The Shrewsbury and Telford Hospital **NHS**

NHS Trust

APPENDIX 4a – Block layout plans

New Treatment Centre

Surgical Day Case

Lofthouse Dental

Fracture

GP

UCC

Cardio

Imaging

OPD

Dental

Apley Ward

GU

Ophthalmology

Hearing

Main Entrance

Pharmacy

Macmillan

Pathology

Mortuary

Estates/ Med/Rec

EBME

Rehab

Loading Bay

Ward 15

Boiler House

Maternity OPD

Midwife

Maternity Unit

Day Hospital

Ward 16

Apley Clinic

Notes

THIS DRAWING READ IN CONJUNCTION WITH : -

Key

	New Built
	Refurbished
	Vacated Space
	New Treatment Centre
	AEC/Empty

7 New Treatment Centre

15 AEC/Empty

New Treatment Centre

Ward 14

Operating Theatres

Public Health Lab

HSDU

Offices

Kitchen

Endoscopy

Education

W11
W10
W09
W08
W07
W06
AEC
W05
W04
W17

Rev	Description	Date	Drg	App by
02	Updated for SOC.	08.03.16	HS	HS
01	Updated for SOC.	02.03.16	HS	AE

drawn by
KW

checked by
AE

date created
15.02.16

client
Shrewsbury and Telford NHS Trust

project
Sustainable Services
Princess Royal Hospital

title
Proposed Potential Solution - Acute and Planned
Level 2

project number
2015.00039 _.001

drawing number
PRH-AHR-00-ZZ-DR-A-20-122

Rev
02

drawn status
SOC

scale
1:500

@A1

Level 1

Level 0 (1:1000)

EMERGENCY ENTRANCE

MAIN ENTRANCE

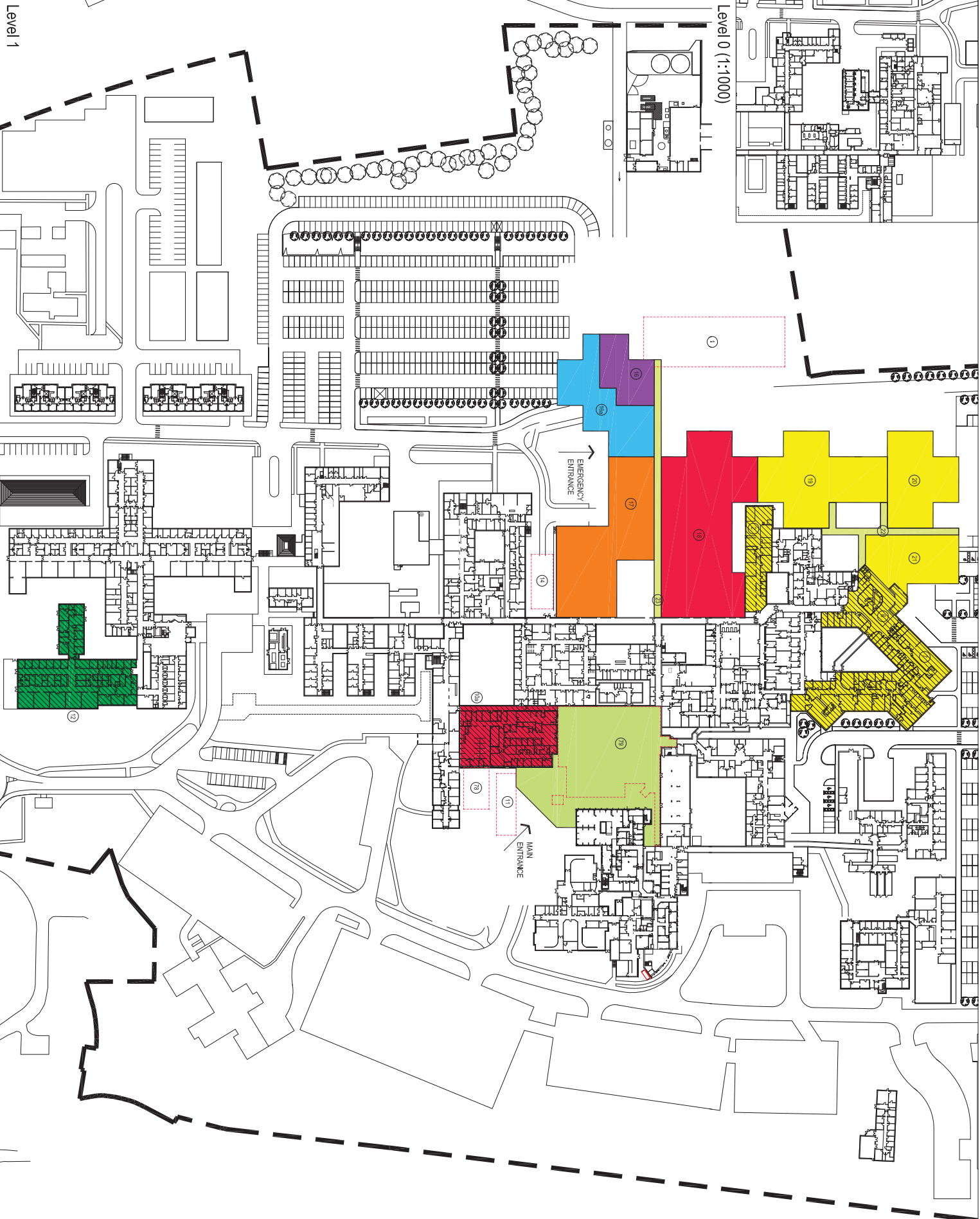| Rev	Description	Date	Drn by	Ckd by	App by
01	Updated for SOC.	02.03.16	KW	HS	AE
02	Updated for SOC.	07.03.16	KW	HS	AE

Notes

THIS DRAWING READ IN CONJUNCTION WITH :

Key

New Built
Refurbished
Demolished

1   Estates office demolished
2   Paediatrics OPD
6   Womens and Children's Atrium/
7   Staff Admin
8   MLU
10a Fracture Clinic
11   Office demolished
12   Practice Ward
14   Offices Demolished
16   AEC
16a UCC
17   Emergency Department
18   Critical Care
19   Paediatrics Inpatients
20   Antenatal
21   Postnatal
22   Circulation
23   Circulation
78   T & O Offices demolished
79   Atrium/Retail/Support

APPENDIX 4b – Development Control Plan (DCP)
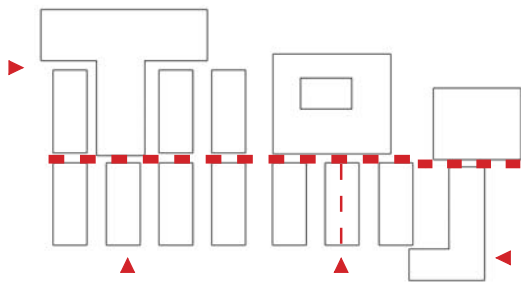
Diagram 1

- Structured circulation East-West axis
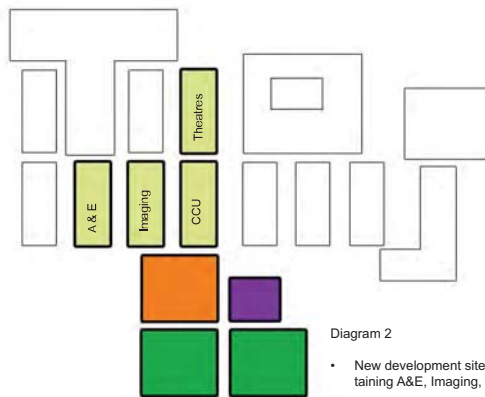- Multiple entrances

Diagram 2

A & E | Imaging | CCU | Theatres

- New development sited by templates containing A&E, Imaging, Theatres and CCU
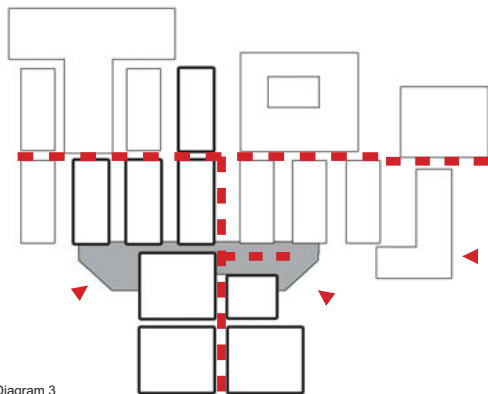
Diagram 3

- Provide rationalised main entrance / commercial opportunities.
- New North/South link to link new development to existing street.
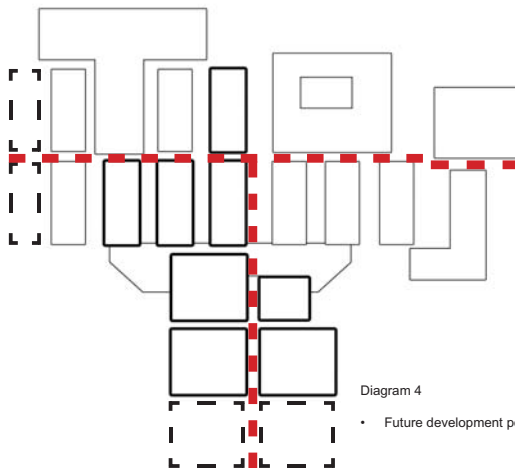- New entrance to link Emergency Department, UCC and Imaging

Diagram 4

- Future development possible on two axis

Diagram 1

- Organic cluster of departments
- No clear structure
- Ground level on 3 different levels

Diagram 2

- North-South street
- Multiple entrances
- No entrances on the street
- Lengthy connections between clinical areas

Diagram 3

- New development adjacent to theatres and imaging

Diagram 4

- Move emergency access

Diagram 5

- Development location prompts re-orientation of street to East-West axis.
- Introduce new main entrance onto street at more direct location.
- All major clinically hot areas linked on one level (Level 1).
- Entrances rationalised.

Diagram 6

- Future expansion of east-west axis

APPENDIX 4c – Site wide impact summary

The Potential Solution: Site-Wide Impact Summary

v5 18 Feb 2016

Sustainable Services Programme-Overall Assumption	Impact of the Potential Solution by Site	
	RSH as Emergency & Acute Site	*PRH as Emergency & Acute Site*

Clinical Support

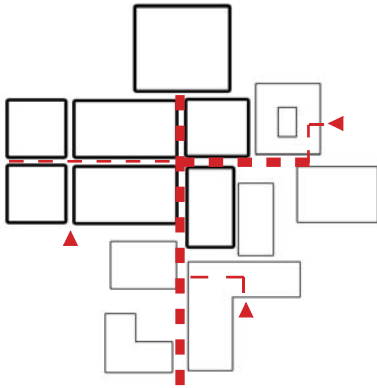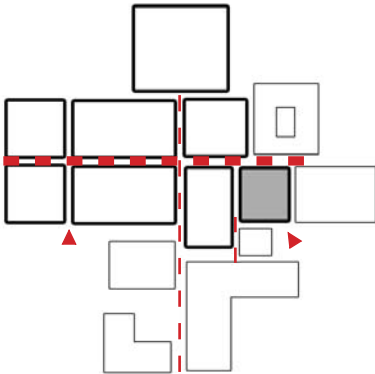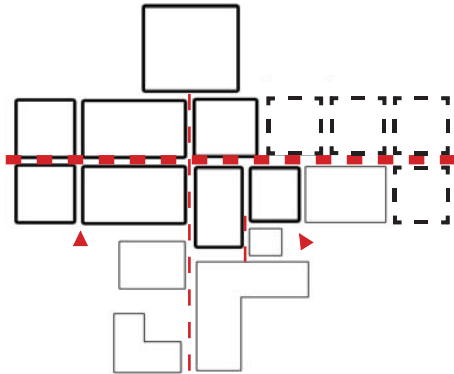|	Sustainable Services Programme-Overall Assumption	RSH as Emergency & Acute Site	PRH as Emergency & Acute Site
Therapy services	*As now, plus therapy assessment space needed in UCC.*	1 x Additional consulting room would be required (to be included in UCC plans)	1 x Additional consulting room would be required (to be included in UCC plans)
Clinical administration and Trust HQ	*As now, with space utilisation and optimisation relating to site specific service locations. Assume Exec Team remains at RSH.*	Allow for relocation of 81 W&C's staff from PRH, plus general small uplift for general office space. W&C's staff to be accommodated in part refurb part new build. Need to review office space provision as part of OBC.	Allow for general small uplift in office space. Assume Executive Team remains at RSH. Need to review office space provision as part of OBC, and also if there is a need for some increased senior management space at PRH.
Imaging	*Cath lab - no change. PRH ED site options: Hybrid room for interventional radiology/ Cath lab.*	Additional cath lab required if Cardiac is consolidated under the potential solution.	Additional Cath lab required and interventional radiology would be required which can be provided in a hybrid room
Pathology	*With colocation of ED and Obs, only 1 blood sciences service would be required. On the ED site an extension of the central lab would be required due to increased activity in urgent / ED Haematology and biochem in line with bed increases.*	Target area for new facility is 2,340m2 (approx 20% increase on current). Current area is 2,200m2 over 2 floors, therefore allow additional 140m2.	Target area for new facility is 2,340m2 (approx 20% increase on current). Current area is 1,700m2 over 2 floors, therefore allow additional 640m2.
Mortuary / PM	*RSH - has sufficient capacity at 89 following recent extension. PRH - has 34 spaces and would need additional capacity in all cases and in line with bed increases.*	Maintain Existing as recently remodelled	Increase capacity to 55 bodies and 3 PM tables. Equates to approximately 427m2 plus 24m2 for Paeds= 451m2. Existing is 235m2, therefore allow refurbishment plus 230m2 new build. Capacity to be reviewed at OBC stage- required capacity could be 60. Unit requires bariatric facilities and 2 No viewing rooms.
Pharmacy	*Aseptic services to remain at RSH and transport solutions to be maintained if need be. If bed base increase on either site there would be a need for additional capacity in pharmacy in line with the bed increase.*	20% increase on the ED site along with improved utilisation and efficiencies. Assume located in refurbished Cardio support/ staff gym (which will be relocated to vacant ITU).	20% increase on the ED site along with improved utilisation and efficiencies. Assume additional 110m2 of new build.
EBME	*As shown:*	• Increase in Bed store Capacity required to cover the increase in ward capacity • RO System within ITU will need replumbing to the appropriate area within new ITU, including the Pex Distribution loop, 100% redundancy and appropriate drainage for RO water. • Transferral of PRH staff to RSH to undertake the increase in workload. To determine most efficient use of MES Staff to cover equipment maintenance tasks • Cabling and switch transferral for ITU monitoring stations. • Increase in Licencing for central station within A&E to cover extra capacity from RSH transfers, plus transferral of central station and associated infrastructure. • Availability of Maternity Workshop for testing of incubators and other maternity equipment to prevent long distance transferral of these items to minimise risk of damage • Infrastructure capacity for W&C networking items for monitoring systems including CTG monitoring etc. .	• Increase in Bed store Capacity required to cover the increase in ward capacity • Complete RO system to be added to ITU with Pex distribution loop, Drainage and ring main to support dialysis patients, this would need 100% redundancy • Transferral of RSH staff to PRH to undertake the increase in workload. • Cabling and switch transferral for ITU monitoring stations. • Increase in Licencing for central station within A&E to cover extra capacity from RSH transfers • Reconfiguration of MES on-call service to ensure appropriate numbers of staff are available at PRH
Education	*No change at RSH. PRH - may need to Reprovide if Education Centre is refurbed for clinical space.*	Assume potential solution has no impact	Assume potential solution has no impact
Research	*No change to current provision unless impacted upon plans*	Assume potential solution has no impact	Assume potential solution has no impact
Medical records	*Out of scope but Trust enabling project. Progression of E-solutions.*	Out of scope of SSP project	Out of scope of SSP project
RSH W&C zone	*FCHS capital scheme for;* *-MLU* *-Maternity scan & Outpatients* *-Antenatal Day Assessment* *-Children's Outpatients* *to be included in all options.*	Out of scope; however please note that a new MLU and associated accommodation is shown at RSH as part of the SSP work, which is a legacy from the FCHS project. This is separately funded.	Out of scope; however please note that a new MLU and associated accommodation is shown at RSH as part of the SSP work, which is a legacy from the FCHS project. This is separately funded.
Medical illustration	*No change*	Assume potential solution has no impact	Assume potential solution has no impact

The Potential Solution: Site-Wide Impact Summary

Sustainable Services Programme-Overall Assumption	Impact of the Potential Solution by Site	
	RSH as Emergency & Acute Site	*PRH as Emergency & Acute Site*

Non-Clinical Support

Estates and infrastructure	*As shown:*	*Refer to separate detailed Estates and Infrastructure impact review (in Appendix 4e)*	Refer to separate detailed Estates and Infrastructure impact review (in Appendix 4e)
Staff welfare	*no change above and beyond standard ward template or dept.*	Assume potential solution has no impact	Assume potential solution has no impact
Spiritual care	*as existing unless impacted upon by plans.*	Assume potential solution has no impact	Assume potential solution has no impact
Sterile services	*Off-site service - localised storage only*	Assume potential solution has no impact	Assume potential solution has no impact
Cleaning and Linen	*Off-site service - localised storage only*	• No significant impact other than staffing levels increase at RSH (additional staffing required in relocated W&C Unit) • 7 day linen service to be introduced for ED and Critical Care services • Consider high level cleaning in new design • New Linen Room, Domestic Stores and machine charging area to be provided in an area accessible to the hospital. Access for linen deliveries to be considered when locating • Decontamination area to be provided on new Loading Bay area (unless MES including?) • Ambulance Linen Cupboard needed in ED • Decant pressure of W&C move	• staffing levels increase at PRH • 7 day linen service to be introduced for ED and Critical Care services • Consider high level cleaning in design of new build • Linen Store for Ambulance Service required • Loading Bay will need to increase in size to accommodate a bigger receipt and distribution area, Linen Room, Charging area and stores
Catering	*Appropriate provision to be made - maintain existing where possible unless impacted upon by plans.*	• Some changes to patient meal numbers • Kitchen, dining Room and Coffee City re-provided (request Caffe Bistro created in new ED entrance) • Delivered meal service would need to be put in place prior to build to ease operational and relocation issues • Extra regen trolleys and supporting equipment required • Opportunity for commercial development to be considered e.g. WHSmith/Boots	• Additional Hostesses needed unless self -serve • Electrical infrastructure to be reviewed to accommodate additional trolleys • Additional freezer space required • Request position and opportunity to create a Caffe Bistro outlet in the new ED development • Commercial fridges must be included in any patient kitchens to ensure food temperatures maintained • Extra regen trolleys and supporting equipment required • Larger receipt/distribution area required on Loading Bay • Opportunity exists to review the introduction of commercial outlets such as WHSmith/ Boots?
Portering and Logistics Services	*TBC in Jan 16 workshop.*	• Helipad on MSCP will impact on patient transfer (distance/weather) and will create fire/safety issues requiring additional staffing and risk • Additional staff to support ED/CCS and extra beds especially if night flights introduced by Air Ambulance? • New Loading Bay needs to be accessible from the Hospital as looking to discontinue use of vans. • New Loading Bay needs to big enough to accommodate waste handling area including Waste Yard, bed and equipment storage • Porters Lodge will be relocated as part of new Loading Bay area • Will there be additional car parking directly outside A&E for Emergency short stay parking and disabled users? • MSCP will need to be built prior to building work commencing • Access/Egress for servicing to new units to be considered plus a service lift and adequate waste cupboards and storage • Traffic flow onto and off site due to loss of circular road system? ambulance activity to be considered as part of this change along with safe pedestrian walk ways etc • Access from helipad to ED to be reviewed. • Changes to existing Car Parking Contract with CPPlus to be negotiated • Newly provide Waste area will need to accommodate compactors and recycling facilities • Decant pressure of W&C move	• Additional staff to support ED/CCS/extra beds especially if night flights introduced by Air Ambulance? • Loading Bay will need to increase in size to accommodate a larger waste area, receipt and charging area • Relocation of porters lodge to provide a bigger room for additional staff? • Additional car parking directly outside A&E for Emergency short stay parking and disabled users? • MSCP will need to be built prior to building work commencing • Access/Egress for servicing to new units to be considered plus a service lift and adequate waste cupboards and storage • Traffic flow onto and off site due to proximity of roundabout and in relation to increased ambulance activity to be considered. Safe pedestrian walk ways etc. • Access from helipad to ED to be reviewed. • Changes to existing Car Parking Contract with CPPlus to be negotiated
Telecoms		• Slight increase in staffing/Review night cover risk • Slight increase in lines to site and minor relocation of assets between site • Review BCP • Mobile coverage solution installed in PRH W&C Unit to be replicated at RSH W&C Unit when relocated • Number allocation	• Slight increase in staffing/Review night cover risk • Slight increase in lines to site and minor relocation of assets between site • Review BCP • Number allocation could pose some issues • Red phone system will need to be extended
Staff residences	*Out of scope*	Out of scope of SSP project	Out of scope of SSP project
Creche	*out of scope*	Assume potential solution has no impact. Access to creche to be reviewed in light of location for potential solution.	Assume potential solution has no impact
Security	*Appropriate provision to be made*	Security lodge will need to be reprovided if new RSH entrance goes ahead.	
Car parking	*Appropriate provision to be made*	Review of car parking required at OBC stage. Initial assessment at SOC stage has shown need to reprovide spaces which are displaced by the new build works; plus (say) 100 additional spaces at the ED site. This is assumed to be in a new multi-storey car park.	Review of car parking required at OBC stage. Initial assessment at SOC stage has shown need to reprovide spaces which are displaced by the new build works; plus (say) 100 additional spaces at the ED site. This is assumed to be in a new multi-storey car park.
Café & Retail	*Opportunities within new build areas to generate income.*	New feature entrances are proposed to be created at both the ED and the non-ED site as part of the SSP work, which will create opportunities for café, retail etc	New feature entrances are proposed to be created at both the ED and the non-ED site as part of the SSP work, which will create opportunities for café, retail etc
IT	*Development of IT infrastructure to support new models of care.*	*tbc at OBC stage*	*tbc at OBC stage*

APPENDIX 4d – Site wide estates impact

The Shrewsbury and Telford Hospital NHS
NHS Trust

SaTH Sustainable Services Programme
Site-Wide Estates Impact of the Potential Solution

SERVICES	RSH as the Emergency and Acute Site
Heating	* Construction is over the existing subterraenean duct (contains steam main etc). * Existing boiler capacity inadequate to serve additional load. * Existing boilers and CHP are on contract with EnerG for approx another 6 years. * Connecting new build to existing boilers would not achieve BREEAM rating. * Existing CHP unit - site's heat baseload utilises the entire output. (see attached data sheet tab). Consider additional CHP unit. * There is a desire to de-steam the site when contract expires. * Existing steam main is c40 years old and susceptible to periodic failures. * See attached schedule of incoming services for info on gas main(s). Meter is adjacent to boilerhouse
	Currently served by 1 gas boiler and 1 CHP/waste heat boiler each providing steam. MTHW is taken from the CHP to heat DHWS calorifiers backed up by steam. A third boiler is not operational due to corrosion of tubes.
	Site winter load is met by 2 operational boilers but if 1 boiler or CHP is off line capacity is inadequate
	Backlog allowance includes a replacement boiler for resilience
	An additional boiler is required to satisfy the load of the new development rated at 1.2MW Include reconfiguration of boiler house to accommodate new plant (may duplicate cost allowances included in backlog)
	Additional CHP unit matchd to base load of the new building - 120kWe May be an extension of the EnerG contract
	Boiler plant is old inefficient and in poor condition, upgrades included in backlog maintenance schedule
	Replace steam main and condensate return in new service duct to carry additional load
	Additional Boiler to be installed as there is no spare capacity or resilience. New plant rooms should be sited above new modules.
	Ventilation plant will be located above departmental areas and included in the departmental costs
	Additional steam to LTHW heating calorifiers to be provided within the new development 3 @ 50% ie 3 @ 600kW each
Cooling/Ventilation	* Consider using (existing) chilled water system for cooling, rather than separate electric chillers.
	Chiller plant will be included within the departmental ventilation costs and it is anticipated will be an extension of the existing system
	Additional cost allowance should be included for additional adsorption chiller capacity to provide a heat load for CHP in summer to achieve a low carbon solution. Chiller rating 1200kW
	Additional cooling / Ventilation to be installed as there is no spare capacity in existing system,(this may have an impact on the electric infrastructure i.e. loadings on existing circuits)
DHWC/CWS	* Incoming water supply may need upgrading - presently 80mm incomer, located under old maternity (Copthorne Building) Replace with 2 new incoming 100mm mains (from separate network connections if possible) to feed central storage tanks

SERVICES	PRH as the Emergency and Acute Site
Heating	* Boiler capacity will need checking. * Distribution mains' capacity will need checking. * Existing boilers are on contract with MCL until Jan 2017. * Desire to de-steam when contract expires. * Connecting new build to existing boilers would not achieve BREEAM rating. * Gas incomer is at rear of site. See attached schedule for info on incoming services. Gas meter at max capacity.
	An additional boiler is required to satisfy the load of the new development rated at 1.6MW Include reconfiguration of boiler house to accommodate new plant (may duplicate cost allowances included in backlog)
	Additional 164kWe CHP unit matchd to base load of the new building. May be an extension of the existing contract
	Boiler plant upgrades included in backlog maintenance schedule
	Enhance steam main and condensate return in new service duct to carry additional load and creat a ring main configuration
	Increase heating plate packs to cope with extra load plus resilience, steam/LTHW pipe to be made to a ring to give resilience and access to carry out maintenance without major impact to service.
	Additional steam to LTHW heating calorifiers (plate heat exchangers)to be provided within the new development matched to the load requirements of the new building.
	Interconnect heating mains to existing to provide resilience
Cooling/Ventilation	* Consider absorption chiling as lead system, linked to CHP rather than electric chilling (which should be as back-up.
	Chiller plant will be included within the departmental ventilation costs and it is anticipated will be an extension of the existing system
	Additional cost allowance should be included for additional adsorption chiller capaacity to provide a heat load for CHP in summer to achieve a low carbon solution.
	Replace aged AHU to meet extra demand and current HTMs increase Abo chillier to meet BREEAM and replace inefficient DX units increase size of electric chillers for resilience and for back up to Abo during period of peak summer heat waves
	It is asume remedial works to ventilation and cooling systems are covered by the backlog allowance
DHWC/CWS	* Incoming water supply may need upgrading (80mm - see attached tab for info on incoming services). * Storage lagoons may be inadequate for any extension. * Need to confirm booster set capacity.
	Replace with 2 new incoming 100mm mains (from separate network connections if possible) to feed central storage tanks

The Shrewsbury and Telford Hospital **NHS**
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SaTH Sustainable Services Programme
Site-Wide Estates Impact of the Potential Solution

SERVICES	RSH as the Emergency and Acute Site	SERVICES	PRH as the Emergency and Acute Site
	Water storage lagoons and booster station are located under maternity. Need to check capacity and suitability. Replace existing tanks with duplicate above ground GRP external tanks to meet water regulations. 2 tanks each 54m3 stored capacity		Replace existing tanks with duplicate above ground GRP external tanks to meet water regulations. 2 tanks each 54m3 stored capacity
	Add cold water booster set comprising multiple pumps and pipework distribution to serve mains supplies to existing high level tanks and direct to new development		Add new cold water booster set comprising multiple pumps and pipework distribution to serve mains supplies to existing high level tanks and direct to new development
	New DHW generators to be installed siting in plant rooms above respective Pods. A new Large diameter Pipe connection would have to be made to the incoming mains.	**Drainage**	Replace old corroded pipe work to prevent blockages separate foul waste from shower waste where poss. to prevent foul waste over spilling in shower cubicle
	Additional steam to domestic HW calorifiers comprising duty, support and standby calorifiers each rated at 50% to be provided within the new development		It is assumed remedial works to drainage is covered by the backlog allowance
Drainage	Existing drainage to be relocated because of the siting of the new build pods.. Existing drains to be upgraded to cope with the increase in flow. (drainage survey to be carried out)		Divert existing drains from beneath the footprint of the new development
Medical Gases	Additional Vacuum Plants would need to be installed. There is spare capacity for Medical Air plants from the treatment Centre.. Assessment to be carried out. (Whilst it is believed there is spare capacity in the medical air system it is unlikely to be adequate given the likely increase in usage of medical air) Any remedial works to existing medical gas systems will be included in the backlog figures	**Medical Gases**	Upgrade all med gas services to meet new demand give resilience and ring services for ease of access for maintenances and minimize disruption to services
	Include a second liquid oxygen VIE installation to provide a second independent source of supply in a separate location to the present installation		Include a second liquid oxygen VIE installation to provide a second independent source of supply in a separate location to the present installation - assume VIE leased
	Extend oxygen distribution to serve new development and create a ring distribution to comply with HTM 02		Extend oxygen distribution to serve new development and create a ring distribution to comply with HTM 02
	It is not anicipated that additional nitrous oxide will be required in the new development		It is not anicipated that additional nitrous oxide will be required in the new development
	Include additional medical compressed air plant comprising multiple compressors		Include additional medical compressed air plant comprising multiple compressors (this plant could be co-located with existing plant or located within and dedicated to the new building)
	It is not anticipated that surigal air plant will be required to serve the new development		Extend medical air distribution to new development or interconnect new dedicated plant to existing to provide resilience)
	Include additional medical vacuum plant to serve the new development		It is not anticipated that surigal air plant will be required to serve the new development
	Include medical gas manifold room including oxygen & medical air manifolds to HTM 02		Include additional medical vacuum plant to serve the new development (this plant could be co-located with existing plant or located within and dedicated to the new building)
Pneumatic tube	Additional stations required. Zone 4 very busy. Aerocom Uk to advise.		Extend medical vacuum distribution to new development or interconnect new dedicated plant to existing to provide resilience)
	The existing pneumatic tube system should be extended to include additional terminals		Include medical gas manifold room including oxygen & medical air manifolds to HTM 02
Incoming electrical Supply LV/HV	* See attached schedule for info on incoming electrical service. * Proximity of generators to the new buildings; may need relocating. * Existing CHP unit (600 kWe) - site's electrical baseload utilises the entire output. Consider additional CHP unit.		
	Replace HV/LV switchgear to meet new load demand and meet HTM 06-02	**Pneumatic tube**	Replace existing 160 mm with 110 system (It must be noted that the replacement of the 160 tube with a 110 tube is not as a result of the new development or a backlog issue but must be included to ensure consistency across the site whilst avoiding installing an inappropriate system in the new development)
	Increase capacity of incoming elecrical supply including new main intake switchgear to 3000kVA		Extend pneumatic tube system to serve departments within the new development including XX No. terminals

SaTH Sustainable Services Programme
Site-Wide Estates Impact of the Potential Solution

SERVICES	RSH as the Emergency and Acute Site
	Install additional sub-station dedicated to new development including duty/standby transformers rated at 1 MVA
Back up generator UPS/IPS	* Note proximity of generators.
	Generator House to be relocated along with bulk oil tanks. Generator capacitiy (2 x 1250 + 600 = 3100 Kva). Max logged recordings 600amps / 750 Kva. Nb. Generators are available to back up Broad crown set @ old Maternity if required. Recommend load recordings taken on existing transformers Catering,Gynae, + treatment Center to determine spare capacity.
	Relocate existing generators to clear site of new development including oil storage tanks
	Install an additional 2 No. generators each rated at 600kVAVA to provide 100% support at N+1 to the new development. Enhance oil storage capacity to include new generators
	It is assumed that any enhancements to existing generator provision will be covered by the backlog allowances
Fire alarms	Additional out stations required to existing Static Systems (925 system)
	Fire alarm and detection will be included in the departmental allowances.
	Include upgrade to the central alarm panel & network to accommodate the additional zones
Security Systems	Door access system required.
	Include card access system within the new development
	Include intruder alarms to ground floor day only spaces - (very limited)
	Include CCTV to internal circulation areas and external access, building perimeter and car park areas
	Include staff attack system to ED & OPD areas
BMS	* Existing BMS (Seachange) on contract with EnerG for approx another 6 years. * BMS 'head-end' is in existing Estates building
	A new BMS outstation will be required on any new build. This would be tagged on to the existing front end and graphics would also need to be updated.
Asbestos	A pre-demolision survey would need to be carry out would refurbishing or taggijng on any new build on to existing.
Car parking/Roadways	Additional car parking to be made available due to the loss of existing. Considerations to be made to its locallity, on site, off site or multilevel. Road ways to be diverted around new build, possibly to avoid building over exiting ducts.
	Street lighting + carpaking lighting to be reconfigured
	Install external lighting to all new roadways, access routes and carpark areas

SERVICES	PRH as the Emergency and Acute Site
Incoming electrical Supply LV/HV	* See attached schedule for info on incoming electrical service. * Existing CHP unit (600 kWe) - site's electrical baseload utilises the entire output. Consider additional CHP unit.
	Replace HV/LV switchgear to meet new load demand and meet HTM 06-02
	Increase capacity of incoming elecrical supply including new main intake switchgear to 2500kVA
	Install additional sub-station dedicated to new development including duty/standby transformers rated at 1 MVA
Back up generator UPS/IPS	Generators will only supply essential supply need to upgrade to supply N+1 (note oil tanks will also need to be increased to maintain running time to 100hrs?) fit UPS/IPS to cat 5 equipment/areas
	Install an additional 2 No. generators each rated at 1 MVA to provide 100% support at N+1 to the new development. Enhance oil storage capacity to include new generators
	It is assumed that any enhancements to existing generator provision will be covered by the backlog allowances
Fire alarms	Capture fire compartment back log to refurb areas consider more door hold magnets where access & egress of trolleys & beds
	Include upgrade to the central alarm panel & network to accommodate the additional zones
	Fire alarm and detection will be included in the departmental allowances.
	Include upgrade to the central alarm panel & network to accommodate the additional zones
Security Systems	Extend cameras & door locking system to vulnerable areas
	Include card access system within the new development
	Include intruder alarms to ground floor day only spaces - very limited
	Include CCTV to internal circulation areas and external access, building perimeter and car park areas
	Include staff attack system to ED & OPD areas

SaTH Sustainable Services Programme
Site-Wide Estates Impact of the Potential Solution

SERVICES	RSH as the Emergency and Acute Site
Ducts	Ducts to be refurbished M & E services repaired / replaced to ensure continity of supplies to Hospital / Departments Options 4-9
	Main service duct from energy centre to main hospital building is beneath the footprint of the new development and will need to be replaced including all services. Assumed to be included in backlog allowance
	Secondary service duct to the south of the site is in poor condition and requires replacement. This is not as a result of the new development and whilst resilience would be improved by the reinstatement of ring mains it is a preference but not essential. Assumed to be included in backlog allowance
Estates office/Workshop	To be re-sited to suit either remote or integral. Option 4 - 9
Loading Bay	To be re-sited to a move suitable position. Consideration to be made which side of the hospital this needs to be built. As operation / service entrances calls would change.Option 4-9
MES	· Increase in Bed store Capacity required to cover the increase in ward capacity
	· RO System within ITU will need replumbing to the appropriate area within new ITU, including the Pex Distribution loop, 100% redundancy and appropriate drainage for RO water.
	· Transferral of PRH staff to RSH to undertake the increase in workload. To determine most efficient use of MES Staff to cover equipment maintenance tasks
	· Cabling and switch transferral for ITU monitoring stations.
	· Increase in Licencing for central station within A&E to cover extra capacity from RSH transfers, plus transferral of central station and associated infrastructure.
	· Availability of Maternity Workshop for testing of incubators and other maternity equipment to prevent long distance transferral of these items to minimise risk of damage
	Infrastructure capacity for W&C networking items for monitoring systems including CTG monitoring etc.
IT/data	IT/Data networks within departmental areas will be covered by the departmental allowances
	New hub rooms with active equipment will be required in each departmental area
	It is assumed a new enhanced data centre will be required to support the existing facility including expansion of the existing unit
Other	Water firing main to be considered
hydrant main	Extend external hydrant main including additional hydrants
IPS/UPS	IPS/UPS to critical care areas - assumed included in departmental costs?

SERVICES	PRH as the Emergency and Acute Site
BMS	* Existing BMS is a Trend system. Any new BMS must be Trend and be integrated with existing. It must include for head-end upgrade to graphics etc. Plant rooms should each include BMS display panel.
	Replace old actuators and hard ware tie system to Telephone switchboard so that switch can be remote Assumed to be included in backlog allowance
	A new BMS would be included in the new development and included in the plant costs.Include on cost to upgrade front end & graphics
Car parking/Roadways	Although there is in the scheme, planned for a multi-storey car park considerations need to be given for disable parking and ambulance parking for both WHA and WML services plus drop off for taxis and the public. Road and parking in staff side also needs improving and increasing to meet new demands. More safer means of getting across car park into the building Bus route and buses passing via main entrance?
Ducts	N/A (only duct work is from pump house to boiler house)
Estates office/Workshop	Due to increase of loading bay and post /mail room moving from the main entrance consideration need to be given to move estates away from prime spot of delivery are and loading bay. Etsates may also need to increase in size to cope with extra stock items and larger workforce
Loading Bay	Increase size of loading bay and stores to accommodate extra deliveries and demand, reorganise waste and hazardous waste using estates compound and stores have poters move to estates and mail room so services post are taken away from the front end of the hospital
Other	*Nurse call system old and obsolete so cannot be added but needs to be replaced with Static Codem system.
	It is asumed replacement nurse all system is included in the backlog allowance
	*R/O unit water treatment plant also need replacing
	It is assumed the replacement of the RO unit is included in the backlog allowance
	*Asbestos although not big issue as RSH but there is low level ACM that needs to be removed in pipe work under cloak and roof soffits so small amount of sums needs to be set a side
	Asbetos surveys & clearance assumed to be included elswhere?
	*Window frames old and obsolete single panel will not meet Breeam
	Window upgrades assumed to be covered in building works
	*Refurbishment wards need Emergency light upgrade to P4 to meet fire regs (1 lux min)
	Included in refurbishment allowance
	*All containment at full capacity especially ELV system (IT trunking)

The Shrewsbury and Telford Hospital NHS
NHS Trust

SaTH Sustainable Services Programme
Site-Wide Estates Impact of the Potential Solution

SERVICES	RSH as the Emergency and Acute Site
Photovoltaic panels	Photovoltaic panels to reduce carbon emmissions to match base electrical load

SERVICES	PRH as the Emergency and Acute Site
	New containment assumed to be included in refurbishment allowance
Helipad	Currently helipad has just being refurbished with night lights but consideration for how patient is transferred along Helipad to ED (may need better lighting smoother road surface better traffic control)
	Include in external building works?
Medical Records	May need more room to contain extra med records possible add another level to existing portacabin
Decontamination/ Queensway	need to turn off AHU for servicing hence maybe we purchase more spare instruments during the shut downs periods or in event of machines in annual service testing or breakdowns
	Med gas : no impact just reorder spare bottles
	Generator: No impact (may need bigger storage tank)
	BMS : No impact (however currently BMS is obsolete hence needs upgrading)
	Others If we don't run on 24/7 we would need to extend building to allow for new washers and sterilizers build new clean rooms and prep room increase size of loading bay
	As stated earlier they should be no impact to which ever site is hot only impact is when theatre list increase regardless of which site this is from and in this case I believe it could be covered with extended hours however it is best to consult with manager of Queensway Duncan Brown who will have a much better understanding of workloads and demands and possible with theatre managers
	Consideration may be needed for extra storage area for extra trolley loads stock and chemicals drums estates spares as no doubt pressures will be greater to maintain extra work demands
MES	· Increase in Bed store Capacity required to cover the increase in ward capacity
	· Complete RO system to be added to ITU with Pex distribution loop, Drainage and ring main to support dialysis patients, this would need 100% redundancy
	· Transferral of RSH staff to PRH to undertake the increase in workload.
	· Cabling and switch transferral for ITU monitoring stations.
	· Increase in Licencing for central station within A&E to cover extra capacity from RSH transfers
	· Reconfiguration of MES on-call service to ensure appropriate numbers of staff are available at PRH
IT/data	IT/Data networks within departmental areas will be covered by the departmental allowances
	New hub rooms with active equipment will be required in each departmental area
	It is assumed a new enhanced data centre will be required to support the existing facility including expansion of the existing unit
Others	
hydrant main	Extend external hydrant main including additional hydrants
IPS/UPS	IPS/UPS to critical care areas - assumed included in departmental costs?
Photovoltaic panels	Photovoltaic panels to reduce carbon emmissions to match base electrical load

The Shrewsbury and Telford Hospital **NHS**
NHS Trust

APPENDIX 4e – Trust IT Strategy

Shrewsbury and Telford Hospitals NHS Trust

IM&T Strategy 2012 - 2017

Executive Overview

Distribution

Organisation Name	Organisation Address
Shrewsbury and Telford Hospital NHS Trust	Royal Shrewsbury Hospital Mytton Oak Road Shrewsbury SY3 8XQ

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Document Control

Approval Sign-off (For formal issue)				
Owner	**Role**	**Signature**	**Date**	**Version**
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1.0	Final	14/8/12	John Damman	Post QA report
1.01	Final	21/8/12	John Damman	Client requested change

Contents

1. Executive Summary

Following a widespread consultation programme with key stakeholders, the high level information needs of clinicians, managers, patients and public have been identified and an analysis performed to highlight how the innovative use of IM&T will support the Trust's clinical strategy for the development of health services.

This report examines the strategic ambitions of the Trust both as a provider of patient care and as a business. A future vision is outlined, which, if approved by the Trust Board, will provide the target for work plans in information management and technology at Shrewsbury and Telford Hospital NHS Trust over a five year period commencing September 2012.

1.1. The Vision for IM&T

The vision statement describes how the Trust will create a 'Digital Hospital Environment', that will use technology to support agile working, eliminate paper, provide a secure clinical environment and empower patients to support their own healthcare. The key components of this vision are:

- *IM&T Infrastructure* – Achieving a solid foundation for clinical and business systems.

- *Electronic Care Record* – The existing set of clinical applications will be integrated together, using a connect-all strategy, to deliver a single, unified clinical system that supports agile ways of working. This in turn will deliver a paper-free environment, enterprise-wide scheduling that minimises patient time in the trust, and maximises clinician usage, and will build an environment that delivers the right information, to the right person, at the right time.

- *Knowledge Management* – There is a need to make better use of information, both about the patients under care, and also about how the organisation itself is operating. This information is a valuable asset that is not currently being fully utilised. The information team, led by a Chief Information Officer, will develop the knowledge to allow the trust to know itself, and to drive the right processes to deliver benefits.

- *Process Improvement* – The Trust faces complex healthcare, funding and legislative processes that require careful management to ensure that systems, (both technical and personal), behave exactly as expected. These processes must be understood and managed to deliver the right solution to identified problems.

The Trust is experiencing significant drivers for change, and IM&T will be an essential enabler to support extensive integration of clinical and corporate services and the achievement of associated qualitative and productivity-based performance improvement across the organisation.

1.2. Next Steps

The Board is asked to approve this strategy and endorse the following actions as early priorities:

- Review the options for infrastructure delivery, as there is potential for savings in excess of £1m per year, (based on the Channel 3 predictive model). These savings will be verified by the production of a Strategic Outline Case for infrastructure sourcing options;
- Commission an OBC for the next stage of Electronic Care Record delivery;

The Finance Director is currently planning the appointment of a Chief Information Officer to lead the 'knowledge management' initiative. There are some 'quick wins' that may be delivered early including delivery of correspondence services and VitalPAC integration. These quick wins should be considered as part of the OBC for the next stage of the ECR development.

2. Introduction

The Shrewsbury and Telford Hospital NHS Trust was formed in October 2003 following the merger of two previous Trusts (Princess Royal Hospital NHS Trust and Royal Shrewsbury Hospitals NHS Trust).

We are the main provider of acute hospital care for almost 500,000 people from Shropshire, Telford & Wrekin and mid Wales. Patients come to us from Telford, Shrewsbury, Ludlow, Oswestry, Bridgnorth, Whitchurch, Newtown and Welshpool in Powys.

The Trust manages two hospital sites:

- Royal Shrewsbury Hospital (RSH).
- Princess Royal Hospital (PRH).

The Trust is currently preparing to apply for Foundation Trust status and has recently re-configured the organisation into eleven autonomous clinical centres, as shown below:

Medicine	Surgical	Women & Children's	Musculoskeletal
Head & Neck	Emergency & Critical Care	Ophthalmology	Oncology
	Therapies	Pharmacy	Diagnostics

Through a series of interviews with key senior managers and clinicians, together with reference to a number of Trust strategic reports and plans, the high level strategic information needs of clinicians, managers, patients and public have been identified and this has enabled a future vision to be presented in which excellent healthcare provision is supported and enabled through the innovative use of IM&T.

3. Strategic Context

The Trust's stated vision is expressed as follows:

'We will embody in our hospitals all the principles, values and the sense of service that created the NHS by providing consistently good safe care in a friendly, listening and informative way, as and when people need and want it and always with dignity and respect.'

Analysis of the situation suggests a challenging future environment dominated by global recession, an increasingly ageing population and rising healthcare demand.

On the positive side there are opportunities provided by the new technologies that can help us do more with less. The national ICT Strategy makes clear that government departments should 'do more with less' and deliver 'whole systems change through collaborative innovation'.

The national vision places the patient at the centre. Patients are generally interested in their healthcare. New remote monitoring facilities, connected by improved networks, can help them contribute to the efficient use of healthcare staff and facilities at a time and place that is efficient for all concerned.

The Department of Health has now officially dismantled the National Programme for IT (NPfIT). Also the supplementary procurement route known as the Additional Supply Capability and Capacity (ASCC) will shortly close. No central funding for IT is on the horizon. Under the localism agenda, Trusts are expected to make their own way and fall back on their own funding resources.

Equity & Excellence: Liberating the NHS (June 2010) sets out reforms that will free NHS organisations from direct Government control, coupled with an increased responsibility to be locally accountable for the quality of services provided and the efficient use of public money.

Liberating the NHS: An Information Revolution (November 2010) supports this and describes an environment in which people have the information they need to stay healthy, to take decisions about and exercise more control of their care; and to make the right choices for themselves and their families. There will be greater openness, transparency and comparability of information and a focus on data collected real time, with the patient, as a bi-product of patient care, not as an administrative 'add-on'.

The NHS Outcomes Framework 2012/13 describes the changes made since the first edition of the framework was published in December 2010. The initial framework set out the outcomes that the NHS Commissioning Board will be held to account for delivering, with corresponding indicators. It formed part of the drive to move the NHS away from centrally driven process targets. The framework is updated annually, to provide a national overview of what the NHS will aim for when improving patient outcomes. The updated framework renews the focus on improving patient results. The NHS will be measured against a number of areas including whether a patient's treatment was successful, whether they were looked after well by NHS staff and whether they recovered quickly after treatment.

Government IM&T Policy is clear. Public Service Infrastructure and technology services will be moved to shared/commercial and Cloud provision. The savings from consolidation of Data Centres alone will deliver £300m per annum. There is an overarching target of £3.2bn operational efficiency from the Governments £16bn per annum expenditure on IM&T.

4. Stakeholder Requirements

This section summarises feedback received from stakeholders about the future use of information and IT to support the delivery of excellent healthcare and improved efficiency. The information requirements of each stakeholder group are identified and a brief analysis of the current situation is presented alongside opportunities for the future.

4.1.   Patient and the Public Want:

- Access to their health record and help in understanding it.

- A window on what the hospital has planned for them and their condition.

- An opportunity to comment on their health record and contribute to its accuracy

- Easy access to information about the hospital services and evidence of capability to deal with the conditions that trouble them in a way that suits them.

- Confidence that the hospital will treat them and information about them with due care.

4.2.   Clinicians Want:

- Smarter access to what they know is in their clinical systems (including summary access to patient histories; easier login)

- Small changes to improve their efficiency (clinical alerts and notices in the right place; "top 10" work lists)

- Guidance and help with the introduction of scheduling and monitoring capability that exists (SemaHelix bed management and VitalPAC)

- Device availability with options and without queues as well as immediate response to fix times.

- To communicate clinical decisions to all relevant parties inside and outside the hospital and to understand what other providers know about their patients.

- To influence the demand for their time in a way that is sensitive to patients needs using targeted advice and guidance systems.

4.3.   Managers/Decision Makers Want:

- Guidance and help in understanding what data is collected, what it means and how it can help to manage the patient process.

- Time to understand systems and promote wider, more consistent take up across the business.

- Flexibility and availability of informatics to solve their next problem, now.

- More timely and accurate ways to predict and monitor spend.

- More timely and accurate ways to predict, monitor and influence levels of patient activity.

- Clinicians to collect sufficient quality outcome data to support quality and outcome based commissioning.

5. IM&T Vision

The vision for Shrewbury & Telford NHS Trust is of a digital healthcare environment that will extend beyond the boundaries of our hospitals and enable accurate and timely information in support of decision-making for excellent patient care and a productive, streamlined support infrastructure.

5.1.　The Patient Experience

The patient experience will be enhanced by patient-centred systems with sophisticated enterprise-wide scheduling such that the patient's visit to the hospital will be as short as possible. To achieve this, appointments for consultations, interventions and tests must be scheduled together, with prerequisite activities undertaken first, time given for the patient to move between different parts of the hospital or wider health system and avoiding conflicts. Choice will be given to patients so they can select convenient times and locations for them. This will include being supported, monitored and treated at home where clinically appropriate.

Patients will have easy access to hospital information including their own health care records to enable them to check and correct the information held and view information about their condition and treatment. This will include access to a summary health record, to enable them to interact with those caring for them including requesting changes to their bookings and receiving appointment reminders by SMS, voice mail, or email. Options for providing this service may include online access via a secure Internet portal, access via Digital TV and patient-held smart cards.

General information about the Trust's clinical performance will also be easily available to patients, in order to give confidence and evidence of the Trust's capability.

5.2.　The Trust Perspective

From the Trust's perspective, efficient scheduling of resources such as beds, clinics, rooms, theatres, equipment and staff will ensure that expensive resources are utilised in the most efficient way. Tracking systems, utilising RFID technology and making use of the hospital-wide wireless network, will ensure that progress through the patient journey can be monitored and delays minimised.

The patient's record will be held electronically, with the majority of it made up from information collected through the clinical process in dedicated clinical systems and brought together in the Trust-wide Electronic Clinical Record (ECR) system. This will enable all relevant clinical data to be viewed in multiple locations simultaneously if required, including non-hospital locations.

5.3.　Paperless working

The Trust wishes to create a virtually paper-free hospital environment. To achieve this, in the interim, existing legacy paper records will be scanned "on demand" as they are requested from off-site storage and added to the ECR. Archived records may be scanned and held electronically or stored in off-site libraries depending on the business case. The generation of new paper records will be discouraged, but can be scanned and added to the record where necessary.

5.4.　Communications with Stakeholders

Communication with GPs will be electronic as far as possible including referral letters, discharge summaries, requests and results, giving improved accuracy of information and greatly improved timeliness of information.

Clinicians will be supported by holistic patient information provided at the point of care to enable timely and clinically safe decision-making. This will include patient history, results and investigations

including PACS images and clinical correspondence presented in a single look and feel solution or portal. Video conferencing facilities will be used for teaching, and to bring together multi-disciplinary teams across the entire district.

Over time, the concept of shared clinical systems will be explored to support the delivery of seamless clinical care between primary and secondary care.

5.5. Decision Support

Decision-support will be implemented within Order Communications systems to encourage clinicians to make requests which are cost-effective, avoid duplication and are in line with clinical best practice. Rules will also ensure that results are viewed and acknowledged within agreed timescales, with a built-in escalation route.

5.6. Prescribing

Full electronic prescribing is a medium term ambition for the Trust. In the interim, the existing prescribing solution (eScripts) will be fully utilised to provide benefits to clinical staff

5.7. Mobile / Remote Technology

All locations from which services are delivered will have equal access to hospital systems. Mobile technology will be deployed where this improves timeliness, patient safety and efficiency. This may include handheld devices to allow doctors to view results and nurses to input patient observations, for example, and computers mounted on trolleys to facilitate ward rounds with PACS image viewing and point of care order communications and prescribing. In addition, it is the intention of the trust to allow users to use their own devices on the trust network to access clinical information (BYOD).

In the medium term, the Trust may choose to introduce more near-patient testing and these devices, along with VitalPac and other modern medical equipment, will be able to interface directly into the patient's electronic record. Telemetry systems will allow nurses and doctors to monitor patients remotely and react to alerts. Other devices, such as pressure pads and motion sensors in beds and rooms, can be used to alert healthcare professionals to movements of vulnerable patients so they can assist them and hence avoid falls.

The Trust's investment in wireless networking facilitates the use of RFID technologies, allowing the tracking of patients through the hospital. With additional investment, this technology can be used to update systems to improve data quality in areas such as A&E and Theatres where tracking of locations and timings is essential to ensure waiting time targets are met and scarce resources are used efficiently. RFID tags can also be used to assist positive patient identification with screens automatically updated with patient details in theatre for example, or screen displays tailored to an appropriate view as a clinician wearing a tag steps forward for example.

Telehealth will allow patients greater choice and flexibility in how and where they engage with the trust, as well as enabling the collection of more, and better, clinical information to inform clinical care.

5.8. Back Office

The Trust's back office processes will be as streamlined as much as possible and will minimise the use of paper. This will be achieved through the use of document workflow, passing forms electronically around the Trust for authorisation, and systems such as e-rostering and e-requisitioning. Stock control will be managed electronically and enhanced by the use of bar-coding and/or RFID tracking.

5.9. Correspondence

The rollout of electronic correspondence services, which can send all external correspondence electronically will improve the efficiency, quality and timeliness of all correspondence. This will also provide market value in making the Trust a preferred partner of local primary care clinicians.

5.10. Management Information and Reporting

Management information will be produced as a by-product of clinical and operational processes. It will be supported through a centralised data warehouse, fed from operational systems with information presented to users in the form of standard reports and dashboards through a self-service portal. Analysis will include forecasts predicted from past trends of historic data. Operations centres will be supported through real-time tracking information and predictive information displayed on large screens. Information will be considered as an asset of the trust, and managed appropriately, with information asset owners responsible for guiding the trust in the best possible use of the organisation's information.

5.11. In Summary

There are clearly a number of implications resulting from the above narrative which will impact the Trust in a several areas. Key amongst these are:

- A sound IM&T infrastructure platform will be needed to support the enhanced use of technology for clinical and business decision-making;

- new ways of working will need to be adopted to optimise use of the new technology. This in turn requires an appropriate level of investment, in both time and money.

Some tactical decisions that have already been taken must be reviewed in light of strategic decisions outlined in this report. Future tactical requests for IM&T developments will need to be judged on the basis of whether they are consistent with the aims of this strategy. Other Trust-wide, strategic choices will need to recognise the impact that these vision statements will create – e.g. PAS and EPR related decisions and the need to ensure full integration with systems supporting these statements.

6. Current Status of IM&T

6.1. Organisation and Management

IM&T is currently managed as a specialist support function and it will engage with the Clinical Centres in three key operating models, as illustrated in the diagram below:

- direct, facilitative e.g. support according to Service Level Agreement

- advice, guidance, challenge e.g. business case or risk assessment support

- transformational, innovative and enabling *e.g. new system development.*
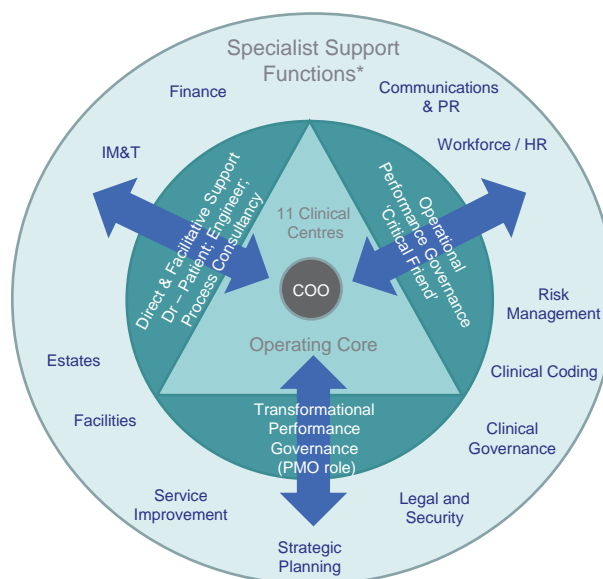
* Examples only shown

Although there is an information management team within the IT group, this is an area that is recognised as needing further focus to deliver benefits to the business. In particular, the current Foundation Trust application process identified the lack of an information department.

The Director of Finance is currently finalising the case for appointing a Chief Information Officer to ensure that, not only the information needs of the Trust continue to be met, but the quality, timeliness and overall integrity of information improves, in accordance with the IM&T strategic vision.

There are numerous processes in place to manage IM&T projects, however these need revisiting to ensure that they adequately capture requirements, and deliver the expected benefits, in the wake of the restructuring to clinical centres.

6.2. Service Management

Services are managed through two helpdesks, one for each hospital site. The support function is supported equally by the clinical centres, proportional to the size of the clinical centre. Currently, the service management function is not using the ITIL industry standard process. This contributes to the observation that the trust is excellent at introducing innovative solutions, but finds it difficult to maintain these into business as usual.

6.3. Clinical Systems

There are six key clinical systems which form the core components of the ECR :

- PAS (Patient Administration System)

- Radiology (RIS) & Picture Archiving & Communication System (PACS)

- Pathology

- Pharmacy

- Order Communications (pathology only)

- VitalPac bedside monitoring

There are also approximately 130 other clinical systems that are utilised around the trust for a variety of clinical and administrative needs. Systems have been procured based on a 'best-of-breed' approach, where systems are generally single-purpose, and focussed to a particular discipline or task. There is limited connectivity between systems (for example, results reporting from Pathology) which must be improved to deliver the benefits of the ECR.

Short-term improvements that have already been identified include integrating radiology results reporting into more clinical applications, and the production of electronic discharge summaries.

6.4. Infrastructure

Servers, networking equipment, storage, desk-top and mobile device hardware are largely dependable. However; the stock is ageing and requires an increasing, (and increasingly scarce), capital provision to replenish it, or an appraisal of alternative sourcing options to decrease the capital provision, in order to deliver the benefits of mobile working, and increase the usage of the clinical systems.

Computer rooms are inadequate in terms of space, air-cooling, fire and power protection. There are key issues here not least of which is the location of the existing rooms which make fire protection a non-trivial task.

The hospital computer network is 'patchy' in its coverage. Some areas are well serviced whilst, expansion of applications into other areas is compromised. Our plan is to increase coverage, accommodate voice traffic, introduce a management system (automation), increase the bandwidth (number of devices able to use it concurrently) and allow for asset tracking.

6.5. Summary of Key Gaps

- Information management is perceived by senior management to be weak;

- Processes for capturing user requirements (and for managing projects) need to be reviewed following the clinical service restructure;

- IM&T Service management needs to be strengthened;

- There is limited connectivity between systems;

- Infrastructure stock is aging and in need of further investment;

- Computer rooms have inadequate cooling, fire and power protection;

- The communications network coverage is patchy

7. IM&T Work Programme

A flexible, forward-thinking but achievable IM&T work programme will be a key enabler for the Trust's ambition to attain Foundation Trust status and realise its strategic direction.

7.1.   Guiding Principles

The guiding principles of the work programme follow these key steps:

- Create a sound infrastructure base on which to run high quality clinical applications

- Deliver the Electronic Clinical Record

- Improve the knowledge management and business management processes

In order to deliver the vision, all of these areas must be delivered. In some areas, these high-level end-points have further requirements that are needed first.
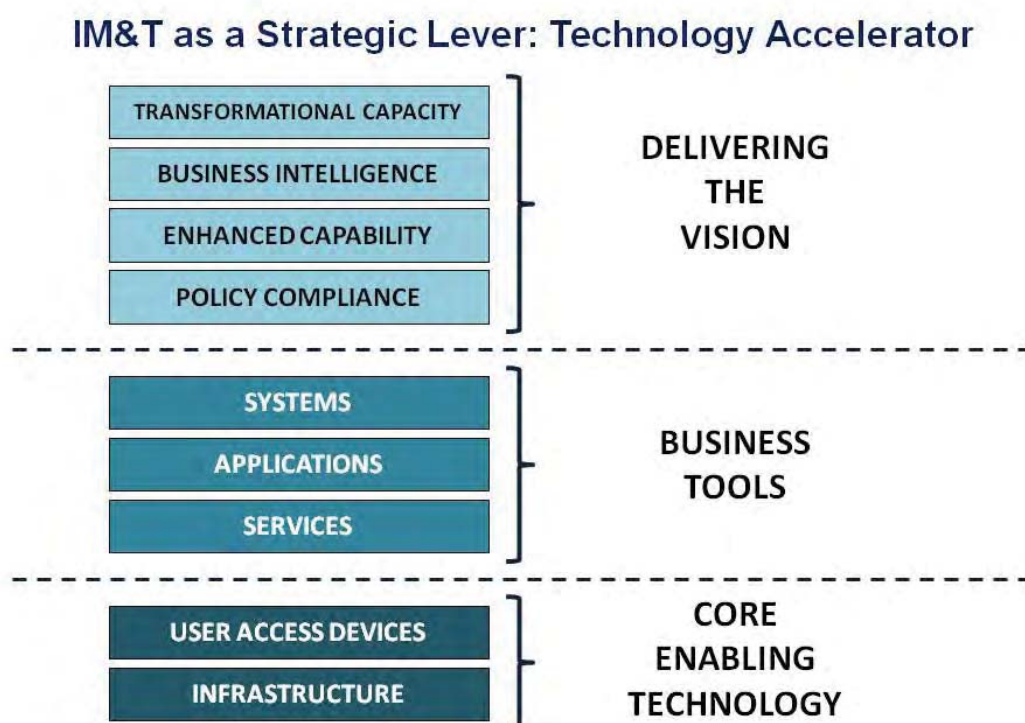
The process of delivering the vision can be seen as an incremental one. The foundation to delivery is the necessary improvements to the core technology – both the server and network infrastructure, and also the end-user devices that clinicians, patients and managers will use to access the system and the information within the system.

Building on the foundation of the infrastructure is the development of the tools used by the business. These tools are both clinical, leading to the development of the ECR, and also managerial, supporting the production and usage of information.

Once the technology and tools are in place, the processes and people are developed to make the best possible use of the tools and the technology to deliver the benefits to the business. This will require developing processes to inform how projects and programmes are delivered, as well as

ensuring that the information about the business is collected, shared, and acted upon in the best possible manner.

Each of these areas, infrastructure, systems and processes, must be developed with an aligned vision, to build towards a programme of work, which can deliver the vision of a flexible, secure and knowledgeable IM&T function that is able to support the Trust vision.

7.2. Programme of Work

Covering a period of five years, we have split the work required into manageable components, which can be delivered, and will move the organisation forwards. Firstly, focussing on what we need to deliver today, and then getting ready for tomorrow's challenges, before delivering the components that will move the organisation to delivery of the vision.

7.2.1. Stabilisation

- ***Evaluate options for delivery of infrastructure***

  Multiple options are available for the delivery of technology to the organisation. These must be evaluated to ensure that the trust are choosing the best possible option for delivery to the business:

    - The resilience solution for the trust servers should be considered;

    - network wireless delivery across the estate should be assessed and surveyed;

    - the current approach to refreshing end-user devices should be re-visited, and there needs to be re-evaluation of the strategy for what devices are the most appropriate for the multiple different users of trust IT services

- ***Implement electronic correspondence services***

  Delivering paper correspondence electronically is a key first step to a paperless clinical record, with added benefits for cost saving, improved perception of the trust to external partners, and timely delivery of information that forms part of national targets

- ***Begin work on Electronic Care Record delivery***

  The first step on the path to a connected, best-of-breed ECR will be to integrate the six core clinical applications, to begin delivering the benefits of the ECR, and to engage clinical stakeholders though the delivery of those benefits

7.2.2. Improvement

- ***Continue delivery of the Electronic care Record***

  Integrate all clinical systems ('Connect-All') to build on the work of the previous package to further deliver the clinical benefits of the ECR. In addition, all components of the ECR will have a single sign-on, which will mean that users only log in to the system once. A system for electronic scanning of paper notes will be implemented as part of the ECR to reduce the use of paper within the trust

- ***Develop a personal device policy***

  Ensure that users can bring in their own devices to use the trust services. This will save the Trust money; build clinical and patient engagement with IT, and also with the clinical record.

- **Enhance the network infrastructure**

  Build on the network deliveries in the previous phase to allow secure use of the network by patients and other non-trust personnel

- **Improve Management Reporting**

  Knowledge management capability will be developed to create information asset owners who will be able to build a view of how the trust is operating, and report this as necessary. This management reporting will form a key part of the programme management and delivery cycle, ensuring that knowledge management is a key part of system delivery and change

- **Back-office improvements**

  The back-office administrative function will target automation of common and repetitive tasks, and improved processes to ensure that access to systems is a core part of the HR and administrative function. In addition, targeted data cleansing will improve the information available for management reporting

7.2.3. Enhancement

- **Deliver the full ECR**

  The final stage of the ECR will be delivered through a clinical portal which allows access to all of the components of the ECR. This will also be able to be published to patients, who can contribute to their health record directly, and through the implementation of telehealth monitoring. An electronic prescribing system will also be integrated into the ECR, to fulfil the clinical needs of the system

- **Management reporting KPIs**

  Management reporting will deliver a dashboard that will report on all necessary key performance indicators. This will enable managers, clinicians and patients to have access to all necessary information to deliver at their best, as well as enabling processes to minimise key national targets, such as patient re-admission

- **Improve the enterprise view of scheduling**

  The enterprise will be able to gain a unified view of the scheduling requirements of the patient, and how these fit into the organisation, to minimise both the patient's time in the process, and maximise the organisation's ability to work with as many patients as possible

7.3.   Delivery Plan & Timetable

The figures below for the delivery plan were supplied by the head of IT and have not been fully validated as part of this strategy, due to the time constraints of the process.

The delivery plan is presented in three parts, aligned to the guiding principles detailed in section 7.1. These are the infrastructure improvements, the delivery of the ECR and the process transformation to deliver knowledge management. A cost summary is included in Section 7.4.

7.3.1. Infrastructure

The infrastructure elements include the improvements to the network, the physical estate used by the infrastructure, the servers and desktop hardware, and the storage solution.
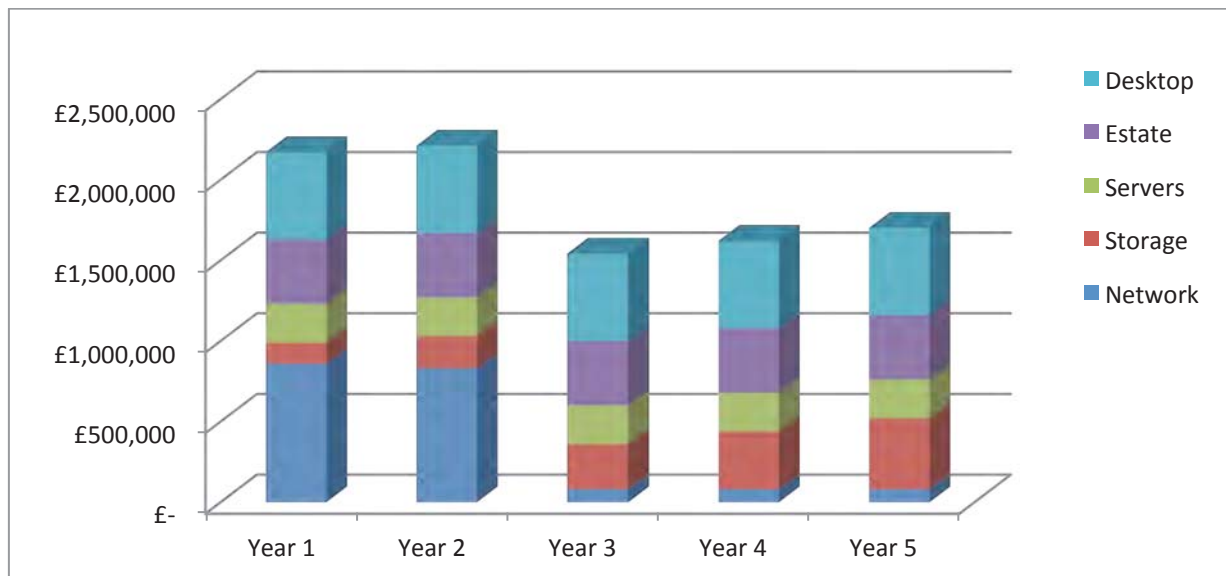

7.3.2. Electronic Care Record

The ECR elements include development of the SemaHelix PAS, such as national spine integration (PDS) and daycase planner; the integration of existing disparate systems to form the ECR, and portal to provide a single view; enhanced order communications and the development of telemedicine, e-Prescribing and electronic correspondence, as well as the move to a paperless hospital.
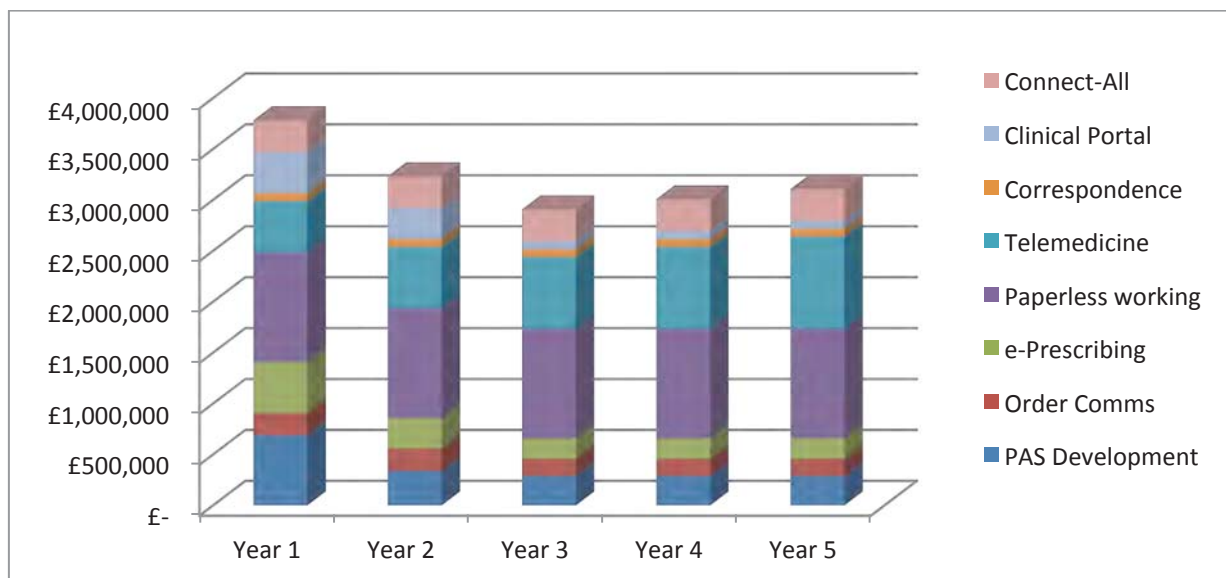
7.3.3. Change Management

Change management to support the improvements in knowledge management involves training of staff in the new process and procedure, supplier engagement in the new ways of working, and necessary staff backfill to allow the training to take place.
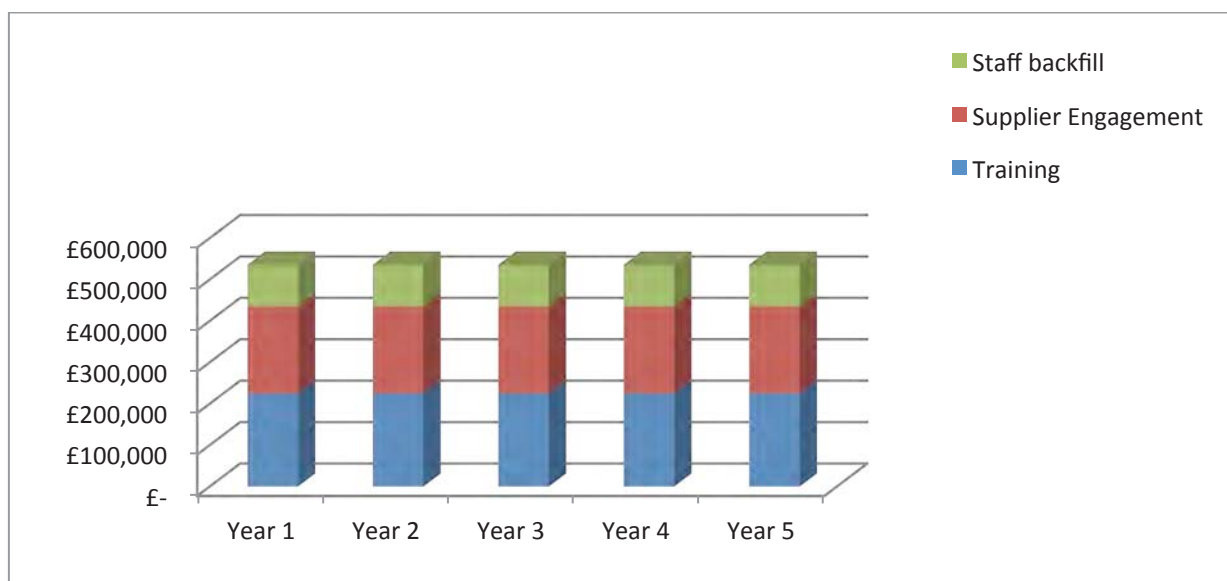
7.3.4. Cost Summary

It is important to note that the Board is <u>not</u> being asked to sanction all the spending referenced in this plan, merely to agree to the general strategic direction being proposed. Separate Outline Business Cases (OBC's) will be written for all the major areas of spend and agreement of these will be the triggers for committing the investment.

IM&T Work Programme 2012 - 2016

	Year 1	Year 2	Year 3	Year 4	Year 5		Total
Infrastructure							
Network	860,000	830,000	80,000	80,000	80,000	£	1,930,000
Storage	130,000	200,000	280,000	360,000	440,000	£	1,410,000
Servers	240,000	240,000	240,000	240,000	240,000	£	1,200,000
Estate	400,000	400,000	400,000	400,000	400,000	£	2,000,000
Desktop	540,000	540,000	540,000	540,000	540,000	£	2,700,000
Sub-Total	**2,170,000**	**2,210,000**	**1,540,000**	**1,620,000**	**1,700,000**	£	**9,240,000**
ECR							
PAS Development	690,000	340,000	290,000	290,000	290,000	£	1,900,000
Order Comms	220,000	220,000	170,000	170,000	170,000	£	950,000
e-Prescribing	500,000	300,000	200,000	200,000	200,000	£	1,400,000
Paperless working	1,080,000	1,080,000	1,080,000	1,080,000	1,080,000	£	5,400,000
Telemedicine	500,000	600,000	700,000	800,000	900,000	£	3,500,000
Correspondence	80,000	80,000	80,000	80,000	80,000	£	400,000
Clinical Portal	400,000	300,000	75,000	75,000	75,000	£	925,000
Connect-All	310,000	310,000	310,000	310,000	310,000	£	1,550,000
Sub-Total	**3,780,000**	**3,230,000**	**2,905,000**	**3,005,000**	**3,105,000**	£	**16,025,000**
Change Management							
Training	225,000	225,000	225,000	225,000	225,000	£	1,125,000
Supplier Engagement	210,000	210,000	210,000	210,000	210,000	£	1,050,000
Staff backfill	100,000	100,000	100,000	100,000	100,000	£	500,000
Sub-Total	**535,000**	**535,000**	**535,000**	**535,000**	**535,000**		**2,675,000**
Total	£ **6,485,000**	£ **5,975,000**	£ **4,980,000**	£ **5,160,000**	£ **5,340,000**	£	**27,940,000**

7.3.5. Outline Timetable

The following table shows a possible order of projects and timescales. This is dependent on the availability of finances to support the activities and may require short-term, additional external support.

The first section highlights developments needed in IM&T infrastructure. The Trust is advised to commission a Strategic Outline Case to assess infrastructure-sourcing options, as other forms of infrastructure management may be more cost-effective than the current, in-house approach, (see next Section 7.4).

IM&T Work Programme Timetable

7.4.   Options Evaluation

The Head of IM&T has recommended the selected option for ECR architecture involving development of the SemaHelix patient management system, with best of breed systems interfaced for specialist departmental areas. Supporting options may involve a portal to bring together the enterprise architecture and integration which will ensure best of breed components are successfully integrated without creating a huge increase in IM&T management overhead.

For many of the programme items above, particularly those in the infrastructure workstream, there are multiple options for delivery which need to be evaluated. These range from delivery by the in-house IT team, to full outsourcing of the work package, and hybrid approaches. It is beyond the

scope of this strategy to perform a full options evaluation, but this should be considered as part of any business cases moving forward.

The case for assessing infrastructure service delivery is strong. Indeed, all NHS Trusts throughout the UK are considering infrastructure sourcing options. There is an opportunity to attain better quality services, at significantly reduced cost and in parallel, introduce innovation to support the strategic objectives of the Trust.

Guidance and direction from the Department of Health QIPP (Quality, Innovation, Productivity and Prevention) back-office work-stream and the NHS Confederation Trust Network Review group is clear. The Quality and Innovation available through the marketplace surpasses that which can be developed internally and savings of between 25% to 40%, recurring/cash releasing are projected nationally, (Audit Commission).

Locally, there is potential for savings in excess of £1m per year, (based on a Channel 3 predictive model, which has been derived from experience of conducting similar studies in similar NHS Trust). These savings will be verified by the production of a Strategic Outline Case for infrastructure sourcing options.

7.5. Conclusions & Recommendations

The Trust is already heavily dependent on its IM&T infrastructure, which is partly due to its geographical catchment and partly due to changes in the way the Trust wishes to interact with patients. The Trust's reliance on its infrastructure is being exacerbated by more initiatives to achieve a closer relationship with patients, and therefore a need exists to ensure that infrastructure is sourced appropriately. There is evidence (from other NHS organisations) that formal assessment of infrastructure sourcing options can be viewed as a QIPP initiative to transform the Trust, with a cost effective service that will simultaneously raise service quality.

The Board is asked to approve this strategy and proceed with the development of a business case for the work programme outlined. The following actions should be considered as early priorities:

1) *Further explore infrastructure sourcing options* through the development of a Strategic Outline Case (SOC) that will confirm the potential for cost savings; allow the case to be affirmed, (strategically, commercially, financially, managerially and economically) and ensure that the strategic direction is achievable;
2) *Commission an OBC* for the next stage of Electronic Care Record delivery.

Some 'quick wins' may be delivered early and these include delivery of correspondence services and VitalPAC integration. These quick wins should be considered as part of the OBC for the next stage of the ECR development.

APPENDIX 4f – Trust IT vision presentation (draft)

Appendix 4f

The Shrewsbury and Telford Hospital Sustainable Services Programme.
<u>A vision for IT – a time for change</u>

The Sustainable Services Programme for Shropshire's Acute hospitals aims to re-engineer our buildings, our workforce and our working practices in order to put the right number of clinicians in the right place for our patients. This change is set against a backdrop of having to ensure all our clinical units are of sufficient size to remain viable, that they can recruit and retain staff to safe levels, that clinical units are proximal to those with which they have the closest working relationship and that for the future our hospital can provide what our population feel is great health care, within our means.

The government in its Five Year Forward View saw the five years leading up to 2020 as being transformational for the NHS. The challenge is one of making changes that demonstrably make a positive difference to health outcomes, that are affordable or require only moderate investment and that together contribute to a reduction in operating costs for the NHS of 20% over that time.

The Five Year Forward View and the subsequent strategic document from the NHS Information Board, Personalised Health and Care 2020 both put great emphasis on using Information Technology to help optimise processes, bring patients and their clinicians closer together and make it easier for patients to take a more engaged and involved role in their healthcare management, before and after hospital.

Our SSP programme will be the catalyst that drives better, more improved, more focused use of IT. In this way IT will not be making do and mending but will be integrated with a movement that is truly all encompassing and transformational for our patients, our workforce, our population and our future.

This document describes what the IT will look like and why it will be necessary.

Creating the vision for IT - What do patients, clinicians and managers want?

Patient	Clinician	Manager
Book and change appointments online. Plan for an appointment or operation with confidence that it will not be rearranged	appropriate information across health and social care at my fingertips.	information to support best and most current use of assets and resources
check information on my medication; report side effects and order and pay for prescriptions	capture information electronically and share with other professionals	help in managing the cultural change to a paper-free organisation
nominate a member of my family to access my information and act on my behalf	receive automatic notifications and alerts to help me make the right decisions and manage my workload	collaboration tools to help me work together with colleagues across our health economy and beyond
interact with doctors and the hospital via video, email and online chat, wherever we are	use technology to transfer orders and actions between care settings	help in my new role to manage my new information assets. I want to understand business continuity.
keep in touch with family and my studies online, while I am away	use cohort intelligence to improve my knowledge base and help me make best use of resources	IT that is available, all the time, anywhere it is needed.
	mobile me	

Satisfying national drivers and priorities

	Five year forward view Improving health and well-being, care and quality, funding and efficiency				
	2016	2017	2018	2019	2020
Personalised Health and Care 2020 NHS Information Board setting strategy with CQC, NHS TDA, Public Health England, Third Sector and Local government agencies	Patients with online access to GP records				
	Patients have digital access to all their health records				
	Records will be interactive. All individuals will be able to record their own comments and preferences				
	CQC will regulate the quality of record keeping				
	NHS kite-marks for 'trusted' smartphone apps that help patients access services. NHS GP verification of health apps.				
	Abolish paper in the emergency department				
	Adopt SNOMED standard clinical terminology across systems and documents				
	A paper free NHS				
	Patients have free Wifi in NHS buildings				

Building our IT strategy
- remain focused on three themes

- Collaboration
  - Help and guidance from NHS bodies including the Health and Social Care Information Centre HSCIC
  - Standards and priority setting by the NHS Information Board NIB
  - Working together with our health partners in the LHE via the Digital IT Forum as we build a Digital Roadmap of work-streams that are interconnected, interdependent and that together have a positive impact on health, wellbeing, care, quality, funding and efficiency.

- Integration
  - The number of systems, the number of stake-holders, the accelerated time-frames, the funding constraints, the agreement on risk make the challenge too big for a one size fits all plan.
  - Simon Stevens NHS CEO comments that "neither can we let 1000 flowers bloom – there must be horses for courses."
  - The challenge must be directed at making best use of systems by integration, harnessing the agility of small and medium enterprises SME's and using standards of data and workflow to make systems talk.

- Safety
  - Electronic will replace paper. The volume of data that supports the best, in-time decision making is simply too great now for it to be any other way. It is safer to have access to the right information. This means that systems must be supported by resilient technology. It must be available, of high integrity and confidential only to those with a need to know. Safety begins with sound design, structured development, testing and training.

We are up there with the best – in some areas

Healthcare systems innovation

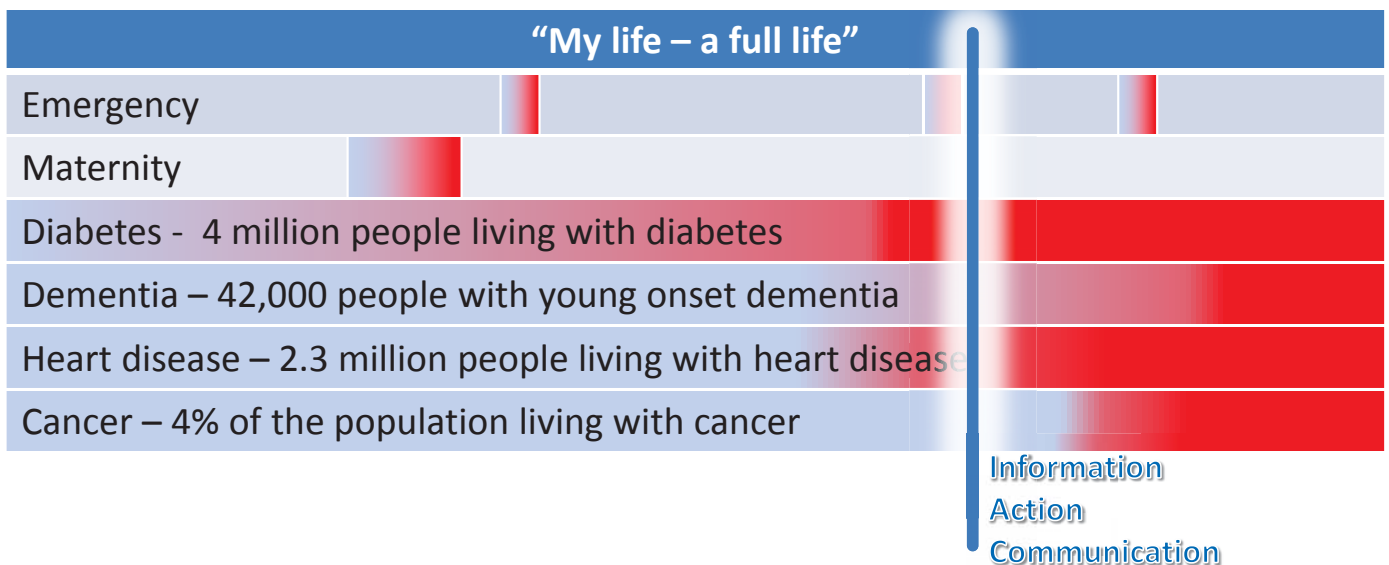## *-Make more room for exciting innovation*

- Mobile working
  - Make use of 3&4G networks and smart id badges to support lone workers.
  - Wearable Telemedicine for continuing support for patients post-discharge. In 2014, 150,000 people had not received adequate support after leaving hospital. 15% of >75's readmitted within 30 days. Re-admissions within 30 days cost the NHS £2.2bn
  - The user may be anywhere. The relevant information may be anywhere.
- Pharmacy
  - Support for hospital and community pharmacies. Help patients better manage discharge medication. Build on the research programmes of Liverpool JM University and Royal Liverpool and Broadgreen UH
- GS1 – just-in-time stock control, re-ordering and tracking
  - Hospitals (Leeds, Derby) are now adopting the global data standard bar-coding for stock control from procurement to bedside.
  - Evidence of 60% reduction in stock-holding. 99.9% stock availability. 46% reduction in order-processing staff.
  - The NHS has some catching up to do. 10-15 years behind efficient retail chains.
- Cancer services support
  - Cancer care accounts for 10% of our activity now. 4% of UK citizens are living with cancer now. This will increase to 6% by 2030. 1000 new diagnoses a day. Survival rates are increasing. Demand for treatment is increasing.
  - Out of hospital shared–care data platforms will become more important. This will require agreement on access rights, contribution from patients, clinicians and carers and integration with a range of hospital and community information systems.
  - Living with cancer will become a partnership between clinical team and patients, helped by shared data.
- Collaboration tools
  - Video conferencing across sites and across care settings across networks that can support this.
  - Document sharing and co-authoring/ editing/ approving – improves bid response times and quality.

Healthcare systems innovation

- it is happening across the NHS

- Clinical access to images
  - Vendor Neutral Archiving can bring images from a range of systems, suppliers and modalities into a format to allow them to be easily accessed and viewed by common means.
- Integration
  - Telematics in fleet cars to ensure optimum call-response times and to manage assets more efficiently and responsibly
- Roaming profiles
  - As access to a computer becomes more important along with identification of the user; roaming profiles and follow-me desktop will have to be considered.
- Electronic noting, e-forms and workflow tools
  - Digital pens
  - Digital forms, paper-free or bar-coded for ease of integration with the electronic records. Embedded into workflow.
- Big data analysis
  - Analysis of NHS prescription patterns for statins established that £27m a month was spent on the more expensive proprietary statins with evidence that all drugs in the class are equally safe and effective.
  - Allows us to invest and position out-of-hospital services in the most appropriate way e.g. E&N Herts Homefirst programme as alternative to Hospital ED admission

Produce the right systems for the new challenges to healthcare

"My life – a full life"
Emergency
Maternity
Diabetes - 4 million people living with diabetes
Dementia – 42,000 people with young onset dementia
Heart disease – 2.3 million people living with heart disease
Cancer – 4% of the population living with cancer

Information
Action
Communication

- A population living longer means that doctors will have to treat more patients presenting with multiple co-morbidities.
- Doctors must have access to important relevant information.
- Patients and advocates must make meaningful use of that information to help ease the burden on doctors – patients can become healthcare partners.
- Systems must provide access to data AND knowledge-based expert intelligence based on that data – for both patients and carers.
- Information must travel across conditions, across multiple carers and across organisations – it must move beyond paper.

Putting all this into a roadmap for SaTH systems and infrastructure
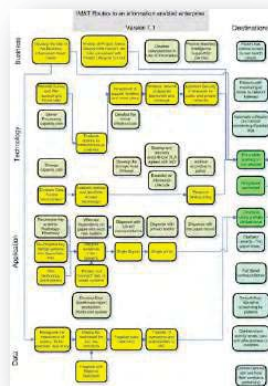

Principles

1. Pursue user engagement for the full life cycle – relentlessly
2. Embrace best of breed – make the best of systems we have and bring early benefits
3. Bring in new systems that users want and that enhance our portfolio
4. Replace systems only when users categorically state they are not fit for purpose
5. Understand the nature of each process re-design (VMI-it)
6. Integrate like mad
7. Make IT resilient, safe, available.

APPENDIX 4g – Phasing plans

THIS DRAWING READ IN CONJUNCTION WITH :

PRH Emergency and Acute
RSH Acute and Planned
Rev05 02.03.1j
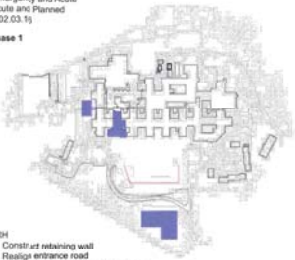
Phase 1

PRH
• Construct retaining wall
• Realign entrance road
• Temporary Car Park/ Park and Ride
• Build multi-storey car park
• Temporary A&E at end of street
• Refurb A&E as UCC

RSH
• Build new MLU/POPD adjacent to Treatment Centre

Phase 2

PRH
• Build new ED/CCU/AEC and wards
• New UCC Operational

RSH
• Demolish ShropDoc
• Provide temporary A&E in its place

Phase 3

PRH
• Refurb existing Critical Care Unit

RSH
• Demolish part of H+N
• Refurbish existing A&E as UCC/AEC
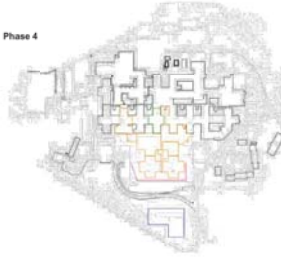
Phase 4

RSH
• Build new entrance

01	Updated for SOC.		02.03.16	KS	AE
Rev	Description		Date	Dr by	App by
KW		date created	12.02.16	Approved by	AE

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client
Shrewsbury and Telford NHS Trust

project
Sustainable Services
Princess Royal Hospital

drawing
Proposed Potential Solution - Emergency & Acute
Phasing Diagrams

project number	scale	
2015 . 00839 . 001	NTS	@ A1
drawing number	rev	issue status
PRH-AHR-00-02-DR-A-20-010	01	SOC

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RSH Emergency and Acute
PRH Acute and Planned
Rev05 02.03.16

Phase 1

RSH
· Construct new stores & loading bay
· Construct new regen kitchen
· Provide new catering offer (Cafe/ Bistro)
· Reconfigure and expand Energy Centre
· Provide Temporary staff parking/ Park & Ride
· Construct new multi storey car park

Phase 2

RSH
· Demolish existing catering, stores and loading bay
· Demolish Generator
· Demolish Estates Building
· Divert Service Road

Phase 3

RSH
· Build new ED/CCU/UCC/AEC
· Build new Women's and Children's Unit

Phase 4

RSH
· Open new Women's and Children's Unit
· Transfer A&E to new ED
· Transfer ICU and HDU to new Critical Care
· Vacate A&E, and ITU/HDU
· Demolish Shropdoc and Head & Neck

PRH
· Vacate Women's and Children's

Phase 5

RSH
· Reconfigure Fracture Clinic
· Construct new Main Entrance
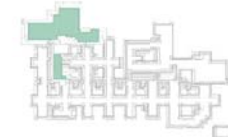
PRH
· Refurbish existing Women's and Children's as new Treatment Centre

Phase 6

RSH
· Move treatment centre to PRH
· Refurbish existing Treatment Centre for MLU/POPD/Admin

PRH
· Refurbish A&E to UCC
· Temporary UCC