

## Borders NHS Board



Meeting Date: 27 June 2019

<b>Approved by:</b>	June Smyth, Director of Strategic Change & Performance
<b>Author:</b>	Jackie Stephen, Head of IM&T Sarah Clark, IM&T Project Manager
<b>TRAKCARE UPGRADE 2018</b>	
<b>Purpose of Report:</b>	
To present the Business Case to upgrade the TrakCare Patient Management System (PMS) from version T2010 to version T2018.	
<b>Recommendations:</b>	
<p>The Board is asked to ratify the recommendations from the Strategy &amp; Performance Committee to:-</p> <ul style="list-style-type: none"> <li>• <b>Note –</b> the very high risk to operational services in Borders General Hospital of the current hardware &amp; software for the Trakcare system;</li> <li>• <b>approve</b> the TrakCare upgrade from version T2010 to version T2018 as a 24/7 managed service as described in the business case;</li> <li>• <b>approve</b> the use of DEL and non-recurring eHealth funding to support the implementation costs;</li> <li>• <b>approve</b> the commitment of additional recurring costs for the fully hosted service and this being added to the financial plan on the basis that operational services are committed to deliver efficiencies to offset the recurring costs.</li> </ul>	
<b>Approval Pathways:</b>	
The business case was presented to the CE Strategy Group who endorsed it and the Strategy & Performance Committee who recommended that it be considered and approved by the Board.	
<b>Executive Summary:</b>	
<p>The “Road to Digital programme” Roadmap presented to the Board in May 2017 highlighted the significant risks with the TrakCare system. An upgrade to the application along with a new hardware platform was part of the overall programme.</p> <p>TrakCare has become a key and critical component for both clinical and administrative users in managing the care of patients across all acute care settings. Services are clear that they would be unable to function for more than a few hours if the system were to fail / be unavailable to them and so any refreshed solution also requires robust support arrangements 24/7/365.</p>	

**Current Situation**

The age and capacity of the hardware presents a significant risk to the organisation.

Storage Capacity - As use of the system has increased over the past eight years, we are storing more data than planned on the hardware. We are at risk of running out of storage capacity by December 2019. This would result in the system being unable to function and no access to patient information.

System access & performance – We have seen degradation in system performance and disruption to users over recent months – interim steps to add memory have been taken to mitigate this but this is not a long term sustainable solution.

The application remains on the original T2010 version. This is now a retired version and no updates, patches or fixes are available from the supplier. It is supported for break fix issues by the supplier while we plan for an upgrade. Running old versions impact our security compliance, our ability to respond to any national changes to data sets and local service improvements in ways of working.

Our current local support is only provided during working hours from the application with very limited skills for the system in the out of hours period. Even in hours the skill level of staff has been eroded due to leavers. This system is based on a Unix operating system. Our infrastructure is predominantly Microsoft so we have a significant skills deficit in being able to fully support Trakcare that is not sustainable moving forward. So far we have been fortunate in being able to access staff not on call when significant issues occur.

**Preferred Option**

The preferred Option 4 in the business case delivers the highest level of risk mitigation and a sustainable 24/7/365 support model. Option 4 is to contract with Intersystems to provide a fully managed service in a private cloud.

This means that the system is running in a supplier data centre. They manage the hardware, operating system and technical components of the application for an annual fee. NHS Borders continue to manage the local configuration and day to day user level support.

This option moves us towards our strategic direction of software as a service in the cloud, delivering improved resilience and support to ensure healthcare professionals have access to the information they need when they need it.

The new modern version of the application has the potential to deliver improvements in ways of working through clinical notes functionality – reducing the need for paper, and through mobility allowing greater access from any location within the hospital.

Our primary aim of the project is to mitigate the significant risks of the current version but a further phase (to be defined) will allow us to leverage both this investment and the nationally agreed contract extension to deliver improved ways of working. Acute services have committed to delivering against those efficiencies to offset the additional recurring cost.

**Financial**

<p>Option 4 demonstrates the best value for money in terms of cost and level of risk mitigation.</p> <p>There are no Capital costs associated with the preferred Option.. There are non-recurring implementation costs of £639,375 in year 1 (2019/20). A source of funding has been identified for these costs. There are annual charges of £275,290 for the managed service. This annual charge will be a cost pressure within the financial plan.</p>	
<b>Impact of item/issues on:</b>	
<b>Strategic Context</b>	<p>Trak remains the system of choice in Scotland and the contract has been renewed for a 10 year term. A move away from on premise hosting in local data centres is the strategic direction NHS Scotland and this proposal is consistent with that. A move away from paper to digital health records is a key component of the national Digital Health &amp; Social care strategy – this proposal will allow progress against that aim.</p> <p>NHS Borders Board agreed an EPR Blue print on 2016 and this proposal was a key strand of that blueprint.</p>
<b>Patient Safety/Clinical Impact</b>	Improved patient safety through additional clinical functionality and the mitigation of risk. Improved resilience and reduced risk of disruption to clinical services in the event of failure.
<b>Staffing/Workforce</b>	Staff will be impacted on the actual upgrade by a change to the Trakcare menu layout as well as mandatory changes to workflows in the system. The project team will support the service throughout the implementation phase and post delivery phase. Training will be provided to support all users. Once implemented the system will deliver the opportunity for efficiencies in working practices which may impact on staffing levels within affected services. This will be managed as part of that project in lien with any organisational polices.
<b>Finance/Resources</b>	Funding has been agreed for the delivery of the project. Additional Recurring funding of £275,290 is required and will be a cost pressure on the financial plan from 2019/20 part year and 2020/21 full year.
<b>Risk Implications</b>	This is a very high risk on our risk register. This proposal will eliminate this risk.
<b>Equality and Diversity</b>	Aligned with Equality & Diversity policy
<b>Consultation</b>	<p>IM&amp;T technical teams – endorsed.</p> <p>Regional eHealth colleagues - endorsed</p> <p>BGH Management Team – endorsed</p> <p>Borders Executive Team- endorsed</p> <p>CE Strategy Group- Endorsed.</p>
<b>Glossary</b>	<p>PMS- Patient Management System</p> <p>T2010/T2018- Version on Trakcare</p>

# eHealth Programme

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## TrakCare Upgrade

*Business Case*

*Version: 0.3*

*Issue Date: 06/02/19*

*Status – Draft*

*Author(s): Sarah Clark*

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## DOCUMENT CONTROL

<b>Title:</b>	TrakCare T2010 Upgrade Project
<b>Author:</b>	Sarah Clark
<b>Approver:</b>	CE Strategy Board
<b>Owner:</b>	Jackie Stephen

### Version History

Version	Issue Date	Summary of changes
0.1	04/02/19	Added clearer benefits & format changes
0.2	06/02/19	Multiple format changes
0.3	06/02/19	Final finance changes
1.0	14/03/19	

### Distribution

Name/Division/Organisation	Date of Issue	Version
IT Programme Team	04/02/19	0.1
Head of IM&T Jackie Stephen & SMT	06/02/19	0.2 & 0.3
CE Strategy Board	14/03/19	1.0

## 1. Executive Summary

This Business case seeks the Clinical Strategy Group's support of the business case and to move forward with the upgrade to version 2018, and to release funding to enable the change.

This business case outlines the requirements for the upgrade of the TrakCare Patient Management System from version T2010 to version T2018. It also highlights the level of support required for future management of the system, and how essential this is for the service. This business case details the rationale and justification for this upgrade, the identified and anticipated benefits, along with the lifetime costs for the solution. The business case will also provide details on the required level of support needed for future management of the system, to meet known organisational requirements, and how essential this is for the service.

### 1.1 Recommendation

IM&T are looking for the recommendation to be agreed and funding to be allocated to proceed With the upgrade to Trakcare version 2018 and move TrakCare onto a fully Hosted Service- Option 4. In addition to request for the recurring SUTA costs for Trak to continue as per the current and new Trakcare contract.

### 1.2 Overview

NHS Borders are now at a stage where formal software support for TrakCare ended mid-July 2018, so although the application continues to be supported on a monthly contract, the options for new patches and software fixes for version T2010 are no longer available.

Over the last eight years, NHS Borders has enhanced the functionality of TrakCare to the point where TrakCare has become a key and critical component for both clinical and administrative users in managing the care of patients across all acute care settings. The original business case approved by NHS Borders Board in December 2009 assumed that there would be interim software upgrades and that at year five a significant hardware refresh would be required. No significant software version upgrades have been undertaken, nor a hardware refresh at the recommended five year point, leaving us with old and dated hardware with a software version which no longer receives any changes or fixes.

We have now gone beyond the intended hardware refresh date to leverage our investment as long as possible. As our footprint has increased over the past eight years with nearly all acute services utilising the TrakCare system, we are storing more data than planned on that hardware which means we are at risk of running out of storage capacity by December 2019. There is now a pressing need to take action to mitigate the risks, as over the last eighteen months we have had significant performance issues which have more recently, caused downtime of the system. We need to move to a supported and sustainable position with our patient management system.

A "Road to Digital" presentation to the Board early 2017 highlighted the current risks with the TrakCare hardware and operating system and now the investment is required to support this change and to mitigate the associated risks.

Another critical risk relating to our current TrakCare solution is the support model currently in place for TrakCare within IT Services. This is due to staff turnover, eroding the skills required for the in-depth technical knowledge for comprehensive support of the Linux platform on which Trak runs. As a consequence, there are no longer the skills within the team to work to Service Level Agreement (SLA) of a four-hour break/fix. Attempting to continue with these knowledge and skills gaps is unsustainable

for the proposed upgrade, especially with the increased dependency on clinical service’s need for 24/7 support. Therefore a new support model will be required as part of this upgrade, to provide stability and reassurance that outage for any layer of TrakCare will be managed within the agreed SLA.

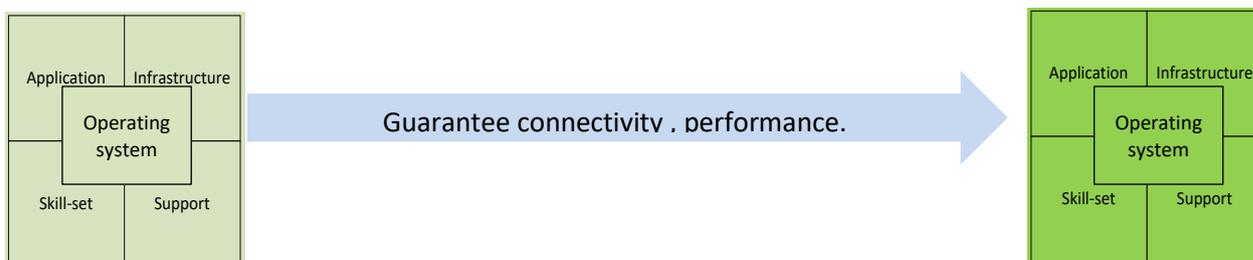
Each of the options presented includes a solution to provide 24/7/365 cover. Currently, NHS Borders provide support from 08:00 – 18:00 Monday to Friday. As a critical system, TrakCare System will be in use on a 24/7/365 basis within NHS Borders. For this reason, the support model for TrakCare must align to that need.

### 1.3 TrakCare Upgrade & Support Options

Five options have been considered and appraised in order to reach the recommended solution. The considered options are listed in detail, within Section 5 of this Business Case. A risk based approach has been taken, so each option has the starting risk position and the target risk position of the investment and the requirements are met. Option 4 is the only option that is a clear route to green improving the service and mitigating identified organisational risks

- Option 4: Upgrade to TrakCare V2018 & with a fully hosted solution from the Vendor- Application & Infrastructure Management

*This option is the preferred option delivering a fully robust, resilient hosted solution with the vendor. All organisational risk will be mitigated with reassurance of a support model across 24/7/365.*



	Capital	Non-Recurring	Recurring
<b>TOTAL Year 1</b>		£639,375	£245,695

### 1.4 Key Benefits

Benefits
With recent performance issues, system stability is at 80%. A hosted service will ensure 99.999%
Reassurance of a robust, stable, high performance and resilient platform
Provided with a 24/7/365 level of support from the vendor with a team of experts

In case of failure at any level of the hardware, downtime will be minimised through failover to a resilient back-up solution
A positive impact on patient care by enabling clinicians to focus on patients rather than a slow, underperforming system.
Enhancing a system for clinical use and working towards a EPR
Alignment with national strategy
Will provide confidence in the expertise managing the break/fix meeting the 4hr fix SLA

### 1.5 Detailed Costs Of preferred option 4

Overall Costs							
		Year 1 (2019/20)		Year 2-5		Year 5-10	
	Capital	Non-recurring revenue	Recurring Revenue	Non-recurring revenue	Recurring Revenue	Non-recurring revenue	Recurring Revenue
Hardware							
Software							
NHSB Resource		£487,446					
Professional Services ISC- Fully hosted service		£43,085	£239,700		£239,700		£239,700
NHSB Connectivity to data centre		£40,000			£28,875		£28,875
Implementation-Upgrade		£33,250					
End user, Sys admin & Internal Team Training		£20,000					
Contingency (2.5%)		£15,595	£5,995		£6,714		£6,714
<b>TOTAL</b>		<b>£639,375</b>	<b>£245,695</b>		<b>£275,290</b>		<b>£275,290</b>

Funding	Year 1 (2019/20)			Year 2-10
	Capital	Non-Recurring	Recurring Revenue	Recurring Revenue
Del Fund		£487,446		
NHS Borders eHealth fund				
Scottish Government				
Surplus/Deficit		£151,930	£252,672 (current SUTA costs)	£255,704 (SUTA- increasing £3k per annum)*
			£245,695 (new hosting costs)	£275,290 (Hosting)
<b>Total Funding Required*</b>		<b>£151,930</b>	<b>£498,670</b>	<b>£530,995</b>

\* NHS Borders will continue to pay a payment to Intersystems for the use of the TrakCare System of £252,672 per annum (figures from the new 10 year contract). This payment, including an annual increase due to RPI of approx. £3,000 per year, will continue and the costs presented in this business case will be in addition to these payments.

### 1.6 Timescales- Indicative

TrakCare is estimated to run out of disk space by December 2019 and Intersystems has provided an upgrade start window from April 2019. This will ensure a full delivery cycle to be completed within this timescale.

Activity	Estimated Start Date
ISC engage & pre-work carried out prior to Upgrade commencing.	Apr – Jun 2019
ISC commence Upgrade- estimated time 6 months	Jun- Dec 2019
Project Start-up- Initiation & planning commences	Apr 2019
Product Delivery- Roll-out/ Implementation of change commencement	Dec/ Jan 2019/20
Post Implementation Activity	July 2020
Project Closure	Aug 2020

## 2. Purpose

The Business Case outlines the organisational requirements for the upgrade of the TrakCare PMS System from version TrakCare T2010 to version T2018.

### Background

NHS Borders current Patient Administration System (PAS) is TrakCare T2010, which was implemented in December 2010.

We are now at a stage where the current version, is no longer being formally supported by Intersystems (Formal support ended mid 2016). Only NHS Golden Jubilee, National Waiting Times Centre and NHS Borders remain on the original T2010 version and a programme of change is being developed to bring all NHS boards to within one version of each other. This is necessary to deliver and maintain greater standardisation and supportability across Scotland.

PMS Scotland- TrakCare Versions Today	
NHS Ayrshire & Arran	T2016.2
NHS Borders	T2010
NHS FIFE	T2016.2
NHS Forth Valley	T2018.2
NHS Grampian	T2016.2
NHS Greater Glasgow & Clyde	T2018.2
NHS Golden Jubilee	T2010

NHS Highland	T2016.2
NHS Lanarkshire	T2016.2
NHS Lothian	T2016.2
NHS Tayside	T2016.2

In 2016 work commenced with NHS Borders and NHS Lothian to determine if an integrated solution was a viable option to include in the 2016 business case to upgrade TrakCare. This was considered a viable option at the time and was presented in the business case approved by CE Strategy Group. Due to insufficient funding, and the urgent need to develop plans to mitigate risks across the whole IT Infrastructure, the upgrade was never progressed. This Business Case has revisited the integrated solution proposed in 2016 to review that work and consider additional options which are now available. Additional information regarding the options and the review are shown in the Appendixes.

### 3. Case for Change

#### 3.1 Business Needs

The TrakCare Patient Management System is a clinical system currently used by a variety of NHS Borders services both in the acute setting and also community locations. When it was first introduced, the only electronic information recorded was patient movement information (Admissions, Discharges and Transfers and Waiting Times) from within the hospital setting. Since then the system has had a more clinical focus providing essential clinical data to all staff as well as the ability to support care planning and business management. In addition, over the past 8 years NHS Borders requirements have changed and therefore NHS Borders is more dependent on TrakCare more than ever. Additional services added to TrakCare over the last 8 years include;

- Order Comms
- Discharge Letters
- Clinic Letters
- Questionnaire's
- Med Rec Tracking
- AAU
- Workbenches incl. Smoking Cessation, Porters
- AHP services incl. Msk Physio, Podiatry, Dietetics
- Ward Attenders
- MH Inpatients

By upgrading the current version of TrakCare we are enhancing our capabilities of achieving a comprehensive Electronic Health Record in accordance with the approved Electronic Health Record Blueprint (EHR) by the Clinical Executive Strategy Group in 2016. The Blueprint addresses and supports the need to provide health care and ultimately social care professionals, with improved access to patient information to enable better clinical care and health management to patients. Also the new Digital Strategy for Health & Social care also supports this.

#### 3.2 Current Risks

The key risks/ issues of the current TrakCare platform are significant;

<i>Risks or Issue</i>	<i>Impact</i>
The probability of hardware failure	The platform will remain unstable and a TrakCare server failure could occur at any point as a consequence of old/outdated hardware. The impact on the service would be significant with the potential for significant periods of downtime for a period of time- which is unable to be quantified.
The probability of software failure	Software could become corrupt or fail at any time. Support would not be available to restore the data so potentially could be lost.
The lack of disk space/ storage for data	This is due to run out by December 2019-based on current monthly data input into TrakCare
Less than Optimum internal support	The skills of the IT Services team have diminished over time due to loss of skilled staff, so IM&T are unable to provide the level of support required for a critical platform. ISC assistance would be required and this would be chargeable and subject to vendor resource availability.
The Business Continuity plans	These are currently on paper throughout the BGH. This gets more difficult as downtime increases and data entry following downtime impacts services significantly.

#### 4. Detailed Options Appraised

##### 4.1 Option 1: Do Nothing

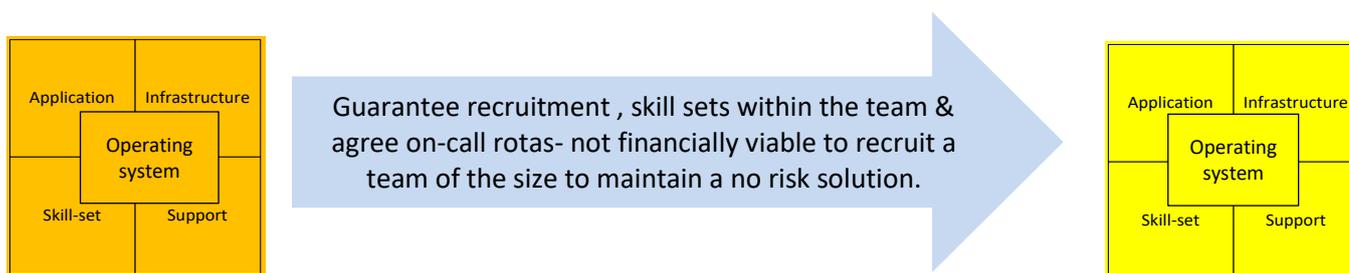
The option to do nothing is not a viable option as the current TrakCare system will reach its disk space capacity estimated to be by December 2019. This is based on the current data being stored in TrakCare on a monthly basis. This is increasing each month significantly as more and more data is being scanned into the system.

The very high risk to the organisation, associated with the current TrakCare PMS will continue until it is upgraded or replaced. This option has therefore not been explored further as it is not a viable option

##### 4.2 Option 2: Expand new IT cluster and upgrade Trak software

This option is just the same as it is now but with the upgraded software. This would mean the local hardware management and support would continue as it is now. The IT team will need to be strengthened to ensure the correct skillset is in place for the new complex underlying ICT Infrastructure layer.

The TrakCare System will be used on a 24/7/365 basis within NHS Borders and therefore the support model should align to that



	Capital	Non-Recurring	Recurring
<b>TOTAL Year 1</b>	£419,225	£669,095	£198,542

### Rationale

- Local decisions can be made quicker and more responsive to issues
- In-house management of the Infrastructure & Application layers will negate any 3rd party involvement out-with the standard support contract with the Vendor.
- By adding the new TrakCare hardware to the new expanded IT Cluster will provide the robust, secure and resilient platform necessary for a Tier 1 critical system.
- Downtime in case of failure at any level of the hardware will be minimised through failover to the new resilient cluster.

### Constraints

- This option isn't delivering to Strategic Direction where all new systems should be cloud hosted wherever possible. Failing this then a Managed Service would be preferential to hosting & managing locally, which is this option.
- Whilst this is a lower cost option, a 3<sup>rd</sup> party supplier would be required to install & provision an extension to the new IT cluster which means new hardware and storage at a considerable cost.
- Hardware will require replacing every 5 years, so additional investment required.
- Significant difficulties may occur with staffing & skillsets. Strengthening the current IM&T team would be required as TrakCare uses a complex proprietary database technology and to support it and the necessary TrakCare Database internally, will require a level of 'skilling up' within the team.
- Involves taking on more highly skilled staff on a permanent basis and therefore does not offer

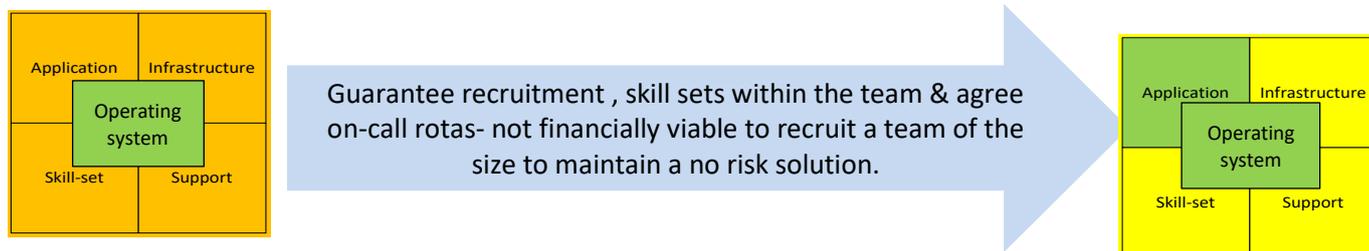
- the flexibility of buying the services from a supplier.
- There is a risk that NHS Borders will not be able to recruit or retain the relevant skills under the restraints of Agenda for Change.
- The approximate costs are based on mid-band entry, but it is more likely that NHS Borders will need to pay at least top-band to attract the required skills and calibre.
- A high risk for the teams' appetite to undertake a very high level of training and the current team's capabilities which are questionable.
- The TrakCare System will be used on a 24/7/365 basis within NHS Borders and therefore the support model should align to that to achieve the 4hr break/fix SLA.
- NHS Borders currently have an 8am-6pm 5 days a week 365 days per year support desk in place with an on-call rota for IT Services which is a mix up of different skill levels and to manage the new upgraded system, this non-24 hr. support model is not sufficient for the new technologies and to achieve the 4 hour break-fix support for a Tier 1 critical system.
- A new support model would have to be put in place, consisting of a team of 12 Senior Infrastructure & Network Engineers as well as Application specialists. Due to the size of the IM&T teams, this would be an unrealistic approach to have this extensive staffing in place to support a historically stable platform (over the last 10 years) to ensure we meet the 4 hr. break-fix SLA. For this option, the technical support would therefore need to be outsourced to a 3<sup>rd</sup> party to take over the management from 6pm to 8am 365 days per year. The costs for this will be explored if this option is preferred.

#### Approximate Costs Option 2: Excluding VAT

Overall Costs									
	Year 1			Year 2-5			Year 5-10		
	Capital	Non-recurring revenue	Recurring Revenue	Capital	Non-recurring revenue	Recurring Revenue	Capital	Non-recurring revenue	Recurring Revenue
Hardware-storage/servers	£133,000 + £230,000 (cluster extension)			£133,000 (Yr5)			£133,000 (Yr10)		
SCC Software Licenses	£46,000								
NHSB Resource		£487,446	£193,700			£193,700			£193,700
Professional Services ISC		£30,000			£24,000 (Yr5)			£24,000 (Yr 10)	
Professional Services SCC		£44,000							
Implementation-Upgrade		£81,000							
Internal Team Training		£10,000							
Contingency (2.5%)	£10,225	£16,320	£4,842	£3,325	£600	£4,842	£3,325	£600	£4,842
<b>TOTAL</b>	<b>£419,225</b>	<b>£669,095</b>	<b>£198,542</b>	<b>£136,325</b>	<b>£24,600</b>	<b>£198,542</b>	<b>£136,325</b>	<b>£24,600</b>	<b>£198,542</b>

#### 4.3 Option 3: Locally Host the IT Infrastructure Layer and buy Core Support Services from the Vendor

This option is to manage the IT Infrastructure internally but to purchase a fully managed service from InterSystems to support the Application Layer and the Operating System.



	Capital	Non-Recurring	Recurring
<b>TOTAL Year 1</b>	£419,225	£660,095	£391,673

## Rationale

- This effectively transfers the critical support responsibilities away from NHS Borders i.e. Application Layer & O/S (Red Hat & Cache specifically).
- Local decisions can be made quicker and more responsive to issues regarding infrastructure
- By adding the new TrakCare hardware to the new IT Cluster will provide the robust, secure and resilient platform necessary for a Tier 1 critical system.
- Downtime in case of failure at any level of the hardware will be minimised through failover to the new resilient cluster.

## Constraints

- The current new Cluster of infrastructure will have to be extended to accommodate the new Trak Infrastructure. This is at a considerable cost.
- NHS Borders would not be delivering to the Strategic Direction of “Cloud First”, but it would be a step in the right direction.
- The necessary team recruitment would reduce marginally; however up-skilling/ training would still be necessary for the existing infrastructure team.
- This option is a higher cost option and the Infrastructure management will still be required according to option 2
- Hardware will require replacing every 5 years, so additional investment required.
- This option involves taking on more highly skilled staff on a permanent basis and therefore does not offer the flexibility of buying the services from a supplier.
- There is a risk that NHS Borders will not be able to recruit or retain the relevant skills under the restraints of Agenda for Change.
- The approximate costs are based on mid-band entry for new posts, but it is more likely that NHS Borders will need to pay at least top-band to attract the required skills and calibre.
- A high risk could be the appetite within the team to undertake a very high level of training and the current team’s capabilities which are questionable.
- The TrakCare System will be used on a 24/7/365 basis within NHS Borders and therefore the support model should align to that to achieve the 4hr break/fix SLA.
- NHS Borders currently have an 8am-6pm 5 days a week 365 days per year support desk in place with an on-call rota for IT Services which is a mix up of different skill levels and to manage the new upgraded system, this non-24 hr. support model is not sufficient for the new technologies and to achieve the 4 hour break-fix support for a Tier 1 critical system.
- A new support model would have to be put in place, consisting of a team of 12 Senior Infrastructure & Network Engineers as well as Application specialists. Due to the size of the IM&T teams, this would be an unrealistic approach to have this extensive staffing in place to support a historically stable platform (over the last 10 years) to ensure we meet the 4 hr.

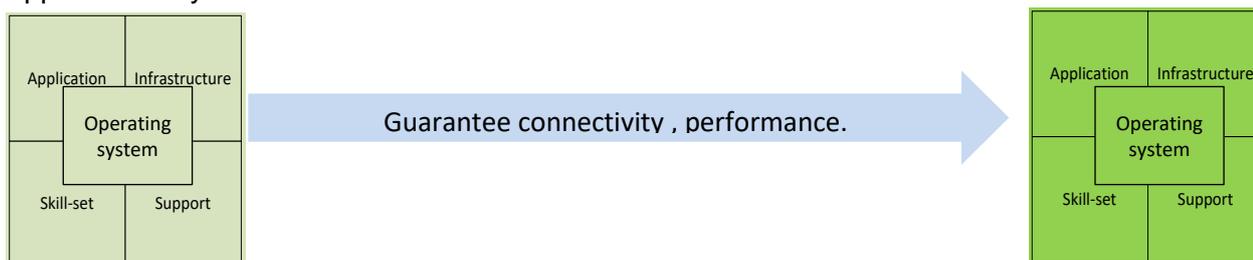
break-fix SLA. For this option, the technical support would therefore need to be outsourced to a 3<sup>rd</sup> party to take over the management from 6pm to 8am 365 days per year. The costs for this will be explored if this option is preferred.

**Approximate Costs Option 3: Excluding VAT-**

Overall Costs									
	Year 1			Year 2-5			Year 5-10		
	Capital	Non-recurring revenue	Recurring Revenue	Capital	Non-recurring revenue	Recurring Revenue	Capital	Non-recurring revenue	Recurring Revenue
Hardware-storage/servers	£133,000 + £230,000 (cluster extension)			£133,000 (Yr5)			£133,000 (Yr10)		
SCC Software Licenses	£46,000								
NHSB Resource		£487,446	£116,220			£116,220			£116,220
Professional Services - ISC manage service fees (initial set up & upgrade non-recurring)		£28,500	£265,900		£24,000 (Yr5)	£265,900		£24,000 (Yr10)	£265,900
Professional Services SCC		£44,000							
Implementation-Upgrade		£81,000							
Internal Team Training		£5,000							
Contingency (2.5%)	£10,225	£16,149	£9,553	£3,325	£600	£9,553	£3,325	£600	£9,553
<b>TOTAL</b>	<b>£419,225</b>	<b>£660,095</b>	<b>£391,673</b>	<b>£136,325</b>	<b>£24,600</b>	<b>£391,673</b>	<b>£136,325</b>	<b>£24,6000</b>	<b>£391,673</b>

**4.4 Option 4: A fully Hosted Solution from the Vendor- Application & Infrastructure Management**

This option comes in 2 parts, firstly to buy a 24/7 Hosted Service support package to cover the underlying ICT Infrastructure layer and also a 24/7 Managed Service support package to cover the Application Layer.



	Capital	Non-Recurring	Recurring
<b>TOTAL Year 1</b>		£639,375	£275,290

## Rationale

- Vendor offering a 24/7/365 fully managed resilient, secure, and robust service, ensuring front line response and specialists staff managing support and fixes
- This would bring NHS Borders in line regionally, with NHS Fife & Tayside already undertaking a full hosted solution.
- NHS Borders IM&T will be able to support TrakCare without reducing its capacity to provide other existing services.
- There will be less impact for IT staff on a daily basis so time & effort can be spent elsewhere.
- It will be easier to interface with any new application as the vendors expertise would carry out all of the work.
- Skills are already in place for the application layer within the HIS team so no additional recruitment is required.
- Prevent skill deterioration over time from within the IT team.
- All of the patching/ upgrades & refreshing of environments will be managed by the vendor.
- The backups, maintenance & outages will be managed by specialists.
- All the risk associated with previous options will be negated
- There will be no requirement of out-sourcing the Out of Hours support for options 2 & 3.
- Hardware will not have to be replaced every 5 years at a cost to NHS Borders
- Storage will not have to be increased annually at a cost to NHS Borders
- Supplier will fully set up this service
- Costs include set-up, contract management and account management.

## Approximate Costs Option 4:

Exc. VAT

Overall Costs							
		Year 1 (2019/20)		Year 2-5		Year 5-10	
	Capital	Non-recurring revenue	Recurring Revenue	Non-recurring revenue	Recurring Revenue	Non-recurring revenue	Recurring Revenue
Hardware							
Software							
NHSB Resource		£487,446					
Professional Services ISC- Fully hosted service		£43,085	£239,700		£239,700		£239,700
NHSB Connectivity to data centre		£40,000	£28,875		£28,875		£28,875
Implementation- Upgrade		£33,250					
End user, Sys admin & Internal Team Training		£20,000					
Contingency (2.5%)		£15,595	£6,714		£6,714		£6,714
<b>TOTAL</b>		<b>£639,375</b>	<b>£275,290</b>		<b>£275,290</b>		<b>£275,290</b>

### 4.5 Option 5: Integrate with Lothian Instance of TrakCare.

This option is to merge NHS Borders footprint and patients on to NHS Lothian's existing instance of TrakCare and having the IT Infrastructure and Application delivered from NHS Lothian.

## Rationale

- This option will be working towards the eHealth vision of Regionalisation and will reduce 2 instances of TrakCare to 1 instance, moving towards the suppliers' vision of a single instance for Scotland.

## Constraints/ Risks

- As ISC have never carried out an integration of platform & different software versions before, this model has been identified as a high risk project, more complex and unachievable at this time. The supplier is not able to recommend or support this option at this time. It is considered too high risk and very costly. Detailed work has been undertaken with the supplier and NHS Lothian.

### 4.6 Preferred Option

Whilst Options 2 & 3 are viable and the cheaper options, the risks around the supporting of the software application would need to be mitigated with the up-skilling of staff and the increase of highly skilled resources within the teams. This would take considerable time and effort to establish these changes and there are still risks about the recruitment of the skilled workforce and maintaining them in the long term.

Given the higher cost of a managed service and the fully hosted solution now being the cheaper option, the preferred and recommended option by IM&T would be Option 4- : A fully Hosted Solution from the Vendor- Application & Infrastructure Management

This option would therefore guarantee

- Alignment with national strategy;
- Achievable within the timescales offered by Intersystems
- Working in parallel to Road to Digital Programme and therefore working in line with key dependencies
- Mitigate current high risk associated with TrakCare
- Reassurance of a robust, stable, high performance and resilient platform
- Reassurance of break/fix capabilities meeting the 4hr fix SLA

### 4.7 Potential Risks and Challenges

- Due to the age of existing hardware and software, Intersystems may have underestimated the upgrade timescales of 5/6 months. A full review has therefore been approved to be undertaken as soon as possible.
- Funding may not be secured for the additional managed service support costs

### 4.8 Recommendation

To upgrade to Trakcare version 2018 and move TrakCare onto a fully Hosted Service- Option 4. This best meets the requirements of a stable and supported 24/7/365 service with more efficient response times.

#### 4.9 Timescales- Indicative

TrakCare is estimated to run out of disk space by December 2019 and Intersystems has provided an upgrade start window from April 2019. This will ensure a full delivery cycle to be completed within this timescale.

Activity	Estimated Start Date
ISC engage & pre-work carried out prior to Upgrade commencing.	Apr – Jun 2019
ISC commence Upgrade- estimated time 6 months	Jun- Dec 2019
Project Start-up- Initiation & planning commences	Apr 2019
Product Delivery- Roll-out/ Implementation of change commencement	Dec/ Jan 2019/20
Post Implementation Activity	July 2020
Project Closure	Aug 2020

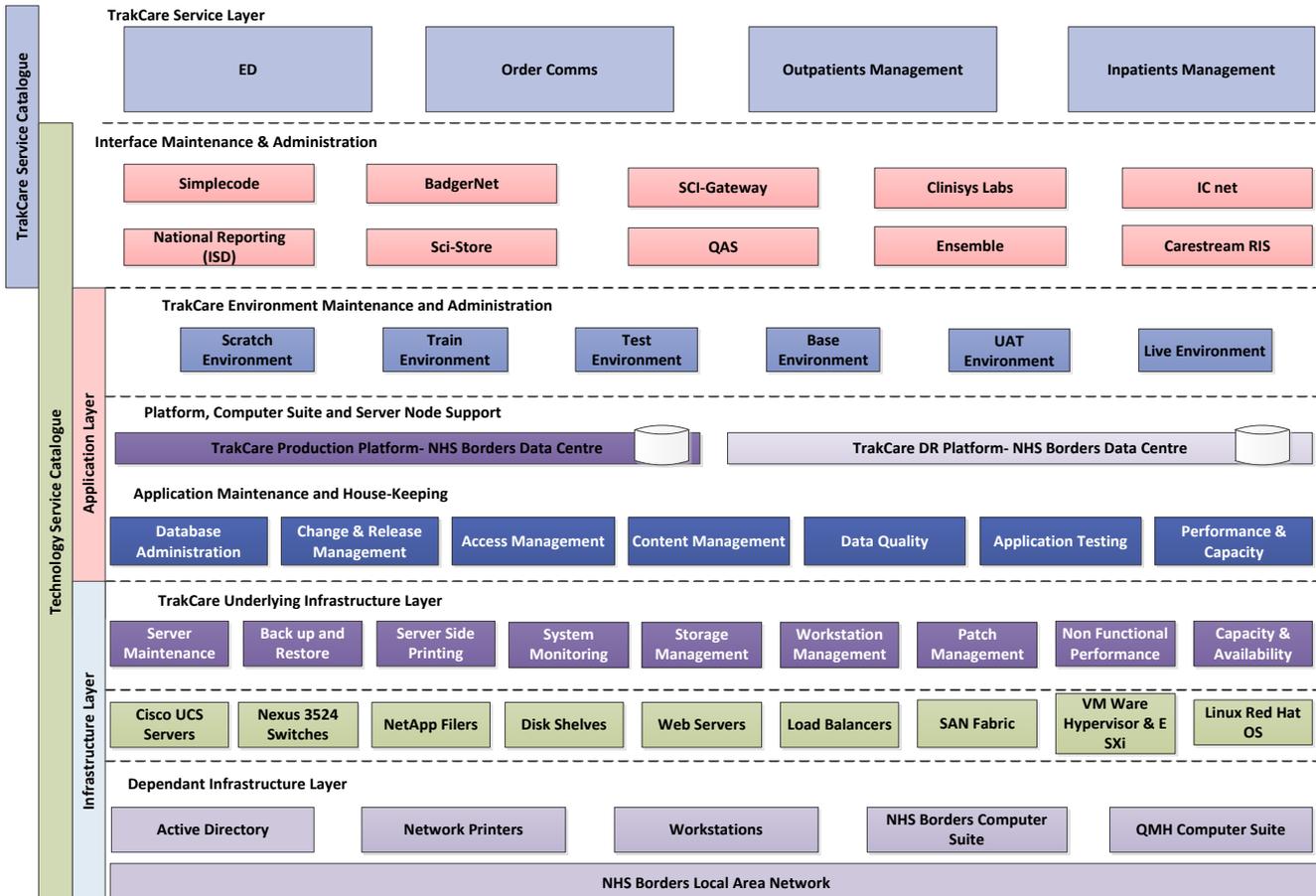
### 5. Planning/ Project Management Team

Non Recurring Revenue	Breakdown	Costs
Project Management- B7	1 WTE	£46,473
Project Management- B6 (Technical lead)	1 WTE	£38,740
Developers B6 X 2	1.5 WTE	£58,110
Lead Tester/QA B5 X 1	1 WTE	£36,247
Workstream Leads/ Project Officers B5 x 2	4 WTE	£72,494
Trainer B5 x1	1 WTE	£36,247
Information Officer B6 x 1	1 WTE	£38,740
IT Facilitators B5 x 2	1.85 WTE	£67,060
System Admin- B6 x 1	0.5 WTE	£19,370
System Admin- B5 x 2	2 WTE	£72,495
Field Engineer B4 x 4 days	0.2 WTE	£300
Senior Infrastructure Engineer B6 X 11 days	1.0 WTE	£1,170
<b>Non Recurring Revenue Total</b>		<b>£487,446</b>

## 6. Appendix

### Appendix A- TrakCare Layered Services

The schematic shows TrakCare as a layered services map. Note the Application Layer and the Infrastructure layers which are very relevant to this paper.



### Technology Layers & TrakCare Support Matrix

The layers that we are particularly interested in are within the Technology Service Catalogue. The main responsibilities and activities which sit within these layers are as follows:

#### Interface Maintenance and Administration

Messaging Interface Administration, Data Housekeeping, Errors and Events reactive support and maintenance, Response to Statutory Changes and Fixes.

#### Environment Maintenance and Administration

Data Management (Clear Down, Anonymisation), Manage Training Environments, Environment Refresh, Patching of TrakCare Live Environment, Patching of Non-Live Environments, Environment Archiving and Housekeeping, TrakCare Change Control Management.

### **Platform, Computer Suite and Server Node Support**

Technical Architectural Design Upkeep, Connectivity to sites for vendor support, Secure Data Centre Hosting, Data Centre Connectivity from User Sites.

### **Application Maintenance & House-Keeping**

Regular Performance Reviews, Data Archiving, Data Husbandry (Clean-up of temporary data generated etc.) Capacity Audit and Planning, Future System Version Replacement and Upgrades.

**Database Administration:** Storage Architecture, Software Installation, Patch Application, Security Management , Clustered (High Availability) Solutions, Database Replication, Auditing Assistance, Data Warehouse Architecture and Maintenance, Performance Tuning , Database Recovery & Restoration, Connection Management, Monitoring and Event Notification, Slow Query Detection and Analysis, Index Maintenance, Statistics Gathering, Modification and Configuration Services, Memory Utilisation and Tuning.

### **Change Control, Versioning and Release Management**

Application Release Management, Platform Release Management, Platform Change Control

**Access Management:** Application Access and User Account Administration

**Content Management / Build Support:** National Reference Files, Code Table Management / Build, Exception Queue Management, Operational Use Monitoring, InterSystems ITSM.

### **Underlying Infrastructure**

**Server Maintenance:** Hardware Support and Maintenance, Operating System Maintenance and House-Keeping, Virtual Server Farm Maintenance.

**Backup and Restore:** Server / OS Backup and Restores, Data Backup and Restores, Periodic Restore Testing.

**Server Side Printing:** TrakCare Print Server Administration, Management of Print Driver Database.

**System Monitoring, Alerting and Automation:** Application Monitoring, Server Platform, Database, SAN Storage, Client Side Networking, Data Centre Networking, HL7 Messaging Interfaces.

**Storage Management:** Capacity Management, Storage Maintenance, Fibre Channel Switch and Zoning, Performance Monitoring, Cross-Site Replication.

**Workstation Management:** Client Workstation and Device Management, Maintain Client Device Configuration According to TrakCare Requirements, Monitor and Manage TrakCare Print Queues.

**Dependant Infrastructure:** Existing underlying technologies and facilities.

The following embedded document includes the Intersystems Managed Hosted Description and support matrix.



Managed-Hosted  
description.docx

Appendix B – Integration document



Borders on Lothian  
Trak\_Changes since 1

## Appendix C – Overview of Software Upgrade

As part of the upgrade, the System Admin team will be investigating the Scottish Edition functionality as well as the T2018 functionality. This means that instead of local Borders site level build, we could possibly adopt a standard Scottish build for most configurable components.

Adopting a standard Scottish Edition is Intersystems vision for all NHS Boards in Scotland. The high level benefits of moving to Scottish Edition are:

- Ease of deployment of new functionality – preconfigured and released through Edition
- Ease of Upgrade – ISC testing is carried out against standard product configuration
- Ease of Patching – as above.
- On-going Maintenance
- mandatory changes for national reporting are released through Edition
- deprecated functionality is replaced with new components
- agreed layout changes are released via Edition

Standardisation of configuration for end users moving between Boards – minimises risk and training requirements

- Changes made for individual Boards are released and made available via Edition
- Edition Workflows benefit from lessons learnt from Global deployments

Intersystems will carry out detailed analysis to determine whether it would be beneficial for NHS Borders to move onto Edition. The analysis will provide a % match of our build to Scottish edition. This will then determine where our local build differs from Edition and highlight what functionality we would have to keep locally so not to lose this by upgrading.

Appendix D- Option Support Matrix & Proposed teams

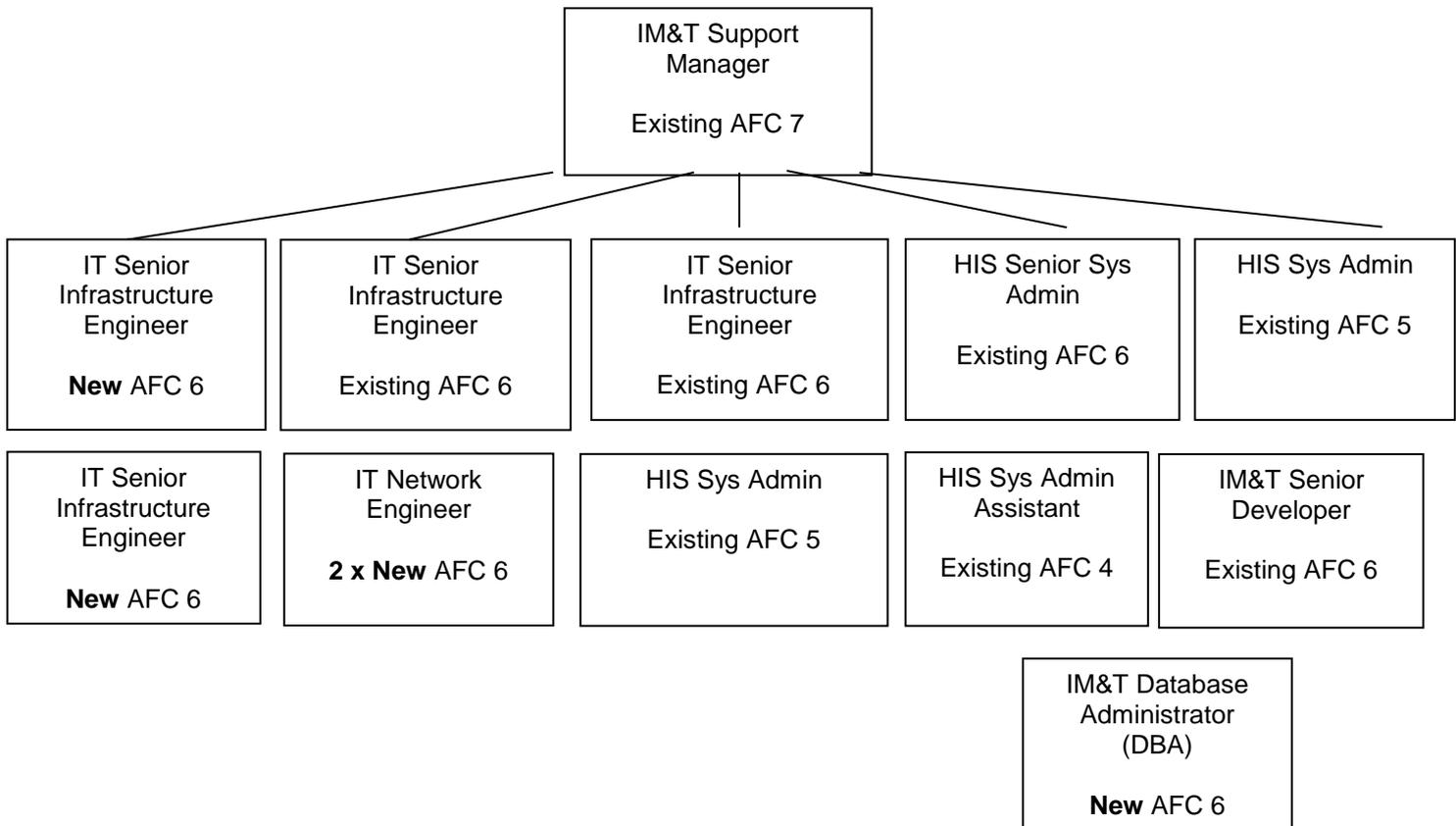
**Option 2 Responsibilities Matrix**

Black Dots Indicate full responsibility, grey dots indicate limited responsibility / assistance

<b>TrakCare Platform Support</b>	<b>InterSystems</b>	<b>NHS Borders</b>	<b>Team Management</b>
Interface Maintenance & Administration	●	●	Developer
System Interface Customisation / Development	●	●	Developer
Environments Maintenance & Administration		●	IT
Platform and Server Node Configuration		●	IT
Application Maintenance & Housekeeping	●	●	IT
Database Administration		●	IT
Change Control, Versioning & Release Management	●	●	HIS
Access Management		●	HIS
Content Management		●	HIS
<b>Underlying Hardware Infrastructure Support</b>	<b>InterSystems</b>	<b>NHS Borders ICT</b>	<b>Team Management</b>
3 <sup>rd</sup> Party Applications / Add ins		●	Developer
Server Maintenance & Break / Fix		●	IT
Virtual Server Environment (VMware) and Operating System Maintenance		●	IT
Backup and Restore Operations		●	IT
Server Side Printing Administration		●	IT
System Health Monitoring and Alerting		●	IT
Storage Management		●	IT
First Level Support		●	IT/ HIS
Workstation Management / Client Side Printing		●	IT
<b>Availability Management</b>	<b>InterSystems</b>	<b>NHS Borders</b>	<b>Team Management</b>

Business Continuity and Disaster Recovery Testing		●	
Service Delivery – SLAs, Service Meetings etc.		●	

**Option 2- Proposed Support Team**



Initially the IM&T team will be structured with 7 (Full Time Equivalents) FTEs, with a maximum net uplift requirement of 5 additional FTEs. This investment in man-power is required to pick up the significant overhead of support tasks that TrakCare will bring into IM&T.

The core team of 7 FTE Specialists will need to be adequately experienced and skilled. The team should have specialists working on the Application Layer and the Infrastructure Layer, with scope for cross-skilling.

The existing Application Support line is not as strong technically as the existing Infrastructure lines and will need significant leadership to effectively manage the supplier regarding Release Management (a really key activity).

There is a specific need for Database Administration (DBA) Skills with this team and it should be

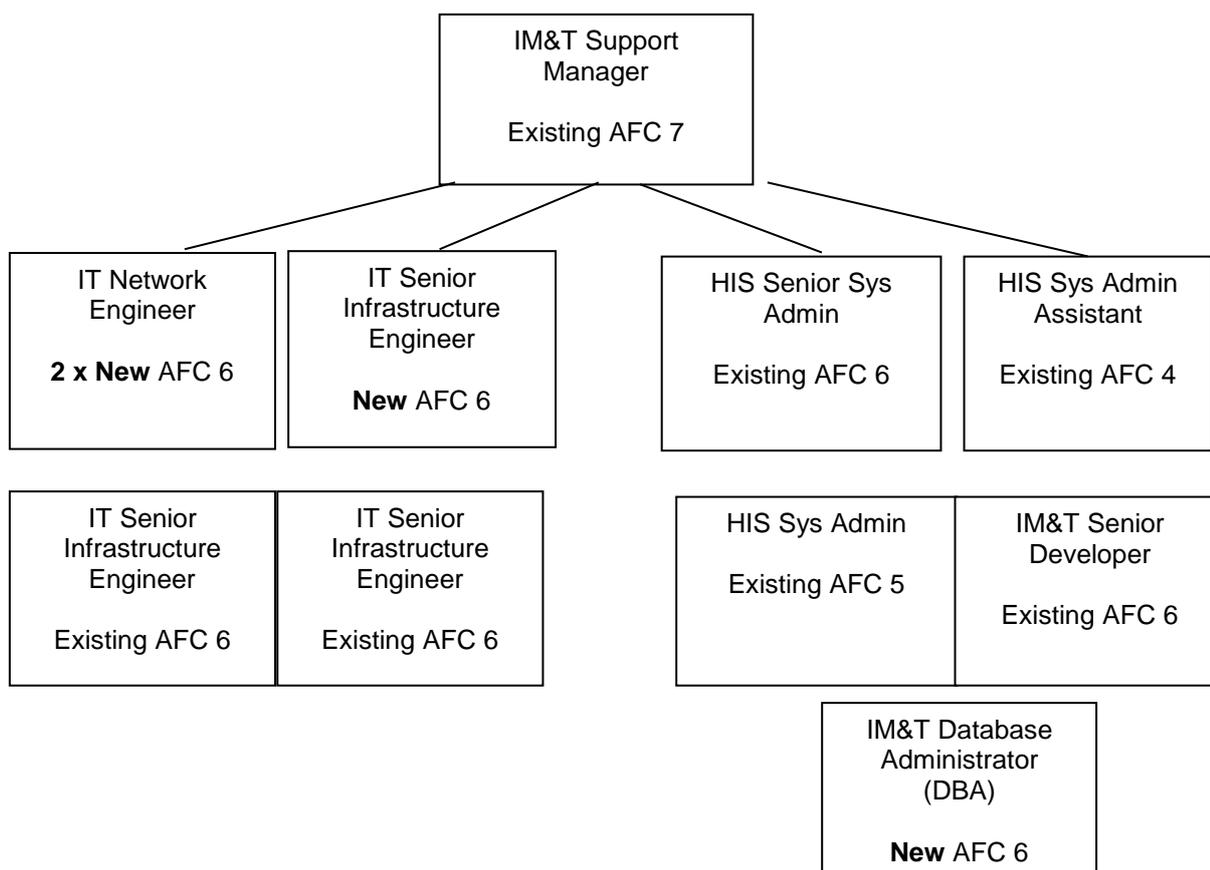
noted that appropriately skilled resource will not be attracted into the AFC Band 6 pay points. The majority of health boards experience this issue and need to use contracted staff.

### Responsibilities Matrix Option 3

*Black Dots Indicate full responsibility, grey dots indicate limited responsibility / assistance*

<b>TrakCare Platform Support</b>	<b>InterSystems</b>	<b>NHS Borders</b>	<b>Team Management</b>	<b>Comments</b>
Interface Maintenance & Administration	●	●	Developer	HL7 message interface
System Interface Customisation / Development	●	●	Developer	
Environments Maintenance & Administration	●	●	IT	Patching O/S
Platform and Server Node Configuration		●	IT	Require this from ISC or NSS- Quote
Application Maintenance & Housekeeping	●			
Database Administration	●			
Change Control, Versioning & Release Management		●	HIS	
Access Management	●	●	HIS	Database only is option Authentication & authorisation policies by ISC
Content Management		●	HIS	
<b>Underlying Hardware Infrastructure Support</b>	<b>InterSystems</b>	<b>NHS Borders</b>	<b>Team Management</b>	<b>Comments</b>
3rd Party Applications / Add ins	●			QAS etc.
Server Maintenance & Break / Fix	●	●	IT	ISC OS maint & house only
Virtual Server Environment (VMware) and Operating System Maintenance	●			
Backup and Restore Operations	●			
Server Side Printing Administration	●			
System Health Monitoring and Alerting	●			
Storage Management	●	●		Capacity reports only
First Level Support		●	IT/ HIS	
Workstation Management / Client Side Printing		●	IT	
<b>Availability Management</b>	<b>InterSystems</b>	<b>NHS Borders ICT</b>	<b>Team Management</b>	<b>Third Party Option</b>
Business Continuity and Disaster Recovery Testing		●	IT	
Service Delivery – SLAs, Service Meetings etc.		●	IT	

### Proposed Support Team- Option 3



Initially the IM&T team will be structured with 6 (Full Time Equivalents) FTEs, with a maximum net uplift requirement of 3 additional FTEs. This investment in man-power is required to pick up the significant overhead of support tasks that TrakCare will bring into IM&T.

The core team of 6 FTE Specialists will need to be adequately experienced and skilled. The team should have specialists working on the Application Layer and the Infrastructure Layer, with scope for cross-skilling.

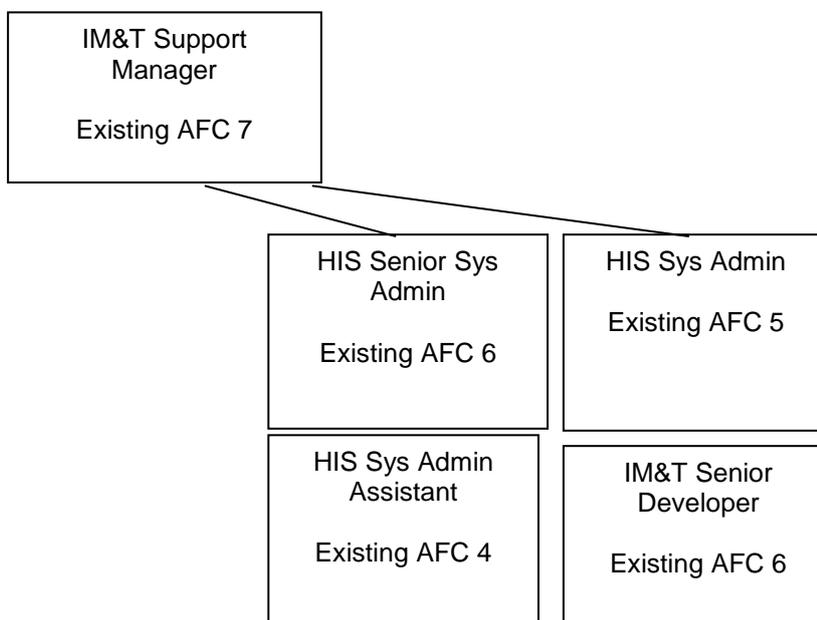
There is a specific need for Database Administration (DBA) Skills within this team and it should be noted that appropriately skilled resource will not be attracted into the AFC Band 6 pay points. The majority of health boards experience this issue and need to use contracted staff.

## Responsibilities Matrix

Black Dots Indicate full responsibility, grey dots indicate limited responsibility / assistance

<b>TrakCare Platform Support</b>	<b>InterSystems</b>	<b>NHS Borders</b>	<b>Team Management</b>
Interface Maintenance & Administration	●	●	Developer
System Interface Customisation / Development	●		
Environments Maintenance & Administration	●		
Platform and Server Node Configuration	●		
Application Maintenance & Housekeeping	●		
Database Administration	●		
Change Control, Versioning & Release Management	●	●	HIS
Access Management	●	●	HIS
Content Management		●	HIS
<b>Underlying Hardware Infrastructure Support</b>	<b>InterSystems</b>	<b>NHS Borders ICT</b>	<b>Team Management</b>
3rd Party Applications / Add ins	●		
Server Maintenance & Break / Fix	●		
Virtual Server Environment (VMware) and Operating System Maintenance	●		
Backup and Restore Operations	●		
Server Side Printing Administration	●	●	IT
System Health Monitoring and Alerting	●	●	IT
Storage Management	●		
First Level Support		●	IT/ HIS
Workstation Management / Client Side Printing		●	IT
<b>Availability Management</b>	<b>InterSystems</b>	<b>NHS Borders ICT</b>	<b>Team Management</b>
Business Continuity and Disaster Recovery Testing	●	●	IT
Service Delivery – SLAs, Service Meetings etc.	●	●	IT

## Proposed Support Team – Option 4



Initially the IM&T team will be structured with 4 (Full Time Equivalents) FTEs, with a maximum net uplift requirement of 1 additional FTE. This investment in man-power is required to pick up the Bandwidth increase for the IT infrastructure management off site.

Appendix E – NHS Borders/ Lothian Integration supporting Docs



Proposed TrakCare  
Implementation for NI



Review 2018  
Assumptions\_BenefitsTrak\_Changes since 1



Borders on Lothian  
Assumptions\_BenefitsTrak\_Changes since 1