SCHEDULE A: SERVICE DEFINITION FOR SMART WIRES

1. Smart Wires Service Description

The Smart Wires Service is the access mechanism that brings the Site on-net to Exponential-e's network and provides access to managed services and applications. Exponential-e offers the following:

Access Mechanism	Circuit Bandwidth	Presentation	Port Speeds
EoF *(Ethernet over Fibre)* *Fibre-optic tail circuit*	10 Mbps – 10 Gbps	RJ45 or Optical	100Mbps –10Gbps
EoF Cross Connect *Fibre optic cross-connect at data centre*	1,000 Mbps – 10 Gbps	RJ45 or Optical	100Mbps – 10Gbps
EoC *(Ethernet over Copper)*	2 Mbps - 35 Mbps	RJ45	1 to 100 Mbps
EoC Cross Connect *Cross-connect at data centre*	100 Mbps – 1,000 Mbps	RJ45	10 to 100 Mbps
Broadband (including Fibre to the Cabinet (FTTC), and Asymmetric Digital Subscriber Line (ADSL))*[1] *Layer 3 service over copper.*	Downstream: 24 Mbps – 80 Mbps*[2] Upstream: 768 Kbps – 20 Mbps*[2]	RJ11 or RJ45	As per Circuit Bandwidth
Wireless Broadband *4G*[3]	Downstream: 10 Mbps – 300 Mbps*[4] Upstream: 5 Mbps – 150 Mbps*[4]	USB Dongle/SIM/ RJ45	As per Circuit Bandwidth

*[1] *Where Exponential-e is unable to provision an ordered FTTC, Exponential-e reserves the right to deliver an ADSL in lieu and the Customer accepts that there will be no reduction in Charges payable. Exponential-e will provide reasonable documentary evidence upon request to the Customer attesting to its inability to deliver the requested FTTC.*

*[2] *The actual bandwidth speed available will depend on a multitude of factors including distance from the exchange, quality/availability of the copper line, contention rates, extreme weather and external electrical interference from outside sources.*

*[3] *4G usage will be subject to any maximum allowances set out on the Order Form. Usage in excess of this amount will be subject to Usage Charges. Rate Card for Usage Charges is available upon request from sales@exponential-e.com*

*[4] *The actual bandwidth speed available will depend on a multitude of factors including signal strength, cellular network congestion, 4G and 4G+ coverage, extreme weather and Network Terminating Equipment performance.*

Ethernet Resiliency Options

Exponential-e offers the following options for adding resiliency to an Ethernet circuit:

Resiliency Option	Description
Resilient Advanced Option	Connects the Site to two diverse Exponential-e's PoPs and ensures that the two circuit routes are kept as diverse from each other as possible. Full diverse routing is not guaranteed.
Resilient Option	Connects the Site to two diverse Exponential-e's PoPs. The resiliency relies on the diversity of using different suppliers, or technology, and diverse routing is not guaranteed.
Resilient Option (Data Centre)	This option, only available at datacentres, connects the Sites to two diverse Exponential-e network nodes.

Broadband Back-up Option

A broadband access mechanism (such as ADSL, FTTC or Wireless Broadband 4G) is provided as the backup circuit. The resiliency relies on the diversity of the different technology for the access circuits.

Smart Wires - Managed Option

This option adds an Exponential-e-owned, Exponential-e managed Layer-2/Layer-3 device(s) to the Service and is included by default with Broadband access and in the Ethernet Resiliency and Broadband Back-up configurations. For the Smart Wires EoF / EoC Cross Connect services the Smart Wires – Managed Service uses a dedicated virtual router managed by Exponential-e. Exponential-e's router management obligations are limited to such management activity as are required to provide the Smart Wires service in accordance with this Service Definition. Should the Customer request that Exponential-e undertake reconfiguration (or other) work in respect of this router, such work, if agreed to be undertaken by Exponential-e, shall be chargeable in accordance with Exponential-e's then-current Professional Services rates.

Customer Premises Equipment (CPE)

Exponential-e's Smart Wires service typically includes Network Terminating Equipment (NTE), providing WAN and LAN interfaces depending on the model supplied. With the "Smart Wires – Managed" option, Exponential-e shall also provide and manage as part of the Service, a Layer-2/Layer-3 device. The NTE and any Layer-2 / Layer-3 devices provided are Exponential-e Equipment; ownership will not pass to the Customer. The Customer is responsible for receiving the configured CPE (and any replacements thereof) and unless the Customer has contracted for an installation service (such as Smart Onsite Install) with Exponential-e, is responsible for carrying out installation in accordance with the written instructions provided by Exponential-e. Exponential-e will provide up to one hour of telephone support during installation.

Vendor Licensing

Licensing of Smart Wires CPE is provided as set out on the Order Form. The period of licensing set out on the Order Form is a fixed period calculated from the date of license activation set forth by the vendor (which can be confirmed upon request by the Customer to sales@exponential-e.com). Upon expiry of this period, licensing will need to be renewed to cover the remainder of the Initial Term or such longer period that the Customer may elect. The Customer shall be responsible for renewing vendor licensing and it is recommended that the Customer contacts their account manager not less than thirty (30) days prior to expiry to discuss renewal options. With respect to vendor licensing, Exponential-e's obligation shall be limited to putting the relevant licensing in place.

Smart Wires VLAN Options

The Customer has the option to deploy Wide Area Network and Internet virtual circuits ("VCs") over its Smart Wires Services as described below. The inclusion and initial allocation of bandwidth to VCs will be set out on the Order Form. The Customer may request changes to its allocation of bandwidth to WAN and Internet VCs by contacting the Exponential-e Service Desk. Changes to allocated bandwidth on existing VCs will be undertaken by Exponential-e free of additional charge. An additional charge of £250 ex VAT per VC shall apply for any additional VCs requested to be set-up.

WAN VC Option

The WAN VC option provides Ethernet-based (Layer 2) virtual circuits configured over Smart Wires Services to establish connectivity between Sites configured as either Point-to-Multipoint (VPLS) or as a Point-to-Point. The Point-to-Multipoint configuration provides a switched service configured with a dedicated, insulated VPLS instance providing a completely separate WAN for each customer. There is a restriction of 64 MAC addresses across each VPLS instance. The Point-to-Point configuration provides a VLAN between two Site(s). Quality of Services (QoS) is a chargeable option available with WAN VCs providing the ability to separate traffic into 6 classes; default configuration as follows:

Level	Service Class	Example	DSCP Ingress	DSCP Egress	Committed Information Rate (CIR)	Peak Information Rate (PIR)
6	Network Control	OSPF	cs6	cs6	5%	5%
5	Real Time Voice	Voice, Signalling	ef46	ef46	10%	10%
4(*)	Real Time Video	Video, Broadcast	cs3, cs5, af31	af31	15%	15%
3	Critical Data	Business Critical Apps, Citrix, SQL	af11	af11	30%	30%
2	Priority Data	Business / Priority Apps	af12	af12	40%	60%
1	Normal Data	standard Apps	0	0	0%	100%

**when a Layer 3 device is provided and managed by Exponential-e, the Customer's markings of DSCP values will be re-marked by Exponential-e into af31.*

By taking the QoS Premium option, the Customer can define the CIR and PIR but must complete a QoS Form to enable Exponential-e to correctly classify and treat traffic accordingly. Note: Smart Wires EoC GEA Services are not available with the QoS Premium option. The default configuration on these Services is 5% EF46.

Local Network Server (LNS)

When the LNS option has been included, all Smart Wires Broadband connections will be built to communicate privately with the VPLS instance via the LNS (L2TP network service) routers. The routers on the broadband connected sites are configured to authenticate against Exponential-e RADIUS servers and terminate their PPP (Point-to-Point Protocol) session onto Exponential-e's LNS routers. The default static routing is injected during the authentication process to break out via the virtual LNS router. This virtual LNS router will be configured in the same routing domain as the Ethernet connected sites to distribute the broadband site IP routes through the network.

Internet VC Option

The Internet VC option provides virtual circuits with bandwidth speeds from 1Mbps to 1Gbps over a Smart Wires Service. IPv4 and IPv6 addresses will be assigned to the Customer subject to the regulations of Reseaux IP Europeens (RIPE). These addresses remain under the exclusive control of Exponential-e and are not transferred to the Customer. As standard on non-resilient Services, the number of IPv4 addresses assigned is limited to a range of 8 with 5 useable IP addresses. As standard on resilient Services, the number of IPv4 addresses assigned is limited to a range of 8 with 3 useable IP addresses. Further IP addresses may be available subject to RIPE approval. If the Customer requires their own independent IP addresses they must apply to RIPE via a Local Internet Registry such as Exponential-e. Where centralised Internet is ordered, Internet VCs will be delivered to a managed Centralised Firewall located in Exponential-e's network and allows a multi-site WAN to have a single, central security boundary and internet gateway. The Centralised Firewall Service (Schedule B) is included by default. Internet VCs come with Distributed Denial of Service ("DDoS") (an electronic attack involving multiple computers sending repeated requests to a web-site generating false traffic with the aim of rendering it inaccessible) Black-holing (discarding all data destined for a particular IP address) as standard. The Exponential-e DDoS mitigation platform will examine the Customer's traffic and auto-generate a "normal" traffic profile. The following are examples of the types of packets that when detected by the DDoS mitigation platform in volumes outside of the "normal" traffic profile will trigger an alert: DNS Amplification, IP Fragment, ICMP, IP Protocol 0, MS SQL Amplification, NTP Amplification, SNMP Amplification, SSDP Amplification, TCP Null, TCP RST, TCP SYN. The triggers are based upon the total amount of any type of traffic going to a monitored IP address. Once an alert is triggered, black-holing is automatically launched and all traffic received into the Exponential-e DDoS mitigation platform for the Customer's destination IP address will be dropped. **Exponential-e does not warrant or guarantee that the DDoS Blackholing service feature will prevent or mitigate all DDoS attacks.** The Customer shall:

(i) notify the Exponential-e Service Desk in advance of any impending activity that can reasonably be expected to result in or encourage additional traffic to its site that may or may not be malicious in nature, including but not limited to marketing campaigns, moral hacktivist attacks and other traffic outside of the normal traffic profile for the Internet Service; and

(ii) immediately inform Exponential-e if any threat is made, whether publicly, privately, intimated, inferred or directly, of any intention to initiate a DDoS or DoS attack at any time.

Border Gateway Protocol (BGP) will not be enabled on Internet VCs unless expressly set out in the Order Form.

2. Smart Wires Service Demarcation Point (SDP)

The Smart Wires SDP is the point up to which (i) Exponential-e's service obligations apply and (ii) the Smart Wires Service Level Agreement covers. The Customer-facing port(s) on the EDD is the default SDP for the Smart Wires Service, however, where the "Smart Wires – Managed" option is taken, the Customer-facing Ethernet port(s) on the managed Layer-2/Layer-3 device is the SDP. With cross-connect access mechanisms, when no CPE is being provided, the SDP will be the Customer-facing Ethernet interface of the nearest Exponential-e switch.

3. Target Service Commencement Dates *

Smart Wires - EoF	60 Working Days
Smart Wires – EoF (International Sites)	100 Working Days
Smart Wires - EoC / EoC Basic / EoC GEA	45 Working Days

Smart Wires - EoF / EoC Cross Connect (Other colocation facilities) 25 Working Days
Smart Wires - EoC Cross Connect (Exponential-e's Colocation facilities) 10 Working Days
Smart Wires - Broadband 25 Working Days
Smart Wires – 4G 15 Working Days

** From Order acceptance. It is assumed all comms rooms are ready.*

4. Smart Wires Service Level Agreement

Service Availability and Key Performance Indicators (KPI)

Availability is defined, for each Customer Site, as the ability to send a data packet from the Smart Wire SDP to Exponential-e's management network, a purpose-built data communications network operated directly from the core of the network. In the Resilient options, the network convergence (failover) time will not be considered as unavailability. Note: Exponential-e's monitoring tools may show access mechanisms as "up" (available) or "down" (unavailable). This must not be confused with the Smart Wires site availability. The KPIs for this service are:

KPI	Definition
Latency	the one-way trip time, measured in milliseconds, between the demarcation device and Exponential-e's management network. Latency will be measured at sampling intervals by Exponential-e's monitoring tools and averaged for the month.
Packet Loss	the percentage of packets sent from the demarcation device failing to arrive at Exponential-e's management network.

For each KPI, a target and a minimum value is defined. Once the KPI is below the target value, the service will be considered degraded and the Customer may log a "degradation of service" ticket. Once the KPI is below the minimum value, the service will be considered unavailable. An abnormally-high Latency and/or Packet Loss measurement, due to the Smart Wires Service being congested because of the acts or omissions of the Customer, will not be considered when calculating the Availability.

Target Service Levels. Target Availability and KPIs

The Target Availability (TA), the Minimum KPI Value (Min.KPI) and the Target KPI Value (T.KPI) will depend on the combination and type of Smart Wires' access mechanisms used as shown in the tables below.

Connection Type	Latency T.KPI (Min.KPI)	Packet Loss T.KPI (Min.KPI)
Smart Wires EoF	10 ms (30 ms)	0.1% (1%)
Smart Wires EoC	15 ms (30 ms)	0.2% (2%)
Smart Wires EoF / EoC Cross Connects	1 ms (3 ms)	0.1% (1%)
Smart Wires International	N/A	N/A
Smart Wires Broadband	N/A	N/A

Smart Wires Access Mechanisms	TA
Two Smart Wires EoF in a Resilient Advanced configuration	99.999%
Two Smart Wires (EoF and/or EoC) in a resilient configuration	99.990%
Smart Wires EoF	99.900%
Smart Wires (EoF and/or EoC) Cross Connect	99.900%
Smart Wires EoF International	99.900%
Smart Wires EoC	99.850%
Smart Wires EoC International	N/A
Smart Wires Broadband	N/A
Smart Wires Wireless Broadband 4G	N/A

Service Credits

	Measure	Service Credit*
Availability	>0.1 Below Target	5%
	>0.5 Below Target	10%
For Resilient Advanced Only *(as per above definition)*	Measure	Service Credit*
Availability	>0.1 Below Target	5%
	>0.2 Below Target	10%
	>0.5 Below Target	20%

** The Service Credit is applied as a percentage of the Monthly Charge for the affected Smart Wires Service only.*