The long-term health and wellbeing impacts of Healthy New Towns (HNTs): a six-month feasibility study of HNT demonstrator sites in England

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1 Background

Improving health and reducing health inequalities remain major global public health challenges. Increasing levels of non-communicable diseases (NCDs), mental health problems, rising levels of obesity and high rates of physical inactivity, unhealthy diets, smoking, and harmful alcohol consumption are placing increasing pressure on health services and are contributing to rising costs (1,2,3). These problems are compounded by the clustering of NCDs, mental health problems and health risk behaviours in the most disadvantaged groups (4,5). There is an urgent need to find effective approaches to prevention, particularly upstream interventions which impact on the social determinants of health (6).

Health is shaped by interactions between characteristics of individuals and their places of residence (7–9). Changes to specific aspects of local environments can improve physical and mental wellbeing, promote healthy behaviours and reduce health inequalities (10–12). Embedding healthy principles in town and city planning is endorsed in WHO recommendations (9). However, the processes and longer-term impacts of creating healthy urban environments are less well understood and determining how characteristics of urban environments interact as whole systems to affect health outcomes is a pressing priority (13).

The Healthy New Town (HNT) programme was funded by the English National Health Service for three years from April 2016 to March 2019. HNTs involve 10 major housing and mixed use developments across England that aim to improve population health and reduce inequalities (sites are listed in Appendix I). Healthy design principles are applied covering movement and transport, green and social infrastructure, the local economy, food choices and place making (14) Three HNT programme priorities are: 1) planning and designing a healthy built environment; 2) creating innovative models of healthcare; and 3) encouraging strong and connected communities (15). The programme brings together partners in local government, planning and urban design, housebuilding, local communities and healthcare. It differs from similar programmes such as the European Healthy Cities movement as its focus is on developments within smaller urban areas (16,17).

The long-term health effects of the HNT programme can potentially be investigated through a natural experiment design using methods that recognise the complexity of pathways to impact. Natural experiments can provide valuable evidence on the impact of large-scale interventions (18), and a complex systems approach can investigate pathways to health improvement over the longer term (19, 20). The feasibility study described in this report was needed to assess whether it is possible to apply a natural experiment design and use a complex systems approach. It was necessary to conduct this study rapidly before the three year funding from NHS England finished to ensure that we were able to capture learning from this crucial formative stage.

2 Plain English Summary

Between April 2016 and March 2019, the Healthy New Towns (HNT) programme was carried out within ten large development sites across England. The programme was funded by the English National Health Service (NHSE). It aimed to improve the physical and mental health and wellbeing of populations living in HNTs, through joined-up actions in three areas: planning and designing healthy built environments; creating new models of healthcare; and supporting strong and connected communities. The HNT sites have evaluated their own actions, and some have also worked with university researchers and other partners. The funding for these short-term evaluations has now

ended and there is a need to measure the impact of HNTs on residents' health over the longer term, and explore its potential to help reduce health inequalities in local populations.

The authors of this report have carried out a six-month study to find out how feasible it would be to do this longer-term research. They set out to answer questions about a) the similarities and differences in actions and outcomes across HNT sites, and b) the possibility of accessing and using information from different sources - routinely collected health data, and existing evaluations - in further research. The activities in our study have been: a) local and national workshops with HNT partners from a range of sectors to understand their perspectives and make a visual map of factors influencing health, wellbeing and community connectedness; b) bringing together and reviewing results from local HNT evaluations; c) discovering what routinely collected information is available to study health outcomes and their economic impact; and d) building relationships across localities and taking steps to involve more sites, and HNT residents, in our plan for longer-term research. Our main findings are as follows:

1. We do have access to sufficient sources of information, and interest from HNT sites and partners, to proceed with a proposal for a longer-term study.

2. To form a baseline for new research against which to measure improvements over time, the information routinely collected in local services is sufficient, and its quality is acceptable. The information produced in local evaluations is not generally feasible for use due to low coverage, the variety in measurements used, and some limitations of methods. Using data from large population surveys would require more detailed mapping of geographical areas covered by HNTs, and calculation of sample sizes over time.

3. Contact has been made with all 10 HNT sites. Relationships have been developed with seven of these, with exchange of information and discussion about priorities for measurement in a national workshop. All seven would like to participate in a longer-term study. More work is needed to develop relationships and knowledge exchange with the other three sites. On all sites there is a need to bring residents' voices more fully into face-to-face and virtual discussion with other groups of HNT stakeholders. Local social media and online consultation have been identified as feasible channels for sharing information, exchanging feedback, and generating community proposals and action.

3 Scientific Summary

Improving health and reducing health inequalities remain major public health challenges. In the context of increasing urbanisation, there is an urgent need to understand how evidence that living environments shape health, wellbeing and behaviour can be used to design and deliver healthy environments in local urban settings. The Healthy New Town (HNT) programme implemented in England from April 2016 to March 2019 consists of ten major developments that aim to improve population health through healthy design principles, new models for integrating health and social care, and the creation of strong and connected communities. These developments expose residents to potential health benefits, but there is uncertainty over the nature and size of any potential benefits. The programme therefore provides a natural experiment in which to investigate the effects of large-scale interventions targeting the wider social determinants of health.

The research described in this report aimed to examine the feasibility of a study to assess the longer-term health impacts of HNTs, by addressing two research questions: 1. What are the similarities and differences in the HNT programme developments, processes, contexts and expected impacts and outcomes across HNT sites?; and 2. How feasible is the use of data from routine sources and existing HNT evaluations as the baseline for a definitive study to assess impact on health, wellbeing,

behavioural and economic outcomes and programme processes. The research consisted of: a) participatory systems mapping with stakeholders to produce a theoretical framework for a longer-term study; b) synthesis of existing qualitative data from local HNT evaluations to understand local processes and mechanisms; c) scoping local and routinely available data to establish a baseline and feasibility for a longer-term study; d) building relationships and recruiting HNT sites into the proposed research. We used our findings from work streams a) to d) to assess whether there are sufficient grounds for progression to a proposal for the longer term study against six criteria addressing whether: outcomes for the HNT can be i) defined and ii) measured in a reliable way; iii) HNT sites can be matched to comparator sites; iv) sample size and power calculations are sufficient; v) existing qualitative research and participatory systems maps are sufficient to ground a longer term qualitative study; and vi) relationships with key stakeholder in HNTs can be developed and maintained.

Assessment against these criteria suggest that it is possible to proceed. It is feasible to use aggregated measures of health outcomes from routine sources, including NHS digital and Quality and Outcomes Framework to form a baseline and these data are of acceptable quality, but it was not feasible to use existing locally held data to form a baseline due to low coverage, heterogeneity in measures, and methodological limitations. The feasibility of using data from population surveys would require further consultation with developers and planners to agree on geographical definitions of HNTs. It is possible to match HNT sites to comparator sites as there is sufficient aggregated data on demographics, geographical context and health outcomes from routine sources. However, the suitability of specific comparator sites is dependent on the geographical definition of each HNT site, and further definition on the desired characteristics of comparator sites (e.g. should comparator sites feature major developments that are not informed by healthy planning principles?). A clear conceptual framework has been produced via participatory systems mapping and existing qualitative research to ground the study of process and mechanisms in any longer term study. Contact has been made with all 10 sites and relationships have been developed in seven out of these 10 sites. More work will be needed in the remaining three sites to ensure equivalence in depth of knowledge with other sites.

4 Study aims, research questions and objectives

4.1 Aims

The research described in this report aimed to examine the feasibility of a larger study to assess the long-term health impacts of HNTs which could inform the future planning, development and implementation of healthy urban environments.

4.2 Research questions

1. What are the similarities and differences in HNT programme developments, activities and processes, contexts and expected impacts and outcomes across the HNT sites that form the HNT Evaluation Collaborative (Barking Riverside, Bicester, Darlington, Ebbsfleet, and Whitehill & Bordon)?
2. How feasible is the use of data from routine sources and existing HNT evaluation data as the baseline for a longer-term study to assess impact on health, wellbeing, economic, and behavioural outcomes, programme processes and mechanisms?

4.3 Objectives

1. To produce systems maps for each of the 5 sites within the HNT Evaluation Collaborative, illustrating processes and expected outcomes from HNT activities and developing an overarching theoretical framework for longer-term research.
2. To synthesise any available qualitative data produced through existing local evaluations and to test the feasibility of using this data to ground a longer-term qualitative study of HNT processes.
3. To define primary and secondary outcome measures for assessment of HNT effectiveness and cost-effectiveness using existing HNT datasets and routinely available data.
4. To test the feasibility of including all 10 HNT demonstrator sites in the longer-term study to improve study power and representativeness.
5. To set up an HNT Residents' Group and wider Stakeholder Groups to advise the study, incorporating their input into the feasibility study and longer-term research design.

An overview of the research process can be found in Appendix II

5 Methods

5.1 Participatory system mapping

Invitations were sent to all five HNT sites involved with the evaluation collaborative and one additional site (Barton) who had expressed interest in being part of the feasibility project. All six sites accepted the invitation and agreed to take part, however, only three sites (Barton, Bicester, Darlington) were able to take part in a systems mapping workshop within the time frame of the study. The workshops at each of these three sites were conducted as a focus group with stakeholders preferring to discuss the process of implementation, mechanisms for change, and barriers/facilitators to their HNT programme rather than depict this visually through systems mapping. The researcher made notes of these discussions and developed a core set of variables to include in a national level systems map which could be applied across HNT sites. The researcher (VM) was able to provide advice to three additional HNT sites (Barking, Ebsfleet and Whitehill and Borden) on how to conduct the workshop themselves and agreed to provide materials to facilitate this. Qualitative materials from these three sites were assessed for additional variables to be included in the national level systems map. The researcher circulated a draft of the systems map to all six HNT sites for validation. Sites provided feedback and amendments to the draft which was finalised in April 2019. The flowchart in Appendix III shows the process of recruitment and development of the systems map.

5.2 Scoping and synthesis of existing qualitative data

Healthy New Town site leads within and outside of the HNT evaluation collaborative were contacted by email to identify existing qualitative or process data from local evaluation or monitoring activity. Further requests were also sent to other relevant individuals and organisations involved with HNT sites such as academic partners who had been commissioned to carry out local evaluations. These same methods were used to identify relevant material for our scoping of existing quantitative data (see section 5.3) i.e. existing local evaluations with quantitative findings; geographical definitions of each HNT using census area definitions; and locally held quantitative data sets. Reports were collated for each site and data were extracted on their aims and methods, sample characteristics, and main findings and recommendations via a standard proforma. Common themes relating to

successes and challenges in implementing HNTs were identified across the findings from individual reports.

5.3 Scoping of routinely available data and existing quantitative data

A wide range of routinely available social, economic, demographic, health, and environment data were scoped and assessed for their suitability as: i) primary and secondary outcome measures; ii) a way to select comparator sites; and iii) parameters for the economic evaluation. The scoping exercise included data held by Public Health England, the Office for National Statistics, NHS Digital and data from nationally representative population health surveys. The availability of existing locally held quantitative datasets and other local evaluations using quantitative measures was assessed using the methods described above in section 5.2. Metadata were used to assess whether the routinely available data were: suitable for assessment of expected outcomes for assessing effectiveness and cost effectiveness of the HNT programme; available at suitable time points to retrospectively form pre-intervention baseline measures; and likely to be available at future intervals suitable for follow up, and have adequate sample sizes for evaluation. The feasibility of matching HNT sites to comparator sites using these data was also assessed based on the availability of data on demographics, geographical context and health outcomes.

Where individual sites had commissioned evaluation partners to carry out quantitative surveys of health and wellbeing, health behaviours, use of local resources and awareness of local activities, the feasibility of collating these into a national level dataset was assessed. Metadata were used to assess: comparability of measures across HNT sites and suitability for assessment of expected outcomes; whether these samples are representative of the HNT resident populations; and whether the timing of data collection was consistent across HNT sites, and therefore appropriate to form a pre-intervention baseline. All data were assessed for quality (i.e. validity, reliability, timeliness, precision, integrity). Where geographical information on HNT sites was not provided by site leads, HNT delivery plans were used to inform geographic definitions of HNT sites. Geographical Information Systems (GIS) were used to produce maps showing the location of housing developments and the feasibility of using Lower-level Super Output Areas (LSOAs) to define HNT sites.

Residents and other stakeholders were involved in the prioritisation and assessment of suitability of outcome measures. The research team prepared and shared with the HNT evaluation collaborative an initial list of variables from routine sources that were potentially useful as primary and secondary outcomes and as contextual variables to use for matching HNT sites to comparator sites. Discussion of the relevance of outcome measures and matching variables to HNT priorities and discussion of the likelihood of HNT processes bringing about change in potential outcome measure facilitated the reduction of an initial ‘long list’ of 180 variables to a ‘short list’ of 25 variables. At a subsequent HNT evaluation collaborative and stakeholder workshop ‘Diamond 9’ exercise was used to further prioritise outcome measures. The workshop was attended by 14 stakeholders from 7 HNT sites, including city councillors, HNT programme directors, community development officers, project managers and residents. Working in three groups, stakeholders discussed the short list of variables on sets of printed cards and generated their own suggested outcome measures. Each group agreed on 9 ‘priority outcomes’ and lined them up in priority rank in a diamond formation (1 x 1st; 2 x 2nd; 3 x 3rd; 2 x 4th; 1 x 5th). The results from the three stakeholder groups combined and an overall score for outcomes was generated based on these ranks.

5.4 Resident and other stakeholder involvement including additional HNT sites

(i) Resident (PPI) involvement[1]
A number of strategies for resident involvement in the study were planned including: recruitment of residents from each of the five HNT sites in the evaluation collaborative to form a HNT Residents Group to co-design relevant research and ethics instruments and advise on public engagement strategies; a resident co-investigator; and resident involvement in the participatory systems mapping (see section 5.1 and 6.1). We encountered a number of challenges with all of these strategies and therefore adapted our methods in light of these.

To recruit to the HNT Residents Group we e-mailed all HNT site leads with a call for them to forward to local voluntary and community groups, asking them to nominate residents to join a national group of HNT residents (not "representatives", as they would not be democratically elected) who would become involved in the research project (see Appendix IV). Due to a low response rate (4 nominations from three sites were received) and difficulties in committing to attending group meetings (due to health problems and work pressures) it was not feasible to recruit to a HNT residents group. We therefore involved residents (successfully) in our wider stakeholder workshops (see below). We also followed up with those residents who had expressed an interest through the call individually and this led to the generation of ideas for feedback mechanisms at a local site level. From these ideas we piloted an online consultation tool in one of the sites (Bicester). The consultation covered resident experiences of health and wellbeing initiatives and services in their area, knowledge and experience of Healthy New Towns, suggestions for improvements needed in their areas, and preferences for communication.

Although we started the feasibility study with a resident co-investigator, unfortunately she was unable to continue as part of the team after January 2019. For any longer term proposal we will recruit a community organisation involved with resident engagement in HNTs as a co-applicant who can provide input from the perspectives of residents and co-ordinate broader engagement across sites. We also encountered challenges to resident involvement in the participatory systems mapping. In Darlington a separate focus group had already been held with residents. In the other sites in which system mapping activity was undertaken, only Bicester had resident involvement and this was via a single resident providing written feedback via e-mail.

(ii) Wider Stakeholder involvement
On the 28th March 2019 we held a workshop in London to capture key stakeholders' knowledge and experience with the HNT programme, and to identify outcomes of HNTs that could be measured in longer-term research (Appendix V). Participating together with the research team were a diverse group of 14 stakeholders from 7 HNT sites. These included a community development project officer from Darlington Council, and two residents whom she had engaged in her new support role with Darlington HNT. The residents made substantive contributions to the workshop discussions and proposals for outcomes which were prioritised through a "Diamond 9" exercise.

(iii) Engagement of additional HNT sites
We aimed to develop relationships with the five HNT sites not involved with the HNT evaluation collaborative (Cranbrook, Whyndyke Farm, Halton Lea, Northstowe and Barton Park). We initially used e-mail contact followed by phone calls. Site leads were invited to the 8th March workshop described above.

[1] In the context of Healthy New Town (HNT) research activities with residents of local communities, we refer to resident involvement, rather than PPI to avoid conceptualising participants intrinsically as patients.

6 Results

6.1 Participatory system mapping

The participatory workshops to develop the systems map and conceptual framework for longer-term research focused on understanding the process of implementation of HNT, mechanisms of change, barriers/facilitators, and pathways to longer term health outcomes. These workshops highlighted how HNT has operated via two mechanisms, influencing decisions by others (e.g. local/master planning, developing primary care networks) and direct action (such as providing new health promoting activities to communities). Through these mechanisms the programme has facilitated partnership working across multiple sectors to affect change on population level health indicators, although these may not manifest for some time, the systems approach demonstrates how this mechanism has affected change in the area. The programme has created several spaces which have facilitated this cross-organisational working to affect change in the built environment, health/social care services, and community engagement. These spaces may have also influenced public sector culture and resources, ensuring health is built into the policy fabric to ensure longer term, sustainable, improvements in health indicators. However, national policy such as Brexit, employment opportunities, and austerity may affect the pace of the programme due to the potential dampening effects this may have on population health outcomes. The first iteration of the systems map is shown in Appendix VI and highlights the interconnections between elements identified by stakeholders.

The refined systems map developed to examine the HNT programme across sites illustrates the areas of HNT influence/direct action and demonstrates the hypothesised pathways to population level health indicators through intermediary outcomes drawn from the participatory workshops (figure 1).

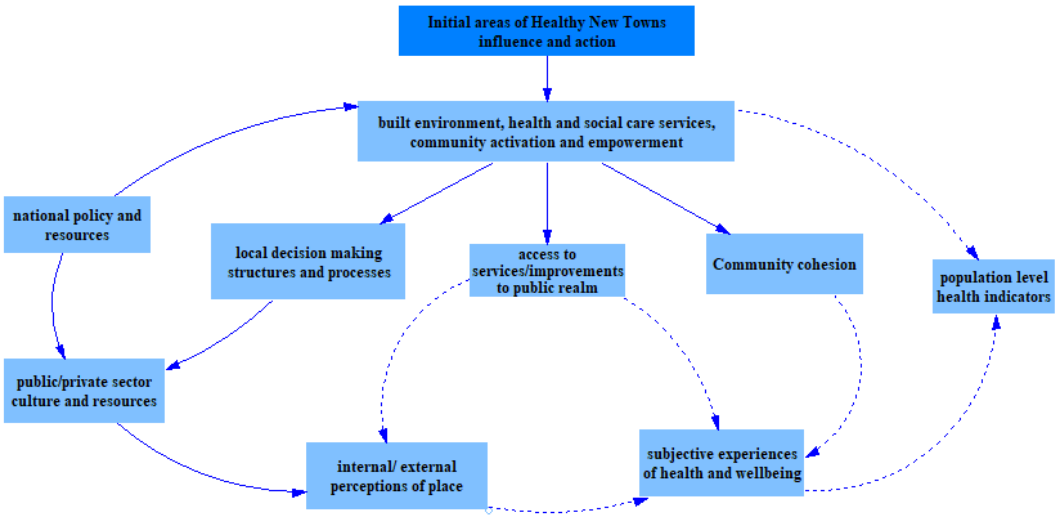

Figure1: Preliminary conceptual framework for longer-term study

Solid arrows demonstrate the areas HNT affected change throughout the initial 3 year period of NHS England funding. Dotted arrows indicate pathways to health improvement stemming from the initial areas of influence or direct action. The solid arrows in the HNT systems map indicate where the initial impacts of the programme would be expected to manifest, creation of new spaces for

collaboration and innovation, public/private sector culture and resources, material conditions, the built environment, and health and social care services as these were directly affected by the implementation of HNT. The dotted arrows indicate hypothesised pathways to population level health indicators mediated through internal/external perceptions of place (e.g. has HNT facilitated change in the built environment that makes people feel safe, do they experience feelings of belonging, has it reduced area level stigma in deprived neighbourhoods) and changes to local decision making structures and processes (e.g. has HNT affected local policy on health services and the public realm) with intermediary outcomes expected to manifest on subjective experiences of health and wellbeing among residents in HNT areas resulting from the creation of healthier environments and better access to health and social care services.

Although further work is required to develop feedback loops between elements (highlighting where connected variables may enable and/or constrain the impact on population level health) Figure 3 provides a robust conceptual framework for any future longer-term study. The dotted arrows indicate potential pathways to longer term health outcomes stemming from the HNT programme. Future research could explore how, and if, these pathways are being activated as a result of HNT, or if new pathways/unintended consequences have emerged.

6.2 Scoping and synthesis of existing qualitative data

The requests for existing local evaluations resulted in 33 reports and 19 case studies of specific interventions containing some qualitative or process data, with at least one report from each of the 10 HNT sites (see Appendix VII). There was very little systematic evaluation activity and there was generally poor reporting of methods and sample. Evaluations tended to be conducted for specific projects and initiatives rather than programme wide evaluations which limited depth and transferability. Common themes derived from the data and findings included: greater tangible success with blue/green space initiatives and healthy place making compared to those aiming to tackle specific behaviours; the need to create connections with residents and communities through stronger outreach activities to ensure that new initiatives are informed and taken up by those who might most benefit from them; benefits and challenges of setting up 'social' interventions within NHS spaces (e.g. prioritisation of space for clinical services). These themes resonated with a process evaluation commissioned across all ten sites which highlighted how: establishing partnership working and governance structures needed at least a year to develop; the HNT programme is providing added value and coherence to ongoing development projects (e.g. levering in additional funding and resources, HNT programme taken more seriously) and; the various special projects and initiatives provided 'urban acupuncture' to the development projects[2]. This over-arching process evaluation also highlighted the need for legacy planning beyond the three years of NHSE funding including a route to longer-term evaluation and monitoring[2].

6.3 Scoping of routinely available data and existing quantitative data

(i) Geographic definitions of HNT areas

Maps of all 10 HNT sites including the location of housing developments and surrounding census LSOAs are shown in Appendix VIII. Where information from HNT site leads suggested that the geographical definition of the HNT extended beyond the LSOAs including the housing developments this is indicated on the map legend. Maps show the location and details of original planned developments, but the progress of developments does not necessarily reflect these original plans. For example, in the Darlington development, it is known that only 81 houses of the planned houses

[2] Watson, Process Evaluation Summary, 2018/19

have been built to date. The 10 HNT sites, defined using these methods cover a total of 132 LSOAs, min = 2 (Northstowe), max = 68 (Darlington), Median = 5.5.

(ii) Routinely available data

The scoping exercise produced an initial 'long list' of 180 variables, which was reduced to a 'short list' of 25 variables. This shortlist is shown with accompanying metadata in Appendix IX. These variables cover outcome measures that are all relevant to at least one HNT programme priority. Data available from NHS digital and the Quality and Outcomes Framework at LSOA level are of suitable quality and timeliness (available at least annually), and sample size (based on aggregate data) would be feasible for use in a potential longer-term study of HNT programme effectiveness and cost-effectiveness in improving long health outcomes. Measures of LSOA-level access to resources for health services and active living are of good quality, and suitable for longer-term study of accessibility to resources. Data available from the Annual Population Survey are of suitable quality for measuring intermediate health and wellbeing outcomes, and of suitable timeliness (available annually). However, sufficiency of the sample size would depend on the methods used to define the geographical area of HNTs and the timescale of a potential longer-term study. Feasibility of using data from Understanding Society is limited by sample size depending on geographical HNT definitions and required timeliness as these data are available only every three years. There is sufficient data available at LSOA level to match HNT areas to controls by applying propensity score matching or principle component analysis to datasets using aggregated outcome measures and routinely available data on demographics and the economy (e.g. NOMIS data on population characteristics and labour market) and geographical context (e.g. region, green and blue space).

(iii) Existing quantitative evaluations

As noted in 6.2, the requests for existing local evaluations resulted in 33 reports and 19 case studies of specific interventions containing some quantitative data, with at least one report from each of the 10 HNT sites (see Appendix VII). The case studies are a reporting format designed by NHS England for reporting specific evaluations, including outcomes, barriers and challenges. The quantitative data contained in these reports and case studies was mostly limited to records of attendance at events or programmes (e.g. the Move More programme in Darlington). There were exceptions where reports contained detailed information on participant characteristics and changes in self-reported health and behaviour. However, these evaluation reports shared several limitations. The most common limitations were: non-randomised designs; designs without comparator groups; small, non-random samples; self-selection bias; low quality (mostly self-report) measures of health, well-being and behaviour. These evaluations often explicitly aimed only to investigate process outcomes including engagement and attendance. Information was received from HNT sites about ongoing plans for evaluations of specific initiatives using more robust methods (e.g. a planned controlled evaluation of financial incentives to drive active travel in Northstowe). Five overall HNT site progress evaluation reports were received, but these covered only three HNT sites (Barton, Bicester and Darlington). These reports all contained quantitative data and synthesis of the uptake of interventions across the HNTs, but the quantitative data in these reports shared the limitations described above for individual reports and case studies.

(iv) Existing quantitative baseline survey data

Requests for existing locally held primary data on health, wellbeing and behavioural outcomes resulted in reports of five baseline surveys involving primary data collection in five HNTs (Barton, Bicester, Darlington, Ebbsfleet, Whitehill and Bordon). These baseline surveys were conducted in 2017 or 2018, a timepoint suitable to serve as a baseline for monitoring outcomes. For example, a survey completed by a sample of 1106 Bicester HNT residents from April to June 2017. The baseline surveys reported broadly representative, but non-random samples of participants, often with low response rates. Some of the measures of health, wellbeing and behaviour were of fair quality, but all relied on self-reported measures with limitations such as low validity and reliability that are

common in surveys using self-report measures. The main limitation of these surveys is that there was only data available for five HNT sites and there was substantial variation in the methods and measures used. Overall, because of the limited coverage and heterogeneity in methods and measures, it is not feasible to harmonise these data into a single dataset suitable to serve as a baseline for an evaluation of the HNT programme in all 10 sites.

(vi) Participatory prioritisation of outcome measures
The results of the participatory 'Diamond 9' activity are shown in Appendix X. The most heavily prioritised outcomes were: 1) Happiness; 2) Physical Activity; 3) Social Support; 4) Attendance at GP for 'non-medical' needs. Measures of happiness and social support would require use of population survey datasets and therefore the feasibility of using these measures depends on HNT area definitions and measurement timelines. Small area estimates from Sport England's active lives survey may be suitable for measuring physical activity levels. Aggregated GP attendance data is available at regular time points at LSOA-level, and through individual GP practice records.

6.4 Resident and other stakeholder involvement including additional HNT sites

(i) Resident (PPI) involvement
As noted in our methods section we encountered a number of challenges with resident involvement leading us to adapt our methods in light of these. We found that local engagement mechanisms obtained greater success either through intermediaries such as community development workers or direct contact via social media or local discussion groups. The online consultation pilot we trialled for example generated 18 responses over a two month period from residents in Bicester (face to face or via the post had only generated three responses). The diversity and criticality of the free text responses indicate the potential for using such a tool in future engagement and research activities, and sharing it on all HNT social media sites.

Our engagement with site leads, residents and wider stakeholders, as well as our review of HNT evaluation and monitoring report identified a number of barriers and facilitators for resident engagement which will need to be considered for any longer term study. These included local politics and tensions between conflict and consensus models of community activation and democratic practice [21], the lack of awareness amongst residents of Healthy New Towns, and the importance of adequate time to develop relationships and trust with residents (see Appendix XI for detailed summary of barriers and facilitators).

(ii) Wider stakeholder involvement
We have successfully involved and developed relationships with a wide set of stakeholders relevant to the implementation of evidence from the Healthy New Towns Programme through our stakeholder workshops and individual contacts. As well as HNT site specific staff e.g. site leads and project managers, we have also been able to engage with city councillors, housing associations, community development officers, residents and town planners. We will maintain engagement through feedback of the findings of the feasibility study and involvement in any preparation of a proposal for a longer term study.

(iii) Engagement of additional HNT sites
We were able to make contact with staff from all five HNT sites not involved with the HNT evaluation collaborative (Cranbrook, Whyndyke Farm, Halton Lea, Northstowe and Barton Park). Some have been more engaged than others (e.g. staff from seven sites participated in our stakeholder workshop on the 28th March) and these have expressed interest in being actively involved in any future long-term study. We will maintain contact with these sites through the mechanisms described above.

7 Conclusions and recommendations

The Healthy New Towns programme offers a novel opportunity to adopt a systems approach to understanding the complexities of implementing a programme of area-based interventions targeting the social determinants of health in real world, dynamic settings across several sites in England. We conducted a rapid feasibility study in order to capture learning so far before the end of funding from NHS England in March 2019 to inform the design of a proposal for a bigger study of the longer term health impacts of Healthy New Towns. We set a number of progression criteria to assess whether there are sufficient grounds for proceeding to developing a proposal for the longer terms study. Assessment against these suggest that it would be fruitful to proceed:

Progression criteria	**Assessment**
1)Primary and secondary outcomes for the overall HNT programme can be defined based on the HNT programme priorities and findings from the participatory systems mapping	*It is feasible to use aggregated measures of health outcomes from routine sources to form a baseline and these data are of acceptable quality. The feasibility of using data from population surveys (e.g. Annual Population Survey) would depend on the geographical definitions of HNTs used, the timescale of the follow up and the effect of these on sample size calculations. However, It is not feasible to use exiting locally held data to form a baseline due to low coverage (5 out of 10 HNTs), heterogeneity in measures used, and methodological limitations.*
2) A core set of these outcomes can be measured using routinely available or locally-held data to retrospectively form a baseline, and these data are of acceptable quality (i.e. validity, reliability, timeliness, precision, integrity	
3) HNT sites can be matched to comparator sites retrospectively using such data	*Yes, there is sufficient aggregated data on demographics, geographical context and health outcomes from routine sources to match HNT sites to comparator sites. The suitability of specific comparator sites will require further consultation with planners and developers in the geographical definition of HNT sites, and decisions about the desired characteristics of comparator sites.*
4) Sample size and power calculations indicate that the data will be feasible to use as a baseline against which changes in outcomes can be measured	*Sample size and power calculations are not relevant to aggregated datasets. For data from population surveys the geographical definition of HNT sites and the timescale of the follow-up would need to be agreed in consultation with planners and developers before sample size and power calculations can be made.*
5) Existing qualitative data from local HNT evaluations together with the findings of the participatory systems mapping can be used to inform a longer-term qualitative study on HNT processes and mechanisms	*We have produced a clear conceptual framework via participatory system mapping to ground the study of process and mechanisms in the qualitative component of any longer term study. Although systematic qualitative research was limited, we have captured a rich picture of the implementation of HNTs across sites from existing evaluation and monitoring activity.*
6) Relationships with key stakeholders in HNTs can be developed and maintained beyond the initial formative evaluation period which ends in March 2019.	*Contact has been made with all 10 sites and relationships have been developed in seven out of these 10 sites. All seven of these sites would like to participate in any longer term study. We have mechanisms in place to keep in contact with all 10 sites. More work will be needed in the remaining 3 sites to ensure equivalence in depth of knowledge with other sites.*

Many of the HNT housing developments are at early stages of development, and building has not begun on some HNT sites. There are examples, such as in Darlington, where developments have not progressed within the expected timescales. A potential future longitudinal study would require collaboration with developers and planners to facilitate the design of a study that fully takes into

account the stages of development. Similarly, the design of the study should be tailored within each HNT to the geographical range of the expected impact, through collaboration with HNT stakeholder involved in ongoing HNT activities and interventions.

A robust evaluation should ask: what happens when an intervention is *"implemented across a range of contexts, populations and subpopulations, and how have these effects come about?"*(22). It is clear that the Healthy New Towns programme has enabled the multiple interests of a wide variety of stakeholders from across the NHS, local authorities, the community and voluntary sector, business and residents to converge. They have been brought together with the stimulus of the design principles for HNTs; the evaluation collaborative, its co-ordinator and site leads; and interest from funders in building on/capitalising on the initiative and the experience gained. Partnerships and relationship-building at all levels have emerged as key to the success of the HNT programme. We found that the feasibility study itself was a stimulus for relationship building. Any longer-term research is likely to influence the cohesion of the initiatives across sites. An action-research component would allow harnessing local energies and contributing to change, as well as measuring outcomes and documenting the process of transformation.

We found that residents have not always been embedded within the programme across sites. It appeared that in some cases residents were seen as an adjunct type of stakeholder, not given the same status as institutional/business partners. Social media could act more as an equalising bridge with other parties, and gain respect for the potential of communities to influence their living environments, also by direct action. The role of academic partners, and coordination between them, could aid connections with one or more user/resident forums to increase the profile of HNTs and residents' self-identification with an unusual integrated model for urban development. This would ensure that HNTs are not simply a laboratory with a captive population for the innovation taking place (e.g. digital monitoring, air quality mapping).

Data from routine and local sources highlight inequalities among areas within HNT sites. Any longer term study will need to monitor the impact of the NHT programme on health inequalities as the programme has the potential to both widen and reduce inequalities depending on contextual and implementation factors.

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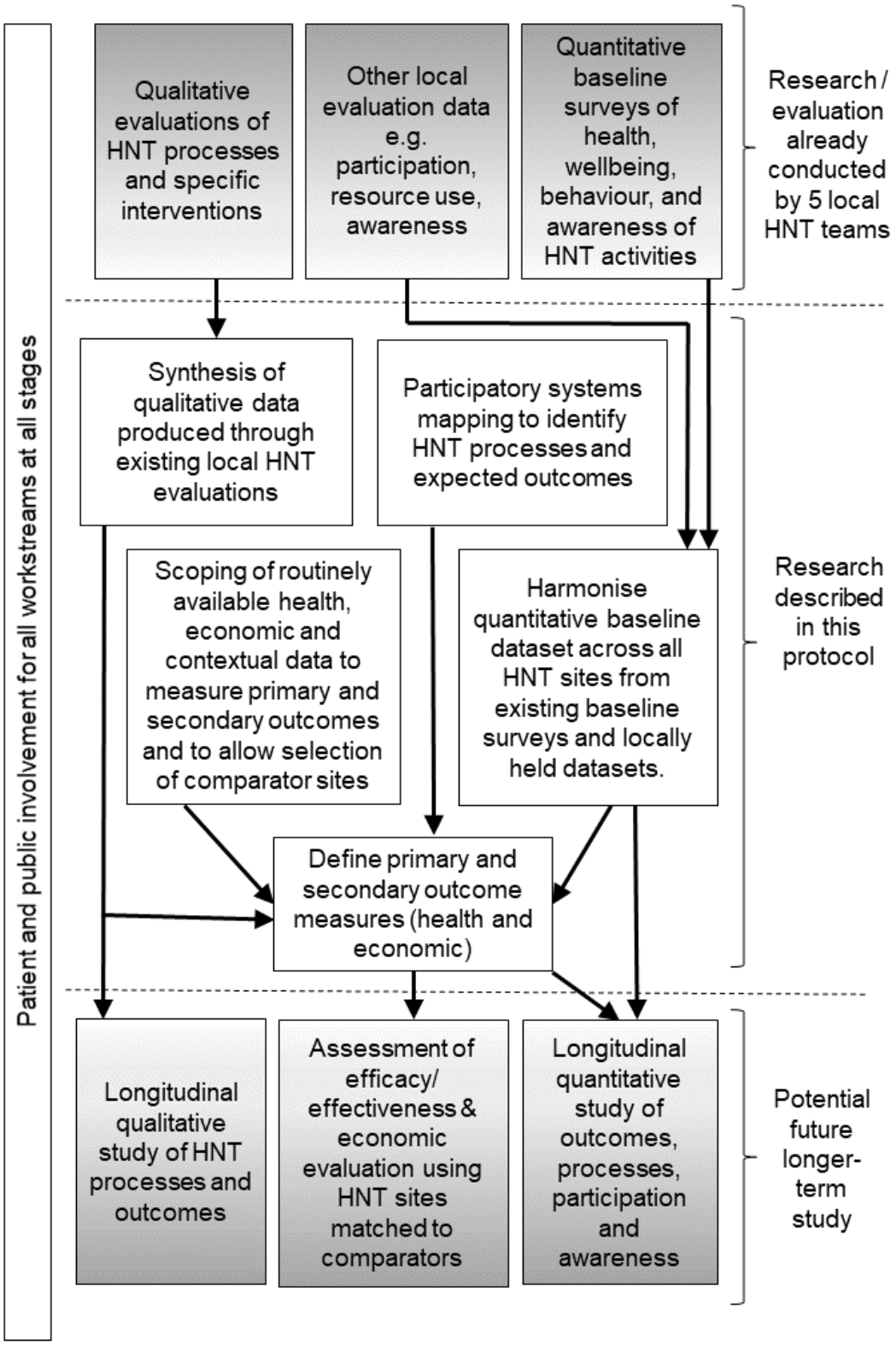
9 Appendices

Appendix I: Healthy New Town demonstrator sites

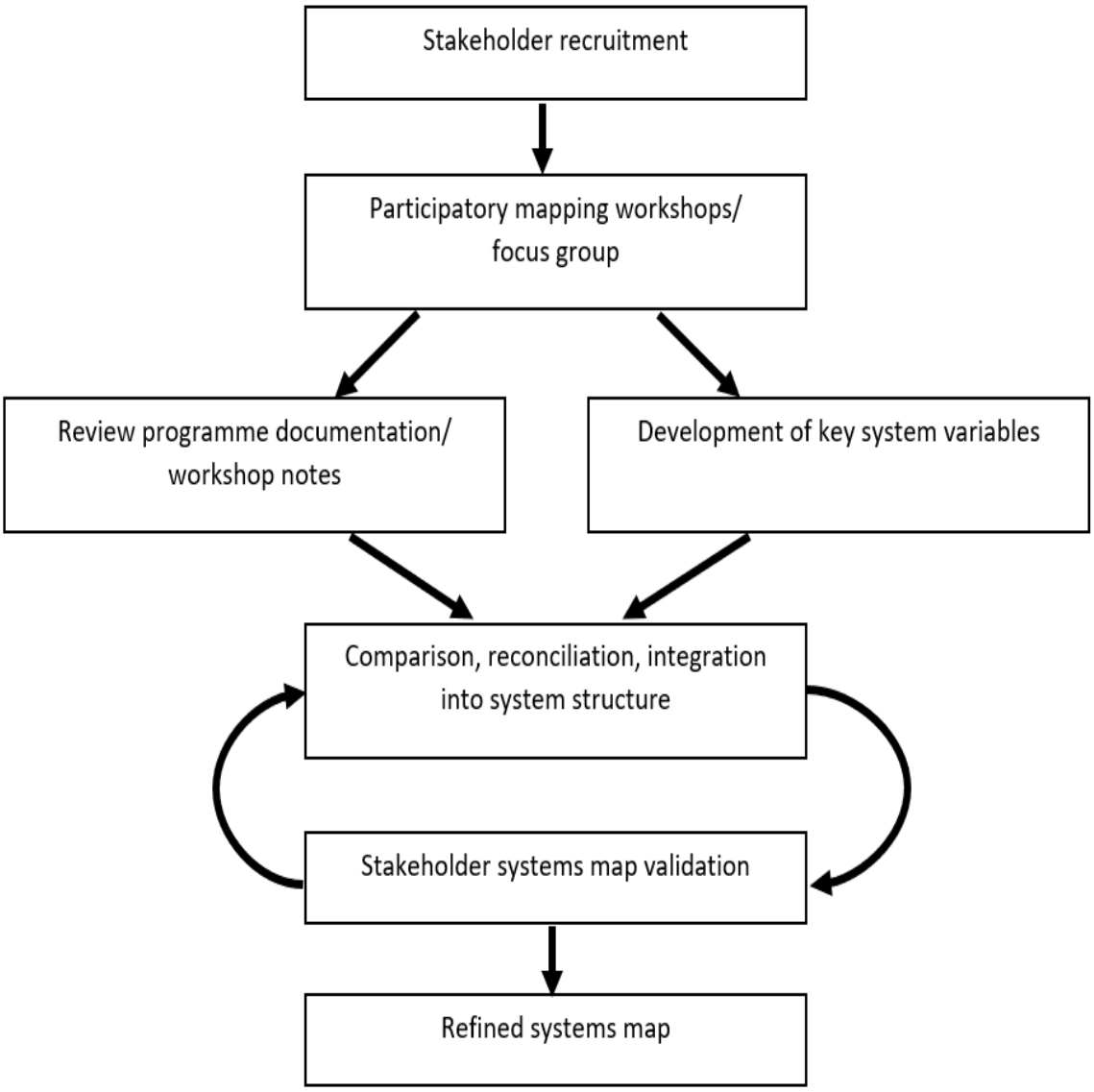
HNT Site	Details of new housing developments
• Barking Riverside, London*.	• 10,800 homes being built on brownfield land alongside the River Thames.
• Barton, Oxford.	• 885 homes on a site next to John Radcliffe Hospital.
• Bicester, Oxfordshire*.	• 13,000 homes being built over 20 years.
• Cranbrook, Devon.	• 8,000 homes being built on greenfield land.
• Darlington, County Durham*.	• 3,600 homes being built on three sites between 2018 and 2025.
• Ebbsfleet Garden City, Kent*.	• Up to 15,000 homes being built on brownfield sites by 2026.
• Halton Lea, Runcorn.	• 800 new homes and a health and wellbeing campus on a brownfield site.
• Northstowe, Cambridgeshire.	• 10,000 homes built on former RAF Oakington base and surrounding land.
• Whitehill & Bordon, Hampshire*.	• 3,350 homes and commercial space built on former Ministry of Defence land.
• Whyndyke Garden Village, Lancs.	• A 1,400 home development on a site planned for the Fylde coast.

* Denotes sites that form the HNT Evaluation Collaborative

Appendix II: Overview of research process



Appendix III: Flowchart of process of recruitment and development of systems map



Appendix IV: Call for nominations for Healthy New Towns Residents Group

Call for nominations: bringing Healthy New Town residents' voices into a research study

Would you like to collaborate with a 6-month study about Healthy New Towns (HNTs)? Nominations will be accepted up to Wednesday December 12th.

We invite you to nominate two people from your locality who could join a group of residents from HNT sites across England.

Benefits of participating will include training in voice and advocacy, travel expenses covered, vouchers to compensate time dedication (6 hours monthly), and helping to make HNTs more effective to promote residents' health and wellbeing.

The HNT Programme is sponsored by NHS England and Public Health England, and your area is part of this initiative. The Programme aims to:
- shape new towns to promote people's physical and mental health and wellbeing
- support local communities' self-care and ways of working together
- rethink delivery of health and care services so they can be more integrated
- spread learning and good practice to other local areas and national programmes.

Researchers from the University of East London and Newcastle University are commencing a six-month study funded by the National Institute for Health Research. We will gather information on what HNTs have achieved over the past 3 years, in preparation for a longer-term investigation going forward.

We are setting up a group of HNT residents (two for each of five HNT demonstrator sites) to bring local voices into the study through face-to-face workshops and phone meetings.

Participants will receive training, reimbursement of travel expenses, and vouchers in recognition of their time dedication, in the spirit of Patient and Public Involvement or volunteering, following INVOLVE guidelines. http://www.invo.org.uk/find-out-more/what-is-public-involvement-in-research-2/

Requirements for residents to be nominated
The people to be nominated should live in the local HNT area and be aged 18 or over. They can come from any kind of background, occupation, educational level or life experience. The study is committed to ethical principles of equality, diversity and accessibility to enable full inclusion.

Residents will be asked to dedicate an average of 6 hours monthly to the study between December 2018 (group set-up and planning meetings for the new year) and April 2019.

The 6 hours will not be in one sitting. They will be distributed between e-mail and phone contact, reading and commenting documents, occasional face-to-face meetings, and workshops in the local area.

Most activities will be virtual or local. If local, we will consult with HNT site leads and resident group members to find venues that are convenient for them.

If more extended travel is required, we will factor in that time and balance it against lesser time dedication in another month.

Nominating two residents
Please send us an e-mail with your two nominees' contact details, and tell us about their experience and abilities they could bring to the study.
Write to Dr Susanna Rance, University of East London: s.rance@uel.ac.uk
Nominations will be accepted up to Wednesday December 12th.

We look forward to hearing from you. Please let us know if you have any questions.
Best wishes,
Susanna
Dr Susanna Rance
for the Healthy New Towns research team

Appendix V: Stakeholder workshop report

Looking back, looking forward:
Long-term health and wellbeing impacts of Healthy New Towns

Report on the stakeholder workshop
Congress Centre, London, 28th March 2019

Angela Harden, Gail Findlay, Paul Watts, Susanna Rance - University of East London
Victoria McGowan - Newcastle University

Healthy New Towns research

The University of East London and Newcastle University are working on a 'baseline and feasibility' study in preparation for research on the longer-term impact of Healthy New Towns (HNTs). This study is supported by a 'Rapid Funding Scheme' grant from the National Institute for Health Research (NIHR). To guide the future research, we were keen to meet with a diverse group of stakeholders including existing members and partners of the HNT Evaluation Collaborative, residents, and leads from other HNT sites.

Workshop aims

- Capture key stakeholders' wealth of learning, knowledge and experience of the implementation of the HNT programme;
- Bring this knowledge into further developing the proposal for longer-term research on health and wellbeing effects of HNTs.

A key workshop objective

- Identify and prioritise longer-term impacts and outcomes of HNTs that stakeholders would like to see measured in the research.

2

Participating together with 5 researchers from UEL and Newcastle University were 14 stakeholders from 7 HNT sites:

Barton - city council locality officer
Barking Riverside - academic partner
Bicester - HNT programme director
Darlington - 2 residents; community development project officer
Ebbsfleet - community and health project manager; academic lead; academic associate
Northstowe - public health lead
Whitehill & Bordon - HNT lead; technology advisor; housing delivery partner; academic partner

3

Looking back: understanding contexts for HNT achievements

What has worked well?

Blue lines, health & walking groups, cycle programme
Partnerships with community organisations
Extra investment from developers
Hubs and social prescribing
Meeting new people
Use of technology

Moving into new 'house for life'
Partnership working between sectors
Embedding HNT principles in new buildings
Community involvement and being listened to
Engaging people who wouldn't usually be involved

What influenced successes?

Resident input into new house design
Involving children in poster design
Engagement from local schools
Resident satisfaction survey
Interactive opportunities
Alternatives to meetings

Integrating heritage into design
Using existing community strengths
Beginning with existing partnerships
Retaining natural environment assets
Building in sustainable mantenance of greenspace
Protected time and ringfenced resources for health

4

Looking forward: how stakeholders see future HNT directions

- Some evidence of political buy-in around healthy placemaking
- Commissioners expect evidence of effectiveness of healthy placemaking programmes
- Need to focus on longer-term initiatives beyond the current funding period
- Active travel increasing
- Participatory budgeting
- Blue and greenspace focus
- Intergenerational housing project
- County-level placemaking initiatives

- New model of care through health hub
- Hope new developments will complement and contribute rather than interrupt good community connections
- Preference found for focus on wellbeing more than on health
- Need to celebrate success and transfer to other areas to enable continued interest and engagement

5

What processes and outcomes were stakeholders keen to measure?

Process	Outcome
• Examples of effective system working (partners working together) • Ladder of participation in the design and implementation of programmes • System access to primary care data • Community capacity (number of leaders/ volunteering) • Strength of partnership building • Evidence that resident voice is being captured and heard within specific interventions • Longitudinal resident experience • Resident engagement (and its quality)	• Numbers of people using active travel • Transport mode • How well you know your neighbours in new developments (and flow into new neighbours) • Sense of belonging/place • Visits to greenspaces within an area (frequency/duration/intensity) • Public Health outcomes framework (site-specific) • Proxy measure (e.g. attendance at leisure centres) • Cost impact of social prescribing and other specific programmes • Attendance at GP and primary care services • Attendance at GP for non-medical needs • Number of new fast food outlets • Participant wellbeing measures • Transport mode shift • Kids cycling to school

6

Prioritising HNT outcomes: from longlist to shortlist

Researchers made a longlist of 180 relevant outcomes, taken from an index of routinely collected data that can be publicly accessed and compared across HNT sites.

Provision of 1 hour or more unpaid care per week (%)
Provision of 50 hours or more unpaid care per week (%)
Cares for sick/disabled/elderly in household
Child Development at age 5 (%)
GCSE Achievement (5A*-C inc. Eng & Maths) (%)
Unemployment (%)
Long Term Unemployment (Rate/1,000 working age population)
Likes present neighbourhood
Standard of local services: Medical
Standard of local services: Leisure
Able to access services when need to
Standard of public transport
Worry about being affected by crime
Extent of worry about crime
Feel safe walking alone at night
Retail Environment domain
Health Services domain
Physical Environment domain
AHAH Index
Retail Environment domain
Health Services domain
Physical Environment domain
AHAH Index
Gambling outlets
Fast food outlets
Pubs/bars/nightclubs
Off licenses
Tobacconists

Part of the Routine Data Index longlist

We narrowed it down to a shortlist of 25 for stakeholders to discuss and add to.

7

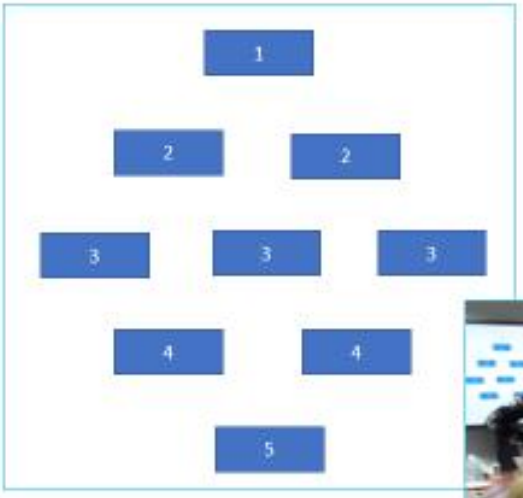
Discussing and ordering cards with 25 shortlisted outcomes …

Health service access (distance to GPs, hospitals, pharmacies, dentists, leisure services)
Active living environment (distance to green/blue spaces, cycle/footpaths, facilities)
Crime rates
Sense of belonging to the local area (resident reported)
Active commuting levels (walking/cycling to work)
Fruit and vegetable consumption levels
Physical activity levels (type and frequency)
Hospital stays for alcohol related harm
% of population with diabetes who are referred to an educational programme
% of population with mental health diagnosis who have a comprehensive care plan
GP prescription rates for cardiovascular diseases
GP prescription rates for diabetes
GP prescription rates for mental health care
GP prescription rates for nutrition-related care
Residents perceive their neighbourhood to be *'close-knit'*
Residents believe *'people are willing to help their neighbours'*
Residents believe *'people in this neighbourhood can be trusted'*
Residents believe *'people in this neighbourhood get along with each other'*
Social networks index (based on resident reported networks)
Social support index (based on resident reported access to support)
Overall life satisfaction
Overall feeling that *'things you do in your life are worthwhile'*
Happiness (resident reported)
Anxiety (resident reported)

… and blank cards for stakeholders to propose their own outcomes

8

Prioritising outcomes using the Diamond 9 exercise



Working in groups, stakeholders discussed the shortlist cards and their own additions. They selected 9 and lined them up in priority order.

9

Diamond 9 prioritisation by groups

10

Overall discussion and scoring of outcomes

10 Happiness (resident reported)
10 Physical activity levels (type and frequency)
8 Social Support Index
7 Attendance at GP for non-medical needs*
5 Fruit and vegetable consumption levels
5 Active Living Environment
5 Overall life satisfaction
5 Child and Adult Obesity*
4 Cost-Benefit of HNTs*
4 Sense of belonging to the local area (resident reported)
3 Health Service Access
3 Residents believe 'people in this neighbourhood get along with each other'
3 Healthy Eating (broader than fruit & vegetables)*
2 Wellbeing*
2 Social Networks Index
2 Active commuting levels
1 GP prescription rates for diabetes

Score based on 3 groups' Diamond 9 ranking. 1st = 5 points; 2nd = 3 points; 3rd = 3 points; 4th = 2 points; 5th = 1 point; not included in Diamond = 0 points.

11

Next steps and staying connected

- Outcomes prioritised in the workshop will form part of the baseline and feasibility study report to be submitted to NIHR in May 2019.
- A proposal for longer-term research on health and wellbeing effects of HNTs will be submitted later this year. We wish to engage all 10 HNT sites in this research.
- We are keen to bring more resident voices into our research. Please help us to circulate an online questionnaire for HNT residents: https://goo.gl/forms/xws0cVer3yOqzgm12
- We are collating qualitative and quantitative data from all HNT sites who wish to be involved in the research. Please write to Dr Paul Watts: p.n.watts@uel.ac.uk
- For further information, please contact project lead Professor Angela Harden: a.harden@uel.ac.uk

Thank you for your participation!

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Appendix VI: First iteration of Healthy New Towns system map

Figure 1 shows the first iteration of the systems map derived from workshop discussions and highlights the interconnections between elements identified by stakeholders. Stakeholders also identified elements that have the potential to either dampen or amplify any positive effects of the programme. National policy and resources for example was one such element (e.g. austerity measures, NHSE pump priming of HNTs). This highlights a feedback loop which can either positively or negatively affect overall population health outcomes mediated through public sector resources.

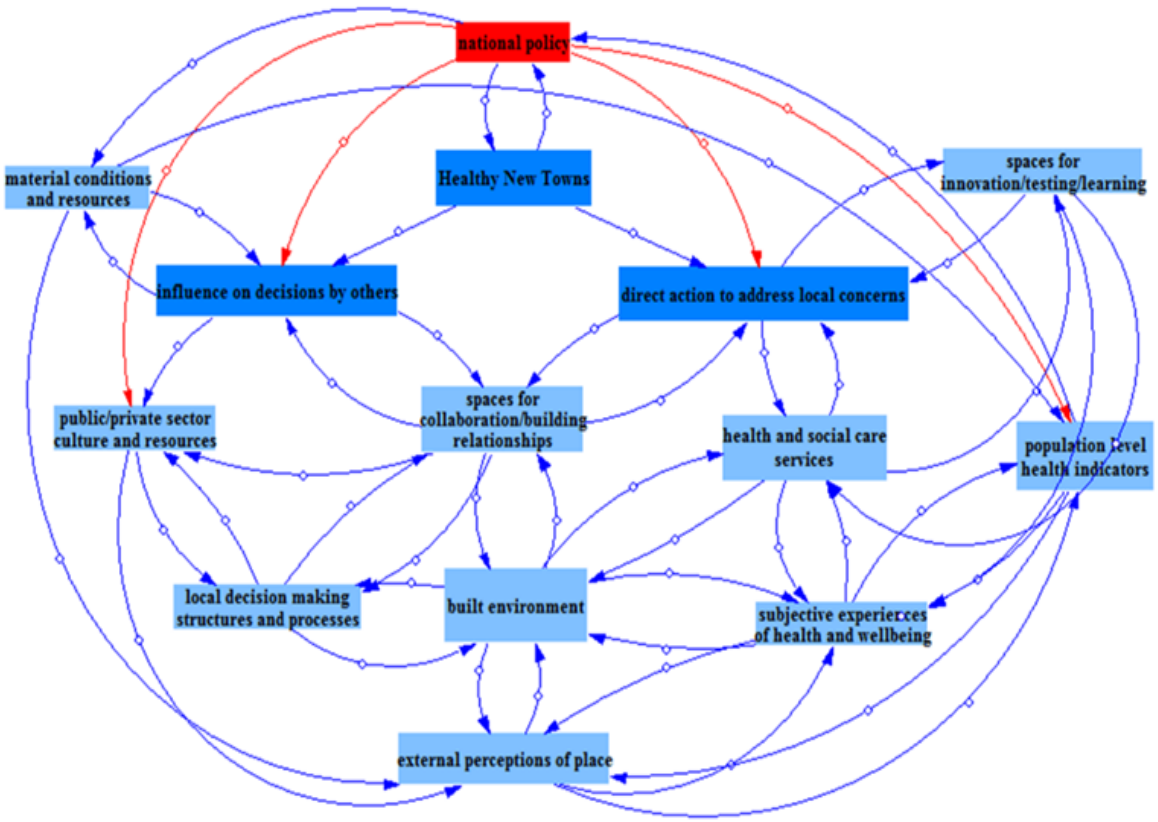


Figure 1 - Initial systems map develop from stakeholder workshops

Examples of system elements discussed in the workshops highlighted in Figure 2:
Material conditions and resources: The HNT programme provided resources to implement the programme, sites have also secured additional resources to continue working in partnerships and continue to embed the principles develop during the three year programme. Also, affecting change on material conditions in place, developing lifetime healthy homes, providing spaces for community engagement such as community houses, community grants.
External perceptions of place: Bicester blue line - created a social space for residents, improvements to housing. Linked to subjective experiences of health and wellbeing – not only due to increase in physical **activity but also through reducing social isolation.**
Spaces for innovation: Social enterprise – young people developing dog walking programme – linked to health, digital innovations – developing bids to provide wifi in greenspaces (linked to external perceptions of place and material conditions).

Appendix VII: Existing evaluation data received from HNTs

HNT Name	**Baseline Survey Data** (collection of primary data designed to form a baseline for longitudinal measurement of outcomes)	**Case Studies** (a format designed by NHS England for reporting specific evaluations, including outcomes, barriers and challenges)	**Interim Evaluation Reports** (reports of overall progress in HNTs including reporting on process and impact)	**Other** (any other relevant evaluation material received)
Barking Riverside	• Not applicable.	• Not applicable.	• Not applicable.	• Evaluation report on Barking Cycle Hub Activation. • HNT Delivery Plan.
Barton	• Barton Health and Wellbeing Baseline Survey (2017).	• Not applicable.	• March 2019 - End of Formative Evaluation Report. • May 2017 – End of Phase one report. • Jan 2017 Interim Report.	• MIND mental health vision workshop report. • MIND community leaders report. • Alcohol Brief intervention training report. • Social Prescribing Pilot Report. • Health Impact Assessment (2017). • Making every contact count workshop report. • HNT Delivery Plan.
Bicester	• Bicester HNT Baseline Survey (2017).	• Health Routes Case Study. • Diabetes Case Study. • Facebook Page Case Study. • Bicester Estate Case Study.	• Jan 2019 – HNT Evaluation Report.	• Air Quality Project Report. • Montgomery Surgery Diabetes Open Report. • HENRY Healthy Start Programme Report. • Workplace Health and Wellbeing Support Offer Outline. • HNT Delivery Plan.
Cranbrook	• Not Applicable.	• Not Applicable	• Not Applicable.	• Health and Wellbeing Strategy Report. • Health Messaging Overview.
Darlington	• Red Hall School and Residents Baseline Survey.	• Move More Programme • New Housing Design Principles • Primary Care Hub. • Health Coaching. • Predictive Modelling • Community Health Hubs	• March 2019 - End of Formative Evaluation Report.	• A day out not a hand out report. • Holiday enrichment programme report. • Move more evaluation report. • HNT Delivery Plan.

		• Community Activation • Design Principles • E-Consultations • Green & Blue Infrastructure • Darlington CCG.		
Ebbsfleet	• Quality of Life Baseline Survey.	• Not Applicable.	• Not Applicable.	• Betterpoints Interim Report. • Digital Monitoring Report. • Digital Trial Report. • Healthy Schools Report. • Digital Monitoring GIS Report. • HNT Delivery Plan.
Halton Lea	• Not Applicable.	• Not Applicable.	• Not Applicable.	• Community Insights Workshop Report. • Focus Group Process Evaluation Report. • Delivery Plan presentation.
Northstowe	• Not Applicable.	• Not Applicable.	• Not Applicable.	• HNT Delivery Plan • Focus Group Process Evaluation Report. • Evaluation Plans for: Travel Plan surveys; Financial incentives for active travel • Active New Communities project.
Whitehill and Bordon	• Whitehill & Bordon Healthy New Town Baseline Survey.	• Runnyhoneys case study. • Community Café case study. • Mind & GP Crisis Project Case study. • Surgery Signposting Project Case study.	• Not Applicable.	• Timebanking Project Report. • Social Isolation Project Report. • Safe Places Project Report. • Healthy Schools Report. • Healthy Food /Community Hub Report. • Energise Me Project Report. • Adult Scooter Participant Survey Results. • Healthy Streets Report. • Modal shift travel survey results. • HNT Delivery Plan.

Appendix VIII: Examples of methods and findings of evaluation and monitoring activity

Healthy New Town	Document no. and type of evaluation/monitoring	Methods	Key findings and recommendations	Reviewer comments
Barton	1. Baseline assessment of needs and existing assets to inform development of health new town 2. Report describing progress and achievements in phase one (ADD dates) 3a &3b. Assessment of needs/areas for development on food poverty including assessment of low uptake of healthy start vouchers 4a & 4b. Assessment of needs/areas for development on mental health and well-being 5. Uptake and progress of social prescribing pilot 6. Alcohol and smoking identification and brief advice training report 7. Evaluation of girls sport, physical activity and health and wellbeing sessions.	1. Combination of secondary data, household survey (n=300) (1a) and qualitative research (1b) (15 telephone interviews with residents, group discussion with 'small number'of residents, interviews with representatives from 6 stakeholder groups) 2. Narrative description of progress, partly based on findings of 1. 3a& 3b. 12 key informant interviews, 57 interviews with residents including food insecurity experience scale. 4a &b Discussion groups with stakeholders, unclear sampling and recruitment 5. Monitoring data e.g. number & type of referrals 6. Discussion group with those attending training 7. Unclear	***Key findings*** • Poor nutrition, with only 14% eating the recommended portions of fruit/ vegetables (1a). • Mental health, including high levels of depression and anxiety (1a). • Older people and middle age men are most at risk from isolation and experiencing multiple disadvantages (1b). • High levels of alcohol consumption were identified within existing and future Barton Park populations through demographic analysis (1a). * Assets – e.g. good links to Oxford and London, clean and tidy; needs - improve shopping facilities, road conditions, traffic and the number of activities/facilities available for children and young people (1b and 2). • Generally, residents and stakeholders were positive about the new Barton Park Development but concerns were raised regarding the volume of traffic and lack of parking (1b and 2). ***Recommendations*** • Project governance needs to be better integrated with existing structures covering Barton (1&2). • A wider 'action group' is needed with a range of active partners (1&2). *More outreach to communities in relation to projects and services such as social prescribing, particularly those most vulnerable via health and community champions and community organisations (3a, 4a,b, 5) *Lack of space in healthy living centre for non-clinical activities needs to be addressed (5)	*Evidence that some of the findings of the needs assessment are informing development of site e.g. food bank rebranded for higher uptake to tackle poor nutrition. *Unclear how high levels of depression &anxiety identified as household survey identified levels in line with average levels for England.
Bicester	1. Survey of a sample of Bicester HNT residents (2017). 2. "Welcome to the Healthy Bicester Celebration 2019" slides with programme evaluation highlights.	1. Quant. and qual. analysis of 1,106 survey responses. 2. Headline stats. from various projects. 3. Quant. and qual. analysis.	***Key findings*** * Socio-economic group was not observed to have a significant impact on many of the outcomes assessed. A possible explanation for this was sedentary office work [1].	*Repeat survey scheduled for autumn 2019 [1] *8 case studies are due to be published March 2019 [3].

	3. Narrative case study and series of 8 case studies. 4. Programme Evaluation Findings: progress report on impact of programme 2016-18. 5. Case study: "Developing and delivering a model for enhanced proactive primary care". 6. Case study: challenges of setting up an integrated care pathway for diabetes in Bicester and the surrounding locality. 7. Case study: Workplace Health and Wellbeing Support Offer 8. Case study: Health routes 9. Project report: Urban Healthy Living Using Satellite Enabled Air Pollution Monitoring and Mitigation. 10. University of the West of England and Bath University: Economic benefits of creating healthy built environments.	4. Focus groups; stats. of programme impact on health and wellbeing. 5. Feedback from patient engagement events before and during implementation of new care models; stats. of primary care visits, hub and practice utilisation. 6. Survey 7 months after pilot concluded: open questions on clinicians' perceptions of change in diabetes management knowledge and behaviour. 7. Flyer with stats. on Bicester challenges and business case for the Scheme. 8. Pedestrian counts from beam-break monitors on Health Routes: hourly data, weekend/ weekday comparison, assessment of impact from specific events. Qualitative social media data. 9. Automated near Real-Time data model of NO_2 providing hourly air quality mapping at 20m spatial resolution overlaid on an urban street map of Bicester. 10. Independently-funded study: link to video and brochure.	* Findings suggested no difference in health status of residents moving to new developments and residents of the existing town [1]. *At 3 year point of healthy place shaping, 2,000 children now run a mile per day at school; 27% increase in footfall on 5k health routes and discovery route; 13 food outlets in Oxfordshire participate in "Eat Out Eat Well" scheme promoting healthy food options [2]. *Initiatives in built environment, new models of care and community activation have been successfully started, but their impact will be reduced if they are not sustained [4]. *Innovation and transferability findings included programme acting as test bed; replicable place-shaping approach [4]. *Providing new patterns of delivering primary care (urgent access hubs and early visiting services) is possible, well received by GPs and patients, helps with practice sustainability, and appears to date to be clinically safe [5]. *Challenges around recruitment and cost of the additional capacity can mean that the provision costs more than providing the same care within core GMS. This may be mitigated by effective deployment of a multi-disciplinary GP led service [5]. *Senior level managerial sponsorship is important in making diabetes care pathway change a reality [6]. *In Bicester, on average 5.31 sick days are taken per person per year. Average cost of sickness is £975 per employee. For every £1 spent on workplace wellbeing schemes there is a return on investment of at least £4.17 [7]. *Although Health Routes aimed to increase physical activity, qualitative evidence suggests they are also reducing social isolation [8]. *Health Routes benefits found or anticipated are increase in: physical activity/footfall; social cohesion, e.g. from welcoming and informative Facebook posts; awareness about HNT programme; potential cost saving through preventative health care [8]. *Ambient air quality in Bicester generally lies within the Low Risk range on the DEFRA Air Quality Index. However,	*Frequent omission of dates on reports and case studies, and sources and dates of statistical data presented. *Much self-evaluation. *For developing predictive modelling app (described in Darlington study), baseline practice data quality has been flagged as a concern in Bicester. *Air quality monitoring follow-up work has been proposed in context of UK Space Agency – NHS Space for Health call [8].

			localised instances of significantly higher levels are found on roads in certain localities due to innate traffic congestion. Abnormally high levels occur in the vicinity of the schools in Bicester during the pick-up period [9]. *There is a clear economic case for developing healthy built environments [11]. ***Recommendations*** *Priority needs to be given to building relationships, as a healthy system is dependent on strong relationships between the actors in that system [4]. *To be sustainable in the long term, the enhanced primary care service will need to have guaranteed ongoing funding and be properly integrated with the GP practice units [5]. *Development of a diabetes dashboard will allow for locality-wide monitoring of care delivery against an outcomes-based contract [6]. *For Blue Line sustainability, resources needed so residents can receive rapid response to complaint or negative social media comments [8].	
Darlington	1. Charter for a Fairer Richer Darlington (no date, last ref. 2017) 2&3. Move More Programme. Case studies (no date) - 2 pp. with quotes from residents on their use of exercise sessions. Questionnaire findings & programme self-evaluation (no date - 2019?). Move More Activities Red Hall (2018).	1. Call to Action citing key local data in public statement of intent to support local wealth creation that benefits all residents. 2&3. Narrative summary on findings from participant registration questionnaire. Narrative summary on programme promotion, attendance tendencies, popularity of sessions, feedback. Stats breakdown of attendances by activity and total (n=863).	***Key findings*** ***** IMD score is 23.6 compared to 21.78 national index. 26% of Darlington workers currently earn below the real living wage. Child poverty expected to increase from 29% in 2018 to 39% in 2019/21. Adults from poorest area, compared to richest area, are 5 times more likely to be in receipt of social care; 40 times more likely to be long-term sick or disabled [1]. ***** When Move More participants were asked if they would pay for future classes, max. people were prepared to pay was £2. Figures indicated sporadic attendance. All participants felt social media was best form of promotion. Most popular activities are continuing, attracting average of 10 children. Feedback included times of sessions not being accessible to all [2&3]. ***** Total of 939 Holiday Enrichment Programme attendances over 4-week period. Total of 48 sessions delivered to 77 individual beneficiaries. Majority of	*****Valuable sources of local data cited on poverty, inequality, patient experience: Child Poverty Action Group (2013); Institute for Fiscal Studies (2017) [1]; CQC NHS patient survey (2016) [8]. *****Systems mapping report includes quant. and qual. findings from other local projects and programmes [6]. *****Evaluation of Move More programme due to be conducted at

	4. Holiday Enrichment Programme (2018) 4a (#3 in PW consolidated evaluation activity table). A Day Out Not a Hand Out: Darlington Holiday Clubs (2017) 5. Case study - Built environment - Improving housing report 2017-18 6. Evaluating Darlington HNT using a complex systems approach - McGowan, March 2019 (70 pp. report)	4. Self-evaluation report of 4-week programme of activities and nutritious meals for children across the most deprived areas in Darlington. Staff maintained attendance records; completed daily evaluations; recorded observations; feedback sessions with children and parents/carers. Narrative report includes a page of feedback examples. 4a. 106 children signed up to this programme delivered by Darlington play leaders and supported by Groundwork NE & Cumbria's Tees Valley project team. Attendance records and qualitative feedback from participants. Stats. on wider regional programme benefiting 585 children. 5. Case study sets out evidence gathered in support of method explained in Darlington HNT Design Principles evidence and practice guide. Scoring system to assess residential site designs, with one point allotted to each factor satisfied by the design within the 6 principles. This	children had not had breakfast before attending sessions. Children asked for the programme to be extended [4]. * 65 families supported by Darlington Holiday Clubs programme (2017). 106 children from 5 – 11 yrs. 64 sessions delivered across Darlington. Positive feedback cited from children and parents/carers [4a]. * From analysis of level of compliance with HNT Design Principles, the top scoring criteria are Placemaking and Transport/Movement. The ones proving more challenging to achieve are Healthy Food Choices and Economy [5]. * From systems mapping, overall change mechanisms identified were direct action and influencing others. Programme elements were classified as seeking change in a) upstream determinants of health such as housing and access to health care; b) downstream individual lifestyle factors such as physical activity and healthy eating [6]. * Systems mapping found that barriers to implementation were short-term funding, lack of buy-in from wider stakeholders, and influence of external factors. Facilitators were partnership working, developing new relationships, and creation of new spaces for thinking, innovation and learning [6]. * Darlington CCG has a registered patient population of c. 108,000 served by 11 GP practices. Primary care hub working project found range of views on working to scale. "Lack of a hub culture" identified as barrier to progression. Perceived hiatus of hub activity linked to uncertainty of who the provider of community services would be in lead-up to and after the period of tender. Decision taken to focus efforts on creating stable primary care. Risk of community services not aligning with hubs [7]. * 41% of Darlington patients reported that they were only partially involved or not involved at all in decisions made about them (CQC NHS patient survey Sept 2016). There are c. 48 Practice Nurses across the 11 GP surgeries in Darlington. Only 8 attended the course. Trainee feedback reported as very positive. Reports that health coaching techniques were being successfully employed in	end of March (2019?) [2]. *Much data under-analysed/under-reported, only summarised in narrative form, anecdotal examples, generalisation. Little or no quantitative evidence. Much self-evaluation [2] [4] [4a] [8]. There has been little formal/external evaluation of projects, as mentioned in report on embedding Design Principles [10]. *For developing predictive modelling app, issues with accuracy of population data received. *Darlington Borough Council has created a methodology for monitoring compliance with Design Principles over time. Full evidence bases were not available to Planning Policy Team when Local Plan was being drafted [5]. * HNT Design Principles were included in local plan for Darlington, and

		provided a quantitative measure to compare different types of development and assess trends or patterns. 6. Evaluation followed complex adaptive system framework to analyse patterns and interrelationships rather than cause and effect, to develop a visual systems map of the HNT. Ethnographic methods, participatory mapping, qualitative interviews and observations. Thematic analysis of qualitative data from interviews and focus groups with key stakeholders and residents; observations of project meetings and events; documentary analysis of HNT plans and reports. Narrative and visual presentation of results. 7. The project aimed to build and ensure resilience in Darlington primary care for the future by investigating: a) at individual practice level: current position and future views regarding working at scale; practice positions on staffing, physical capacity, sharing services. b) at hub	consultations. Renewed action plan with training was set for Oct. 2018 [8]. ***** In Bicester predictive modelling, utility of the model was limited by the quality of the base data used to build it. Predictive modelling work in Darlington showed that greater insight can be gained if a broader dataset of information is used that includes demographics, housing development and local environment [9]. *Integration of Design Principles within the Local Plan is considered disappointing, within the challenging economic and regulatory context. However, industry-wide there is broad acceptance of the Principles. Developers are happy to comply when all applicants have to, in the interests of fair competition [10]. ***** Red Hall (Estate) and Darlington Schools Survey (no date) showed comparative results including: (i) Are you often near people who smoke cigarettes? RH: 67% yes; D: 40% yes. (ii) Do you exercise playing sports or games? RH: 60% yes; D: 74% yes. (iii) Do you think you have a balanced diet? RH: 79% yes. D: 84% yes [10a.] ***Recommendations*** *****Suggestion to use national datasets instead of extracting data from practices. See Hobbs *et al.* (2016), Clinical workload in UK primary care [1] [9]. ***** "A longitudinal study needs to be undertaken to monitor the outcomes and impact of the use of the Principles." (Design Principles case study report, p. 4) [5]. ***** Primary care hub working project identified a need for a town-wide primary care voice and improved federation and practice communication. Engagement with practices before commissioning change would have been useful [7]. *****For predictive modelling work, ensure the end user is part of the development, constantly validating outcomes and user interface. Establish a funded project for predictive analytics with dedicated staff. Implementation needs a champion to push for implementation, support colleagues and answer questions from primary care [9]. ***** Embedding HNT Design Principles requires greater political awareness and buy-in; internal push via senior	incorporated in master plans for 2 other local areas [6]. *****Behaviour health coaching project found low level of commitment from practices to release nursing staff to attend two days training. Follow-up feedback from trainees planned for Jan. 2019 [8]. ***** Comparative results from Red Hall and Darlington Schools Survey indicate inequalities across areas within the HNT [10a].
	7. Case study - New Care Models (2018) - final report - primary care hub working (2017-18) 8. Case study - New Care Models (no date) - final report - Behaviour health coaching (2017-18)			

	9. Case study - New Care Models - Sept 2018 - report v.4.0 - Data informed general practice patient services planning 10. Case study - Built Environment - 2017-18 report v0.1 (no date) - Local plan process - embedding Darlington HNT Design Principles. Timothy Crawshaw 10a[3]. Red Hall and Darlington Schools Survey	level: hub activities currently undertaken; models of working desired for the future; opportunities for hub working. 14 interviews produced: 11 in GP practices, 3 in hubs. Change management provider analysed all interviews. Narrative report. 8. Health coaching selected as programme to empower patients and produce benefits shown by studies on shared decision-making. Coaching for Health was commissioned to deliver a training course to primary care practice nurses. Training delivered over 2 separate days in Oct. 2018. 9. Development of predictive modelling app for GP care in response to new models of care, changing demographics and growing populations due to new build developments. App based on practice lists for 2 GP practices in Bicester and 1 in Darlington (being rolled out to 2 more practices at time of report). Unless patients opted out, all were	management and politicans; new partnerships and funding mechanisms for delivery of local centres and clustered services (including future health hubs) [10].	

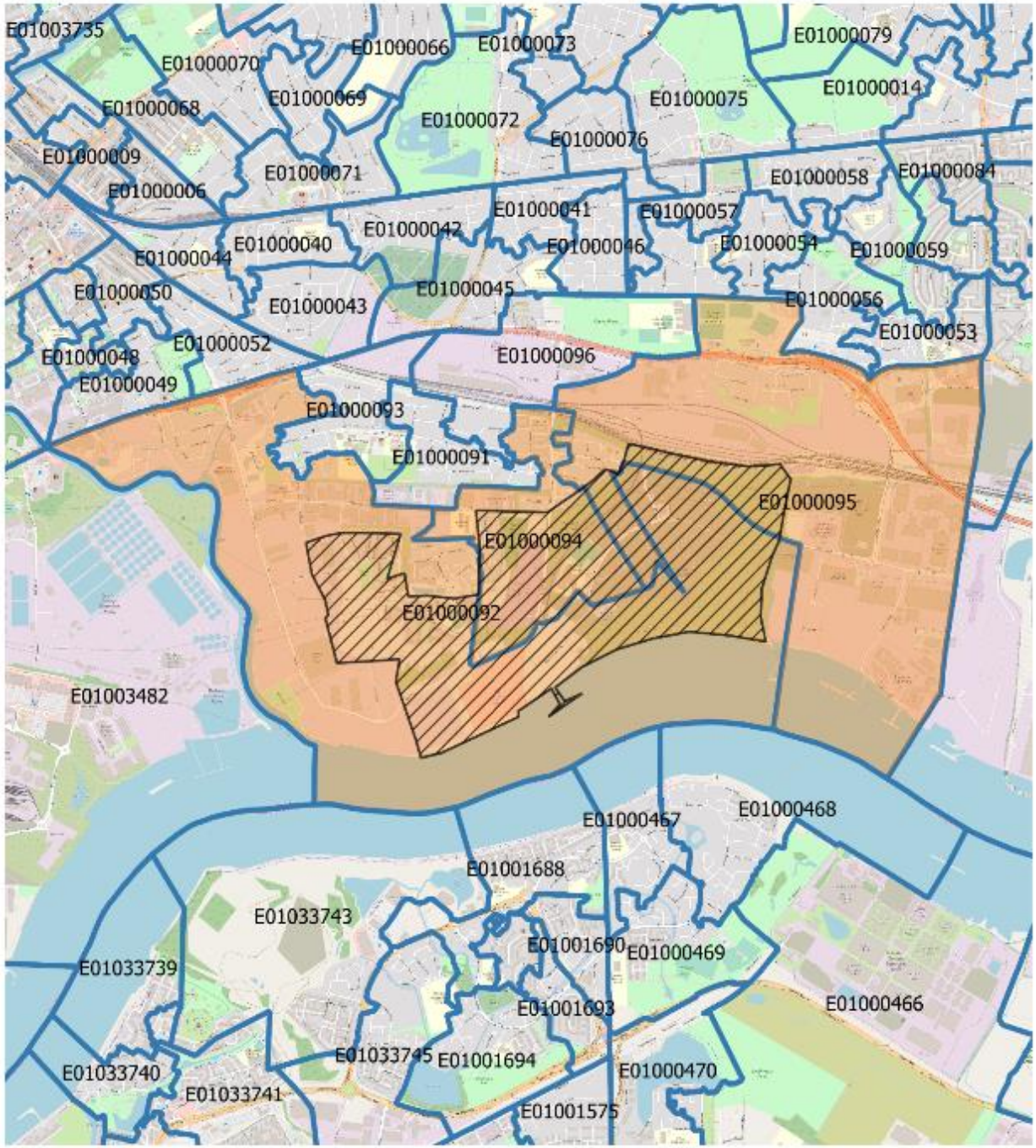
[3] Darlington had the largest number of reports available. Not all our summarised in this table.

		included to allow a model to be built showing breakdown by demographic groups. All interested GP practices in areas in scope are to receive a copy of the model which links their practice data to population predictions (local or national). 10. Design Principles were developed in 2017 through Health and Wellbeing Theme group within the Local Plan. In consultation process, c. 1,300 comments were used to update Local Plan prior to formal examination in public. The Local Plan covers a population of c. 104,000 and plans for 10,000 new homes in the period 2016 - 2036. 10a. School survey of health and wellbeing behaviours. No sampling information available (whole school sample). Data analysis: responses reported as proportions. Comparative results for Red Hall and Darlington.		
Ebsfleet*	1&2. Ebbsfleet digital monitoring trial. Interim report (2018); Lessons Learnt (2019).	1&2. 100 residents and workers equipped with FitBit devices. Data on movement and exercise patterns recorded in 2 time periods in 2017 & 2018. Primarily statistical analysis.	***Key findings*** * 67% of users did not use their device for half the time. 14% used their device for 80-100% of days possible [1]. *Running, walking, biking, and hiking together comprised the highest proportion of activities: 85% by duration. Gym-related activities comprised 15% [1].	* Data quality issues: exact number of FitBit devices distributed was not recorded; age and gender of owner was sometimes retrospectively added

	3. Get Active in Ebbsfleet/ BetterPoints.] 4. Healthy Schools Programme at Cherry Orchard School.	Only volunteers were selected. 3. Digital rewards programme launched March 2018. Complex behaviour change intervention piloted to address high levels of childhood obesity and Type 2 diabetes in the population. Targeted website with call for people to download free app to track physical activity, earn rewards and connect with others. Measured levels of physical activity compared with baseline. Self-report surveys. Tracked weekly minutes of activity evaluated for people who were previously doing less than 30 mins. and between 30-90 mns. Utilisation of green spaces measured through heat maps of tracked activities. Quality issue: Images represent all journeys, which may include in-vehicle journeys if people are using automatic tracking. 4. Edible Ebbsfleet sessions delivered by a youth worker and community worker from a Healthy Living Centre: six one-hour gardening sessions and five one-hour cooking sessions.	* Average daily step count generally increased for age cohorts 18-29, 40-49, and 50-59 as the study progressed. Daily step counts decreased for age cohort 30-39. As the trial progressed, activity levels between males and females became approximately equal [2]. * Digital reward programme users in first 3 months (n=502) exceeded 6 month target. Gender: 74% female, 25% male, 1% other. Engagement level of 66% approx. double the industry standard for health & lifestyle apps [3]. *Over £500 overspend on rewards in the first 4 months of the programme due to higher than expected reach and engagement levels [3]. *Social media was most effective for engagement: over 100,000 impressions in first month. Print promotions not successful with only 15 using promo code on flyers [3]. *In Healthy Schools Programme, 16 pupils (female and male, 5 – 8 yrs old) participated in gardening sessions. In cooking sessions, 3 pupils and 3 parents participated [4]. ***Recommendations*** * In digital monitoring (FitBit) trial, a combination of statistical and qualitative analysis would enhance findings, better inform next steps and give greater balance [1&2]. * As there was a bias toward parties already interested in improving their health, in future studies a range of participants should be sought across spectrum of health interests [1&2]. * Technical recommendations include: broaden sample size; test data collection before investing in technology; bring technology and data together with a resident forum to encourage more active lifestyles [1&2]. * New research questions proposed include: How can wearable technology facilitate better social networks? How can it be used for social prescribing and better integrated within primary care provision? How can geolocation be used to better design healthier places to live? [1&2]. *In digital rewards programme, behavioural data should be used as a guide to categorisation of physical	to data; significantly fewer devices distributed to older age cohorts; comprehensive literature review not yet carried out [1&2]. *Get Active/ BetterPoints evaluation methodology undergoing review in liaison with Canterbury Christ Church University who have access to anonymised programme data [3]. * Data quality issues (digital rewards programme): narrative account of participant age distribution shows the opposite to data in graphic illustration; some unlikely increases self-reported in previously "inactive" group; heat maps suggest that people are tracking their commutes to/from London [3]. * Healthy Schools Programme self-evaluated in brief narrative report with general, anecdotal, "good" and "positive"

		Results were substantiated by organisers' narrative report including feedback quotes from children and parents.	activity/inactivity and associated rewards, rather than self-report (known to be often misrepresented) [3].	comments by organisers. Limited reach of programme. Original aim to do Level 3 Gardening Awards was not achieved, but could be followed up in future [4].

Appendix IX: Maps of Healthy New Towns Sites



Barking Riverside HNT

Development details:

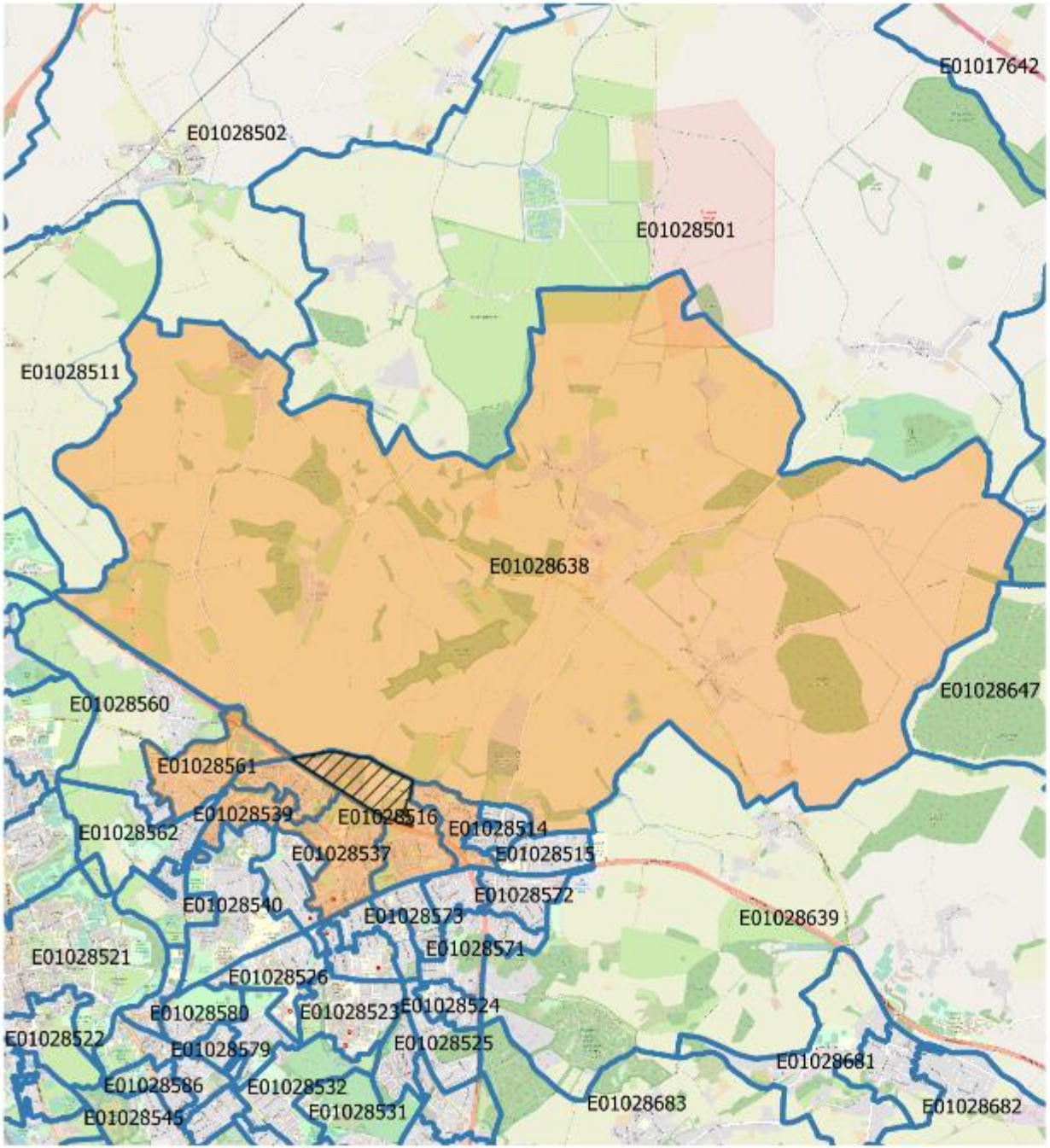
- Led by LB Barking & Dagenham.
- 10,800 houses, 65,500 sqm. commercial and 2,500 new jobs.
- Brownfield site.
- Timeline: Start from 2017, fully built 2031.
- HNT area covers 3 LSOAs

Interventions, evaluations and activities delivered to date:

- Community leadership event and toolkit for best practice for community governance.
- Barking Riverside Cycling Hub Activation.
- Workshops and interviews building shared understanding of and commitment to connected community objectives.
- Two-year TfL funded targeted travel planning programme for schools, employers and residents.
- Development of an active travel plan.
- Development of a placemaking strategy
- Cycle training programme for schools and residents.
- 'Respoke' bicycle recycling scheme.
- Walk to School/ Walk once a week events.
- Riverside hub for community access to healthy food.

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs containing HNT developments
- Development Site



Barton HNT

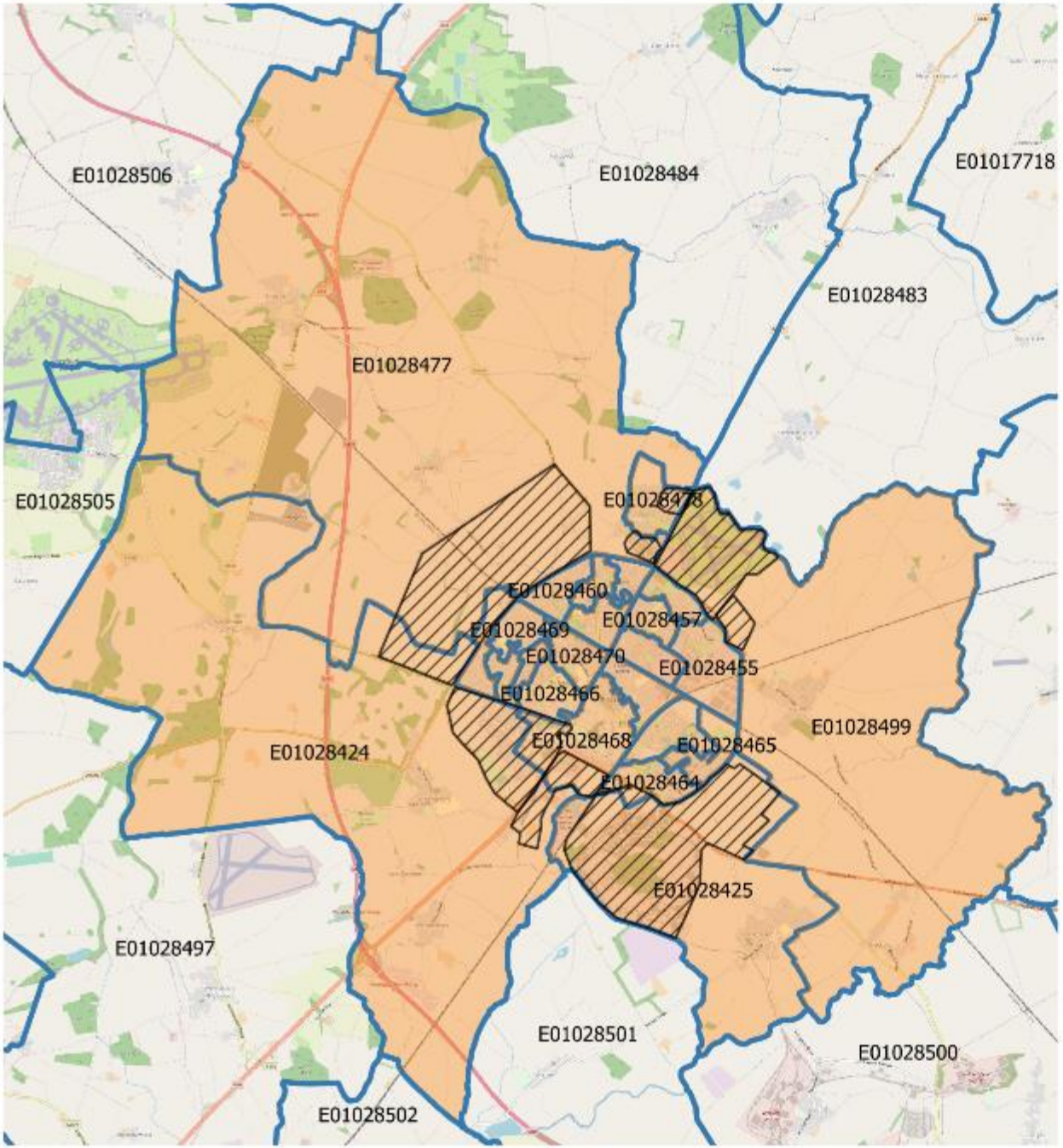
Development details:

- Led by Barton Oxford LLP a joint venture between Oxford City Council and Grosvenor.
- 885 homes, Barton Park, extension of Barton.
- 36 hectares (90 acres) Greenfield site adjacent to John Radcliffe Hospital.
- Timeline: 2017-2023.
- HNT area covers 6 LSOAs.

Interventions, evaluations and activities delivered to date:

- Investigation into low uptake and redemption of Healthy Start Vouchers in Barton.
- Investigation in to understandings of food poverty in Barton HNT.
- IBA (alcohol and smoking Identification and Brief Advice) training sessions.
- MIND Mental Health Visions Workshop and community leaders' workshop.
- Youth Ambition Girls Sport, Physical Activity and Health & Wellbeing sessions.
- Barton Healthy New Town Health and Well-being

Map Legend: Lower Super Output Areas (LSOAs)
LSOA boundaries
LSOAs defining Barton HNT in HIA (2017)
Development Site



Bicester HNT

Development details:

- Led by Cherwell District Council.
- 6,000 houses in North West Bicester, 13,000 for the whole town.
- Greenfield site.
- Timeline: first site completed. Expansion over 20 years.
- HNT area covers 25 LSOAs.

Interventions, evaluations and activities delivered to date:

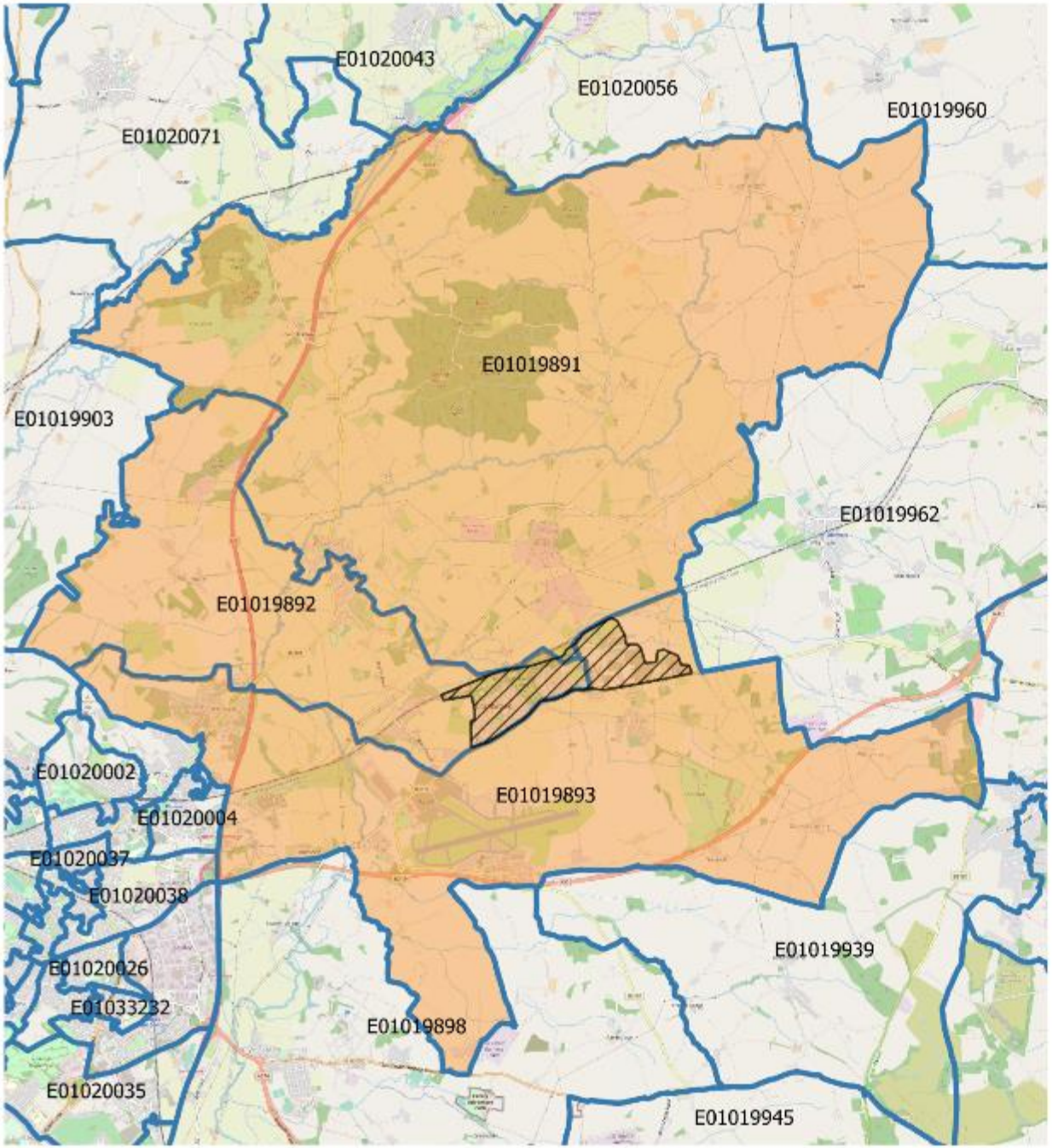
- Bicester HNT health and wellbeing baseline survey.
- Bicester model of primary care case study.
- Report on the challenges of setting up an integrated care pathway for diabetes in Bicester.
- Workplace Health and Wellbeing Support Offer.
- Bicester HNT Health Routes case study.
- Urban Healthy Living (UHL) Using Satellite Enabled Air Pollution Monitoring and Mitigation.
- Make Every Contact Count training for non-clinicians.
- Model of enhanced proactive primary care.

Map Legend: Lower Super Output Areas (LSOAs)

LSOA boundaries

LSOAs defining Bicester (Source: HNT lead)

Development Site



Cranbrook HNT

Development and geographic details:

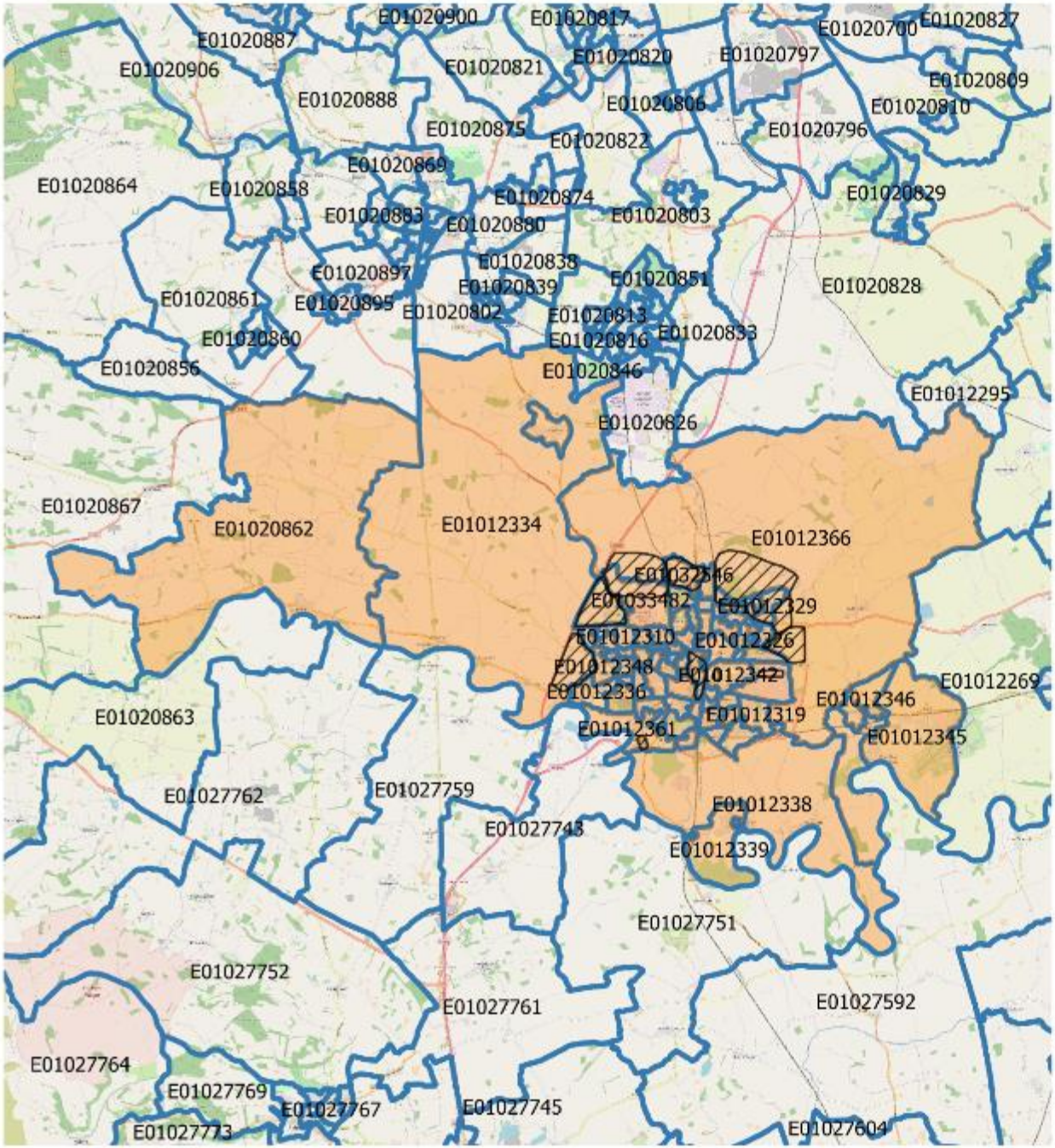
- Led by Devon County Council (formerly East Devon District Council in 2016-17).
- 8,000 homes.
- Urban extension on Greenfield land.
- Timeline: Phase 1 developed and occupied with further building phases until 2028.
- HNT area covers 3 LSOAs.

Interventions, evaluations and activities delivered to date:

- Brain-in-Hand mobile phone app for the Cranbrook Education Campus.
- Sherborne Movement sessions at St Martin's school.
- Oral hygiene awareness training for teachers to run brushing clubs initially for Reception children.
- Live digital radio broadcast by Sound Communities for students to explore and share their understanding of health issues relevant to them.
- Safe online health information skills training delivered to community champions.
- Supporting mental wellbeing through purchase of Reading Agency's Reading Well Mood-Boosting and Books-on-Prescription book collections.
- Premier League Kicks at the Education Campus.
- Signage advising shared pavement-use.

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs containing HNT developments
- Development Site



Darlington HNT

Development details:

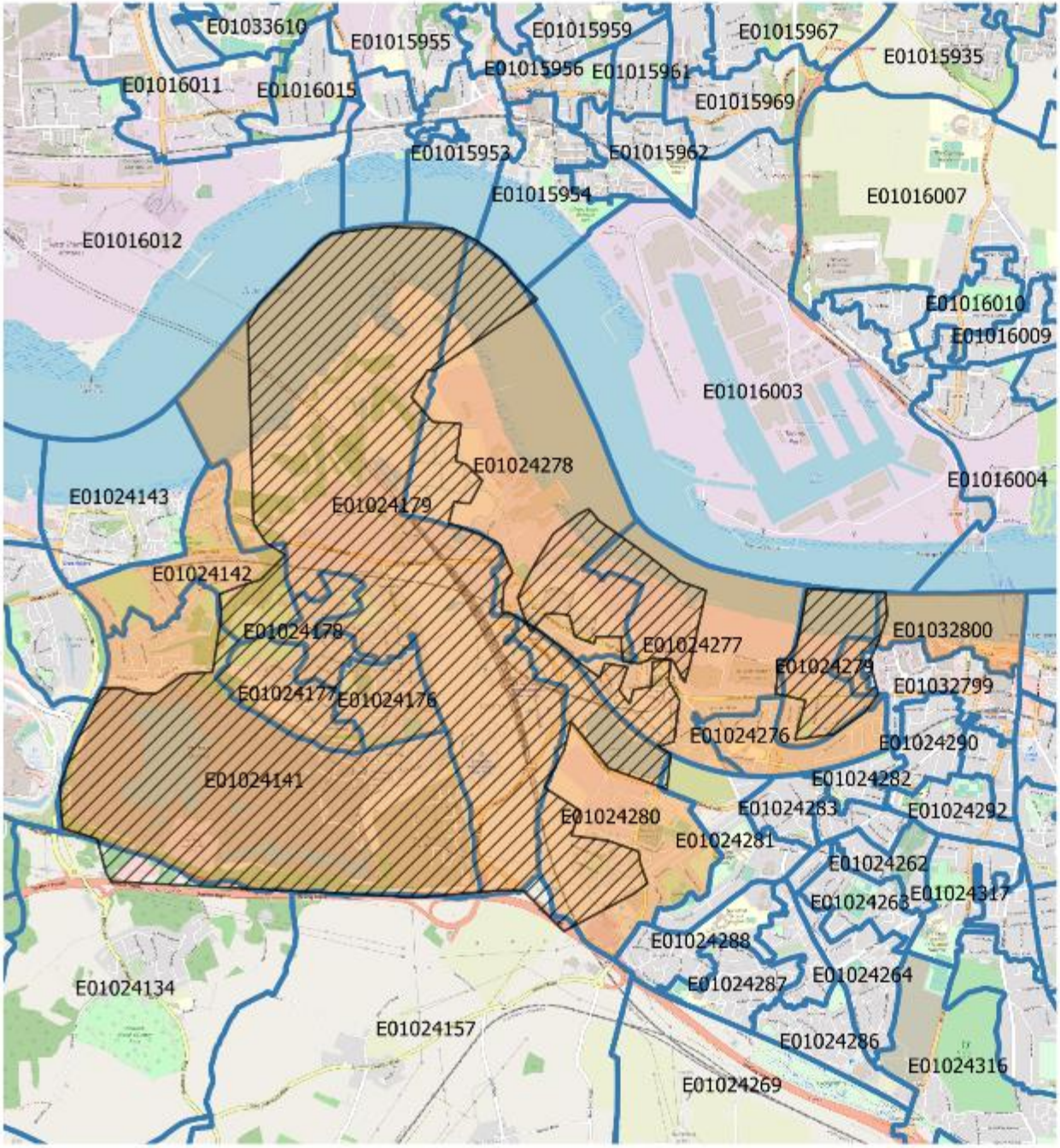
- Darlington Borough Council as lead applicant, in partnership with public, private and voluntary sector organisations.
- 3600 homes across 3 sites.
- Greenfield and regeneration sites.
- Timeline: 2018 for phase one through to 2025.
- HNT area covers 68 LSOAs.

Interventions, evaluations and activities delivered to date:

- Charter for a Fairer Richer Darlington.
- Move More Activities Red Hall.
- A Day Out Not A Hand Out: Darlington Holiday Clubs
- Holiday Enrichment Programme - Neighbourhood Renewal Budget.
- Red Hall and Darlington Schools Survey.
- Evaluating Darlington HNT using a complex systems approach – report.
- New Care Models - final report - Behaviour health coaching.
- Data informed general practice patient services planning.
- E-consultations project report

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs in Darlington HNT (Source: HNT lead)
- Development Site



Ebbsfleet HNT

Development details:

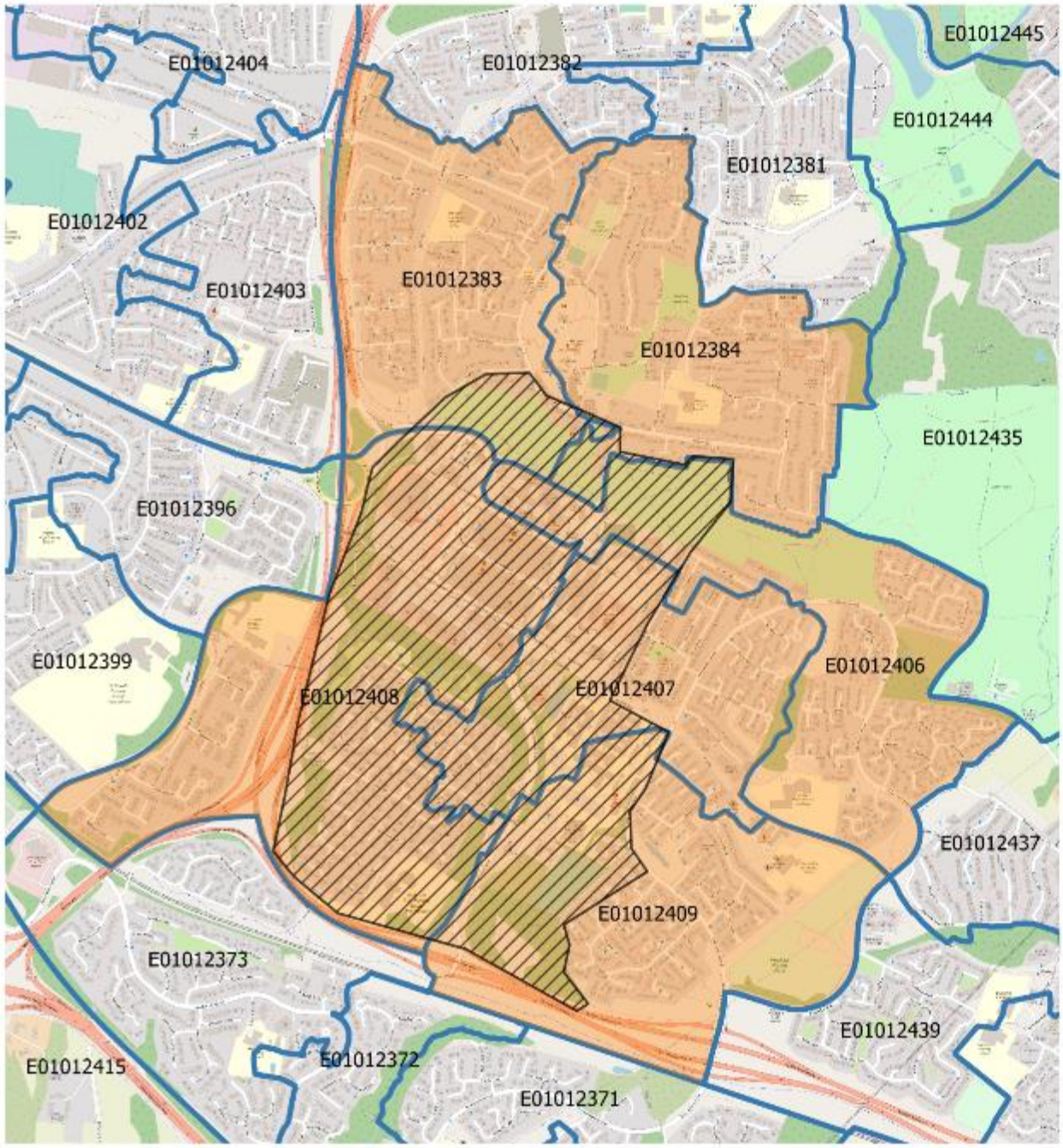
- Led by Ebbsfleet Development Corporation.
- Up to 15,000 homes and 30,000 new jobs.
- Brownfield sites.
- Timeline: completion by 2035, with rapid growth of up to 11,000 homes by 2026.
- HNT area covers 11 LSOAs.

Interventions, evaluations and activities delivered to date:

- Ebbsfleet Digital Monitoring Trial - analysis report.
- Get Active in Ebbsfleet /BetterPoints interim report.
- Physical activity encouraged through in-app messaging, push notifications and stories which appears on participants' timeline.
- Healthy Schools Programme at Cherry Orchard School, gardening and cooking interventions.
- *Edible Ebbsfleet* sessions.
- Quality of life baseline survey data collection.
- Pilot Healthy Garden City School.

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs containing HNT developments
- Development site



Halton Lea HNT

Development details:

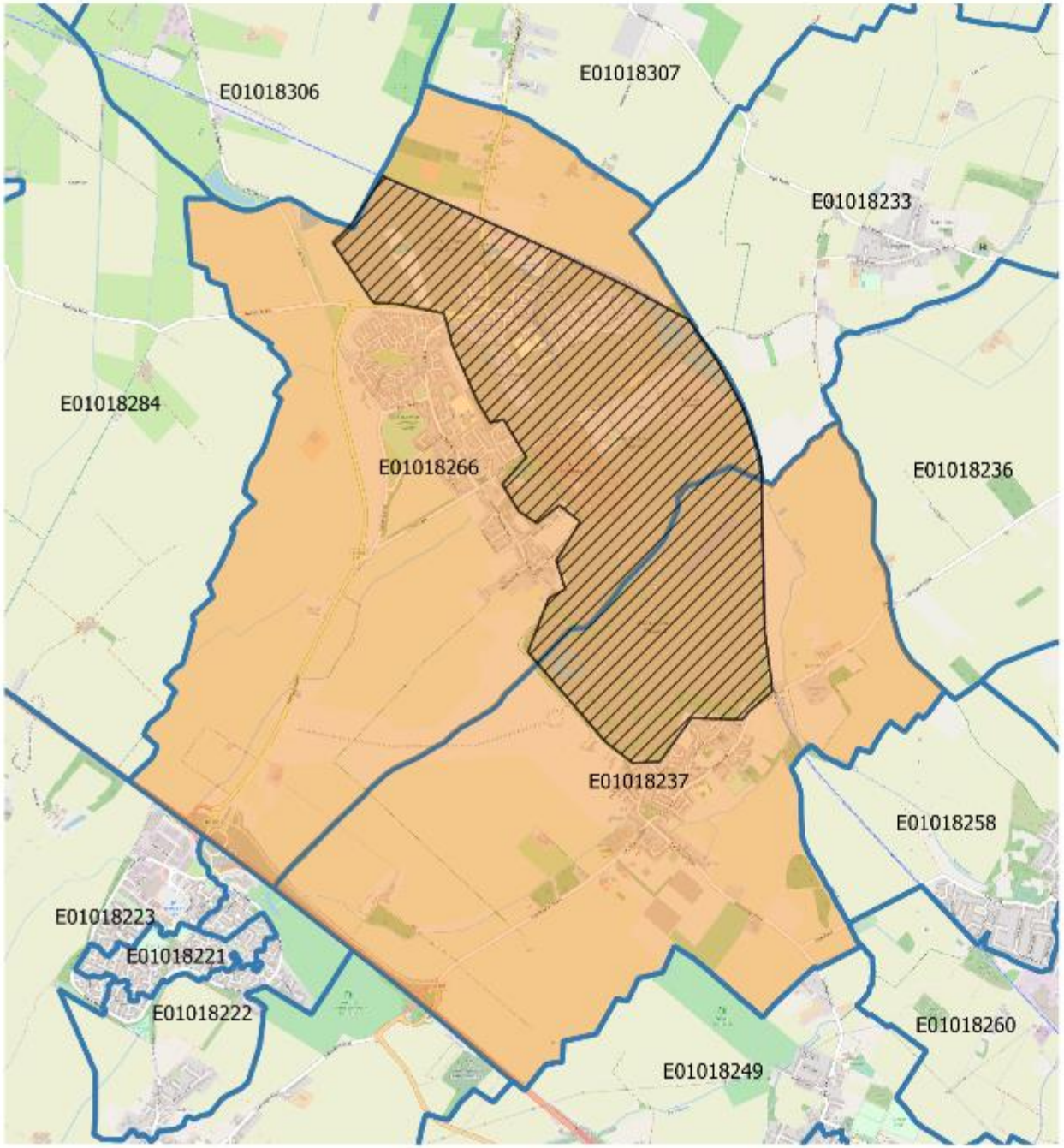
- Led by Halton Borough Council.
- Building 800 new homes, developing a 'Health & Wellbeing Campus'.
- Brownfield site, mixed-use development and regeneration.
- HNT area covers 6 LSOAs.

Interventions delivered to date:

- Developed the Happy Places app to help promote wellbeing and social interaction.
- Community insights workshops for adults and young people.
- Halton Healthy New Town Health Summit.
- Town Park improvements including improved access and usage, particularly walking, running and cycling routes through what is a varied and interesting range of habitats and landscape.

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs containing HNT developments
- Development site



Northstowe HNT

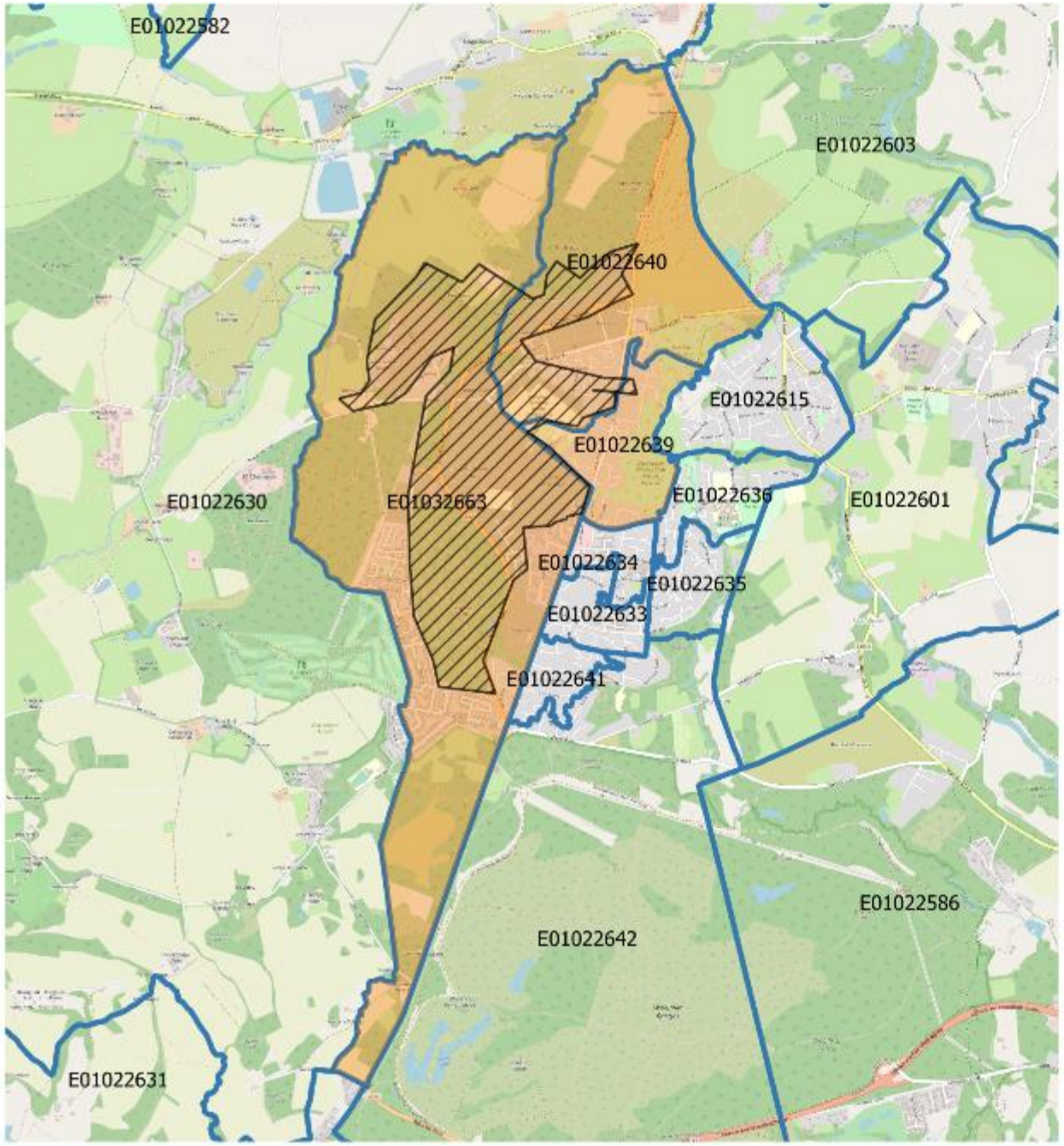
Development details:

- Joint bid led by Cambridge Uni. Hospitals NHS Foundation Trust, South Cambridgeshire District Council, Homes and Communities Agency.
- 10,000 homes.
- Brownfield development – built on the former RAF Oakington base and surrounding farmland between Cambridge and Huntingdon.
- Timeline: 20 years with first occupation in 2017.
- HNT area covers 2 LSOAs

Examples of interventions, evaluations and activities delivered to date:

- Travel Plan surveys, undertaken annually by Travel for Cambridgeshire.
- Project designed to test the effectiveness of financial incentives in driving active travel behaviours.
- Active New Communities project aiming to enable residents to remain engaged with sport and wellbeing activities following the move to a new community.
- Commissioned report from to predict the housing,

Map Legend: Lower Super Output Areas (LSOAs)
LSOA boundaries
LSOAs containing HNT developments
Development site



Whitehill and Bordon HNT

Development details:

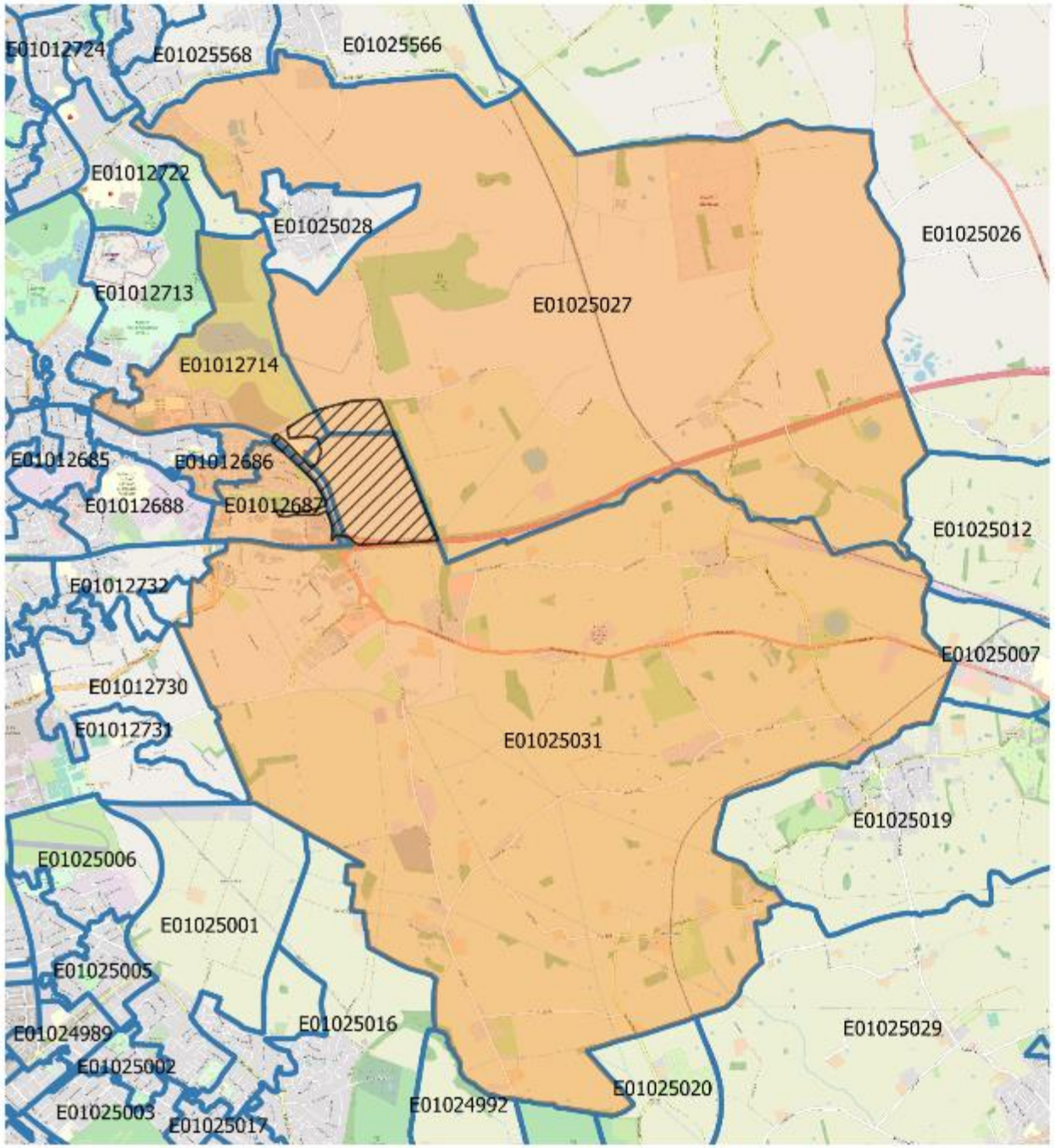
- Led by East Hampshire District Council.
- 3,350 homes.
- Old MoD brownfield land.
- Mixed-use incl. 84,000sqm commercial space.
- Timeline: Complete by 2036.
- HNT area covers 3 LSOAs

Examples of interventions, evaluations and activities delivered to date:

- Whitehill & Bordon Healthy New Town Survey – baseline survey of health and wellbeing outcomes.
- Woolmer Forest Timebank project led by Timebanking UK and Hampshire County Council.
- Social Isolation and loneliness insights investigation
- Safe Places scheme to provide a network of refuge locations around town for vulnerable people.
- Runnyhoneys: A running group that delivers couch to 5k sessions in Whitehill & Bordon.
- Community Café case study.
- Mind & GP Crisis Project Case study.

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs containing HNT developments
- Development site



Whyndyke Farm HNT

Development details:

- Fylde Borough Council as lead applicant
- 1400 homes across 72 hectares
- 20 hectares of employment land
- Greenfield site
- Timeline: Completed by 2031
- First occupation Summer – 2018
- HNT area covers 5 LSOAs

Interventions, evaluations and activities delivered to date:

- A Partnership Board established to lead the programme.
- Strategy for Out of Hospital Services. The strategy will include the development of Neighbourhoods and Integrated Neighbourhood Care Teams.
- Community Based Cookery Programmes (which include partnerships between local restaurants and schools).
- Community Gardening projects.
- Reducing Social Isolation (Just Good Friends voluntary sector organisation).
- Park Run and Walking Groups.

Map Legend: Lower Super Output Areas (LSOAs)

- LSOA boundaries
- LSOAs containing HNT developments
- Development site

Appendix X: Meta data for shortlisted outcomes available from routine data

Data Source	Population	Primary Category	Secondary Category	HNT Priority *	Outcome description	Measurement	2015	2016	2017	2018	2019	Latest datapoint available	Frequency Updated	Lowest Level of Geography Available
Examples of potential sources of data on health outcomes:														
Consumer Data Research Centre	All	Environment Quality and Safety	Access to Healthy Assets and Hazards	1	Health service access (distance to GPs, hospitals, pharmacies, dentists, leisure services)	Decile	N	N	Y	N	N	2017	TBC	LSOA
Consumer Data Research Centre	All	Environment Quality and Safety	Access to Healthy Assets and Hazards	1	Active living environment (distance to green/blue spaces, cycle /footpaths, facilities)	Decile	N	N	Y	N	N	2017	TBC	LSOA
Police	All	Environment Quality and Safety	Crime and Safety	3	Reported crimes in LSOA by category	Rate	Y	Y	Y	Y	Y	2018	Annually	LSOA
Police	All	Environment Quality and Safety	Crime and Safety	3	Sense of belonging to the local area (resident reported)	%	Y	Y	Y	Y	Y	2018	Annually	MSOA
NHS Digital	Adults	Health Outcome	Alcohol	1	Hospital stays for alcohol related harm	standardised admission ratio	Y	Y	Y	Y	Y	2017	Annually	MSOA / LSOA by request
Quality and Outcomes Framework	Adults	Quality indicator	Diabetes	2	% of population with diabetes who are referred to an educational programme	%	Y	Y	Y	Y	Y	2018	Annually	GP Practice / LSOA
Quality and Outcomes Framework	Adults	Quality indicator	Mental Health	2	% of population with mental health diagnosis who have a comprehensive care plan	%	Y	Y	Y	Y	Y	2018	Annually	GP Practice / LSOA
NHS Digital	Adults	Health Outcome	Cardiovascular	All	GP prescription rates for cardiovascular diseases	%	Y	Y	Y	Y	Y	2018	Monthly	GP Practice / LSOA
NHS Digital	Adults	Health Outcome	Diabetes	All	GP prescription rates for diabetes	%	Y	Y	Y	Y	Y	2018	Monthly	GP Practice / LSOA
NHS Digital	Adults	Health Outcome	Mental Health	All	GP prescription rates for mental health care	%	Y	Y	Y	Y	Y	2018	Monthly	GP Practice / LSOA
NHS Digital	Adults	Health Outcome	Nutrition	All	GP prescription rates for nutrition-related care	%	Y	Y	Y	Y	Y	2018	Monthly	GP Practice / LSOA
NHS Digital	Adults	Social connectivity	Strong and connected communities	All	Residents perceive their neighbourhood to be *'close-knit'*	%	Y	Y	Y	Y	Y	2018	Monthly	GP Practice / LSOA
Understanding Society	Adults	Health Behaviour	Physical Activity	1	Active commuting levels (walking/cycling to work)	%	N	Y	N	Y	N	2016	Every 2 years	LSOA

Data Source	Population	Primary Category	Secondary Category	HNT Priority *	Outcome description	Measurement	2015	2016	2017	2018	2019	Latest datapoint available	Frequency Updated	Lowest Level of Geography Available
Understanding Society	Adults	Health Behaviour	Healthy Eating	1	Fruit and vegetable consumption levels	%	Y	N	Y	N	Y	2017	Every 2 years	LSOA
Understanding Society	Adults	Health Behaviour	Physical Activity	1	Physical activity levels (type and frequency)	%	Y	N	Y	N	Y	2017	Every 2 years	LSOA
Understanding Society	Adults	Social connectivity	Strong and connected communities	3	Residents believe *'people are willing to help their neighbours'*	%	N	N	Y	N	N	2017	Every 3 years	LSOA
Understanding Society	Adults	Social connectivity	Strong and connected communities	3	Residents believe *'people in this neighbourhood can be trusted'*	%	N	N	Y	N	N	2017	Every 3 years	LSOA
Understanding Society	Adults	Social connectivity	Strong and connected communities	3	Residents believe *'people in this neighbourhood get along with each other'*	%	N	N	Y	N	N	2017	Every 3 years	LSOA
Understanding Society	Adults	Social connectivity	Strong and connected communities	3	Social networks index (based on resident reported networks)	%	N	N	Y	N	N	2017	Every 3 years	LSOA
Understanding Society	Adults	Social connectivity	Social connectivity	3	Social support index (based on resident reported access to support)	Various	N	N	Y	N	N	2017	Every 3 years	LSOA
Understanding Society	Adults	Health Outcome	Wellbeing	3	Overall life satisfaction	Various	N	Y	N	N	Y	2017	Every 3 years	LSOA
Annual population survey	Adults	Health Outcome	Mental Health	1 & 3	Overall feeling that *'things you do in your life are worthwhile'*	Mean	Y	Y	Y	Y	Y	2017	Annually	LSOA
Annual population survey	Adults	Health Outcome	Mental Health	1 & 3	Happiness (resident reported)	Mean	Y	Y	Y	Y	Y	2017	Annually	LSOA
Annual population survey	Adults	Health Outcome	Mental Health	1 & 3	Anxiety (resident reported)	Mean	Y	Y	Y	Y	Y	2017	Annually	LSOA
Annual population survey	Adults	Health Outcome	Mental Health	1 & 3	On a scale where nought is 'not at all anxious' and 10 is 'completely anxious', overall, how anxious did you feel yesterday?	Mean	Y	Y	Y	Y	Y	2017	Annually	LSOA

Data Source	Population	Primary Category	Secondary Category	HNT Priority *	Outcome description	Measurement	2015	2016	2017	2018	2019	Latest datapoint available	Frequency Updated	Lowest Level of Geography Available
Examples of potential sources of data on demographic, economic and geographical context:														
Census	All	Demography	Age, Sex, Ethnicity	N/A	Proportion of residents bellowing to demographic groups.	%	N	N	N	N	N	2011	Every 10 Years	LSOA
ONS population estimates	All	Demography	Age, Sex	N/A	Proportion of residents bellowing to demographic groups.	%	Y	Y	Y	Y	Y	2018	Annually	LSOA
Annual population survey	Adults	Economic Activity	Employed / Unemployed	N/A	Proportion of residents currently employed/unemployed	%	Y	Y	Y	Y	Y	2018	Annually	LSOA
Annual population survey	Adults	Economic Activity	Employment	N/A	Employment by occupation	%	Y	Y	Y	Y	Y	2018	Annually	LSOA
ONS	All	Land use	Generalised land use database	1	9 types of land use including green and blue space, paths and roads.	%	N	N	N	N	N	2010	Approx. every 5 years	LSOA

*HNT Priorities: 1) Planning and designing a healthy built environment; 2) Creating innovative models of healthcare; 3) Encouraging strong and connected communities

Appendix XI: Results of the Diamond 9 exercise

Proposed Outcome	Group			Notes	Total Score[4]
	A	B	C		
Happiness (resident reported)	5	5	0		10
Physical activity levels (type and frequency)	4	3	3		10
Social Support Index	4	0	4		8
Attendance at GP for non-medical needs	1	4	2	Participant generated	7
Fruit and vegetable consumption levels	3	2	0		5
Active Living Environment	2	3	0		5
Overall life satisfaction	0	0	5		5
Child and Adult Obesity	0	4	0	Participant generated	4
Sense of belonging to the local area (resident reported)	0	0	4		4
Health Service Access	3	0	0		3
Residents believe 'people in this neighbourhood get along with each other'	0	3	0		3
Healthy Eating (broader than f & v)	0	0	3	Participant generated	3
Wellbeing	0	0	3	Participant generated	3
Social Networks Index	2	0	0		2
Active commuting levels	0	2	0		2
GP prescription rates for diabetes	0	0	2		2
Range of services delivered in primary care and who is accessing them	0	1	0		1
Cost-Benefit of HNTs[5]	3	*'overarching'*	1	Participant generated	4

[4] *+Item scoring and total based on rank (1st=5 points; 2nd=3 points; 3rd=3points; 4th=2 points; 5th=1 point; not included in 'Diamond 9' = 0 points)*

[5] *Economic evaluation separated from the other outcomes as it would rely on health outcome data*

Appendix XII: Barriers and facilitators to resident involvement

Barriers

- Local politics, and tensions between conflict and consensus models of community activation and democratic practice (Silver *et al.*, 2010), acted in some instances as barriers to HNT resident engagement and involvement with the project.
- The project's need for intermediaries to help identify and recruit residents encountered the barrier of limited time available for HNT site leads and local partners to dedicate to this activity, particularly in the end-of-programme phase.
- Some residents who were keen to become involved in the project felt constrained by physical and mental health and mobility issues. Some had limited ability or interest in sustaining e-mail communication, responding to text messages or participating in phone or face-to-face meetings. From a widening participation perspective, we considered it important to maintain contact with these residents and explore alternatives modes of involvement with which they felt comfortable.
- Site documents we revised, and observation in events we attended in the course of the project, indicate that there is a generalised culture of conceptualising HNT 'stakeholders' as members of institutions and organisations, often with professional, administrative or technical roles. 'Residents' are habitually treated as a category apart. While some residents are asked to give feedback on local HNT initiatives, and user surveys have been implemented on some sites, residents are not routinely integrated within wider 'stakeholder' meetings. This disjunct, which contrasts with a co-production approach (Findlay and Tobi, 2017), can act as a barrier to mutual listening among HNT population groups and implementing bodies, and ground-up action for local transformation.
- While from a project perspective, we were clear about the definition of HNT residents (from new builds as well as adjoining communities), many of the residents we consulted had not thought of their living environments as Healthy New Towns. The great majority of respondents to our survey questionnaire (Appendix B) declared in free-text that they knew 'nothing' or 'not much' about the HNT programme. There is evidently a need for more public engagement and positioning of HNT design principles and initiatives.

Facilitators

- A valuable Community Development Project Officer role was created by Darlington Council and drawn on by Darlington HNT through a specific 6-month contract. This officer was contracted to work closely with the local community, beyond the end of the HNT programme. This was part of a commitment to HNT legacy, linked with a wider piece of Darlington work on sustainability.
- Social media emerged as a key channel for residents' information, feedback and involvement. The great majority of respondents to our questionnaire mentioned this, and specifically the Facebook pages run by some HNT sites. These pages could be an important vehicle for accessing residents' perspectives using online anonymised survey links, and for promoting involvement in future research.