network overlays. The proposed network and any deployed CPE equipment must support DHCP Relay into the Council's core high speed network.

## **3. INTERNET SERVICES**

### **General Internet services**

Initially the Contractor will be required to deliver a public access, filtered, Internet service, however during the life of the contract, the Council will want to explore the possibility of migrating its existing corporate Internet services onto the new Internet provision provided as part of the Schools HGfL managed network.

The contractor will provide details of overall capacity available, ISP peering point information and class / tier of bandwidth provider used to deliver the HGfL/schools service.

In addition provide a cost for 2 x 200Mbps of Internet capacity for the Councils corporate use, 200 mbps terminated at each of the Contractors central node service points.

### **Public Internet**

#### **Filtered Public access in Libraries**

The Contractor will provide a filtered public access Internet service to the Council's Library sites. This Internet service will also be used to support access from the public NW and WIFI network overlays.

The filtering must offer an environment that is appropriate for public use but protects against material that is inappropriate in the setting of a public library. An age related filtering policy must be provided with the option to integrate with the library PC booking systems Active Directory infrastructure. This service will have all the characteristics of that delivered to the schools including multiple filtering levels, AD differentiated services, Image and Multimedia restrictions, Proxy servers, DHCP Relay, DNS, AV and full reporting.

It is anticipated that this service will initially require 35 mbps of bandwidth from each of the Contractor's central node service points delivered over the "public overlay network" on a separate filtering policy.

### **Filtering changes**

The Contractor must provide a mechanism for filter policy and dedicated URL white/black list changes. The service should be via telephone and or email and allow a nominated contact within the Council library service to request changes to filter configuration. The service levels and reporting, request and confirmation mechanisms should be in line with those agreed for the school HGfL provision.

### **Proxy service (public)**

The library PC base currently operates through a squid proxy server resilient pair. The use of a resilient proxy arrangement should continue. The Contractor will need to provide suitable resilient proxy devices across both of their central node service points and manage the transition from the existing service with the Council's Internet and Network security team. The current browser configuration arrangement deployed to public PCs uses proxy.PAC file allocations to manage exceptions and inter NW routing for specific HTTP hosts. Again this arrangement will need to continue.

### **Internet Addressing (public)**

The Contractor will provide the Council with a range of external public Internet IP addresses. These public addresses will be used to enable the Council to access the Internet but will also be used by the Council's suppliers to restrict or allow access to online systems and content purchased via the library service.

Currently the Council's Library Internet service is delivered by E2B which uses the main IP address 85.12.64.148 for all of their outgoing traffic. The Council's Library service has been allocated the IP address of 85.12.81.1 by E2B to uniquely identify them when accessing Internet services and content provided by third parties.

The Council is reviewing its requirements and it is anticipated that an initial 24 IP addresses will be required.

### **Reporting**

Each month the Contractor will report on the effectiveness of the filtering and caching service in line with that identified within the schools network service.

## **4. SECURITY, QUALITY AND REPORTING**

### **Network Security**

The Contractor will operate the network in line with the Council's security policy at all times maintaining 'air gap' equivalent security across the network, between overlays and for any point to point cross network tunnels. There will be NO incoming access from the Internet or any other overlay or point to point tunnel to ANY of the Council's corporate facilities without express written agreement from The Council's ICT infrastructure Manager.

The Contractor will provide the necessary technical resources to periodically review network security with the Council at quarterly meetings with the Council's corporate security staff to review developments, progress and new threats.

All changes relating to security will be controlled via the technical change process and will be documented appropriately.

The Contractor must work with the Council to enable the Council to undertake full auditing and both external and internal penetration testing. The Contractor will also allow full access to all network nodal rooms, data centres and associated equipment locations to authorised members of the Councils staff and its audit or security testing partners.

The Contractor will notify the Council (names and contact procedure to be agreed with the successful contractor) within 1 working hour of a security violation being detected with recommended remedial actions. A written explanation of each violation explaining what happened what subsequent action was taken must be made available for review at the next account meeting.

### **Anti virus**

The Contractor will provide, maintain and support a network anti-virus solution for the Public Library overlay on a 24 x 7 x 365 day a year basis that will operate within key network areas to manage and restrain any virus outbreak.

### **Service availability reporting**

The Contractor will provide and maintain an online browser accessible IP network performance reporting service to provide the Council with real-time information on the current and historical performance of their networks.

The Contractor will provide details of the interface and any web components required by the client software.

The Contractor will provide access to the online monitoring system at all times. The service will need to provide a wide variety of pre-defined reports in easy-to-read tabular and graphical format, with information at both network and site level. Both summary and detail reports, and tools to help focus on the time periods and groups of devices or sites that are of particular interest. Historical trend information should be provided for a rolling thirteen month period.

The Contractor will need to provide on-line 'near real time', evidence of ongoing performance showing key component and individual line usage. Showing traffic flows in both directions presented in 5 minute intervals across all technological platforms deployed to deliver the service. This should be in the form of statistics derived from network equipment and or external probes. The performance monitoring should apply to each overlay as well as the core network and should not in itself breach the Council's security policy to achieve the desired outcome. It should produce 13 months of historical data for sites including figures on latency between elements of the core network, percentage utilisation, Jitter and round trip delay between core and all network components. This information is to be available in both graphical and tabular form. The service will support five years history and trends for main items.

The service monitoring should also provide performance results that demonstrate that there are no bottlenecks within the core network and that full bandwidth is available from all outlying sites.

The on-line reporting tool will be made available from within the secure network only with multiple users being setup day 1 (each with separate username and password).

### **Network Quality & Performance Reporting and Tool set**

The Contractor will need to provide a range of monthly report, correlating data from tests and monitoring systems to deliver a working view of the health of the network.

Provide monthly results that demonstrate:

- the performance of the core against agreed targets (allowing the identification of significant bottlenecks)
- that full bandwidth is available from all outlying sites into the nearest POP of nodal point.
- that every user site can simultaneously load their links into the core in line with design criteria of the network.
- that the core network can be loaded to it's design capacity .

Provide a self diagnostic and performance testing facility that will:-

- allow users at corporate sites to perform bandwidth tests between their PC and the Internet and "key" core interconnection points.
- allow corporate IT staff to run real time upload and download bandwidth tests and present these results through a browser interface as part of the testing process.
- the contractor will agree suitable levels of performance and as appropriate review and revise "benchmark" figures with the Council that can be used by staff at sites to evaluate test results.
- provide an HTTP non cached 'journey travelled' experience measure for access to the internet for any internet services provided. A sample of 10 agreed websites must indicate that the time to access an internet page should be no more than 1second.

#### **Note:**

The service performance and availability reporting service as defined within the schools HGfL area of the tender should be made available to all corporate network overlays in a way that does not compromise security and is in line with the Council's security policy.

### **5. OPTIONAL SERVICES:**

The Council believes that the following services would be of benefit but cannot at this stage identify the take up rate. The Council would like the Contractor to identify if and how they can provide the following services

#### **Corporate Internet future migration**

The Contractor will confirm this facility would be available to corporate services if transferred.

##### **Corporate Internet Access – Filtering Service**

If the Council were to convert the contractor would need to provide secure lightly filtered access into the Internet. Current policy allows for monitoring and policing of user activity. However base line black lists and specific sites are restricted.

The Contractor will need to confirm that such a lightly filtered service offering would be possible along side that needed for the library and Schools services.

The Contractor would also need to confirm that they could provide monthly usage reports for the Council staff, flagging any misuse or excessive usage. This can either be provided as a service or via an online system that would allow the Council staff or nominated contractors to generate the reports. Currently the Council's reports are based on 'syslog' level access logs generated from our Squid proxy servers and firewalls.

### **Corporate Proxy arrangements**

If the Council were to convert all corporate sites and partners over to the new internet provision then these sites also rely on a "proxy service". The new service would have to allow this to continue. The Contractor will provide and maintain a number of pre-determined proxy points as well as providing the ability to deploy ". PAC" files for traffic management and routing. Both the ".PAC" and delivery mechanisms must be provided as part of a managed service.

The Contractor will need to explain how this would be possible.

### **Internet Addressing**

If the Councils corporate services were to convert the Contractor will need to supply and maintain sufficient "real" Internet TCP/IP addresses to enable the Council to provide, participate in and make use of services offered over the Internet. The contractor will undertake to provide external IP address translation for those services that the Council require to be available from the Internet. Changes will be authorised and requested using the "change management" service provided to the Council by the Contractor. Currently the Council has 3 class C networks or part there of. The Contractor will need to explain what restrictions in terms of IP addressing may apply.

### **Reporting**

The Contractor will confirm this facility would be available to corporate services if transferred.

### **Video streaming control**

The Schools HGFL You Tube video authorisation and policing service should also be available to the Council's corporate networks if required. The Contractor should explain how this will be achieved.

### **Hosting Service**

Provide details of the hosting facilities that you could make available to the Council at each of the core Internet sites.

## **6. SERVICE MANAGEMENT**

### **Service Support**

- The Contractor must provide a UK based service management centre to operate, report on and control network and core service delivery to meet the Council's objectives as described in detail within the HGFL area of this document. The service will support the Council's aims for a professionally managed and well maintained WAN and as such the Contractor will need to maintain a flexible approach to the delivery, development and support of the service provided to corporate sites within Hertfordshire. The Contractor will

develop and maintain a close relationship with the Councils networking staff and the Councils managed service providers. The service will need to accept Helpdesk to Help Desk level call / service requests as well as works such as adds, moves and changes via our suppliers project management and delivery office. The Contractor will also need to have service representatives available to represent the networking and associated service at Bi weekly Operations meetings.

- Pro-active focus on continuous service improvement by analysis of Service desk calls to establish trends, root cause of failures of service, and proactively amend working procedures to reduce the level of calls from service users whilst maintaining service levels;

The service will encompass:

- The provision of a managed service desk that will provide a single point of contact for all service requests by telephone, web, fax and email. For corporate sites it is expected that service requests will originate from the Council's ICT staff or one of the Councils partner service desks. Cooperating with the Council to set-up working relationships with the various other service desks that provide services to the Council and the public supporting the current and future needs of the Council.
- The provision of a dedicated service centre manager and technical manager.
- Provision of efficient and effective end to end problem, change and service function covering the network and related services.
- The adoption of a proactive and responsive approach which assists the Council in the achievement of its business objectives
- The operational management of nominated third party suppliers.
- The provision of operational management of network fault restoration
- Service "trouble shooter" to provide advice to The Council managed service provider where performance issues are, in the view of the Contractor, caused by issues within the IT service rather than with the connectivity service itself. This service will include site investigation and consultative visits.

The Contractor:

- will adopt a culture of continuous improvement throughout the life of the contract to further improve quality and reduce unit costs
- Will provide first time fix percentage at the service desk in line with agreed targets year on year during the life of the contract. Year one target will be 50% of calls increasing to 70% by year three.
- Will proactively participate in service take on activities that are handed over from the Council and/or other Council suppliers as and when engaged by the Council.
- Will work within the Council's policies and procedures.
- Will apply project management methodology and documentation to all upgrades and roll-outs.
- Will operate in line with industry recognised best practice quality and management frameworks (ITIL/Prince 2 etc ).
- Will maintain a dedicated Service Catalogue of all network and core services (including detailed diagrams where appropriate).

- Will operate a knowledge base system based on Wiki technology accessible to both The Contractor and the authority/user base. This Wiki should be made available to the Council and end users as agreed.
- Will provide these services and facilities to all users of the service regardless of their organisation or authority

### **Projects, Adds Moves and Changes (MACs)**

The Contractor will need to coordinate and interface with the Council's managed service provider to provide services to allow the movement of staff, decommissioning and commissioning of site and moves within or between these sites.

This will include but not be limited to:

- The provision of an end to end installation service for network services covering the complete service from ordering and installation of cabling and active equipment, to the disposal and replacement of equipment.
- The provision of project services as required by the Council to develop the ICT Infrastructure and integrate third party products.
- Management of product and service rollouts.

### **Incident and Problem Management**

The Contractor will provide an incident and problem management service for all users of the various networks and associated services. Some of the more important elements of this service are identified below:

- Problem/Call management and resolution via a local Service desk;
- Proactive fault diagnosis, identification and fix;
- Continuous monitoring and reporting on the status, availability and performance of all equipment (hardware devices and software) used to deliver network and core services. Systems to pro-actively identify and report on all fault or exception events and where appropriate automatically raising "incident/trouble" tickets.
- Classify all reported incidents and service requests into as many categories as the Council requires.
- Advice and guidance to users and other the Council's service partners.
- Problem Management analysis of repeated incidents and related incidents in order to determine the root cause and permanent solution;
- Change Management and administration (including account administration )
- Service requests (e.g. additions, installations and removals of services and assets);
- Software and Hardware Configuration and Installation details in the form of a Configuration Management Database (CMDB), Definitive Software Library (DSL) and Definitive Hardware Store (DHS)
- Third Party liaison, management and co-ordination.
- Asset management. the Council will require on-line access to the asset system (database) and the ability to pull off pre-defined and adhoc reports.
- Provide support to the Council with the on-going development of their Business Continuity planning process. Provide agreed levels of support to the Council when they are dealing with major incidents that involve the invocation of the Council's "Business Continuity" processes.
- Provide the Council with up to date copies of network diagrams. The details of the content and structure to be agreed with the Council.
- Provide a fully searchable "wiki" based knowledge repository.

- Provide on-line and hard copy access to all information pertaining to the service.
- Automatic establishment of an incident team for issues effecting more than two sites once the problem/incident exceeds the initial SLA parameters.
- Proactive management and recording of incidents and problems onto a suitable computerised database system.
- Be able to provide full call history, call volumes and pattern reports as well as evidence of activities undertaken to resolve issue and communicate with end users.
- Root cause analysis provided to the Council for all issues involving the incident team.

### **Overall service provision**

In addition the Contractor:

- Will enable the Council to flex its IT network service requirement without exposure to disproportionate fixed charging elements or penalties
- Will provide the required skills to implement and exploit advancements in technology. Drawing on their experience of the marketplace to be pro-active in identifying, investigating and recommending new technology and solutions which will deliver demonstrable service benefits to the Council
- Will not restrict the development of the network or services required within the wider user base due to adherence to a sole technology manufacturer or supplier.
- Attend BCP planning and design meetings and carry out an annual BCP/DR test and desktop review with the Council's ICT representatives.

### **Service Changes**

The Contractor will agree with the Council a fast and efficient stream-lined process that will be aimed at providing a "standard approach" to the implementation of service changes. This will include a structure of pre-defined processes for categorising and implementing service change requests. The Contractor will co-ordinate all changes to services delivered under the contract within the times and service levels identified under the contract

### **Change Control Process**

The Contractor will provide, maintain and manage a "change control" system for the Council's networks and core services. All changes will be managed by the contractor. These will be as a result of a service request, fault (problem or incident) management or as a direct result of a root cause analysis report or other consultancy or investigative work.

The Contractor will –

Provide the Council with a "change request" form (design to be agreed with the Council) to use when requesting a service change. The Contractor will only accept a request if signed by an authorised Council representative or received from the authorised representatives email address.

Record and categorise change requests on receipt of a request and issue the Council with a unique reference within half a working day and carry out changes inline with the service definition in the corresponding schools HGfL network part of this Tender.

The Contractor will provide the Council with a firm completion date, including the production of all relevant documentation inline with the service definition in the corresponding schools HGfL network part of this Tender.

Changes of a significant or service effecting nature will need to be agreed with the Council in advance of implementation by the technical engineering manager.

At the beginning of each calendar year the contractor will agree with the Council a schedule of maintenance weekends to undertake service effecting maintenance. These will need to be coordinated with the Councils managed service provider via the Councils service delivery manager. Network maintenance activity will need to be coordinated with other ICT changes to void conflict and excessive down time or shut down periods.

The Contractor will also provide a mechanism to implement “emergency” change requests. All requests (both normal and emergency ) will be coordinated through The Council’s central change desk.

Change requests and the progress reports will be reviewed at the two weekly operations meetings and if necessary at monthly account meetings.

The Contractor is requested to consider the provision of an on-line system, accessible through a browser, which will enable users and the Council to monitor the progress of change requests.

#### **Process for new services (project)**

The Contractor will provide, maintain and manage a “Service request control” system for the Council’s networks and core services. All requests will be managed by the contractor. These will be as a result of a service request, fault (problem or incident) management or as a direct result of a root cause analysis report or other consultancy or investigative work.

#### **Process for change requests including new services**

Change requests will usually be initiated by the Council and will usually involve routine additions, deletions or alterations to particular services at particular sites. The Council may also from time to time request new services for some or all of its sites. Other contract changes may be proposed by the Contractor possibly as a result of a root cause analysis report or other investigative work following a service failure.

The Contractor will –

- provide the Council with a “service change request” form (design to be agreed with the Council and preferably on-line) to use when requesting a service change. The Contractor will only accept a request if signed by an authorised Council representative or received from an authorised representative’s email address
- record and categorise (simple, routine or complex,) change requests on receipt of a request form and issue the Council with a unique reference within half a working day

**Simple** change requests will be completed within one day of receipt.

**Routine** change requests will completed within two working days of receipt.

For **complex** change requests the Contractor will, within three working days of receipt seek from the Council any further information or clarification that might reasonably be required and within 15 days of receipt of that provide the Council with:

- a written explanation complete with network and/or systems diagrams of the change covering all technical implications and service issues
- any relevant issues and risks
- any implications with regard to the contract
- lead time for implementing the change
- the proposed charge for implementing the change

After initial investigations the Contractor may re-categorise a complex change as **very complex** in which case the completion time must be agreed with the Council within 20 days of receipt of the original change request.

For simple and routine changes the Council will not usually require further documentation prior to implementation. For complex and very complex changes the Council will require documentary evidence, possibly through the production of a Change Notification Form, that the Contractor has operated an internal engineering change control system and employed suitable ITIL style processes to ensure all engineering changes are authorised by a network/service design authority, operational and technical managers. For all such changes the Council's technical sign off of all elements of the change, implementation and back out plan must be sought before the change can proceed.

The Contractor will also provide a mechanism to implement "emergency" service change requests

Change requests and the progress reports will be reviewed at the two weekly operations meetings and monthly account meetings.

If any service request results in a charge to the Council for new/additional equipment then the Contractor will give the Council full details of any equipment or services so that they can independently test the market. If the Council can prove that it is possible to source the same/identical equipment with appropriate warranties at a cost that is at least 2.5% lower than that quoted the Contractor will revise its costs in line with the Council's figures.

All requests will be managed for impact and scheduling conflicts by the Contractor.

## **Preventative Maintenance**

Preventative maintenance is defined as "activities that will prevent user problems, system, network, or infrastructure loss or failure".

This element of the managed service is defined within the following activities:

- Disaster Recovery and Backup service;
- a programme of preventative maintenance tasks for all core point of presence and exchange sites
- Server/equipment Performance and Capacity monitoring and management;
- Security monitoring and management
- Anti virus monitoring and management. Managing the impact at the Underlying NW level and on nominated Overlays in a way in which the effects of a Virus outbreak on one overlay do not effect another.
- Monitor the performance of key infrastructure and services.
- Production of monthly statistics and service maintenance recommendations for discussion at the account meeting.

- Maintenance of all hardware in line with the manufacturer's guidance ensuring that no equipment is obsolete or falls outside manufacturers full support unless specifically agreed, in writing, with the Council.
- Maintenance of all software in line with the manufacturer's guidance ensuring that no software is obsolete or falls outside manufacturers full support unless specifically agreed, in writing, with the Council.

The Contractor will grant authorised Council personnel full access to all tools used to manage Council services.

### **Continuous Improvement Service**

The continuous Improvement Service is defined as “changes that improve the quality (performance and reliability ) of the service, reduce costs and improve the users perception of the service.. This will be focused activity to reduce the number of calls in a particular area. It will improve the service to users by reducing faults, making corrections and enhancements quicker or safer to apply, or improving the service in any other way.

The Contractor will undertake a specified work stream/activity associated with the Improvement Service. For corporate sites the contractor will work with the Councils managed service provider and the Council directly to ensure a seamless approach to continuous improvement is in place across the whole service. Any tasks resulting from the monitoring activity will be undertaken as separate projects and are agreed and authorised by the Council prior to commencement.

Statistics and pro-active reporting is required in this area. Statistics will include:

- Calls by category ( including Service provider instigating the call )
- Reoccurring issues.
- Monthly management reports identifying ongoing, re-occurring and large volume issues.
- Items arising from Joint service meetings with the Council and it's associated 3<sup>rd</sup> party Managed service provider.

Any costs for the proposals will be reviewed at the two weekly operations meeting. The Council reserves the right to accept, defer or decline the proposals offered by the Contractor.

### **Adaptive Maintenance Service**

The Contractor will undertake impact analysis, maintenance and testing of the supported service and applications resulting from upgrades of software patches or base application packages or environmental changes.

These tasks, carried out in line with agreed change control processes, will be agreed and authorised by the Council prior to commencement. They will be scheduled and undertaken in the same way as preventative maintenance.

## **Service Hours**

The service hours and associated areas/services such as:

Network and Core services  
Network and Service Support Centre  
Service Desk

Will be identical to those identified in the HGfL schools section of the document .

## **7. SERVICE TRANSITION**

### **Introduction**

The Contractor will work with the Council to ensure a smooth transition of all services and users to the new service without disruption to normal services.

To achieve this they will undertake all design and planning and project management activities required to ensure a smooth transition.

### **Timescales (corporate sites )**

The Council has no contractual pressures driving the transition of specific sites to this service. If the Council take up the corporate service option the contractor is invited to propose a transition schedule for corporate sites using the details provided in relevant schedule.

There are overall time constraints referred to else where in this and associated documentation with regards school migrations. In terms of service transition the contractor is free to either leave corporate sites to after the schools network transfer or to move these as the new network is built and delivered. Corporate sites can 'go onto' the new network whenever convenient and are available to pay for the service as soon as they are cut over.

### **Project Plan and Risk assessment**

The Contractor will provide a detailed project plan detailing the process they will use to transfer the existing corporate services to the new infrastructure and core services without interruption to the day to day operation of the business.

The contract will provide a detailed risk assessment of the process they propose to use to transfer corporate services to the new infrastructure.

These two documents will be submitted with the tender response.

The successful Contractor will be expected to produce the definitive version of these two documents within one calendar month of the award of the contract. These documents will be used to establish the dates for migration targets to be used to monitor service delivery targets.

The Council and the Contractor will agree the key milestones identified in the definitive version of the project plan.

The Council will agree financial penalties with the Contractor for failure to meet key milestones. Further information will be found in the Service Level Agreement.

### **Service Transition**

Will include but not be limited to the following:-

- The Contractor will be required to obtain the Council's agreement (technical and commercial) in advance for all of its transition plans and associated work programmes.
- Initial and ongoing technical design reviews with the Council
- Weekly technical progress meetings with the Council during implementation. Dependent of migration and transition approach taken these would form part of the same meetings to cover the migration of school sites.
- As a minimum monthly contract and high level progress review meetings with the Council starting at the signing of the contract and continuing throughout the implementation phase.
- Documentation standards agreed in advance covering terms of content, sign-off and timings.
- The Contractor will develop and provide transition information and training as appropriate. This will in some cases include awareness training sessions with support documentation for the support staff and third party organisations working on IT services provided to schools to ensure a trouble free transfer of their services.
- Develop and agree with the Council standards/processes for inter-working with our other contractors.

### **Communication with Corporate sites**

The Contractor will liaise with a central ICT project team who will facilitate communication with all corporate user sites.

### **Service acceptance**

The Contractor will be responsible for developing an acceptance plan to be agreed by the Council prior to the order being placed and provide resources and equipment to undertake the tests to the Council's satisfaction.

The Contractor will be responsible for documenting and updating the acceptance plan.

Two copies of the completed acceptance documentation will be supplied to the Council to support payments.

The Contractor should assume that all acceptances testing affecting "live" services will be undertaken outside the Council's normal working hours.

The Contractor will provide resources and equipment to undertake acceptance tests to the Council's satisfaction

The Council expects to use the service reporting tools identified within this specification to support and validate acceptance testing.

Note: the service will not be considered operational until all of the reporting is fully functional and available to the users and the Council.

The Contractor will agree a site service acceptance plan with the Council, which will identify all processes, with acceptable responses, that need to be undertaken at site migration. The nominated customer representative will be required to sign this document to accept the new service.

The contractor will have a member of their staff present on site for every transfer to ensure that the full range of services required at that site are operational and provide the level of response agreed under the contract.

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