



PWYLLGOR ADNODDAU CYNALIADWY SUSTAINABLE RESOURCES COMMITTEE

DYDDIAD Y CYFARFOD: DATE OF MEETING:	23 August 2021
TEITL YR ADRODDIAD: TITLE OF REPORT:	Strategic and Operational Business Intelligence
CYFARWYDDWR ARWEINIOL: LEAD DIRECTOR:	Huw Thomas, Director of Finance
SWYDDOG ADRODD: REPORTING OFFICER:	Anthony Tracey, Digital Director

Pwrpas yr Adroddiad (dewiswch fel yn addas)

Purpose of the Report (select as appropriate)

Ar Gyfer Trafodaeth/For Discussion

ADRODDIAD SCAA

SBAR REPORT

Sefyllfa / Situation

The purpose of this report is to provide the Sustainable Resources Committee with a synopsis of the Health Board's current and future contractual arrangements with the analytical company Lightfoot Ltd. This report provides further detail on the current work programme and associated benefits.

The Committee is requested to note the future commitments outlined within the body of the report and the proposed exit strategy with the development of an in-house advanced analytical platform.

Cefndir / Background

A key Strategic Planning Objective (3E) of the Health Board is to improve the use of Business Intelligence and Modelling, with an emphasis on real time reporting, to support clinicians and managers with day to day operational planning and wider strategic objectives.

In order to accelerate the use of real time reporting and analytics, the Health Board has partnered with several leading analytics companies, such as Lightfoot and Microsoft (for cloud analytics), to improve the understanding and use of information and data. Several data master classes have been undertaken, which include Executive Directors, Independent Members, operational leads and clinicians, to promote the philosophy of a data driven organisation. As part of the agreement with Lightfoot, the Health Board has implemented a transformation programme based around the outputs from Lightfoot to identify where linked data can improve the understanding of the impact of pathway changes. Work has also commenced with the Planned Care team on the possibility of using "Signals for Noise" (SfN) for recovery planning.

Asesiad / Assessment

The contract with Lightfoot is split into two distinct areas; firstly, the use of the Lightfoot product SfN and secondly, specific consultancy support from a leading consultant who successfully implemented Lightfoot in Canterbury, New Zealand and steered the transformational change of using data / information to make the necessary service reconfigurations.

Benefits

Lightfoot would enable the improved use of real time information in decision making and the achievement of the key Strategic Planning Objective (3E). The Health Board has been striving toward creating a data driven culture and the partnership with Lightfoot has accelerated the development of embedding information and data at the heart of the Health Board. The COVID-19 pandemic has highlighted the importance of analytics. The strategic partnership with companies such as Lightfoot and Microsoft have given the Health Board a tactical approach to real time provision of data. The Health Board is collaborating with Digital Health and Care Wales (DHCW) and other health boards to develop a “centre of excellence” to ensure that NHS Wales can offer the types of services Lightfoot have provided.

The approach of Lightfoot allows the following benefits:

- Time series analysis is an advanced area of data analysis using time-ordered datasets.
- It allows organisations to leverage the routine data to predict the future and deliver better outcomes for the population.
- It addresses the challenges inherent in health data, which is generated by capturing activity.
- The true patient journey through the health and social care system is revealed by linking diverse datasets.

The aim of the accelerated work is to use routinely available information to transform the thinking and planning of services. Enabling the linking together of data on a platform, such as SfN, allows routine data to generate new insights, increase understanding and provide new solutions.

Consultancy advice has provided the acute operational and community teams with additional insights, with the aim of providing support to service changes. This has enabled the Health Board to model the impact of service changes and to monitor these changes to determine expected effects and benefits, which has not been achieved previously. The consultancy support has provided the leverage of data to assist the operational management teams with predictive analytics (such as frailty, diabetes, and musculoskeletal) to allow pathway improvement via ‘what if’ modelling. Consultancy advice has enabled the Health Board to determine how data is used for the planning and redesign of service by the use of forecasting, incorporating the ethos of value based healthcare.

Implementation / Delivery

There was a phased delivery of the Lightfoot product and methodologies into the Health Board from October 2020 until April 2021. Subsequently, the Health Board extended the contract by a further 3 months to ensure completion of the work commissioned. The initial contract was separated into several delivery phases, as outlined below:

- Delivery Phase 1 – Project Initiation and Data gathering (Minimum 3 years of historic data (Emergency Department & Inpatient))
- Delivery Phase 2 –SfN Platform Build
- Delivery Phase 3 – Design SfN Patient Flow Dashboard Viewers
- Delivery Phase 4 – Baseline Analysis and Delivery Workshops
- Delivery Phase 5 – Consulting Support to 30 April 2021
- Delivery Phase 6 – Secure Hosting Provision of SfN platform for 6 months

Opportunities

From the initial baseline analysis, a number of opportunities were identified and presented to the Health Board in November 2020. These were:

Opportunity	Work completed to date
<p>Strengthen and reframe existing and emerging primary/community support strategies to drive hospital avoidance</p> <ul style="list-style-type: none"> • Reduce non-admitted Emergency Department (ED) attendances (could be halved) • Reduce short-stay admissions by half • Support general practice to be the point of continuity for most of the population by enhancing timely access to clinical information, diagnostics and alternative service responses 	<p><i>The analysis approach has been utilised to engage general practices in Ceredigion in active conversations about new approaches to A&E avoidance and early supported discharge. The ability to illustrate the length of the patient journey and to provide practice level analysis was particularly supportive of the conversations.</i></p>
<p>Progress person-centred early discharge services and community-based rehabilitation services and other services for frail elderly to</p> <ul style="list-style-type: none"> • Avoid admission • Reduce length of stay (LOS) • Reduce on-going need for care • Reduce admission to care homes 	<p><i>Multiple engagements at County (including Social Care), Operational Leadership, and Clinical leadership levels have led to a consensus that there are specific opportunities to address the pathways for frail elderly people and people with long term conditions exhibiting frailty. There is early evidence of patient pathways changing leading to a reduction in occupied beds despite the current increase in attendance. The analytical platform is being used to support business cases, resource planning and evaluation of existing programmes. A further refinement has been discussed regarding Signals for Noise, which will allow greater analysis of the frailty pathway</i></p>
<p>Leverage the COVID-19 back-log opportunity to build primary/secondary integration around new pathways of care to</p> <ul style="list-style-type: none"> • Minimise the need for hospital based clinical intervention • Mitigate the clinical risk of the current backlog • Support people in a community-based setting 	<p><i>Active work is underway with operational teams and extending to clinical teams to plan the way forward with the COVID-19 backlog. These will expand as new data sources become available, but the opportunity exists to support the system to ensure that the highest priority patients are addressed first. The analytical platform has also made clear the link between unscheduled care bed occupancy and the ability to address planned care challenges</i></p>
<p>Enhance the way of working by removing barriers and trusting clinical teams</p> <ul style="list-style-type: none"> • Building a data enabled methodology linked to an outcomes framework which enables the Teams to be clear about the 'what' and free to determine the 'how' • Using information to plan and drive service improvement incorporating quality, safety and patient experience into the core system outcomes • Manage the short-term tactical response in the context of the long-term strategy • Make decisions based on where services should be provided by balancing what is best for the person and what is best for the system 	<p><i>Implement a framework for using data to empower clinical, operational, strategic and resource allocation decisions, monitor progress and identify opportunities for earlier intervention.</i></p> <p><i>This approach is also to support the development of the Improving Together agenda across the organisation.</i></p>

Financial Cost

The introduction of Lightfoot is a significant cost; however, the accelerated and focused use of information has provided a platform to tangibly move the Health Board forward in achieving Planning Objective 3E. As outlined above, the financial commitment to date is as follows:

Table 1: Financial Cost of Initial Contract

	Commitment (ex VAT)	Expenditure to Date
Initial Contract October 2020 until April 2021) – (HDD-DCO-21948-40_Winter Planning Consultancy)	£320,437	£317,962
Extension to cover additional workstreams and data sources (Outpatients / Theatres, Waiting Lists, Referrals, Welsh Community Care Information Solution (WCCIS))	£430,300	£430,300
Extension of SfN licensing and hosting from 01 May 2021 to 31 July 2021	£48,463	£48,463
Additional workstreams (July 2021 – August 2021) *	£129,100	£59,100
	£928,300	£855,825

Table 2: Financial Cost of the Consultancy Support

	Commitment (ex VAT)	Expenditure to Date
Consultancy support for community models of care transformation (HDD-DCO-21948-25)	£299,520	£228,800
(Hywel Dda UHB have hosted this arrangement, and then invoices Cardiff and Vale UHB and Swansea Bay UHB)		
	£299,520	£228,800

The workstreams below have been established and include the number of days allocated, based on the financial commitment above.

1. Initial Contract October 2020 until April 2021) – (HDD-DCO-21948-40_Winter Planning Consultancy)	Days Allocated
Workstream 1 – Pembrokeshire – Reduce Urgent Care Demand	19
Workstream 2 – COPD and Frailty Initiative	19
Baseline and Analysis & workshops	24
Viewers	12
Total	74

2. Consultancy support for community models of care transformation (HDD-DCO-21948-25)	Days Allocated
Falls and Fragility – Initial Scoping of Opportunity	5
Analysis and Consulting (Pembrokeshire and UC Demand)	10
Analysis and Consulting (Carmarthen – RBFT)	10
Analysis and Consulting (Backlog and Recovery)	15
Analysis and Consulting – Program Business Case Hospital Capacity and Flow	18
Finance and Opportunity Identification	5
GP Population Data Consulting	2
Training – Early Adopters	8
Total	73

The Committee should note that the majority of investment into Lightfoot has been attributed to the initial set up and establishment of the system. If the Health Board was to partner with any other organisation, this level of investment would still have to be committed. Leveraging the

use of data will support operational teams (via predictive analytics) and assist with pathway improvements, which will enable value within the system to be optimised.

All Wales Approach

Lightfoot is being utilised by a number of other Health Boards within Wales;

- Cardiff and Vale University Health Board (CVUHB) has been using the product and support for Lightfoot for 2-3 years, and has identified specific areas of improvements, such as LOS over 21 days, and outlier for certain diseases.
- Swansea Bay University Health Board (SBUHB) and Aneurin Bevan University Health Board (ABUHB) are in a similar position to Hywel Dda University Health Board (HDdUHB) in that the baseline work has been completed and additional datasets are being submitted to Lightfoot to improve the linkage of data.
- Betsi Cadwaladr University Health Board (BCUHB) is in the process of agreeing a contract with Lightfoot, with preparatory work underway.
- Cwm Taf University Health Board (CTUHB) has held discussions with Lightfoot, but as yet have not signed a contract.

Due to the interest from Health Boards and Trusts, Welsh Government (WG) is exploring the purchase of an enterprise licence agreement for NHS Wales. To date, the Health Board is not fully sighted on the elements of the proposed contract and what is included or excluded, which may mean additional funding is required for viewer development, new data sources and additional training and support. Discussions with WG are being led by CVUHB. If an enterprise agreement is purchased by WG, this would reduce the future commitment of the Health Board. The anticipated costs for continuing the contract with Lightfoot for a further 3 years are as follows:

	Year 1 (2021/22)	Year 2 (2022/23)	Year 3 (2023/24)	Total Cost
Option 3 – Enterprise Licence Costs ⁽¹⁾	(TBC)	-	-	TBC
Change Request Budget (if required)	£50,000	£50,000	£50,000	£150,000
Additional Training (if required)	£30,000	-	-	£30,000
Regional Partnership Board (RPB) Hosting	-	£100,000	£100,000	£200,000
Total Costs	£80,000	£150,000	£150,000	£380,000

(1) These costs are to be confirmed following the development of the all Wales enterprise contract

As illustrated above, if WG agree to fund the agreement, the commitment from the Health Board will be circa £380,000 for the 3 years. To date, the Health Board has not committed any additional resources after August 2021 until notification from WG has been received. Lightfoot has provided a commitment to continue the work outlined below.

Next Steps

In order to progress the use of Lightfoot within the Health Board, the following has been agreed for the next 12 weeks, until there is clarity around the all Wales enterprise agreement.

	Days Allocated
Coaching and mentoring program to support skills and knowledge transfer (Improving Together)	8
Support for Phase 1 delivery of the Annual Plan 2021/2022 through dynamic planning capability (The 50 days supports configuration & and set up, start with 1st four Specialties)	50

Configuration of additional SfN viewers (e.g. frailty)	5
Continued support of the Operational Team	8
Analysis and consulting – 200 beds out of system	10
Total *	81

* Days that have been unallocated from Phase 1 and 2 have been reassigned to the above priorities

In-house Development

The Health Board relies on those individuals who make decisions having access to good information and there is a case that more sophisticated reporting will enable better decisions and therefore unlock efficiencies and savings. Currently, HDdUHB's management reporting capability resides within the Information Reporting Intelligence System (IRIS). IRIS is built upon the Microsoft SQL Server Reporting Services (SSRS) product, which allows tabular reports to be created. IRIS users are able to specify criteria that define the scope of a report's output and have a limited ability to interact with the tabular data by performing filtering and/or aggregation. However, it is not truly dynamic in the sense of a modern Business Intelligence (BI) reporting tool. Enabling staff to interact with their own information via Microsoft Power BI dashboards will allow them to arrive at the answers they need quickly, freeing them to get on with the work of treating patients and managing services in the best way possible.

With the addition of the Lightfoot platform within the Health Board, the need to provide enhanced analytics has increased the need for a locally grown system, with additional local knowledge included within the design. Moving to a centralised platform would enable the Health Board to manage its information and data in a seamless and consolidated manner. This technology migration would reduce overhead costs associated with the large workforce currently required to manage these tasks. The Health Board would also benefit from more timely and accurate reporting and continuous updating of performance metrics. This real time access reduces errors, improves cycle time and is readily available to any authorised user.

Various options and alternatives were analysed to determine the best way to leverage technology to improve the business processes and reduce the overhead costs within the Health Board. The approach described herein allows the Health Board to meet its corporate objectives of continuously improving efficiency, reducing costs and capitalising on technology. The recommended development project will methodically migrate the data and functions of current systems to the new web-based Power BI platform, together with additional specialised analytics (such as R, Python) in order to preserve data integrity and allow adequate time to train employees and managers on their responsibilities and respective functions. The platform will be compatible with all other current digital systems and will improve the efficiency and accuracy of reporting throughout the Health Board.

The migration of current reporting systems from the legacy system to the advanced analytics platform will result in greater efficiency with regards to resources and business processes. It is anticipated that the development of the Advanced Analytical Platform will take 12-15 months.

Conclusion

Whilst Lightfoot has accelerated the use of information and data within the Health Board, this has incurred a significant investment. It is therefore proposed that a dedicated workshop session is undertaken as part of the Strategic Improving Together Group to begin reflecting upon and detailing what the organisation requires from strategic business intelligence and how the Health Board structures itself to deliver this more effectively, either by further exploring the use of Lightfoot, Microsoft, other third party companies, or developing the product in-house with collaboration with other health boards and DHCW.

The Digital Team has begun examining the scoping of an in-house Advance Analytical Platform which will incorporate Statistical Process Control (SPC) charts, easy drilldown interrogation,

additional data sources, removing the need for passwords, automatic refreshing, and the ability for users to design their own dashboards based on an agreed set of data. As part of this work, the Health Board will design a programme of development and mentoring for staff who require additional training/support in using data and information.

Argymhelliad / Recommendation

The Committee is asked to:

- **NOTE** the content of the report and the financial commitment to date;
- **SUPPORT** the continuation of the relationship with Lightfoot Ltd in principle, until further work is completed, noting the requirement for Welsh Government approval for financial commitments, which exceed £1m.
- **NOTE** the work to scope the development of an Advanced Analytics Platform

Amcanion: (rhaid cwblhau)

Objectives: (must be completed)

Committee ToR Reference: Cyfeirnod Cylch Gorchwyl y Pwyllgor:	3.11 Receive reports relating to the Health Board's Digital Programme to ensure benefits realisation from the investment made.
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	Not Applicable
Safon(au) Gofal ac Iechyd: Health and Care Standard(s): Hyperlink to NHS Wales Health & Care Standards	All Health & Care Standards Apply
Amcanion Strategol y BIP: UHB Strategic Objectives: Hyperlink to HDdUHB Strategic Objectives	All Strategic Objectives are applicable
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2018-2019	9. All HDdUHB Well-being Objectives apply

Gwybodaeth Ychwanegol:

Further Information:

Ar sail tystiolaeth: Evidence Base:	Not Applicable
Rhestr Termiau: Glossary of Terms:	Contained within the body of the report
Partion / Pwyllgorau â ymgynhorwyd ymlaen llaw y Pwyllgor Adnoddau Cynaliadwy: Parties / Committees consulted prior to Sustainable Resources Committee:	Not applicable

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	The financial impact is continued within the main body of the report.
Ansawdd / Gofal Claf: Quality / Patient Care:	The availability of real time information is essential to provide accurate real time information to clinical teams will improve decision making.
Gweithlu: Workforce:	Not applicable.
Risg: Risk:	The lack of information is a risk to the organisation in terms of clinical decisions and service planning.
Cyfreithiol: Legal:	Not applicable.
Enw Da: Reputational:	Making decision based on inaccurate information and data could affect the reputation of the Health Board
Gyfrinachedd: Privacy:	Not applicable.
Cydraddoldeb: Equality:	Not applicable.