City-Region Deal
Cùmhnant Baile-Roinne

BUSINESS CASE	
Project name	Housing/Assisted Living
Themes	Digital Opportunity; Enhanced Growth Capacity; Innovation; Young People; Up-skilling; Life Sciences; Low Carbon
Lead	Albyn Housing Society
Date (Version)	Version 0.5 250417

STRATEGIC CASE

1.1 Introduction

The Inverness-Highland City-Region Deal Heads of Terms agreement was signed on 22nd March 2016, setting out the broad areas for Government investment over the next 10 years. One of the projects included in this agreement was to support the development of clusters of innovative assisted living schemes throughout the region.

There is a growing need to address health and social care provision in Scotland, the UK and globally. The number of older people is expected to rise by 29% in Scotland by 2030, according to population growth estimates[1], and to double globally by 2050, according to United Nations projections[2]. See Appendix 1

"The growing number of people with complex health and social care needs, particularly frail older people, together with continuing tight finances, means that current models of care are

[1] Adapted from National Records of Scotland (2015), 2014-based principal population projections for 2014-2039

[2] United Nations, Department of Economic and Social Affairs, Population Division (2013). *World Population Ageing 2013.* ST/ESA/SER.A/348.

unsustainable.

Transformational change is required to meet the Scottish Government's vision to shift the balance of care to more homely and community based services. NHS Boards and Councils need to significantly change the way they provide services and how they work with the voluntary and private sectors."[3]

The cost of inpatient hospital care and residential care home places is substantial and increasing, putting pressure on public sector budgets across the UK. This is exacerbated further in Highland through a highly dispersed population. There is a shortage of local care facilities in Highland, which results in its population having to travel considerable distances from their homes to access the support they require. There is also a shortage of residential and nursing home beds in the region.

"The Scottish Government has a long standing policy of 'shifting the balance of care', supporting people to remain at home independently for as long as possible……The benefit of providing the right housing and support at the right time could be considerable, by reducing both the cost and trauma of unplanned hospital admissions."[4]

As well as there being a need for the local delivery of health care, there is a growing requirement for adaptation funding for existing properties, to enable people to remain safely in their homes to the end of their lives. Alternative ways of delivering this provision need to be developed that are both effective in the delivery of care, but also cost efficient.

There also needs to be consideration given to the private sector. The percentage of people living in their own homes in the population has increased in Scotland over the last three decades. A greater proportion of older people (over 60 years old) own their own properties (70%). Any solutions need to also address this sector of the population.

Compounding the problem is the movement of younger people from rural to city living. This is a global phenomenon but becomes acutely visible when placed in a Highland context. This has led to an insufficient labour supply in local areas to care for increasing numbers of elderly people. At the same time, life expectancy continues to rise. This supply and demand model inevitably results with higher delivery costs.

1.3 Project Mission

We will create sustainable, affordable, replicable, cost-effective, design-led homes that people can live in from cradle to grave. The homes will be co-designed and agile, so adaptation can occur with minimal disruption. We will include technology that may prevent hospital admissions, predict health events and monitor the physiology of tenants. This technology will be capable of being retrofitted into existing builds. We will build robust response systems to react to data produced from this technology. This will range from telephone calls, visits and emergency responses to virtual consultations. The responses will deliver robust support while enabling choice for the person on the receiving end. We also aim to stimulate the local economy by identifying opportunities for care organisations to provide services to residents of these homes.

Partnership working will be central to the design and delivery of the homes, technology and service provision. Only by creating working partnerships with end users, health and social care staff, the private and third sectors will we develop holistic solutions that work for everyone.

[3] Changing Models of Health and Social Care, March 2015; Audit Scotland

[4] Age, Home and Community: A Strategy for Housing for Scotland's Older People 2012-2021; Scottish Government

[4]Joseph Rowntree Foundation. Housing Policies For Scotland. 2008

1.4 Project Vision

Our vision is to create, in partnership with NHS Highland, a solution for long-term care by integrating housing, social care and health. We aim to create a model that can be replicated throughout Scotland, the UK and globally. Elements of the model will have commercial qualities which we intend to maximise through a social enterprise, re-investing profit into social purpose within the field. In addition, we want to test and evaluate the ability of technology to disrupt the traditional delivery of health and social care. This may include creating new response pathways, the inclusion of third sector providers in the pathways, maximising the input of the volunteer sector and the development of local community care hubs. this sector. We will do this in partnership with the end user, the public sector, the private sector, the third sector and academic institutions. We will also align with other Inverness City Deal investments. This will include:-

- working with the Centre for Health, Social Care and Life Sciences to test and develop health technology prior to it being deployed in the houses;
- working with the Northern Innovation Hub to maximise commercialisation opportunities from the new technology, and also through creating a market ready infrastructure which will help digital health SMEs perform live testing and ensure NHS credentialing;
- working with the Highland Council to create training opportunities around the build of the properties and around support for people in their homes.

Albyn Housing Society is working within a large geographical area that encompasses urban, rural and very rural communities. Based in Highland, we have an ageing population that is more pronounced than most other areas in the UK. This project has its origins in a very sad episode, when a tenant lay dead but was not discovered for over a year. Other similarly distressing episodes have occurred in the UK. We are therefore driven to find a solution to minimise the chances of this event re-occurring. This solution must be capable of being used in varying formats by the majority of the population.

We conducted research with the University of Highlands and Islands (UHI) to explore market ready solutions. In particular, our tenants were seeking solutions that did not involve wearable monitoring devices (as they were unlikely to wear them). We failed to identify a solution currently on the market that would meet our needs.

Through our research, we have identified that this is both an international problem, and a problem which requires innovative solutions. To meet this challenge, Albyn Housing Society Ltd has created a unique collaboration between the Highland Council, NHS Highland and an award-winning socially driven modular housing manufacturer (Carbon Dynamic). This collaboration arises out of a geographical area that already leads the UK in health and social care integration.

The partnership's main proposition is to provide 32 assisted living properties in a number of communities across the region. This will enable people with a range of assisted living needs to live in their communities, in new homes, with appropriate digital health and movement sensors, linked to remote health and care providers.

These providers would monitor the individual and provide bespoke, responsive care packages as required, sometimes avoiding the need for people to be admitted to hospitals and/or care homes. The homes may also facilitate the early transfer of patients who are fit for medical discharge from hospital. All of the properties could be linked, where appropriate, to existing telecare services in the Highlands. Data, for example, could flow to NHS Highland's Technology Enabled Care Team or to the Social Care Hub. Appropriate and proportionate responses can be managed accordingly. NHS Highland is fully committed to developing these services.

The potential to disrupt traditional processes in this sector is huge. We anticipate that there will be health economic advantages for all sectors and to capture these we are working with academic colleagues to measure outcomes from the project. This capacity is being funded by Interreg Cross Border European Union grants and the Digital Health and Care Institute.

Each cluster will also have a specific innovation focus on top of the housing and technology:

- Cluster 1 will focus on health and social care support from a community perspective
- Cluster 2 will focus on veteran housing and employability training
- Cluster 3 will focus on medical interventions with housing close to a major hospital hub
- Cluster 4 will focus on very rural/fragile service delivery

The City Region Deal will cover the costs of the core housing and technology in all of these areas. However, we are looking to develop further innovation on top of this, some of which will need further funding, which we have already identified.

See Appendix 2

We will engage with tenants to help us test and develop innovations in care, crowd sourcing this design with public involvement. This will enable a "house for life" model to be developed to meet future demands in the Highlands and further afield.

Enabling the delivery of high quality health services locally within communities will enable people to remain in the communities they were brought up in, adding to community resilience and attracting new and returning residents, while at the same time creating employment opportunities across the region. These homes will be well designed, energy and ergonomically efficient, environmentally responsible and affordable.

1.5 Project Objectives

- A customer led sustainable, affordable, replicable, cost-effective home where people can live from cradle to grave without the need for significant adaptation.
- A system of sensors, linked to day to day living, enabling monitoring of daily activities and management of the property.
- The development of predictive analytical models.
- A new, more appropriate approach to housing allocation.
- A more robust care sector.

We aim to develop 4 housing clusters, amounting to a total of 32 units. These will be built in and around the Highland area. We have co-created a number of housing options, which have been tested using state of the art virtual reality planning sessions involving occupational therapists, service users, health and social care managers and commissioners. This has allowed us to develop highly agile homes that we are confident will meet the needs of residents.

We will be using a modular volumetric design and build solution, enabling cost effectiveness in the long run, while enabling employability and training opportunities for young people, veterans and the disabled as part of the build process. We have already used the contractor and have designed an "off the shelf" product with built in flexibility to enable bedrooms to be extended to accommodate hospital equipment and provide extra space to meet the requirements of individuals.

We are working with NHS Highland, British Telecom (BT) and the Digital Health & Care Institute (DHI) to ensure we have the resource and capability to deploy the technology in a robust and resilient

fashion.

We have acquired both in-house (NHS Highland and UHI) and out-sourced (DHI) research capabilities to ensure we have accurate ways to measure success for the project. We also have strong project management capability within Albyn to manage the day to day build requirements. Albyn has a history of delivering a large scale development programme on time. We have committed to building a minimum of 750 social rented homes over the next 5 years, with the understanding that we may choose to increase the total by another 250 homes during this time. Managing the building of an additional 32 modular units will be accommodated within existing resources.

NHS Highland has taken the lead in the integration of health and social care in Scotland and this solution will add to the success they have achieved in this area. Professor Angus Watson, Head of Research, Development and Innovation at NHS Highland, in partnership with Senior Adult Social Care managers, will lead on behalf of the NHS.

This project meets the requirements of both the customer and the public sector partners. NHS Highland is committed to finding new solutions for patient centred/patient controlled care. The project will build capacity within the health and social care system and enable better patient flow through secondary care services. It will support delivery of other projects in the area, including the virtual ward round initiative, outpatient antibiotic services, Living It Up, Enhanced Recovery After Surgery and Rapid Access and Assessment clinics. Early detection of risk of falls and frailty can augment the Anticipatory Care Programme which is already well advanced in primary care in the region. The home monitoring technology will sit neatly within NHS Highland's patient and clinical portal projects and will build further resilience in this exciting area.

We can comfortably meet the build requirements in a three-year period, and would welcome the opportunity to deliver the homes as fast as possible. The digital health analytics and research need longer to ensure a robust data set is produced. A five-year period will allow iterative design to occur based on client feedback. It will also allow the technology to become embedded in homes and services.

1.6 **Project Outcomes**

- 32 new units developed through the 'Fit House' model
- A further 16 technology embedded homes
- People able to remain in their own homes longer following significant changes in health or mobility and as they near end of life
- Better health outcomes from predictive health technology
- More people employed in the care sector
- More jobs in rural areas
- More efficient and cost effective health services which produce better outcomes
- Highland developed as a hub for digital health, creating more job opportunities
- International partnership with research institutions
- Commercial technology developed
- Commercial franchise for build and design

1.7 **Highland and National Outcomes – Fit House Impact**

This project fits in well with a number of national and local outcomes identified by the Scottish Government and the Single Outcome Agreement produced by the Highland Community Planning Partnership. These have been highlighted in **See Appendix 3**

Additionality

The City Region Deal funding will be sufficient to provide the test bed on which we intend to develop further digital health innovation. These include the following:-

- We have already been awarded £100k from the DataLab to work with Robert Gordon University to look at falls prediction within the Fit House model.
- We are currently scoping out voice recognition personal assistant opportunities with Fit House as a test bed.
- We are in discussion with a number of digital health providers on testing equipment for both UK and international markets.
- The Digital Health & Care Institute, now based at the University of Strathclyde will give us access to and fund the health economic analysis on the impact of digitally enabled homes on health and social care costs.
- In conjunction with a PhD/Post Doctoral researcher based at UHI and under the leadership of Professor Watson, we will produce economic models that may help the case for adoption across the UK.
- The project will support the Scottish Government's ambition to switch from an entirely analogue Technology Enabled Care system to one that is digital. We will be early adopters of digital sensors sending data to digital Alarm Receiving Centres (ARCs).
- The City Deal funded UHI Health Innovation Centre will create a digital health prototyping laboratory that will encourage knowledge transfer between SMEs, the NHS and academics. Fit Homes will create the ultimate test bed for new digital health and care innovations.

The project will also leverage and apply the R&D work being undertaken by Carbon Dynamic around the use of Virtual and Augmented Reality (VR / AR). VR has already been employed in the co-design process of stakeholder engagement for design of the first cluster of houses. We were able to involve end users, OT's and care professionals amongst a wide range of stakeholders in refining the development of a 'virtual prototype' of the building. Going forwards, there are applications for this tech from end to end within the entire process including: the opportunity for skills development both in the manufacture of the buildings and in service provision to the end user; quality control; on-going end user engagement towards continual improvement; and post occupancy maintenance. **See Appendix 4**

THE ECONOMIC CASE

2.1 Customer Driven Need

Albyn Housing Society had a tenant who died in one of our homes and lay undiscovered for over a year. This tenant lived in a semi-detached home in a small Highland village, had been linked to public sector support but had chosen to disassociate themselves from it and had not made relationships in the community. This sad incident was picked up by the Housing Regulator who asked Albyn to find a solution to prevent this type of event recurring.

Albyn worked with the University of the Highlands and Islands to establish what was already available in the market, and what our tenants would find acceptable. We established that the only current solution to the challenge would have been a wearable technology solution and, since the individual had no need for wearing such an item prior to this illness, that solution would not have worked in this case. It was very clear from our discussions that people did not want to be associated with wearable alarms unless they had an incident or were frightened. There is no other market-ready alternative, therefore there is a gap in the market. We strongly believe that ambient

technology needs to be sourced or developed to fill this requirement. In addition, the solution developed should not just be targeted at elderly or disabled people, but should also be a wellness solution that can be used by anyone at any stage of their life.

From the build perspective, adaptable homes that are efficient to run, environmentally friendly to build and affordable for social rent, are in short supply. These homes, when coupled with a range of technology options and linked to a health and social care system, provide options for care that are currently not available. Creating homes that facilitate care 'at home' is both socially highly desirable and economically attractive. Hospital costs, per day, are £300-£370, dependent on ward type. If we can provide care at home, at scale, where it is appropriate to do so, there are likely to be efficiency savings. Equally, residential and nursing home costs are high, up to £2000 per week. Therefore if tenants can be adequately supported in their own homes, there are potential savings to be realised and re-invested.

2.2 The Fit House Model

Albyn Housing Society Ltd, NHS Highland and Carbon Dynamic, with support from Highlands and Islands Enterprise (HIE), the Digital Health Institute and Highland Hospice, have been working for over 2 years to develop a housing and IT solution that will enable greater independence for the individual, a better healthcare service and a joined up approach in a cost effective package that also takes account of modern living and this need for ambient monitoring. The needs and aspirations of the people and communities where we propose to establish this solution have been central to development of this approach.

The purposes of our proposed homes are threefold:

1. to prevent people having to enter long-term care or hospital;
2. to enable people to be discharged from hospital, when medically fit, at an earlier stage; and
3. to detect deterioration in health and wellness and intervene early.

We have carried out research into where the market is failing in the first instance. Market failures have been identified as follows:

- there is currently no ambient monitoring system on the market that will cover an entire house and send an alert when someone has had a health event such as falling or becoming acutely unwell. There are some systems that will capture partial data from some strategically placed devices, but none that capture the whole house that are not wearable;
- there is no off-the-shelf digital platform for gathering data of a personal nature from individuals in their homes that is capable of being used to send data through the NHS Highland firewall. NHS Highland have begun to pilot small scale projects in this area but none of that are commercially viable – however, this has placed NHS Highland well to exploit this opportunity further
- there is no way of harnessing the data captured by individuals on their own data devices e.g. fit-bit, etc. that can be sent onto an individual's health data record,;
- there is no system that monitors physical house space usage for the elderly/disabled that enables feedback to improve on design and technology for future iterations;
- there is no current system that monitors social interaction that is added onto individuals' health records to enable predictive analytics to be developed around both social and physiological interventions. Ethical consideration around this also have to be developed;
- there is no system to enable on-going real life testing of new digital technology that could improve wellbeing within the public health structure that is easy to implement and low cost.

Our Fit Home will provide the following solutions:

- An ongoing real life test bed for new digital technology within an NHS model.

- The development of B to B and B to C ambient monitoring, predictive analytics and digital health solutions within FIT Homes. These systems will potentially provide alerts to occupants being ill or at risk of incident in their home.
- A software solution to take the data gathered in the home, through the NHS firewall and enable staff to work on developing analytics to establish patterns of ill health and wellness.
- A personal data storage facility that will enable individuals to gather their own data, from personal downloads and devices, and hold them in the same place as household and medical data providing the benefits of full integration for the individual and the NHS. The system will also look at potential links to national patient/citizen portals.
- NHS level research on health economics around the new system of delivery.

Our work so far has involved the following:

- primary market research with prospective clients and families;
- development of partnership working with NHS Highland;
- initial discussions with international companies to scope the best options for build and technology;
- informal support from a range of Scottish Government departments;
- research with carers and care organisations;
- discussions with communities;
- initial scoping on digital technology options in partnership with NHS Highland.

2.3 Options

In order to develop a fully integrated model, it was essential to have NHS Highland as a key partner. The commitment to innovate and to move forward with social purpose is shared between the partners.

This project has the potential to add a large amount of public value and create a system of healthcare and support that could save the government substantial costs while at the same time delivering a more comprehensive, person centred living solution.

The options that have been considered in addition to the Fit House model are:

- do nothing;
- invest more from public purse;
- engage the private sector to deliver;
- pay the end user and leave it to market forces.

These options have been discounted because:

- the current system is not working and no change is not an option;
- they are too expensive;
- they allow for 2 tier service provision in rural areas;
- they do not add any further economic benefits to Highland.

See Appendices 5a and 5

A full costs savings analysis has been added to this project through additional support from the Digital Health and Care Institute and through PhD students currently working in NHS Highland.

See Appendix 5C

2.4 Sector Involvement

The model we are developing involves all sectors of society. At the centre will be a social enterprise model that will enable value from the public sector to be retained and re-invested in research, development, innovation and growth of the model itself.

The private sector are key to enabling the model and we will be working with a number of private sector bodies to develop products and software and deliver services, and to commercialise our products nationally and internationally.

Academic institutes will be central to the research and development associated with innovation and improvement. We are already working with two universities and our intention is to develop these relationships further.

The public sector itself will be central to delivery, and the ability to change and test services at a faster rate through this model is becoming an evident benefit for all.

The voluntary sector is also a key partner in our work. We are looking at enabling the involvement of this sector in a more sustainable and effective delivery system

2.5 Business Growth

The model we are developing is based on a system that can be adopted throughout Scotland, the UK and internationally. We have developed the following systems to enable this:

- The housing finance model is developed to fit within the Scottish Government Social Housing Grant and the local rent cap.
- The build design is reflective of a house for life, negating the need for specialised housing or major adaptations.
- The commercial model enables continuous innovation enabling the public sector to grow in line with the market.
- The technology is being developed to enable internationalisation of the products

COMMERCIAL CASE

3.1 Market Appetite

Albyn has conducted research with potential service users, families, communities and professionals over the project proposal. We have received unqualified support over what we are proposing and NHS Highland is committed to the collaboration and developing better ways of working and managing care.

We have been contacted by a number of communities and individuals requesting that we place these units in their communities. We have been visited by a senior UK civil servant, who has asked to be kept informed of the research outputs, as well as the King's Fund who have just met with us to discuss the implications of our project. We have been asked to speak at the main Chartered Institute of Housing event in Glasgow in March to showcase our project and also at a Scottish Government sponsored Health Care at Home event the same month.

From a research perspective, we are in negotiation with other health boards in Scotland and internationally. The collaboration we have developed enables us to reach our potential market

through housing channels, enabling a more accessible product to be developed. Our status as a social enterprise and social housing provider enables us to partner with other social housing providers to capture large sectors of the market when we are in a position to expand and commercialise.

We are focusing on a customer designed system with an open source platform for our sensoring, allowing for other health apps such as Fitbit, etc data to be stored on the system and available to health professionals. By combining modern technology, that people choose to subscribe to, with health data we can create more robust personalised data sets. We will test the development and deployment of anticipatory intervention programmes, for example falls prevention physiotherapy programmes. NHS Highland is committed to transform outpatient care by moving towards virtual clinics that provide help in a person's own home. This will bring both direct and indirect health economic savings. The project has leveraged two funded post doctoral research positions from the Cross Border Interreg. Programme. These researchers will measure the health and social care gains from the Fit Home programme and help disseminate models and outcomes.

3.2 Procurement Strategy and Contracts

Albyn Housing Society Ltd already works within the Scottish Government procurement procedures. Given that this project is an innovation journey, innovation will be our primary focus when ensuring procurement compliance. We have taken legal advice to ensure we are fulfilling all of our statutory obligations from both the housing procurement and technology perspective. We will be using NEC contracts for the build.

3.3 Risk Management

A single risk register will be held for the project and managed electronically so that both the NHS and Albyn can input. The NHS will manage the day to day IT part of the register and Albyn will manage the housing side. Albyn will be responsible for the overall management of the risk register.

3.4 Future Commercialisation

The project seeks to develop commercial products which are customer driven and include learning from other life science initiatives throughout the UK and internationally.

The Highland area has considerable expertise in digital health delivery. It is therefore well placed to harness technology enabled care and to deliver it, at scale, across the region. This unique and agile collaboration will add to this expertise by working with the Highland Innovation and Commercialisation Hub (HI HUB) to create test bed opportunities and open new markets.

This project aims to meet all of these challenges by delivering a sustainable and replicable system of housing that includes the technology to enable people to remain in their homes safely and for as long as possible. The project will help reduce hospital admissions, enable people to return from hospital earlier, reduce delays in discharging medically fit patients from hospitals, and provide access for innovative technology into mainstream NHS health delivery. It will contribute to the creation of person-controlled care. **See Appendix 6**

These houses will be rented as social housing in the first instance. The IT will be developed alongside academic partners. The intellectual property developed as a result of the project will be commercialised using a social enterprise model with profits re-invested in research, development and innovation within the health, housing and care field in partnership with NHS Highland. Any data produced will be managed under strict information governance and will be compliant with the Data

Protection Act. Personally identifiable data will only be handled within the health and social care system. NHS Highland has developed a number of techniques that allow the safe passage of person-reported and collected data to enter core e-health systems.

We will set up a new company (Sunnd) to take forward the commercial activities and products developed through this project. The company will have a number of commercial arms, reflecting the ownership and legal status of the products being developed. We aim to create social enterprise entities to enable re-investment in health, housing and social care where possible.

3.4.1 House Design

The house design is intended to be in constant development through each subsequent house build. The sensors being deployed within the property are intended to enable accurate recording of space usage within the property. This coupled with feedback from the occupants will enable us to change the build within an iterative process that is constant, and not something that gets revisited after a number of years. The ownership of the design will be held in the new company and franchise opportunities will be considered to maximise commercialisation of the product. The Fit House will be marketed as an "off the shelf" product, with further iterations of 1 bed, 2 bed and modular bolt-on to existing properties already in the design phase.

3.4.2 Software Commercialisation

There are a number of opportunities to develop commercial software within this project, both through direct investment from the Inverness Highland City Region Deal, and through the development of a test bed within that framework. We are already scoping out further investment opportunities and board members to enable us to maximise the commercial opportunities that may arise from this, and scale to an international level.

3.4.3 Market Deployment

Given that Albyn Housing Society is a significant player within the Registered Social Housing movement in Scotland, we are in a prime position to deploy our concept throughout the country. This has been verified by our invitation to update the housing movement in Scotland at their main housing conference held by the Chartered Institute of Housing at the SECC in Glasgow in March. We see the social housing market in Scotland as one of our primary markets in the first instance.

NHS Highland, UHI and Highlands & Islands Enterprise are building a robust digital health innovation sector with a key aim of engaging a cluster of SMEs. These companies will form a 'triple helix' with the health service and academics. We will take advantage in our remote decision support programmes and the burgeoning superfast broadband infrastructure to ensure that the Fit Home project is seen as a regionally owned programme and not just centred around Inverness City.

Equally, we wish to provide apprenticeships, graduate placements and new company start ups for graduates and employees from UHI. These relationships will allow us to build robust and scalable models that can be exploited in other health and social care systems, worldwide.

We are also working closely with care providers and community trusts in Scotland and are currently in our first negotiations to support organisations in these sectors to enhance the work they do through the Fit House model.

THE FINANCIAL CASE

4.1 Overview

This Assisted Living project has been allocated £3m in finance through the Inverness Highland City Region Deal. This is a significant sum of money which is a welcome boost for the start of the project. However, it is our intention to attract significantly more that £3m into the project by the end of the 5 year timescale through research, private sector investment and commercial activity.

4.2 Private Sector Investment

Albyn Housing Society Ltd has already secured a further £2m of private sector investment for the project including the technology development. Our commitment to sustainability throughout the entire process has directed us to the Triodos bank to ensure ethical lending is used where we have control.

We have been short listed as part of the Ignite Social Enterprise Investment programme to garner support for further private sector investment for the commercial aspects of our technology.
We intend using the test bed facility to enhance digital health solutions and commercialise products through this route.

4.3 Research Grants

We have already been awarded £100k from the DataLab to work with Robert Gordon University to identify fall precursor events with the aim of developing a product suitable for public and private sector commercialisation.

We have been awarded £50k from the Digital Health and Care Institute to undertake health economic and social return on investment research on the project outcomes.

The Fit Home project will align with the UHI School of Health digital care programme. Through the school of health we have secured 2 post doctoral research fellows who will measure the impact and outcomes from the project. They will disseminate outputs through peer review papers and presentation at national meetings. Links with the University of Stirling and other universities with an interest in housing policy will be engineered. Collaborations with international academic colleagues are being forged in China, Singapore and New Zealand.

The Cross Border Interreg grant funds a number of knowledge exchange events with colleagues in Northern Ireland and Ireland. These fora will be used to disseminate learning outcomes from the Fit Homes. In addition, NHS Highland RD&I department are in receipt of a number of Northern Periphery and Artic programmes grants to look at market penetration and innovative procurement in European markets (Shine & Bridge projects).

See Appendix 7

4.4 Assisted Living Core Costs

The build costs we have submitted are based on the model of the FIT House that we have already developed. Any variations from these costs are expected to be only from land purchases or discovery of adverse ground conditions on selected sites. If the land used is already in the ownership of the public sector or communities, there may be substantial savings to costs identified. Similarly, if

the housing is placed in high value areas owned by the private sector, these costs may rise. We anticipate decisions about suitable sites being made in conjunction with the HUB managed by the Highland Council.

The table below provides a summary of total projected expenditure over the 5 years of the project. A more detailed breakdown can be found at **Appendix 8**

Projected Expenditure - Summary	£'000
Construction costs (32 Fit Homes)	
Land acquisition and groundworks	£1,396
Superstructure Costs	£3,039
Professional Fees	£146
Total	**£4,581**
NHS Highland costs	
Project and Care Management	£283
Equipment for Monitoring and Care	£283
Total	**£566**
Project Management costs	
Project Partners' Costs	£154
Project Partners' In-Kind Contribution	(£77)
Net Cost	**£77**
Total Project costs	**£5,224**
Funding from Albyn Housing Society Ltd	-£2,223
CITY DEAL FUNDING SOUGHT	**£3,001**

Albyn Housing Society will manage and maintain the properties and affordable rent charges will help service the loans required to fulfil Albyn's funding contribution.

THE MANAGEMENT CASE

5.1 Assisted Living Project Board

A project board will be set up to manage the overall delivery of the project. As the project sponsor, Albyn Housing Society will lead this board, which will include the following members of each partner: Additional invitations for this group can be extended by the Chair as required.

Calum Macaulay (Chair), SRO, Albyn Housing Society Ltd
Isla Cruden - Independent member
Tenant Representative (TBI)
Angus Watson, NHS Highland
Matt Stevenson, CEO, Carbon Dynamic
David Goldie, Highland Council
Lucy Fraser, Albyn Housing Society Ltd
John Robertson, City Region Deal
Programme Manager

Additional invitations for this group can be extended by the Chair as required.

This board will meet quarterly to ensure project compliance and delivery.

5.2 Assisted Living Sub Groups

There will be 2 sub-groups set up to deliver the main activities within the project.

5.2.1 Housing Sub-group

This sub-group will work in partnership with the Highland Council HUB to ensure land has been identified and brought forward for the build process, and to identify and assist with any issues that come up from the housing delivery side. This group will consist of:

Allan Maguire, Highland Council
Carers Representative
Tenant Representative
Lucy Fraser, Albyn Housing Society Ltd
Programme Manager

Additional invitations for this group can be extended by the Chair as required.

5.2.2 Health Sub Group

This sub-group will take forward the health and technology aspects of the project and ensure that compliance and innovation are developed within that remit. This group will consist of:

Prof Angus Watson, (Chair) NHS Highland
Tenant Representative
Mairi McIvor, NHS Highland
Graeme Hamilton, Albyn Housing Society Ltd
Lucy Fraser, Albyn Housing Society Ltd
Programme Manager

Additional invitations for this group can be extended by the Chair as required.

5.3 Governance

The Head of Innovation will provide regular reports of progress to the multi-agency project delivery group, currently made up of The Highland Council, NHS Highland and Albyn Housing Society Ltd. Formal budget and output reporting will be through Highland Council's City-Region Deal monitoring group and ultimately to the Planning, Development and Infrastructure Committee.

- Project Management (This project will be managed day to day by a qualified programme manager with agile project management experience who will be line managed by the Head of Innovation, Albyn Housing Society Ltd.)
- Project Sponsor (The project sponsor is Albyn Housing Society Ltd who will have responsibility for managing and delivering this project)
- Project Board (Direct oversight of this project will be undertaken by Albyn Housing Society Ltd)
- Senior Responsible Officer – Calum Macaulay, CEO Albyn Housing Society Ltd

5.4 Programme Board

An overall Programme Board has been established for all of the City-Region Deal projects which reports to the Council's Planning Development and Infrastructure Committee and to the Highland Community Planning Partnership. Schemata included at **Appendix 9**

5.5 Key Project Dates and Milestones

Appendix 10 contains the outline project plan.

5.6 Project Methodology

We will use an agile project management approach for our project going forward.

5.7 Risks – Analysis, Prevention, Management and Monitoring

A risk register will be held by Albyn Housing Society that will cover the main areas of risk identified for the project. Albyn will be ultimately responsible for this register, and each risk will have its own responsible person/s. **See Appendix 1**