



Kent and Medway Sustainability and Transformation Plan

Integrated Impact Assessment: Post-consultation
report - Stroke services

September 2018

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Executive summary

An outline of service changes proposed by the Kent and Medway Sustainability and Transformation Plan

The Kent and Medway STP has four key priorities. These are:

1. Prevention of ill-health
2. Local care
3. Hospital care
4. Mental health

The STP also focuses on: productivity improvements (drawing on lessons from the Carter Review¹); enablers (encompassing three strategic priorities of workforce, digital and estates); and system leadership (transforming commissioning, and communications and engagement).

Wave one

Wave one of the STP sets out the priority services for transformation. These service areas are:

- Stroke services across Kent and Medway
- Vascular services across Kent and Medway
- Emergency care in East Kent (including acute medicine, accident and emergency (A&E), and critical care)
- Elective orthopaedic services in East Kent

This report focuses on stroke services.

Summary of proposed changes

Currently stroke patients are treated in one of seven hospitals; though there are no Hyperacute Stroke Units (HASUs).² The proposed change is to deliver stroke care for Kent and Medway in three combined HASUs and ASUs (acute stroke units) at three sites³.

The preferred option is for the HASUs to be located at:

1. Darent Valley Hospital
2. Maidstone Hospital,
3. William Harvey Hospital

¹ Department of Health (2015): 'Productivity in NHS hospitals'.

² There is a temporary halt to emergency care provision, including stroke, at Kent & Canterbury Hospital.

³ HASUs bring experts and equipment under one roof to provide the very best immediate assessment and treatment for a stroke, reducing death rates and long-term disability. People can expect to stay in a HASU for three days. An ASU is an acute stroke unit. After three days in a HASU, many people are well enough to continue their recovery at home. Those who are not well enough to go home from hospital get the best recovery in an ASU. ASUs have many of the same specialist staff as a HASU, but because people have been stabilised, their care and treatment does not need to be so intensive.

Introduction to the integrated impact assessment

The aim of an integrated impact assessment (IIA) is to explore the potential positive and negative consequences of Kent and Medway Sustainability and Transformation Plan (STP) proposals to transform healthcare in Kent and Medway. The purpose of impact assessments is not to determine the decision, rather it is to assist decision-makers by giving them better information on how best they can promote and protect the well-being of the local communities that they serve.

The scope of the Kent and Medway STP service review and study area for the IIA is the eight clinical commissioning groups (CCGs)⁴ across Kent and Medway. A health impact assessment (HIA), a travel and access impact assessment, an equality impact assessment (EqIA) (in which the impacts of the proposals on protected characteristic groups⁵ and deprived communities are assessed) and a sustainability impact assessment have been conducted as part of this IIA.

Impact assessment of proposed changes

The following sections summarise the likely positive and negative impacts identified through this IIA, under the four impact topic headings.

Health impacts

Positive impacts

- The proposed changes will improve patient outcomes and remove the variation currently experienced.
- The consolidation of workforce resources will enable the three comprehensive stroke units to sustainably achieve recommended workforce standards. This will create a more sustainable workforce for providing stroke care across Kent and Medway.
- Rehabilitation services for stroke patients will be improved, supporting patients to regain their independence and overall quality of life.

Negative impacts

- For patients experiencing a stroke whilst already in hospital at one of the four sites no longer providing stroke services, a transfer will be required to a HASU. This could potentially have a negative impact on patient outcomes although appropriate protocols will be in place to mitigate against this.
- With activity for stroke services being consolidated onto fewer hospital sites, there is a risk that capacity could become constrained within these units.
- If links between clinical inter-dependent services across the wider STP programme are not appropriately maintained, this has the potential to negatively impact on the safety of care.
- The reconfiguration of stroke services is considered to bring logistical challenges for some staff, which could result in increased staff turnover and the loss of current expertise.
- Patient choice will reduce for these specialist stroke services.

Travel and access impacts

Positive impacts

⁴ The eight CCGs are Ashford CCG, Canterbury and Coastal CCG, Dartford, Gravesham and Swanley CCG, Medway CCG, South Kent Coast CCG, Swale CCG, Thanet CCG and West Kent CCG.

⁵ These are set out as age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation in the Equality Act 2010.

No positive travel and access impacts were identified.

Negative impacts

- The proposed changes will mean that some patients will have to travel further to access a stroke service.
- The proposed changes will result in longer ambulance journeys for some patients required to be conveyed to a HASU, which will negatively impact the capacity of the ambulance service.
- The proposed changes as part of the preferred option result in a reduction in accessibility to stroke services within 30 minutes and 45 minutes by blue light ambulance (BLA).
- The proposed changes will mean that some patients will have to travel further to access a stroke service.

Equality impacts

Positive impacts

- Patients identified as having a disproportionate need for stroke services are likely to use these services more and, therefore, experience the benefits of improved health outcomes to a greater extent. These groups are:
 - Age (older people aged 65 and over)
 - Disabled people
 - Pregnancy and maternity
 - Race and ethnicity
 - People from deprived communities

Negative impacts

- Some patients and visitors will experience increased travel costs, which are likely to disproportionately impact upon those on lower incomes.
- The high financial cost of certain transport methods could act as a barrier to utilising alternative transport modes to cars.
- Increased journey times or the need to make different and/or unfamiliar journeys to access care, is likely to affect some equality groups more than the general population.
- The preferred option will have disproportionately longer journey times for those from deprived areas.

Sustainability impacts

Positive impacts

No positive sustainability impacts were identified.

Negative impacts

This Greenhouse Gas (GHG) emissions for the preferred option is outlined below.

The assessment shows that the preferred option is expected to increase emissions (a small negative impact of 467 tCO₂e). Enhancements and mitigations

The following table provides a summary of the key enhancement and mitigation measures that have been identified through this IIA.

Executive summary table 1: Enhancements and mitigations summary table

Impact assessment area	Summary of mitigations and enhancements
Health	<ul style="list-style-type: none"> ● Health outcomes: <ul style="list-style-type: none"> – Develop and distribute information on the care model for rehabilitation. – Emphasise prevention and health promotion activities to counter risk factors for stroke. – Closely monitor activity and outcome information to ensure standards and outcomes of care are maintained. ● Capacity issues: <ul style="list-style-type: none"> – Ensure the assessment of capacity and resources has sensitivities applied including: <ul style="list-style-type: none"> ○ The capacity of HASU/acute stroke unit (ASU) services at neighbouring hospitals (should this be closer to patients than their nearest HASU in Kent and Medway) ○ The impact on capacity if patients choose to self-present at hospitals with a HASU and require other acute services. ● Continue to review the co-dependencies matrix to ensure that essential links are maintained. ● Develop a workforce plan and undertake engagement to understand further the consequences of the potential impacts and recruitment ● Communications with the public should highlight the drivers for change, with a particular focus of engagement with seldom heard groups in the community
Travel and access	<ul style="list-style-type: none"> ● Engage with the ambulance service to assess the impact of change on their capacity and ascertain the additional resources that may be needed to minimise any impact on the wider ambulance service. ● Review the current travel plans for hospitals selected in the preferred option ● Encourage collaboration between local authorities and hospitals to better understand any transport strategies which can help to mitigate any travel impacts. ● Engage with any local community organisations offering voluntary transport to hospitals to understand the impacts of increased travel times on funding and capacity of the service.
Equality	<ul style="list-style-type: none"> ● Maximise public transport accessibility of specialist centres through engagement with local transport providers. ● Ensure the effective communication of the future model of care to the local population, so they understand how to access and use services and the potential increased journey times ● Provide access to BSL/English interpreters using remote access such as Skype, FaceTime or Video Relay Service (VRS) where available.
Sustainability	<ul style="list-style-type: none"> ● No additional measures to enhance or mitigate sustainability impacts have been identified.

Source: Mott MacDonald

1 Scope and approach

1.1 Kent and Medway Sustainability and Transformation Plan

The CCGs, NHS providers and upper tier local authorities in Kent and Medway have developed a STP to transform the way in which health and social care services are delivered across the Kent and Medway geographical footprint⁶. Four key priorities for the transformation of care have been identified:

1. Prevention of ill-health
2. Local care
3. Hospital care
4. Mental health

The STP also focuses on: productivity improvements (drawing on lessons from the Carter Review⁷); enablers (encompassing three strategic priorities of workforce, digital and estates); and system leadership (transforming commissioning, and communications and engagement). The programme is split into two waves, with the first wave now underway and the second wave to be designed and implemented in 2018.

1.2 Wave one

Wave one of the STP sets out the priority services for transformation. These service areas are:

- Stroke services across Kent and Medway
- Vascular services across Kent and Medway
- Emergency care in East Kent (including acute medicine, accident and emergency (A&E), and critical care)
- Elective orthopaedic services in East Kent

1.3 The integrated impact assessment

It is important that those involved in making decisions about future health service configuration understand the full range of potential impacts that the preferred option could have on the local population. It is particularly important to understand the potential impacts on groups and communities who will be the most sensitive to service changes. This is the purpose of the IIA process.

⁶ This footprint is comprised of eight CCGs covering the following areas: Ashford, Canterbury and Coastal, Dartford, Gravesham and Swanley, Medway, Thanet, Swale, South Kent Coast, West Kent.

⁷ Department of Health (2015): 'Productivity in NHS hospitals'. The Carter Review looked at productivity and efficiency in English non-specialist acute hospitals, concluding that there is a significant amount of unwarranted variation across the main resource areas. It is estimated that this unwarranted variation is worth £5billion in terms of efficiency opportunities. The report makes 15 recommendations designed to tackle this variation and help trusts to improve their performance.

IAs are a key component of policy-making and help guide and appraise investment.⁸ They have long been identified as a mechanism by which potential effects on health outcomes and health inequalities can be identified and redressed prior to implementation. According to the World Health Organisation (WHO), impact assessments (including IAs) provide “a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population”.⁹

The aim is to explore the positive and negative consequences of the preferred option and produce a set of evidence-based, practical recommendations, which can then be used by decision-makers to maximise the positive impacts and minimise any negative impacts.¹⁰ Impact Assessments act to assist decision-makers by giving them better information on how best they can promote and protect the well-being of the local communities that they serve.

It is regarded as best practice to assess impacts for the whole population and highlight the sections of the population which will be differently or disproportionately affected by the impacts. These might be geographical communities or certain socio-economic or ‘equality’ groups. Assessment of impacts, along with recommendations for opportunities and mitigations, are drawn in part from evidence provided by representative and informed stakeholders. In this way, the impact assessment process provides a certain level of independent scrutiny and democratic legitimacy.

1.4 Scope and objectives of the IIA

1.4.1 Wave one

In May 2017, the Kent and Medway STP Programme Board commissioned Mott MacDonald to undertake an IIA of wave one of the Kent and Medway STP. The objectives of this IIA are to:

- Understand the overall demography and the protected characteristic groups (as defined by the Equality Act 2010)¹¹ of the different CCG populations affected.
- Undertake a **HIA**:
 - Identify the impact on patient outcomes, safety, effectiveness of care and patient experience.
- Undertake an **EqlIA**, critical in supporting the CCGs in meeting their obligations under the Equality Act 2010¹²:
 - Understand the impacts on protected characteristic groups¹³ across the CCG populations through a programme of stakeholder engagement.
 - Identify which (if any) of the protected characteristic groups are more likely to be affected by the proposals due to their propensity to require different types of health services and what these impacts will be.
 - Where impacts are disproportionate for certain groups, consider opportunities for mitigating negative impacts and enhancing positive impacts.

⁸ HM Government (2011) ‘Impact Assessment Overview’

⁹ World Health Organisation (2017): ‘Health Impact Assessment. Available at: http://www.who.int/topics/health_impact_assessment/en/

¹⁰ Herriott, N, and Williams, C (2010) ‘Health Impact Assessment of Government Policy’ .

¹¹ The nine protected characteristic groups are: age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex and sexual orientation.

¹² Equality Act 2010 (Commencement No.3) Order 2010.

¹³ As defined in Chapter 4.

- Undertake a **travel and access impact assessment**:
 - Consider increases and decreases in journey times and changes in journey patterns for the overall impacts.
 - Consider travel and access impacts for protected characteristic groups.
- Undertake a **sustainability impact assessment**:
 - Identify any sustainability impacts by reporting on the carbon footprint change.

1.4.2 IIA update

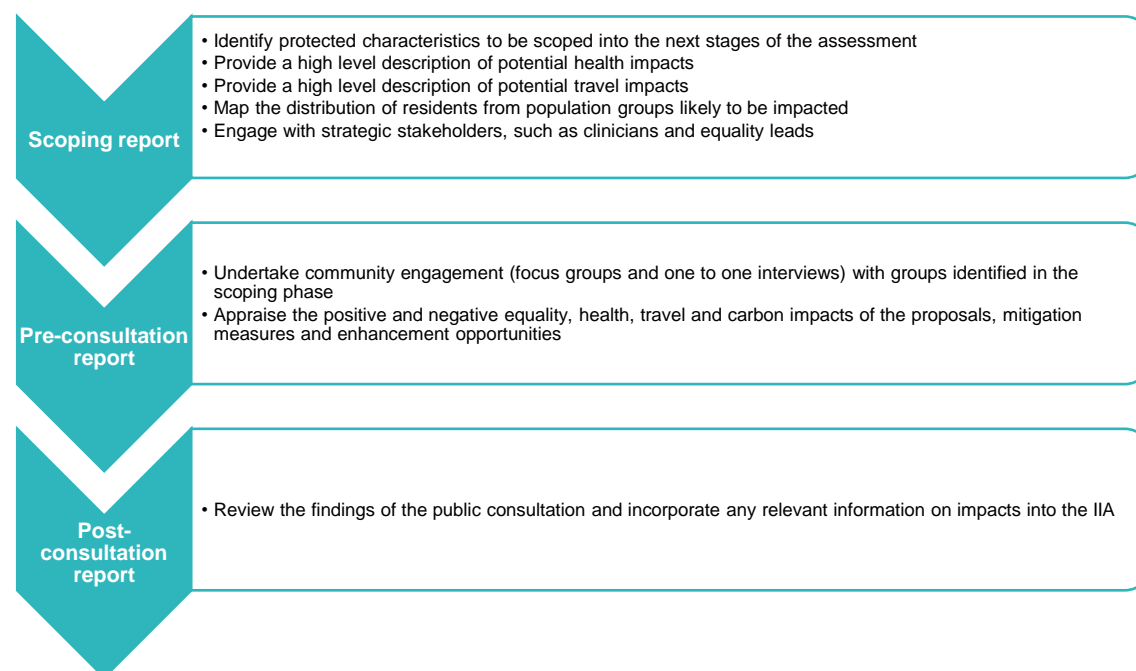
In September 2018, the Kent and Medway STP Programme Board selected a preferred option for the location of the HASUs – this document presents a singular IIA for the preferred option being taken forward. The following report therefore only considers the current preferred option, referred in the previous IIA as option B.

1.5 The IIA approach

Phases of the IIA

The IIA is designed to be an iterative process that can be revisited taking on board evidence over the course of the CCGs' proposal-development and consultation process. Work has been structured around three stages, as shown in Figure 1.

Figure 1: Stage of the IIA



1.6 Purpose of the scoping report

The first output of the IIA was a combined scoping report covering all of the services areas included in the wave one review; it does not represent a full impact assessment. It is a high-level report outlining the first stage of the IIA only. Based on analysis of available secondary data pertaining to the population and health conditions and needs in Kent and Medway, it presented preliminary observations on which groups are considered to have disproportionate

need¹⁴ for the hospital services under review. The report mapped the density and distribution of these groups across Kent and Medway in order to illustrate where there are high numbers of those groups.

1.7 Purpose of the pre-consultation reports

The pre-consultation IIA reports appraise the Kent and Medway STP in terms of both the positive and negative health, equality, travel and access, and sustainability impacts which require consideration and/or action during the decision-making process. There are three separate standalone reports covering: stroke services, vascular services and East Kent emergency and elective orthopaedics services.

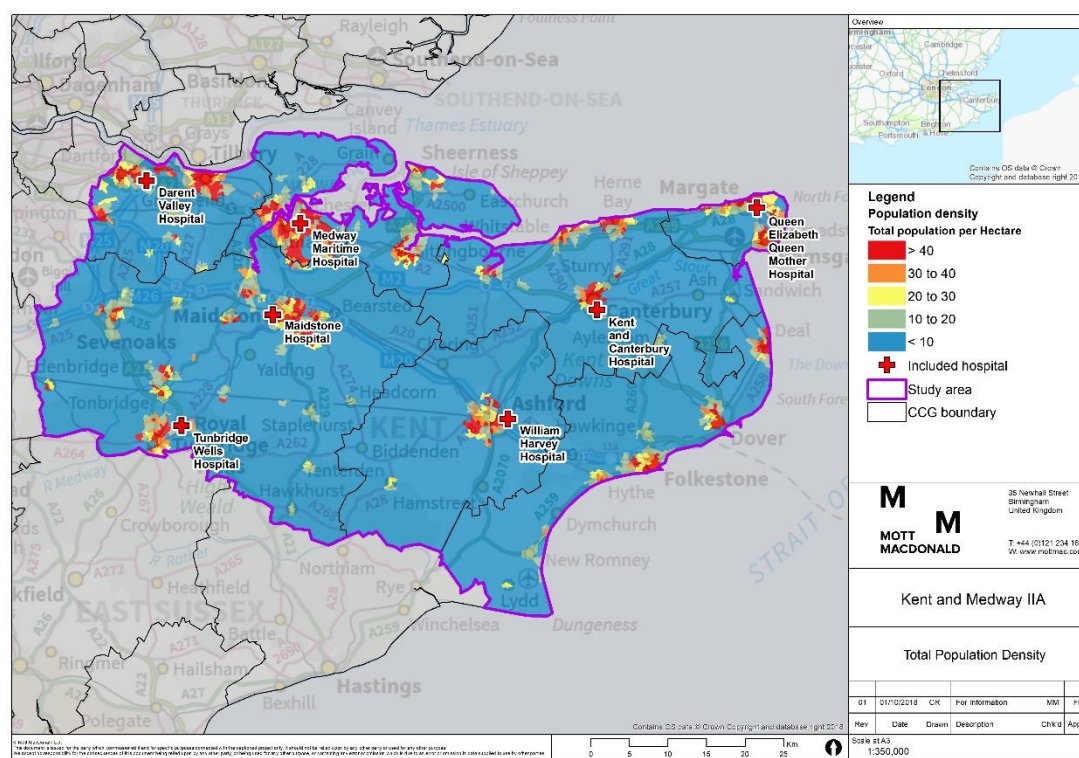
1.8 Purpose of the post-consultation reports

The post-consultation IIA reports take into account the findings of the public consultation and incorporate any relevant information on impacts into the IIA.

The study area

The primary study area for this IIA consists of the eight CCGs¹⁵ across Kent and Medway, which is shown in Figure 2, along with the acute hospitals in the area and the population density.

Figure 2: Study area and population density



Source: Lower layer super output area (LSOA) MYE population estimates 2016, Office for National Statistics (ONS)

¹⁴ The term 'disproportionate need' is used to identify a need for a service or treatment that is above the need of the general population.

¹⁵ The eight CCGs are Ashford CCG, Canterbury and Coastal CCG, Dartford, Gravesham and Swanley CCG, Medway CCG, South Kent Coast CCG, Swale CCG, Thanet CCG and West Kent CCG.

1.9 Methodological assumptions and limitations

This IIA is based on the following principles, assumptions and limitations:

- It is not the purpose of the IIA to justify, defend or challenge the rationale or principles behind proposed reforms put forward by the Kent and Medway CCGs.
- The purpose of the IIA is to inform rather than decide. The objective is not to make the decision, but to assist decision makers by providing better information.
- With respect to the engagement that has been undertaken to support this IIA:
 - Ten interviews were undertaken with clinicians.
 - Eight interviews were undertaken with equality leads and service providers
 - Three interviews were undertaken with community groups: community groups were invited via email to participate in this report through one-to-one interviews. They were sent two reminder emails to take part in an interview.
 - Five focus groups were undertaken across Kent and Medway with groups considered to have a disproportionate need for stroke services.

Table 1: Focus groups

Location	Composition	CCG area
Tunbridge Wells	People aged 65 and older	NHS West Kent CCG
Isle of Sheppey	People aged 65 and older	NHS Swale CCG
Margate	People from the most deprived quintiles in the local area	NHS Thanet CCG
Gillingham	People from a BAME background	NHS Medway CCG
Greenhithe	People from a BAME background	NHS Dartford Gravesham and Swanley CCG

Source: Mott MacDonald 2017

- The travel modelling parameters are set to provide an indication of typical journeys. They will not exactly match each individual patient experience.
- To estimate journey distances for the GHG assessment, the medium journey time has been used alongside the average speed of local A roads. To estimate GHG emissions from distances, the mode of transport has been assumed to be in line with the national breakdown of distance travelled by each mode, excluding air, motorcycle and peddle cycle.

1.10 Structure of the report

The remainder of the report is structured as follows:

- Chapter **two**: detail on the Kent and Medway STP
- Chapter **three**: assessment of health impacts
- Chapter **four**: assessment of travel and access impacts
- Chapter **five**: assessment of equality impacts
- Chapter **six**: assessment of sustainability impacts
- Chapter **seven**: conclusions including opportunities for enhancement and mitigation measures

2 Kent and Medway Sustainability and Transformation Plan

2.1 Strategic context and the case for change

The overarching 'case for change' developed by the Kent and Medway STP¹⁶ sets out the drivers for change in delivering health and social care. These are:

- **Increase in the local population:** From 2011 to 2031, planned housing developments are expected to result in an additional 414,000 residents in Kent and Medway.¹⁷ This growth is forecast to be distributed unevenly across Kent and Medway, with most housing growth in Medway, Dartford and Maidstone.
- **Aging population with more complex health needs:** Growth in the number of people aged 65 and over in Kent and Medway is over four times greater than growth in those under 65¹⁸. The older population will have greater and more complex health needs than those who are under 65.
- **Health inequalities across Kent and Medway:** Poor health outcomes are more prevalent among some groups, living in certain areas. For example, women living in the most deprived areas of Thanet live, on average, 22 years less than those in the least deprived areas¹⁹. The prevalence of mental health problems in Kent and Medway is generally in line with the rest of England, but mental health problems disproportionately affect people living in the most deprived areas in Kent and Medway.
- **Local people living in poor health with preventable long-term conditions:** Over 528,000 local people live with one or more significant long-term health conditions,²⁰ many of which are preventable. National data suggests that for those living with one long-term condition, spending is three times higher than for a healthy individual (rising to 10 times higher for those with two long-term conditions).²¹ This is higher for Kent and Medway, where the total spend per resident with a long-term condition is six times higher than for a healthy resident²².
- **Kent and Medway are facing financial challenges:** Commissioners and providers in Kent and Medway had a forecast deficit of £110m in deficit in 2016/17, and if nothing changes, are expected to be £486m in deficit by 2020/21.²³

As a result of these challenges, Kent and Medway CCGs put forward proposals to change the way in which some services are delivered. The first set of these services, those identified in 'wave one' are stroke, vascular, emergency care and elective orthopaedics.

The map below sets out the seven hospitals in Kent and Medway.

¹⁶ Comprised of Kent and Medway CCGs, Kent and Medway NHS Trusts, Kent and Medway local authorities

¹⁷ Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'

¹⁸ Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'

¹⁹ Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'

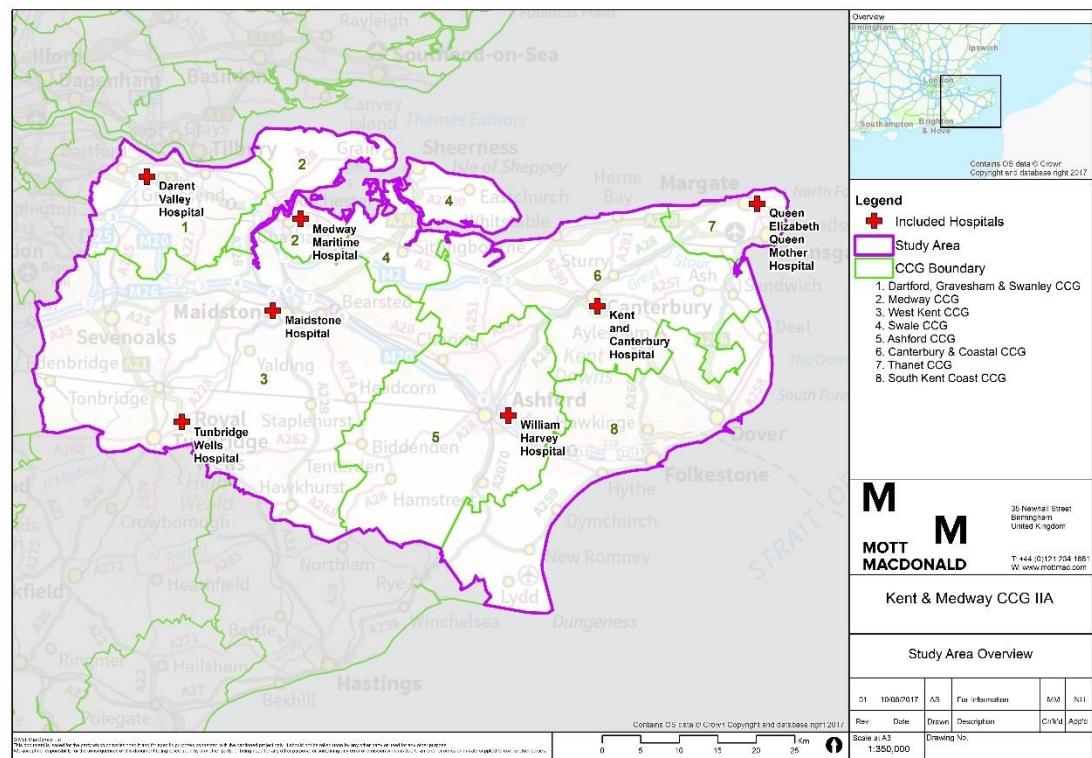
²⁰ Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'

²¹ House of Commons Health Committee (2015): 'Managing the care of people with long-term conditions'.

²² Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'

²³ Ibid

Figure 3: Hospitals in Kent and Medway



Source: Mott MacDonald 2017

The current provision for stroke services and the proposed changes is set out overleaf.

Table 2: Current provision and proposed changes for stroke services

Service area	What are the issues?	Current provision	Proposed service model
Stroke	<ul style="list-style-type: none"> Only half of all patients are admitted within the four-hour waiting target. This performance is below the national average. Hospitals do not provide seven-day consultant ward rounds. Patient volumes are too small to deliver clinical sustainability. 	<ul style="list-style-type: none"> Stroke patients are treated in one of the seven hospitals outlined above; though there are no HASU.²⁴ Seven-day medical ward rounds only operate in Tunbridge Wells Hospital (TWH), not always consultant led (on a 1:3 rota). Consultant assessment is available in all units over the weekends via telemedicine rotas. Seven-day therapy is partially available at the Medway NHS Foundation Trust (MFT) and the Dartford and Gravesham NHS Trust (DGT). No unit meets the recommended workforce complement across any profession. 	<ul style="list-style-type: none"> Consolidate stroke services onto three sites, each with a HASU. <p>This will mean that:</p> <ul style="list-style-type: none"> Seven-day specialist consultant-led care will be available. More direct access from ambulance transfers to stroke assessment units (this means that people who have had a stroke will have quicker access to specialist stroke care and stroke teams, without having to first be seen by a generalist doctor in A&E). Improved patient outcomes due to co-location with critical co-dependent specialist clinical services. Improved access to physio and other therapies following the stroke Early supported discharge for a majority of patients. TIA's that require ambulance conveyancing would be treated in the HASU/ASUs

²⁴ There is a temporary halt to emergency care provision, including stroke, at Kent & Canterbury Hospital.

An initial long list of options was developed, these were reduced down to a medium list of proposed service models using a hurdle criteria for subsequent evaluation.

Table 3: Medium list proposed service models

Scenario	Proposal
Current	Four trusts providing stroke services across seven sites (Darent Valley Hospital, Kent and Canterbury Hospital, Maidstone Hospital, Medway Maritime Hospital, Queen Elizabeth the Queen Mother Hospital, Tunbridge Wells Hospital and William Harvey Hospital). ²⁵
Proposal one	A HASU at: 1. Darent Valley Hospital 2. William Harvey Hospital 3. Queen Elizabeth the Queen Mother Hospital
Proposal two	A HASU at: 1. Maidstone Hospital, 2. Medway Maritime Hospital 3. Queen Elizabeth the Queen Mother Hospital
Proposal three	A HASU at: 1. Darent Valley Hospital 2. Medway Maritime Hospital 3. William Harvey Hospital
Proposal four	A HASU at: 1. Darent Valley Hospital 2. Medway Maritime Hospital 3. Queen Elizabeth the Queen Mother Hospital
Proposal five	A HASU at: 1. Darent Valley Hospital 2. Maidstone Hospital, 3. William Harvey Hospital
Proposal six	A HASU at: 1. Darent Valley Hospital 2. Maidstone Hospital, 3. Queen Elizabeth the Queen Mother Hospital
Proposal seven	A HASU at: 1. Darent Valley Hospital 2. Tunbridge Wells Hospital, 3. Queen Elizabeth the Queen Mother Hospital
Proposal eight	A HASU at: 1. Maidstone Hospital, 2. Medway Maritime Hospital 3. William Harvey Hospital
Proposal nine	A HASU at: 1. Tunbridge Wells Hospital, 2. Medway Maritime Hospital 3. Queen Elizabeth the Queen Mother Hospital
Proposal ten	A HASU at: 1. Tunbridge Wells Hospital, 2. Medway Maritime Hospital 3. William Harvey Hospital
Proposal eleven	A HASU at: 1. Darent Valley Hospital 2. Tunbridge Wells Hospital, 3. William Harvey Hospital

Source: Kent and Medway SEC Clinical Senate Submission

²⁵ There is a temporary halt to emergency care provision, including stroke, at Kent & Canterbury Hospital.

A shortlisting exercise conducted by the CCGs was undertaken to reduce the number of models to carry forward. Five proposals are to be included in the pre-consultation business case (PCBC) and these would be re-named A, B, C, D and E. A full IIA of the shortlisted proposals was completed in January 2018.

Table 4: Shortlisted proposals

Scenario	Proposal	Re-named
Proposal three	A HASU at: 1. Darent Valley Hospital 2. Medway Maritime Hospital 3. William Harvey Hospital	A
Proposal five	A HASU at: 1. Darent Valley Hospital 2. Maidstone Hospital, 3. William Harvey Hospital	B
Proposal eight	A HASU at: 1. Maidstone Hospital, 2. Medway Maritime Hospital 3. William Harvey Hospital	C
Proposal ten	A HASU at: 1. Tunbridge Wells Hospital, 2. Medway Maritime Hospital 3. William Harvey Hospital	D
Proposal eleven	A HASU at: 1. Darent Valley Hospital 2. Tunbridge Wells Hospital, 3. William Harvey Hospital	E

Source: Kent and Medway SEC Clinical Senate Submission

In September 2018 it was announced that the preferred option was option B. This report therefore only focuses on the preferred option.

3 Health impacts

This chapter identifies health impacts which may be experienced when the preferred option is implemented. This chapter presents impacts within three sub sections; health outcomes, service impacts and workforce impacts.

3.1 Health outcomes

3.1.1 Individual health outcomes for patients

The proposed changes will have a positive impact on patient outcomes and remove the variation currently experienced across Kent and Medway.

The creation of HASUs in Kent and Medway should lead to improved clinical outcomes for patients in comparison to the current model. This can be evidenced in the varied and inconsistent performance of current units against the Sentinel Stroke National Audit Programme (SSNAP).²⁶

The clinical evidence²⁷ highlights that the best outcomes for patients are delivered within specialist units that have adopted measures such as rapid access to advanced tests, such as CT and MRI scanning, treatments such as thrombolysis and thrombectomy, and the 24-hour presence of specialist stroke doctors and nurses along with other complementary specialist teams. These outcomes are seen when the initial care of all patients with acute stroke (other than rare exceptions such as end-of-life care) are assessed in a HASU with access to all the services that may help survival and recovery. Access to hyper-acute stroke care should be available 24 hours a day, seven days a week and should be for all people with acute stroke, not just those who might be suitable for intravenous thrombolysis.²⁸ As an example, a 2014 study evaluating the centralisation of acute stroke services reported decreases in unadjusted mortality at 30 days of between 1.6% and 2.8% for the two areas studied, as well as an absolute decline in risk adjusted length of hospital stay of between -2.0 days and -1.4 days.²⁹

Through the streamlining of services, such as consistently delivering direct access from ambulances to the stroke assessment unit, it is likely that the proportion of patients receiving thrombolysis within the agreed standards of 120 minutes 'call to needle' and 30 minutes 'door to needle' will increase. This is of considerable importance for improving patient outcomes. Therapeutic yield is known to be maximal in this timeframe, declining rapidly over the next five hours, which highlights the importance of early presentation and treatment.³⁰ Clinical stakeholders engaged with as part of this IIA also highlighted the improvement in patient outcomes as a key driver and benefit for this proposed change, citing evidence that patients treated in a HASU, which meets all necessary quality standards, are less likely to die or be disabled at the 30 days, three and six-month timepoints after their stroke. There are therefore also likely to be medium term benefits for the wider healthcare economy because of lower health and social care costs resulting from a reduction in disabilities and longer-term rehabilitation costs. It is also considered that services would also improve as those with

²⁶ Kent and Medway STP (2 March 2017) Clinical Models Summary: Submission to the South East Coast Clinical Senate

²⁷ The King's Fund (2014) The reconfiguration of clinical services

²⁸ Royal College of Physicians (2016) National clinical guideline for stroke. Fifth edition.

²⁹ Morris S et al (2014) Impact of centralising acute stroke services in English metropolitan areas on mortality and length of hospital stay: difference-in-differences analysis. *BMJ* 2014;349:g4757

³⁰ Saver, J. L., Smith, E. E., Fonarow, G. C., Reeves, M. J., Zhao, X., Olson, D. M., & Schwamm, L. H. (2010). The "golden hour" and acute brain ischemia. *Stroke*, 41(7), 1431-1439.

expertise and skills specialised in stroke will be located together, and will see a critical mass of patients. One clinician further highlighted the clinical benefits in potentially establishing mechanical thrombectomy, although it is recognised that this is not directly part of the preferred option. Findings from community engagement also corroborated available evidence on the perceived benefits of centralising stroke services. Participants viewed that improved outcomes for patients could be achieved through the concentration of specific services and senior clinical input.

3.1.2 Individual choice for patients

Patient choice will reduce for these specialist stroke services however, the potential to improve outcomes is a balancing factor.

Nationally, it is recognised that the way in which health services are configured should support choice as a principle and this is an important part of the NHS constitution. Choice of hospital service is however only pertinent to those admissions which are planned and booked, yet nearly all stroke patients are likely to be conveyed by ambulance to their nearest HASU. Therefore, whilst the preferred option will reduce choice of hospital providing this care from seven sites to three, the potential for improved health outcomes at the HASU must be balanced against this.

3.1.3 Rehabilitation services

Rehabilitation services for stroke patients will be improved, having a positive impact on patients in regaining their independence and overall quality of life.

Under the preferred option, rehabilitation services will be improved and early supported discharge will be available to a minimum of 50% of patients.³¹ Stroke rehabilitation is very important to help patients regain their independence and overall quality of life, most often involving a combination of motor-skill exercise and mobility therapy, technology assisted physical activities, and cognitive and emotional activities.³² The evidence base for the impact of reconfiguration and centralisation on rehabilitation specifically, as part of the stroke care pathway, is still evolving.^{33 34}

There is consensus that stroke rehabilitation overall is effective in producing improved patient outcomes, and it is recommended that patients should first receive rehabilitation in a dedicated inpatient unit, with maximised resources, and after that from a specialist community team.³⁵ A clinical stakeholder highlighted the benefits of rehabilitation being provided alongside HASU and ASU services, as this allows for the rapid transfer of patients between services (should their condition deteriorate for example), as well as providing continuation of care for patients. This model of care also builds on evidence that patient satisfaction and outcomes are better in a stroke rehabilitation ward, or when possible at home, than for rehabilitation in hospital.^{36 37}

³¹ Kent and Medway STP (2 March 2017) Clinical models summary: Submission to the South East Coast Clinical Senate, Slide 48

³² Mayo Clinic 2017 Stroke rehabilitation: What to expect as you recover

³³ NIHR 2015 Centralising stroke services improves chances of patients getting the right care

³⁴ Although the rehabilitation stroke care pathway is still evolving we conclude that there will be a positive impact as a result of the reconfiguration.

³⁵ NICE Stroke Rehabilitation: Long term rehabilitation after stroke

³⁶ Ramsay AI, Morris S, Hoffman A, et al. (2015) Effects of centralizing acute stroke services on stroke care provision in two large metropolitan areas in England. *Stroke* 46: 2244–2251

³⁷ Fearon P, Langhorne P (2012) Early Supported Discharge Services for reducing duration of hospital care for acute stroke patients. *Cochrane Database of Systematic Reviews* Issue 9

This reflects national guidance which states that “*the closer a rehabilitation service is to the person’s home the more that family/carers can be engaged and the more targeted the rehabilitation can be*”.³⁸

3.1.4 Transfers to a HASU

For patients experiencing a stroke whilst already in hospital at one of the four sites no longer providing stroke services, a transfer will be required to a HASU. This could potentially have a negative impact on patient outcomes although appropriate protocols will be in place to mitigate against this.

The reduction in the number of sites providing HASU service may mean that some patients who are already in hospital receiving other services may be required to be transferred to a HASU. This could potentially have a negative impact on patient outcomes. For example, the Royal College highlights that one in 20 strokes occur in people already in hospital. Clinicians in high-risk clinical areas should therefore have awareness of the need to identify and treat acute neurological presentations urgently, including direct admission to a HASU for emergency stroke treatment.³⁹

3.2 Service impacts

3.2.1 Capacity of services

With activity for stroke services being consolidated onto fewer hospitals, there is a risk that capacity could become constrained within these units. This could, in turn, have a negative impact on the responsiveness, safety and quality of patient care.

Consolidating HASU and ASU services onto fewer hospital sites will inevitably result in an increased volume of activity at these hospitals, as well as resulting in increased demand for inter-dependent or clinical support services such as diagnostic scans. Unless appropriately scoped and resourced, the capacity of these services could have a potentially negative affect on the responsiveness and quality of patient care within both stroke services but also within other acute services provided on site. Activity modelling has been undertaken by the STP Programme which should look to mitigate against this potential impact.

There may also be some patients who are picked up by the ambulance service on the border of Kent and Medway and may be conveyed to the geographically closest HASU which is within a neighbouring area. These numbers are likely to be small but to maintain safe and responsive services, it is essential that these neighbouring HASUs can accommodate this activity with their own capacity constraints.

Finally, a clinical stakeholder has also highlighted that the HASU designation of a hospital may result in an unintended consequence of patients choosing to self-present at these sites with non-stroke conditions, creating additional demand within their emergency departments.

3.2.2 Clinical inter-dependencies

If links between clinical inter-dependent services across the wider STP programme are not appropriately maintained, this has the potential to negatively impact on the safety of patient care.

³⁸ RCP (2016) National clinical guideline for stroke

³⁹ Royal College of Physicians (2016) National clinical guideline for stroke. Fifth edition.

The South-East Coast Clinical Senate has thoroughly documented the co-dependencies between stroke services and other acute services.⁴⁰ As part of the wider STP programme, it is important that these dependencies are appropriately maintained to ensure that all hospital services remain safe and do not negatively impact patient care. For example, the Royal College highlights that cardiology, renal wards, and cardiothoracic units are examples of the high-risk clinical areas which may need to directly admit patients to a HASU. Therefore, where wider STP development plans include these other acute services it is important to continue to review these dependencies.

The full evaluation undertaken by the Programme has highlighted that the preferred option achieves the co-dependencies outlined by the South-East Coast Clinical Senate and has the required co-dependencies for mechanical thrombectomy.

However, a separate review of emergency care services is being conducted in East Kent. If following the review, the William Harvey Hospital was no longer considered to be a long-term option for emergency and specialist services, it is unlikely that the site would be considered viable for a HASU, and as such the expected health impacts will differ from those outlined in this report.

3.2.3 Ambulance service capacity

The proposed changes will result in longer ambulance journeys for some patients required to be conveyed to a HASU, as well as additional transfers, which may negatively impact the capacity of the ambulance service.

Patients will be conveyed to one of three comprehensive stroke units, meaning that the ambulance service will be required to undertake some longer journeys than currently undertaken. There may also be an increased number of transfers for patients currently receiving other care in hospital but requiring access to a HASU. This will have a negative impact on the capacity of the ambulance service in terms of ambulance and paramedic resources. It is understood that facilities and infrastructure are a key enabler within the continued development of these proposals. Now a preferred option has been decided, the ambulance service should be involved in assessing the materiality of this impact and how it can be mitigated.

Stakeholders and the community engagement have also highlighted this impact, noting that additional resources may be required to minimise the impact on the wider ambulance service and its response times. These concerns were raised in the consultation analysis, with respondents suggesting that the increased ambulance times may disproportionately impact on residents of East Kent.

3.3 Workforce impacts

3.3.1 Workforce standards

The consolidation of workforce resources will enable the three comprehensive stroke units to sustainably achieve recommended workforce standards. Increased consultant presence is associated with positive outcomes for patients.

Consolidation of these services, and the associated workforce, will allow for recommended workforce standards to be achieved, which are in turn associated with improved patient outcomes. For example, seven-day consultant ward rounds will be delivered across the three

⁴⁰ South East Coast Clinical Senate (2014) The Clinical Co-Dependencies of Acute Hospital Services –A Clinical Senate Review

hospitals, in contrast to the current situation where seven-day ward rounds only operate at one site and are not always consultant led.

Stakeholders consulted as part of this IIA considered that, in the long-term, stroke services in their current form are not sustainable, due to the current workforce pressures on staff as they work hard to try and maintain the quality of care. Anecdotally, it is reported that this has created challenges in retaining staff with specialist yet scarce skills and expertise. The proposed consolidation will therefore ensure that appropriate rota patterns can be established, creating a more sustainable working environment for staff, as well allowing for new clinical standards of care to be delivered.

A clinical stakeholder also highlighted, however, that the appetite for consultants to specialise in stroke services can be lower than other specialities, and is declining. This may therefore create a longer-term risk that the new model of care may not be delivered as planned. Nonetheless, the consolidation of workforce resources onto fewer sites will create more opportunity to achieve appropriate staffing levels and the implementation of the new model of care may encourage staff to join the service.

Stakeholders from the community engagement believed that the concentration of expertise in the combined HASU and ASUs will allow clinical resources to be pooled, enabling workforce standards to be achieved.

3.3.2 Workforce sustainability

Proposed changes will create a more sustainable workforce for providing stroke care across Kent and Medway. This in turn will support the retention of current staff, as well as future recruitment requirements.

As described in section 3.1 above, the consolidation of workforce resources will enable the three comprehensive stroke units to establish appropriate rota patterns and a more sustainable working model for staff. This contrasts with the current situation where stakeholders have anecdotally commented that some staff are being asked to work one in two weekends, which does not enable an appropriate work life balance. Clinical stakeholders have highlighted that this is likely to support the retention of current staff, as well as the recruitment of staff in the future. This is important in an area where anecdotally in recent years, several stroke consultants have left the service, moving to areas that are better organised and have already made these reconfiguration changes.

In the longer term, recruitment may also benefit from staff being attracted to move to Kent and Medway to work as part of an established and high-quality stroke network, which offers a variety of specialist roles and training opportunities. Clinical stakeholders supported this view, as did stakeholders in local listening events.^{41 42} Community engagement also corroborated that through the creation of more resilient teams, factors such as staff satisfaction, staff retention and recruitment will also be positively impacted by a greater ability to develop roles and responsibilities, increased availability of specialisation and training opportunities.

3.3.3 Workforce turnover

The reconfiguration of stroke services is considered to bring challenges for some staff, which could result in negative impacts such as increased staff turnover and the loss of current expertise.

⁴¹ East Kent Delivery Board (March 2017) East Kent Listening Event: Feedback Report

⁴² West Kent CCG (April 2017) West Kent Health and Care Listening Events: Feedback Reports

Clinical and community engagement stakeholders have identified that some negative workforce impacts may be realised as part of the proposed reconfiguration. For example, it is widely recognised that there is a national challenge in terms of recruiting to stroke physician posts and one stakeholder highlighted the risk that existing staff may leave if the implementation process is too lengthy, creates uncertainty and is not properly communicated.

The proposed change is likely to require staff from four of the current sites to change their place of employment. This may result in some staff having to travel further to their place of work; which is likely to have an impact in terms of the personal costs of travel, as well as the inconvenience associated with additional journey times and the implications on childcare commitments for example.

Some of these staff can also work across different specialties and may therefore look for opportunities to move departments within their existing employer. This may have a short term transitional negative impact on the operational running of the service, and particularly during its transfer to a new site.

As a result of the preferred option, some staff may not feel able or willing to change their working arrangements and may therefore not continue working in this service area. This may be a risk if staff with specialist expertise which are in demand nationally are lost. Stakeholders highlighted that the recruitment of new staff can be time-consuming and expensive.

4 Travel and access impacts

This chapter identifies travel and access impacts, which could potentially be experienced as a consequence of implementing the preferred option. The chapter presents impacts for BLA as the journeys by patients for the services assessed would typically be made by this mode of transport. Quantitative and qualitative journey time analysis is provided for the preferred option; along with maps visualising BLA travel times. Detailed analysis by an equality group is included within the equality chapter (chapter 5).

4.1 Qualitative journey time analysis

4.1.1 Service impacts

4.1.1.1 Impacts on ambulance service journey times and capacity

The proposed changes will result in longer ambulance journeys for some patients required to be conveyed to a HASU which may negatively impact the capacity of the ambulance service.

Patients will be conveyed to one of three comprehensive stroke units, meaning that the ambulance service will be required to undertake some longer journeys than currently undertaken. This will have a negative impact on the capacity of the ambulance service in terms of ambulance and paramedic resources. It is understood that facilities and infrastructure are a key enabler within the continued development of these proposals. As a preferred proposal has been decided, the ambulance service should be involved in assessing the materiality of this impact and how it can be mitigated.

Stakeholders and the community engagement have also highlighted this impact, noting that additional resources may be required to minimise the impact on the wider ambulance service and its response times. Respondents to the consultation analysis raised the issue of increased travel times on the ambulance service as a potential concern.

4.1.2 Travel impacts for patients

The proposed changes will mean that some patients will have to travel further to access a comprehensive stroke service. Whilst it is recognised that this delay to care could have a potential negative impact on the outcome of the patient, it is considered that this is offset by having access to a streamlined and fully resourced HASU service on arrival.

Within local listening events and engagement undertaken as part of this IIA, some stakeholders expressed concern about the distance to specialist services, delaying access to care. There is recognition that this may increase the 'call to needle time' which can have a negative impact on health outcomes for patients. It may also increase the period in which patients may experience discomfort during the ambulance journey itself.

National guidance states that people with suspected acute stroke should be admitted directly to a HASU and be assessed for emergency stroke treatments by a specialist physician without delay. It recognises however the balance between location and critical mass; "*stroke services should be organised to treat a sufficient number of patients to ensure that the specialist skills of*

the workforce are maintained".⁴³ It is recognised that whilst the patient may receive a delay in accessing care, the treatment they receive when arriving at the HASU will be streamlined, provided by staffing with appropriate expertise and will be of high quality. This is corroborated by other reports that state whilst delay for people with life-threatening conditions is linked to poorer outcomes, it is the timing of the start of appropriate treatment rather than the timing of arrival at hospital that affects the outcome.⁴⁴ Therefore, rapid access to the specialist team once at the hospital can offset or overcome the risk created by the additional travel time.

4.1.3 Travel impacts for family, carers, and visitors

For the period that care is provided at the comprehensive stroke unit, negative travel and access impacts may be experienced by the visitors and carers of patients. This may also have some impact on the recovery of patients.

It is recognised that family, carers, and visitors will have to travel further to visit patients receiving HASU, ASU or rehabilitation care and this is explored further in the travel and access impacts section of this report.

Whilst stakeholders are generally accepting of receiving specialist care in a location further away from their place of residence, where rehabilitation is hospital based, they have highlighted that potential negative impacts may be experienced as patients will be recovering from their stroke further away from their home, potentially constraining access to carers and visitors. It is considered that this could have a negative impact on their recovery and general wellbeing including feeling isolated.

The consultation analysis highlighted increased travel time for visitors as a key concern, particularly for those living in East Kent. The response to the consultation stated as a preferred option has now been chosen the impacts on families and carers will need to be assessed in terms of mitigating these potential impacts.

4.2 Methodology for quantitative journey time analysis

4.2.1 Population data

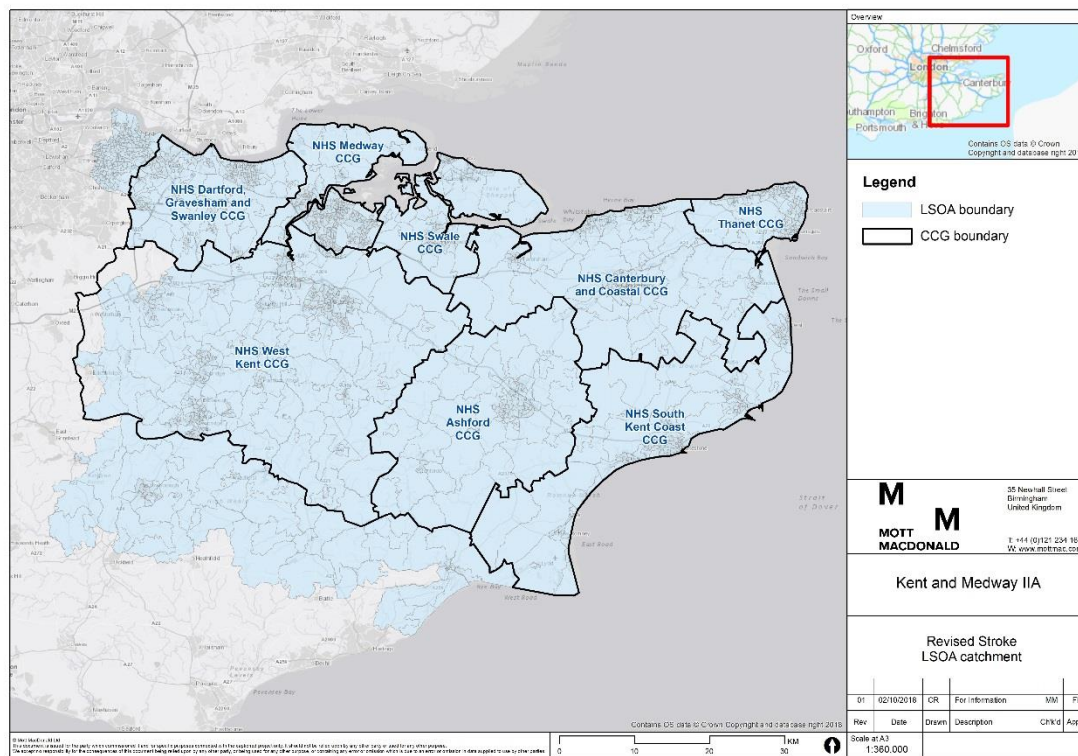
Travel and access analysis has been undertaken on the basis of population data in line with previous analysis conducted by Carnall Farrar. The study area used for the travel time analysis includes LSOAs for which the shortest travel time at off-peak times to a stroke service is to a stroke service within Kent & Medway. Following discussions with South East London Commissioners, Kings College Hospital Foundation Trust and London Ambulance Service it was agreed that the only South East London patients that would be included in the catchment area would be from Bexley CCG⁴⁵. The study area is illustrated in the map below:

⁴³ RCP (2016) National clinical guideline for stroke

⁴⁴ Kings Fund (2011) Reconfiguring hospital services

⁴⁵ Based on information received from Carnall Farrar

Figure 4: Catchment area



Source: Carnall Farrar

Impacts have been discussed within the equality impacts chapter for those with disabilities, those who are older than 65 years, males, BAME people, those who are pregnant or recently have given birth and for those from deprived communities.

4.2.2 Travel time data and analysis

Travel time data has been provided by Basemap⁴⁶ and 'off peak car' has been used to represent travel times by BLA. The travel time for each option has been calculated based upon the minimum travel time from LSOAs to hospitals offering stroke services. Sites within Kent and Medway considered as part of the baseline and the preferred option are detailed below:

- Baseline:
 - Darrent Valley Hospital
 - Maidstone General Hospital
 - Tunbridge Wells Hospital
 - Medway Maritime Hospital
 - William Harvey Hospital
 - Queen Elizabeth Queen Mother Hospital
- Preferred option:
 - Darrent Valley Hospital

⁴⁶ Basemap 2017/18 data has been used in line with the DMBC refresh produced by Carnall Farrar.

- Maidstone General Hospital
- William Harvey Hospital

In addition to these services within Kent and Medway the following peripheral sites have been included within the analysis for both the baseline and the preferred option as shown in the table below.

Table 5: Peripheral hospital sites included/excluded

Periphery hospital	Offer acute stroke services (yes/no)	Included in travel analysis (yes/no)
Brighton (Royal Sussex County Hospital)	Yes - Brighton and Sussex University Hospital NHS Trust has an acute stroke unit at the Royal Sussex County Hospital	Yes
Queen Elizabeth Greenwich	No - Stroke services were removed permanently from Queen Elizabeth Greenwich in 2015	No
Queen Victoria (East Grinstead)	No - This is a specialist hospital providing reconstructive surgery, burns care and rehabilitation services	No
Conquest	No - East Sussex Healthcare NHS Trust moved all stroke services to their Eastbourne site	No
East Surrey Hospital	Yes - Has an Acute stroke unit with 28 beds	Yes
Eastbourne Hospital	Yes - Offers Hyper acute and acute stroke services	Yes
Princess Royal	No - Although inpatient stroke rehabilitation services are offered at the Princess Royal site, the Trust runs its acute stroke services from the Royal Sussex County Hospital	No
Princess Royal University Hospital	Yes - Has one of London's 8 Hyper Acute Stroke Units	Yes
Croydon (Mayday)	No - Not one of London's 8 Hyper Acute Stroke Unit, but does have a stroke unit for patients following their stay at a HASU	No
Guy's	No - Not one of London's 8 Hyper Acute Stroke Unit, but does have a stroke unit for patients following their stay at a HASU	No
King's	Yes - Has one of London's 8 Hyper Acute Stroke Units	Yes
Queen Mary's Sidcup	No - Is an Urgent Care Centre so does not offer acute services	No
Queen's (Romford)	Yes - Has one of London's 8 Hyper Acute Stroke Units	Yes
St George's	Yes - Has one of London's 8 Hyper Acute Stroke Units	Yes
St. Thomas'	No - Not one of London's 8 Hyper Acute Stroke Unit, but does have a stroke unit for patients following their stay at a HASU	No
University Hospital Lewisham	No - Although Lewisham has a stroke unit for ongoing treatment and rehabilitation, the first acute part of stroke care for Lewisham patients is undertaken at King's and this is where patients would be conveyed to by blue light	No

Source: Carnall Farrar

The report has utilised thresholds of 30 and 45 minutes to report on the travel impacts.

4.2.3 Quantitative journey time impacts by BLA

Based on population data, 89.5% of people can currently access to stroke services by BLA within 30 minutes and 99.8% within 45 minutes. Within the preferred option there is a reduction in the proportion of people that can access stroke services within 30 minutes by BLA to 69.6%. This is a reduction of 19.8% from the baseline. Similarly there is a reduction in the proportion of population that can access stroke services by BLA within 45 minutes to 92.4%. This is a reduction of 7.4% below the baseline. These results are shown in Table 6 below.

Table 6: BLA journey times for the population under each proposal

	Within 30 minutes	Within 45 minutes	>45 minutes	Within 30 minutes %	Within 45 minutes%	> 45 minutes%
Baseline	1,908,014	2,128,408	4,183	89.5%	99.8%	0.2%
Preferred Option	1,484,852	1,969,931	162,660	69.6%	92.4%	7.6%
Change from baseline	-423,162	-158,477	158,477	-19.8%	-7.4%	7.4%

Source: Mott MacDonald

Table 7 provides a breakdown of the population experiencing both no change and an increase in travel time accessibility by BLA for the preferred option. This identifies that 53.9% of the population under the preferred option experience no change in journey times, and 46.1% of the population experience an increase in journey times compared to the baseline. Of the 46.1% of the population experiencing an increase in journey times by BLA, 28.2% have an increase of less than or equal to 15 minutes and 17.9% have an increase greater than 15 minutes; Table 8.

Table 7: Population experiencing change in journey time by BLA

	No change	Increase	No change %	Increase %
Preferred option	1,148,521	984,070	53.9%	46.1%

Source: Mott MacDonald

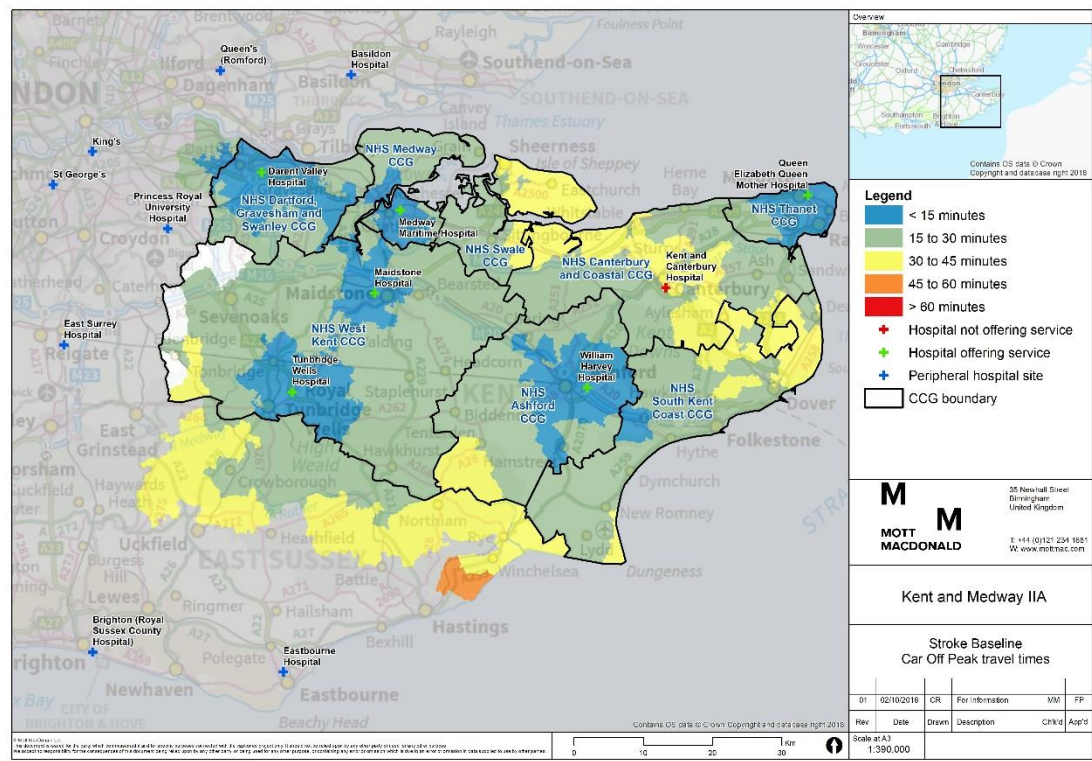
Table 8: Population experiencing a change in journey time by BLA by size of increase

	No change	<=15 minutes	>15 minutes	No change %	<=15 minutes %	>15 minutes %
Preferred option	1,148,521	601,537	382,533	53.9%	28.2%	17.9%

Source: Mott MacDonald

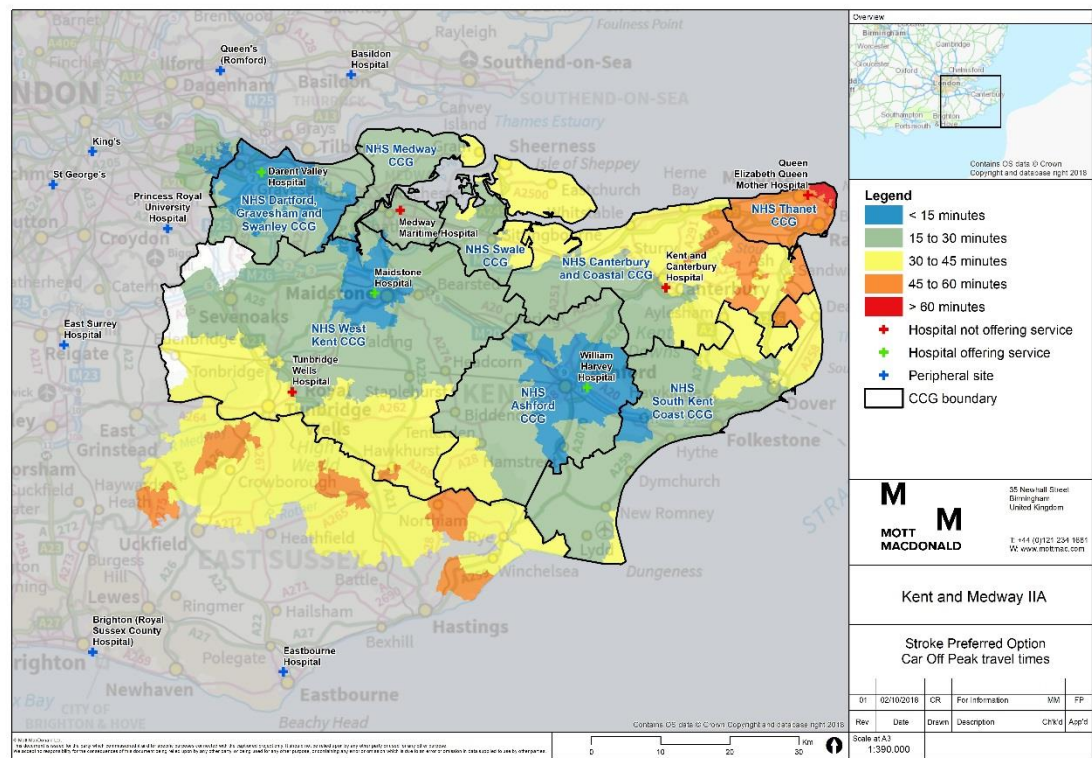
The areas experiencing increases in travel time to the nearest stroke services are illustrated in the maps below. Comparing the baseline to the preferred option it is evident that areas to the east of Kent and Medway will experience an increase in travel time due to the removal of services at the Queen Elizabeth Queen Mother Hospital. Similarly, areas to the south west of Kent and Medway will experience an increase in travel time due to the removal of services at Tunbridge Wells Hospital. In addition, the area in close proximity to the Medway Maritime Hospital experiences an increase in travel time due to the removal of services here under the preferred option.

Figure 5: Baseline travel times to stroke services



Source: Mott MacDonald

Figure 6: Preferred option travel times to stroke services



Source: Mott MacDonald

5 Equality impacts

This chapter identifies equality impacts, which could potentially be experienced as a consequence of implementing the preferred option.

5.1 Stroke services: summary

In order to assess the impact of the service changes on protected characteristic and deprived groups, the scoping phase involved detailed analysis to understand which groups may have a disproportionate need for stroke services. The following groups were identified as having a disproportionate need for stroke services:

Table 9: Scoped in equality groups

Equality group	Summary of evidence presented in the scoping report
Age: Older people	High blood pressure is a key risk factor for strokes, this is common in older people.
Disabled people ⁴⁷	Living with a disability increases the likelihood of having a stroke as rates of Atrial Fibrillation (AF), which causes irregular heartbeat and increases the risk of stroke, are more common among disabled people.
Pregnancy and maternity	Pregnancy alters the level of female hormones which can lead to developing certain conditions and having a stroke.
Race and ethnicity: Black and Afro-Caribbean people, people with a South Asian background	Those from certain minority ethnic backgrounds have a pre-disposition to certain factors which can lead to having a stroke, such as high blood pressure, cholesterol and diabetes.
Sex: Male	AF, a factor which increases the risk of having a stroke, is more common in men compared to women.
People from deprived communities	There are a number of lifestyle factors that increase the risk of having a stroke such as obesity, physical inactivity and an unhealthy diet.

Source: Kent and Medway Sustainability and Transformation Plan Scoping report 2017

5.2 Health outcomes

As identified in the health component of this IIA, the proposals under the STP are likely to provide positive health impacts including improved clinical outcomes, and overall service improvement. These long term impacts are likely to be experienced disproportionately by those groups listed in section 5.1.1 above due to their higher propensity to require stroke services.

5.3 Service familiarity

Reconfiguring the delivery of services may impact certain equality groups as travelling to a new location and being treated by different healthcare professionals may lead to an increase in anxiety. These will be transitional and relate to service and geographical familiarity. Groups likely to be affected include older people, disabled people and some people from BAME backgrounds, particularly those who do not have English as a first language who traditionally find it more difficult to navigate the healthcare system.

⁴⁷ The marker for those living with a disability will be those who have identified as living with a limiting long term illness (LLTI)

5.4 Journey time impacts for equality groups

5.4.1 Methodology and assumptions

As with the travel and access analysis presented in chapter four, this journey time analysis on equality groups has been undertaken on the basis of population data. The scoped in equality groups are as follows:

- Age: older people aged 65+
- Sex: Males
- Race and ethnicity: BAME people
- Disabled people
- Women who are pregnant or on maternity leave⁴⁸
- People from socio-economically deprived backgrounds⁴⁹

Using the best available data, travel times for the scoped in equality groups are compared to the overall population travel times. This ascertains whether there is a greater impact on a particular group. The study area used for the equalities impact analysis includes LSOAs which have the shortest travel time to acute sites (by BLA) to one of the 7 within K&M.

The tables in section 5.4.2 onwards highlight the travel times for stroke services by scoped in equality groups, comparing the baseline scenario with the preferred option. An equality group is considered to experience disproportionate negative journey times impacts if one or both of the following is realised:

- In terms of journey time access within 30 minutes, the proportion of the population from a given equality group is five percentage points or more lower than the proportion of the overall population.
- In terms of the percentage point change from the baseline, the proportion of the population from a given equality group change is five percentage points or more higher than the overall proportion of the population.

5.4.2 Baseline

None of the groups identified as having a higher need for stroke services currently experience disproportionately higher journey times.

Table 10: Baseline journey travel time by BLA (population data)

	Within 30 minutes %	Within 45 minutes %
Population overall	89.5%	99.8%
Females aged 16 -44	89.4%	99.9%
Population with LLTI	88.4%	99.7%
Population within the most deprived quintile	84.7%	100.0%
Population aged 65 and over	87.9%	99.6%
Males	89.4%	99.8%
BAME population	91.4%	99.9%

Source: Basemap travel time data, UK Census 2011/ MYE 2016/IMD 2015

⁴⁸ Proxy data, (females aged 16-44 years) has been use for this equality group.

⁴⁹ Deprivation is calculated using the lower layer super output area (LSOA) in which a patient is resident. It is recognised that not every patient in a deprived LSOA will be experiencing deprivation themselves, but that this is the best available data. An LSOA is an administrative boundary with a minimum population of 1,000 and a maximum population of 3000.

5.4.3 Preferred option

Table 11: Preferred option travel time by BLA (population data)

	Preferred Option - Within 30 minutes %	Percentage point change from baseline	Preferred Option- Within 45 minutes %	Percentage point change from baseline
Population overall	69.6%	-19.9%	92.4%	-7.4%
Females aged 16-44	71.5%	-17.9%	93.2%	-6.7%
Population with LLTI	66.2%	-22.2%	89.9%	-9.8%
Most deprived quintile	61.8%	-22.9%	81.3%	-18.7%
Population aged 65 and over	65.1%	-22.8%	90.5%	-9.1%
Males	69.7%	-19.7%	92.5%	-7.3%
BAME population	78.0%	-13.4%	94.5%	-5.4%

Source: Basemap travel time data, UK Census 2011/ MYE 2016/IMD 2015

The analysis above shows that there will be some disproportionate negative impacts for those from the most deprived quintile by BLA under proposal the preferred option:

- Only 61.8% of those from the most deprived quintile will be able to access stroke services within 30 minutes by BLA, compared to 69.6% of the population.

5.4.4 Other travel and access impacts for equality groups

Stakeholder and community engagement including the focus groups undertaken for this IIA identified several other **negative** impacts associated with increased journey times for equality groups:

- Increased stress and anxiety:** increased journey times or the need to make different and/or unfamiliar journeys to access care, is likely to affect some equality groups to a greater extent than the general population. These groups include:⁵⁰
 - Those who find navigating new journeys, particularly using public transport, more challenging and problematic, for example older people and those with mobility or vision impairments.
 - Those who are less confident in making unfamiliar journeys, which may result in anxiety or panic attacks for example older people or those with a disability.
 - Those who also no longer frequently drive in busy areas, such as older people or disabled people, and particularly those with mental health issues, are also likely to be affected.
 - Those who may not be confident in making journeys at night, for example older people or those with a disability such as impaired vision.
 - Those who do not have access to a private mode of transport and are reliant on assistance or public transport, such as older people who cannot afford to run a car or are unable to drive anymore, as well as those from deprived communities.
 - The consultation analysis highlighted an increased concern for older people about any increases in distance required to travel to the new locations increased; 42% of consultation respondents aged 65-74 raised this concern, compared to 21% of those aged 18-34 years.

⁵⁰ It should be noted that these impacts are identified not only for patients but also for visitors and relatives who will also need to access new sites.

- **Increased costs associated with travel:** some patients and visitors, for example those living in East Kent and travelling to West Kent, will experience increased travel costs. This is likely to disproportionately impact upon those traditionally on lower incomes, such as those from deprived communities, disabled people and older people. The consultation analysis suggested that this increase in cost may impact on more economically deprived areas, such as Thanet.
- **The consequence of access difficulties for visitors and carers:** increased journey times (and associated costs) for visitors and carers of patients receiving care in a 'non-local' location may limit or prohibit regular visits from relatives. This could affect patients' experience in hospital, and could disproportionately impact those who are more reliant on assistance and support, for example, disabled and older people – especially those with learning difficulties or mental health conditions. Some of those from BAME backgrounds who do not have English as their first language may also rely on relatives to help translate. Limited access to carer or relative support would mean the patient is less likely to be able to communicate effectively with clinical staff to express their preferences or ask questions about their care.

6 Sustainability impacts

6.1 Overview

This chapter details the assessment of GHG emissions under the preferred option for stroke services for Kent and Medway. The chapter outlines the scope of the assessment, the methods used to estimate emissions from the preferred option, presents the results of the assessment and provides commentary on the results.

By necessity the assessment has used a variety of assumptions to produce the results. Some of these assumptions may have resulted in an over or under estimations of emissions.

6.1.1 Building Energy Use

Data for the consumption of gas and electricity for the preferred option, for all of the buildings, after the changes are implemented was not available. Instead, a proxy for consumptions was used to estimate additional energy use. First, consumption rates of gas and electricity over the last four years for each building were averaged and divided by the floor space of each building. This resulted in an average consumption rate per square meter of each building.

Data was available on changes to the floor space utilised under the preferred option and at each building assuming beds would be used for 10 days per patient, (the preferred option was not anticipated to result in a reduction in utilised floor space, as the hospitals consulted indicated any floor space freed up by the changes would be used for other purposes). By multiplying the change in floor space by the average rates of gas and electricity consumption per unit of floor space, it was possible to estimate the change in building energy consumption under the preferred option. This assumes that any newly utilised floor space will have the same energy consumption rate as the current rate of the building where the newly utilised floor space is located.

To calculate carbon emissions from energy use, emissions factors for 2017 were sourced from the Department for Business, Energy and Industrial Strategy⁵¹. As the carbon intensity of the electricity grid is expected to reduce in the future, the use of emissions factors for the electricity grid published in 2017 is a conservative assumption. These were multiplied by the consumption of data to result in carbon emissions data for the preferred option. This method assumes that the energy emissions from the newly utilised floor space will be additional to current energy emissions.

6.1.2 Travel

Patient data for 2015/16 was used to form the basis of a travel time analysis, which assessed how long it would take each patient to travel to the hospital where they would receive stroke care under the preferred option. This data was then used as the basis for the carbon assessment for travel.

This was undertaken by multiplying each journey time by the average speed of traffic on A-roads in Kent during 2016 based on statistics published by the Department of Transport⁵². This provided an estimated distance travelled. As the patients were stroke patients, it was assumed each patient would travel alone by ambulance. As such the total distance travelled by all

⁵¹ <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017>

⁵² <https://www.gov.uk/government/statistical-data-sets/average-speed-and-delay-on-local-a-roads-cqn05>

patients was multiplied by the emissions factor for 'average van' (representing an ambulance) published by the Department for Business, Energy and Industrial Strategy⁵³. This resulted in estimated carbon emissions due to patient travel for the preferred option.

Across the NHS, patient travel accounts for 44% of all travel emissions (NHS staff, visitors, patients, and contractors)⁵⁴. To account for all travel emissions, the results of the patient travel assessment were uplifted in line with the ratio of patient travel to other travel, to produce an estimate of all emissions from travel under the preferred option. Across the NHS, patient travel will have used a variety of transport modes. However, for this assessment it has been assumed that all patients have travelled via ambulance as they are stroke patients. This means that the assumption to uplift the patient travel data in-line with the ratio of patient travel to other travel across the NHS has likely overestimated total travel emissions.

6.2 Results

Table 12 below provides details of the results in terms of tCO₂e for the preferred option per annum. The assessment shows that the preferred option is expected to increase emissions.

Table 12: Carbon assessment results

Emissions category	Preferred option
Change in building energy use (tCO ₂ e)	451
Change in patient Travel (tCO ₂ e)	7
Change in all travel (tCO ₂ e)	16
Total change in emissions (tCO ₂ e)	467

The carbon footprint for the whole NHS in 2015 was 22.8MtCO₂e, and in line with the climate change act 2008, the NHS aims to reduce emissions by 80% based on a 1990 baseline by 2050⁵⁵. According to the Kent and Medway Partnership Trust Estates Strategy 2015-2020⁵⁶, carbon emissions in 2013/14 from buildings were 6,500tCO₂e, and from business travel were 600 tCO₂e. Although reductions to emissions are targeted, the increase in emissions due to the changes to services under the preferred option is expected to be less than 10% of Kent and Medway's building energy and business travel emissions, and a very small proportion of the overall NHS carbon footprint, therefore the increase in emissions are considered to be small.

⁵³ <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017>

⁵⁴ NHS Sustainable Development Unit (2012), Carbon Footprint update for NHS in England 2012, <http://www.sduhealth.org.uk/policy-strategy/reporting/nhs-carbon-footprint.aspx> - (2012 is that most recent year where the travel data is broken down into travel types)

⁵⁵ NHS Sustainable Development Unit (2016), Carbon Footprint update for NHS in England 2015, <http://www.sduhealth.org.uk/policy-strategy/reporting/nhs-carbon-footprint.aspx>

⁵⁶ Kent and Medway Partnership Trust (2015) ESTATES STRATEGY 2015-20

7 Conclusions

This chapter brings together the impacts from across the service areas and impact assessment topics and outlines potential ways to enhance opportunities and to mitigate or reduce negative impacts.

7.1 Summary of impacts

The table below provides a high level summary of the positive and negative impacts experienced across all the impact assessment areas.

Table 13: Impact summary table

Impact assessment area	Summary of positive impacts	Summary of negative impacts
Health	<ul style="list-style-type: none"> The proposed changes will improve patient outcomes and remove the variation currently experienced. The consolidation of workforce resources will enable the three comprehensive stroke units to sustainably achieve recommended workforce standards. Rehabilitation services for stroke patients will be improved, supporting patients to regain their independence and overall quality of life. Proposed changes will create a more sustainable workforce for providing stroke care across Kent and Medway. 	<ul style="list-style-type: none"> For patients experiencing a stroke whilst already in hospital at one of the four sites no longer providing stroke services, a transfer will be required to a HASU. This could potentially have a negative impact on patient outcomes although appropriate protocols will be in place to mitigate against this. With activity for stroke services being consolidated into fewer hospitals, there is a risk that capacity could become constrained within these units. If links between clinical inter-dependent services across the wider STP programme are not appropriately maintained, this has the potential to negatively impact on the safety of care. The reconfiguration of stroke services is considered to bring challenges for some staff, which could result in increased staff turnover and the loss of current expertise. Patient choice will reduce for these specialist stroke services.
Travel and access	N/A	<ul style="list-style-type: none"> The preferred option will mean that some patients will have to travel further to access a stroke service. There is a reduction in accessibility within 30 minutes by BLA The preferred option will result in longer ambulance journeys for some patients required to be conveyed to a HASU, as well as increased transfers, which will negatively impact the capacity of the ambulance service.

Equality

- Improved clinical outcomes for the equality groups who have disproportionate need for stroke services:
 - Age: older people
 - Disabled people
 - Pregnancy and maternity
 - Race and ethnicity
 - Sex: male
 - People from deprived communities
- Disproportionately longer journey times for those from the most deprived quintile compared to the overall population.
- Increased stress and anxiety from unfamiliar journeys
- Increased costs associated with travel
- Lack of acceptable alternative transport methods

Sustainability	N/A	• Small negative impact (467 tCO ₂ e)
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Source: Mott MacDonald

7.2 Enhancements and mitigations

Arising from this assessment, is a set of actions which focus on potential ways to enhance opportunities and to mitigate or reduce the effect of the potential negative impacts. It is suggested that these are considered by the STP as part of the implementation of the preferred option.

7.2.1 Health impacts

This section discusses potential ways in which to enhance opportunities and to mitigate or reduce the effect of the potential negative impacts identified in the health impact assessment for consideration by decision makers as part of the implementation of proposals.

Table 14: Mitigating actions

Impact Area	Impact	Enhancement / mitigating action
Health outcomes	Health outcomes	<ul style="list-style-type: none"> • Further detail on the care model for rehabilitation is required, responding to the lack of clarity that some stakeholders perceive around this. This is an essential part of the stroke pathway of care. • As well as treatment, focus must also be placed on prevention and health promotion activities to counter potential risk factors for stroke. • The stroke clinical group should review estimated ambulance travel times for the shortlisted and preferred options to ensure that they achieve relevant standards. • As part of evaluating the impact of these changes, activity and outcome information should be closely monitored to ensure standards and outcomes of care are maintained. • Appropriate protocols should be established for patients already in hospital but requiring urgent transfer to a HASU.
Service impacts	Capacity	<ul style="list-style-type: none"> • Continue to update STP activity modelling to ensure that sufficient capacity can be provided at selected Kent and Medway hospitals, for the increased volume of stroke related activity, as well as demand for inter-dependent and clinical support services. • The assessment of capacity and resources must have sensitivities applied including: <ul style="list-style-type: none"> – The capacity of HASU/ASU services at neighbouring hospitals (should this be closer to patients than their nearest HASU in Kent and Medway) – The impact on capacity if other patients choose to self-present at hospitals with a HASU and require other acute services.
	Clinical inter-dependencies	<ul style="list-style-type: none"> • As the wider STP programme develops, continues to review the co-dependencies matrix to ensure that essential links are maintained.

Workforce impacts	Workforce	<ul style="list-style-type: none"> • A programme of engagement with clinical, nursing and wider staff should be undertaken, with clear messages to ensure that staff recognise that they are valued and are proactively encouraged to stay within the Kent and Medway stroke network, despite potential changes to their local service. This engagement should be commenced with all existing services in advance of the announcements of the short list or preferred option. • A workforce plan for the stroke network should be established which focuses on both the short term and longer-term resource and succession planning of services. This should consider potential recruitment strategies as well as the impact of trends in specialisation to ensure that the new model of care can be delivered. • Incentives to encourage staff to relocate should be considered. For example, one stakeholder suggested offering training opportunities to nurses who are band 6 or below. • Where staff are not able to transition to these new arrangements, alternative approaches should be sought to ensure that they are retained within Kent and Medway.
Implementation	Communication	<ul style="list-style-type: none"> • Communications with the public should continue to highlight the drivers for change; high quality care and improved outcomes. • This should include clear messages to the public on the new care models and where to go for services to minimise potential negative transitional impacts. • Review the current methods of communicating and engaging with local community groups, local organisations, and groups representing members of the community from protected characteristics to ensure the entire community is aware of the proposed changes.
	Governance	<ul style="list-style-type: none"> • Ensure that the clinical regiment currently established continues as the stroke programme progresses. This includes due process, an independent chair of the clinical reference group and clinical engagement.
	Enablers	<ul style="list-style-type: none"> • The South-East Coast Clinical Senate identified that in order for potential benefits to be realised, timescales for implementation need to be realistic, and the feasibility of the models is dependent on effective enabling functions (digital, workforce and estates). Stakeholders have also highlighted these enablers.

7.2.2 Travel and access

Now that a preferred option has been decided, the ambulance service should be involved in assessing the impact of change on their capacity and ascertain the additional resources that may be needed to minimise any impact on the wider ambulance service.

The current travel plans for hospitals selected should be reviewed in line with any increase in the volume of patients and visitors. Further collaboration with the local authorities will help greater integration of transport strategies and thus help to mitigate any travel impacts.

Finally it is suggested that additional engagement takes place with organisations offering voluntary transport to hospitals to understand the impacts of increased travel times on funding and capacity of the service.

7.2.3 Equality impacts

This section discusses potential ways in which to enhance opportunities and to mitigate or reduce the effect of the potential negative impacts identified in the equality impact assessment for consideration by decision makers as part of the implementation of the preferred option.

Table 15: Mitigating Actions

Impact area	Impact	Enhancement / mitigating action
Travel and access	Disproportionately longer journey times for those from the most deprived quintile.	<ul style="list-style-type: none"> • Maximise public transport accessibility of specialist centres through engagement with local transport

Impact area	Impact	Enhancement / mitigating action
	Increased stress and anxiety from unfamiliar journeys	providers.
	Increased costs associated with travel	<ul style="list-style-type: none"> • Ensure the effective communication of the future model of care to the local population, so they understand how to access and use services and the potential increased journey times
Service delivery		<ul style="list-style-type: none"> • Frontline services staff should feel confident in being able to communicate with all patients, including those who are Deaf or do not speak English. Members of staff should be able to call upon staff with BSL/English interpreters using remote access such as Skype, FaceTime or Video Relay Service (VRS) where available.

7.2.4 Sustainability

No additional measures to enhance or mitigate sustainability impacts have been identified.

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B. Equality chapter of scoping report

B.1 Overview

This section of the report considers each of the nine 'protected characteristic' groups as defined by the Equality Act 2010, as well as considering deprived communities.⁵⁷ These groups are:

- Age – specifically children (those under 16) and older people (those aged 65 and over)
- Disability
- Gender reassignment
- Marriage and civil partnership
- Pregnancy and maternity
- Race and ethnicity
- Religion and belief
- Sex
- Sexual orientation
- Deprived communities

For each group, a summary table is presented identifying whether, and for which services, they

Definition of terms

Disproportionate need refers to a need for the service / treatment over and above the general population.

Differential need refers to a group that has different types of need for the service during delivery.

have a disproportionate or differential need.

Where possible, density maps and population data tables have also been provided. The population for Kent and Medway and east Kent⁵⁸ have been stated, along with national figures to act as a comparator.

Table 31 below outlines the protected characteristics and their disproportionate need for Stroke services.

⁵⁷ Although not included as a protected characteristic, it is accepted best practice to review deprivation.

⁵⁸ Outlined in the tables as: 'Total Study Area' which represents the whole of Kent and Medway, and East Kent.

Table 16: Evidence of disproportionate need for Stroke services.

Protected characteristic	Evidence of disproportionate need for Stroke
Age: children (0-16 years)	
Age: older people	✓
Disability	✓
Gender re-assignment	
Marriage and civil partnership	
Pregnancy and maternity	✓
Race and ethnicity	✓
Sex: male	✓
Sex: female	
Sexual orientation	
Deprivation	✓

Source: Mott MacDonald 2017

B.2 Age: Older people (65 and over)

B.2.1 Stroke services

There is a high demand for stroke services within the 65 and over age group. Three quarters of strokes (75%) in the UK occur in people aged 65 or older.⁵⁹ At the time of the census in 2011, this age group represented 16% of the UK population.⁶⁰ Evidence shows that more than half of all people over the age of 75 have high blood pressure, which is a contributory factor in 54% of strokes.⁶¹ Figures in Kent and Medway highlight that the numbers of hospital admissions for strokes by CCG and Kent region shows that the 75-79 age group (between 2011/12 and 2013/14) had the most strokes.⁶² The next highest categories were the 80-84 and 70-74 age groups.

The regularity with which strokes occur in this age bracket indicates that older people are likely to experience a disproportionate impact of any changes to this service.

B.2.1.1 Demographic profile strokes services in Kent and Medway: older people

Changes to stroke services are under consideration across the whole of Kent and Medway. The table below shows that within Kent and Medway, the proportion of those aged 65 and over (19%) is broadly in line with the national average (18%). There is one CCG – Medway – where the proportion of people over 65 is more than two percentage points lower (3%) than the national average. South Kent Coastal (23%) and Thanet (23%) CCGs all have proportions above the national average.

⁵⁹ Stroke Association (2015): 'Stroke Statistics'.

⁶⁰ Office for National Statistics (2011) '2011 Census: Population Estimates for the United Kingdom, March 2011'

⁶¹ Stroke Association (2015): 'Stroke Statistics'.

⁶² Kent and Medway Public Health Observatory (2015): 'Kent and Medway: Stroke Profile'.

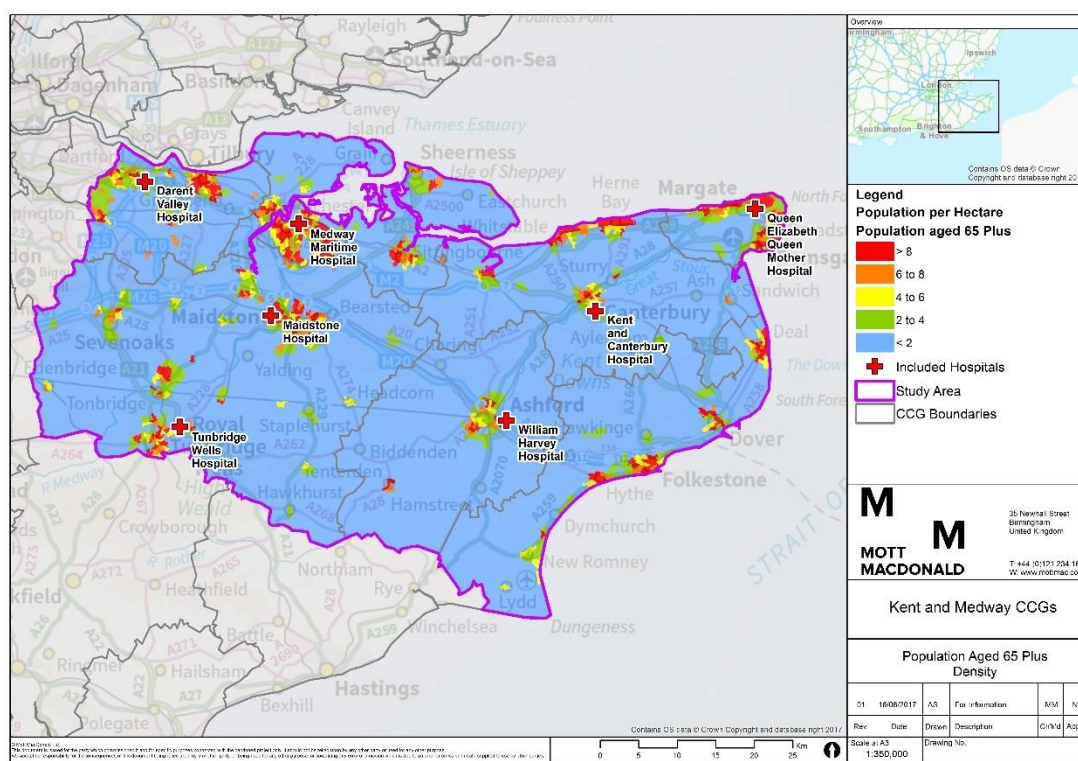
Table 17 Age - older people (65 and over)

Study area	Total population	Aged 65 and over	Aged 65 and over (%)
Ashford CCG	124,250	23,585	19%
Canterbury and Coastal CCG	207,653	43,176	21%
Dartford, Gravesham and Swanley CCG	258,208	44,152	17%
Medway CCG	276,492	42,511	15%
South Kent Coastal CCG	205,463	46,928	23%
Swale CCG	112,528	20,378	18%
Thanet CCG	139,772	31,919	23%
West Kent CCG	476,845	90,136	19%
Kent and Medway	1,801,211	342,785	19%
England	54,786,327	9,711,572	18%

Source: LSOA population estimates 2015, ONS

Figure 4 below shows that the highest densities of those aged 65 and over are located in the urban centres of Maidstone, Chatham, Gillingham and Margate. There are other areas of moderate to high density, particularly on the coast, but the majority of this rural study area has relatively low densities of people aged 65 and over.

Figure 7: Population aged 65 and over



Source: LSOA population estimates 2015, ONS

B.3 Disabled people

B.3.1 Stroke services

The need for stroke services among disabled people is likely to be higher as rates of atrial fibrillation (AF) - which causes irregular heartbeat and increases the risk of stroke fivefold - are much higher amongst this group.⁶³ The strokes suffered by people with AF are also more severe and are more likely to prove fatal.⁶⁴

Data for people with learning disabilities shows that strokes are around ten times more common in people with learning disabilities up to the age of 34, compared to those without a learning disability.⁶⁵ People with learning disabilities are also more likely to have factors associated with an increased risk of stroke, for example 81% of people with learning disabilities have high blood pressure, which is substantially more than the 64% of people without learning disabilities.⁶⁶ Obesity is also twice as common in people aged 18 to 35 with learning disabilities. High blood pressure and obesity are two leading causes of stroke.⁶⁷

B.3.1.1 Demographic profile strokes services in Kent and Medway: disabled people

Changes to stroke services are under consideration within the whole of Kent and Medway. The table below shows that the proportion of people who live in Kent and Medway who live with a limiting long-term illness (LLTI) (17%) is broadly in line with the national average (18%). South Kent Coastal and Thanet CCGs both have higher proportions (21% and 23% respectively) of people with a LLTI than the national figure.

Table 18: Disability

Study area	Total population 2011	LLTI	LLTI (%)
Ashford CCG	117,956	19,085	16%
Canterbury and Coastal CCG	198,275	36,138	18%
Dartford, Gravesham and Swanley CCG	245,999	40,043	16%
Medway CCG	263,925	43,354	16%
South Kent Coastal	201,924	42,440	21%
Swale	106,424	20,037	19%
Thanet CCG	134,186	31,348	23%
West Kent CCG	458,976	67,947	15%
Kent and Medway	1,727,665	300,392	17%
England	53,107,169	9,352,586	18%

Source: LSOA population estimates 2015, ONS

Figure 5 below shows that those living with an LLTI in Kent and Medway are predominantly located in urban centres, particularly around Gillingham, Margate and Gravesend. All of the hospitals are located within areas of moderate to high densities of people living with an LLTI.

⁶³ Stroke Association (2012): 'Stroke statistics'.

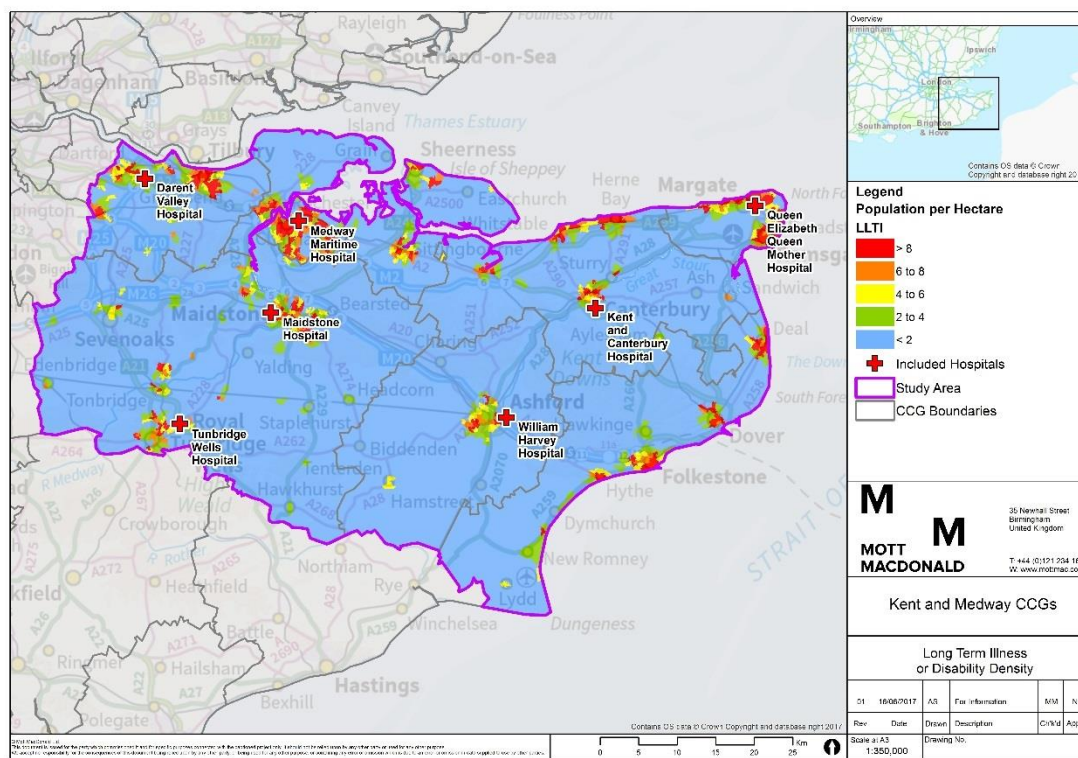
⁶⁴ Atrial Fibrillation (date unknown): 'Preventing a stroke crisis: why does AF matter?'.

⁶⁵ NHS (2016): 'Health and care of people with learning disabilities'.

⁶⁶ NHS (2016): 'Health and care of people with learning disabilities'.

⁶⁷ NHS choices (2015): 'Stroke'.

Figure 8: Population living with an LLTI



Source: LSOA population estimates 2015, ONS

B.4 Pregnancy and maternity

B.4.1 Stroke services

Pregnancy causes the levels of female hormones to rise, which causes changes in the blood vessels and the make-up of the blood. Pregnancy can also cause increased blood pressure.⁶⁸ These changes increase the risk of stroke; pregnant women are 13 times more likely to have a stroke than non-pregnant women of the same age.⁶⁹ In addition, there are several causes of stroke that are unique to pregnancy and the postpartum period, such as preeclampsia and eclampsia, amniotic fluid embolus, postpartum angiopathy and postpartum cardiomyopathy.⁷⁰

B.4.1.1 Demographic profile strokes services in Kent and Medway: pregnancy and maternity

Changes to stroke services are under consideration within the whole of Kent and Medway. To analyse levels of pregnancy and maternity in the study areas we have used data on the number of women aged 16-44 within the population. The table below shows that within Kent and Medway, the number of women aged 16 to 44 (18%) is broadly in line with the national average (19%). South Kent Coastal (16 has a proportion of women aged 16 to 44 that is two or more percentage points lower than the national average of 19%.

⁶⁸ Stroke Association (2012): 'Women and stroke'.

⁶⁹ Stroke Association (2012): 'Women and stroke'.

⁷⁰ Tate, J. and Bushnell, C. (2011): 'Pregnancy and stroke risk in women'.

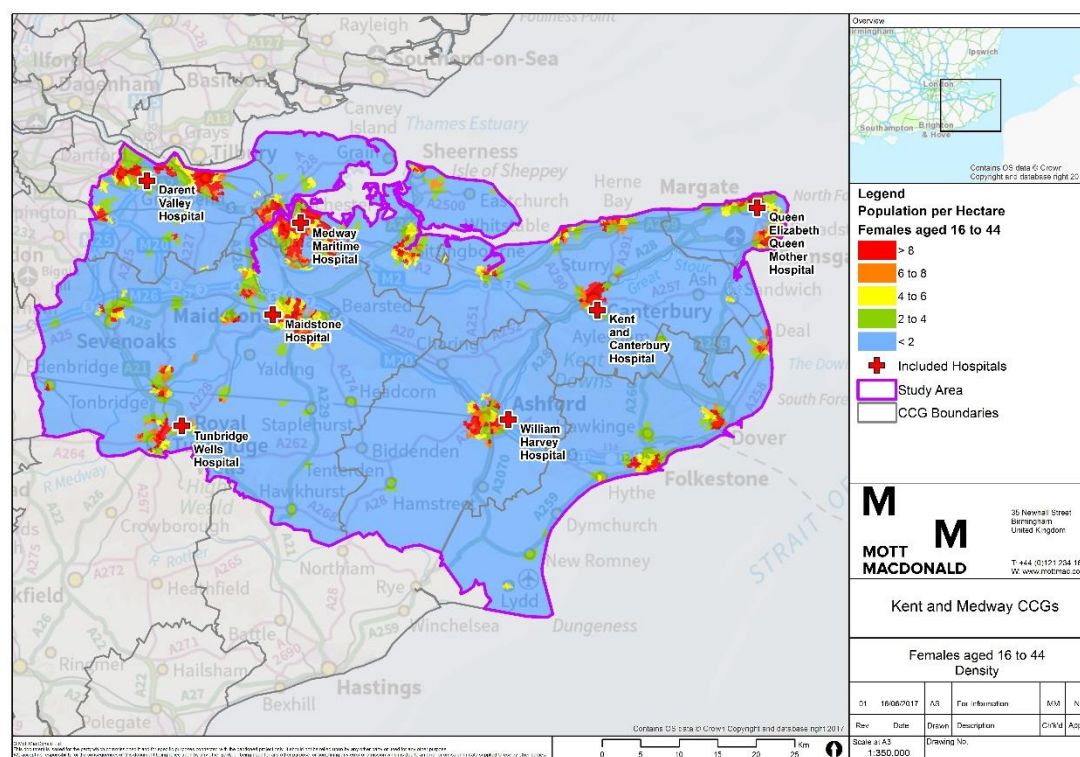
Table 19: Females aged 16-44

Study area	Total population	Females aged 16-44	Females aged 16-44 (%)
Ashford CCG	124,250	21,829	18%
Canterbury and Coastal CCG	207,653	39,700	19%
Dartford, Gravesham and Swanley CCG	258,208	48,605	19%
Medway CCG	276,492	53,756	19%
South Kent Coastal CCG	205,463	32,647	16%
Swale CCG	112,528	19,993	18%
Thanet CCG	139,772	23,187	17%
West Kent CCG	476,845	82,381	17%
Kent and Medway	1,801,211	322,098	18%
England	54,786,327	10,336,501	19%

Source: LSOA population estimates 2015, ONS

Figure 6 shows that the highest densities of females aged 16 to 44 are in the urban centres of Gillingham, Chatham, Canterbury, Ashford and Gravesend. The study area overall has relatively low densities of women aged 16 to 44.

Figure 9: Population of females aged 16-44



Source: LSOA population estimates 2015, ONS

B.5 Race and ethnicity

Evidence of disproportionate need has been identified for stroke services.

B.5.1 Stroke services

Black people are twice as likely to have a stroke than white people,⁷¹ because this group has a higher prevalence of factors that increase their risk of stroke, including high blood pressure, cholesterol and diabetes.⁷² Furthermore, some lifestyle factors are more common amongst some African and Caribbean people, than the rest of the UK population, such as carrying weight around their waist and smoking.⁷³

People from a South Asian background are more likely to have a stroke at a younger age than White people. They also have an increased prevalence of factors that increase their risk of stroke, including high blood pressure, cholesterol and diabetes.⁷⁴

B.5.1.1 Demographic profile strokes services in Kent and Medway: BAME

Changes to stroke services are under consideration within the whole of Kent and Medway. The table below shows the proportion of those from BAME backgrounds in Kent and Medway (11%) is significantly below the national average (20%) apart from in Dartford, Gravesham and Swanley CCG (18%).

Table 20: **BAME**

Study area	2011 total population	BAME	BAME (%)
Ashford CCG	117,956	12,458	11%
Canterbury and Coastal CCG	198,275	21,680	11%
Dartford, Gravesham and Swanley CCG	245,999	43,845	18%
Medway CCG	263,925	38,271	15%
South Kent Coastal CCG	201,924	16,774	8%
Swale CCG	106,424	7,893	7%
Thanet CCG	134,186	12,840	10%
West Kent CCG	458,976	44,692	10%
Kent and Medway	1,727,665	198,453	11%
England	53,107,169	10,733,220	20%

Source: LSOA population estimates 2015, ONS

Figure 7 below shows that the highest densities of those from a BAME background live within the urban centres of the study area, including Canterbury, Gravesend, Gillingham and Chatham. There are also other hotspots within the area with moderate densities of people from BAME groups, including in Ashford and Maidstone.

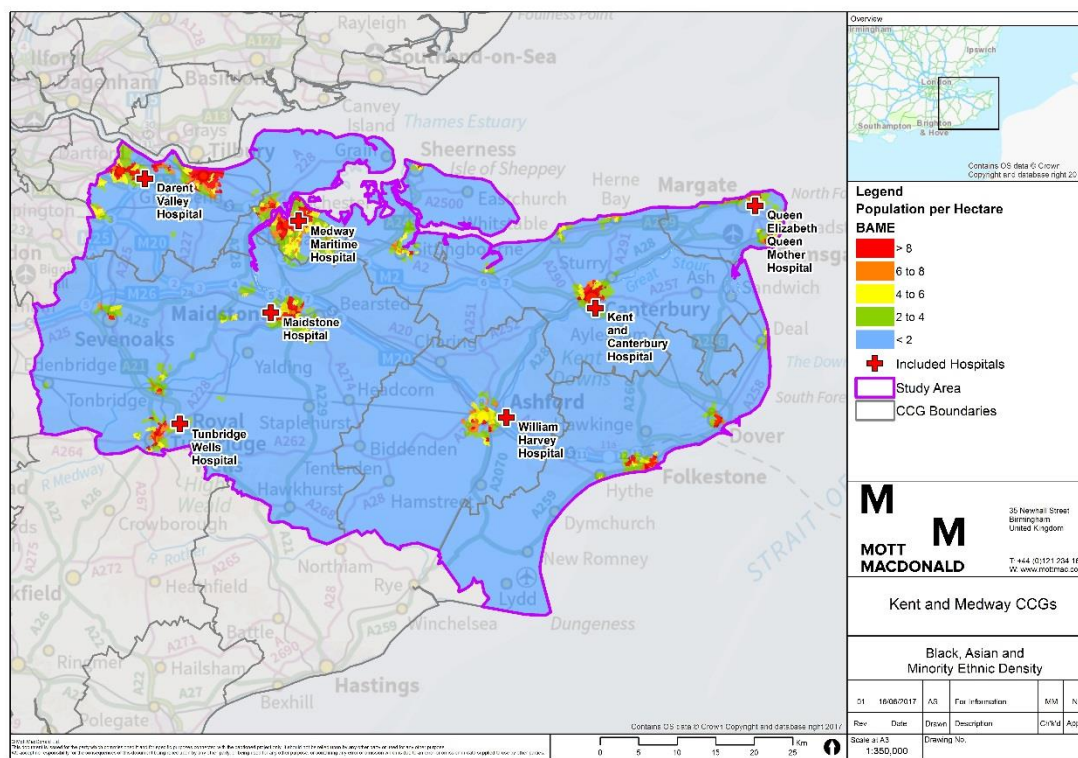
⁷¹ Stroke Association (2016): 'State of the Nation Stroke statistics'.

⁷² Stroke Association (2016): 'State of the Nation Stroke statistics'.

⁷³ Stroke Association (2016): 'Reducing your risk of stroke: information for black African and black Caribbean people'.

⁷⁴ Stroke association, (2016). 'State of the Nation Stroke statistics'

Figure 10: Population of people from BAME backgrounds



Source: LSOA population estimates 2015, ONS

B.6 Sex

Evidence of disproportionate need has been identified for stroke services,

B.6.1 Stroke services

Men face a 25% higher risk of having a stroke and at a younger age compared to women.⁷⁵ Men are also 1.5 times more likely to have AF; which increases the risk of having a stroke fivefold.⁷⁶

B.6.1.1 Demographic profile vascular and strokes services in Kent and Medway: sex

Changes to vascular and stroke services are under consideration within the whole of Kent and Medway. Table 35 below shows that the number of men and women living within Kent and Medway is the same as the national average (49% and 51% respectively).

⁷⁵ Royal College of Physicians Sentinel Stroke National Audit Programme (SSNAP) (2014): How good is stroke services? First SSNAP Annual Report prepared on behalf of the Intercollegiate Stroke Working Party December 2014.

⁷⁶ Stroke Association (2015): 'Stroke Statistics'.

Table 21: Sex

Study Area	Total population	Males	Males (%)	Females	Females (%)
Ashford CCG	124,250	60,403	49%	63,847	51%
Canterbury and Coastal CCG	207,653	101,422	49%	106,231	51%
Dartford, Gravesham and Swanley CCG	258,208	126,926	49%	131,282	51%
Medway CCG	276,492	137,320	50%	139,172	50%
South Kent Coastal CCG	205,463	101,181	49%	104,282	51%
Swale CCG	112,528	55,750	50%	56,778	50%
Thanet CCG	139,772	67,517	48%	72,255	52%
West Kent CCG	476,845	234,247	49%	242,598	51%
Kent and Medway	1,801,211	884,766	49%	916,445	51%
England	54,786,327	27,029,286	49%	27,757,041	51%

Source: LSOA population estimates 2015, ONS

B.7 Deprivation

Evidence of disproportionate need has been identified for stroke services.

B.7.1 Stroke services

People from the most economically deprived areas of the UK are around twice as likely to have a stroke and are three times more likely to die from a stroke than those from the least deprived areas.⁷⁷ This is due to the strong association between deprivation and stroke risk factors such as higher levels of obesity, physical inactivity, an unhealthy diet, smoking and poor blood pressure control.⁷⁸

The Indices of Deprivation (IMD) 2015, show that Thanet continued to rank as the most deprived local authority in Kent and Dover (located in the South Kent Coastal CCG) ranked as the fourth most deprived.⁷⁹ Local information also shows that the Thanet and South Kent Coastal CCGs have the highest prevalence of strokes and transient ischaemic attack (TIAs), as well as a high prevalence of hypertension and diabetes.⁸⁰

This suggests that there is a link between deprivation, prevalence of factors associated with an increased risk of stroke, and actually numbers of people having a stroke.

B.7.1.1 Demographic profile strokes services in Kent and Medway: Deprivation

The table below shows that the proportion of people residing in the most deprived quintile in Kent and Medway (14%) is below the national average (20%). There are two CCGs where levels of deprivation are higher than the national figure: Thanet (37%) and Swale (23%). Four CCGs have lower levels of people in the most deprived quintile – Ashford (11%), Canterbury and Coastal (10%), and West Kent (4%).

⁷⁷ Stroke association (2016): 'State of the Nation Stroke statistics'.

⁷⁸ Public Health England (2014): 'Adult obesity and type 2 diabetes'.

⁷⁹ Business Intelligence Statistical Bulletin (2015): 'The English Index of Multiple Deprivation (2015): headline findings for Kent'.

⁸⁰ Kent and Medway Public Health Observatory (2015): 'Kent and Medway: stroke profile'.

The least deprived quintile in Kent and Medway is in line with the national average (20%). Only West Kent CCG has a higher proportion of people (38%) living in the least deprived quintile than the national average. Three CCGs (South Kent Coastal (5%), Swale (7%), and Thanet (2%)) have significantly lower proportion of people living the least deprived quintile compared to the national average.

Table 22: Deprivation quintiles

CCG	Most deprived quintile	Second most deprived quintile	Third most deprived quintile	Fourth most deprived quintile	Least deprived quintile
Ashford CCG	14,076 (11%)	17,304 (14%)	44,199 (36%)	31,372 (25%)	17,299 (14%)
Canterbury & Coastal CCG	20,863 (10%)	37,389 (18%)	56,314 (27%)	58,473 (28%)	34,614 (17%)
Dartford, Gravesham and Swanley CCG	32,808 (13%)	61,628 (24%)	54,783 (21%)	56,715 (22%)	52,274 (20%)
Medway CCG	55,991 (20%)	81,990 (30%)	45,394 (16%)	46,312 (17%)	46,805 (17%)
South Kent Coastal CCG	36,841 (18%)	51,808 (25%)	57,586 (28%)	48,091 (23%)	11,137 (5%)
Swale CCG	26,274 (23%)	33,192 (29%)	27,440 (24%)	17,738 (16%)	7,884 (7%)
Thanet CCG	51,116 (37%)	31,789 (23%)	28,083 (20%)	25,704 (18%)	3,080 (2%)
West Kent CCG	17,756 (4%)	42,962 (9%)	97,210 (20%)	139,034 (29%)	179,883 (38%)
Kent and Medway	255,725 (14%)	358,062 (20%)	411,009 (23%)	423,439 (24%)	352,976 (20%)
England	11,087,624 (20%)	11,154,703 (20%)	11,021,188 (20%)	10,814,029 (20%)	10,708,783 (20%)

Source: IMD 2015

Figure 8 below shows the distribution of the deprivation quintiles across the study area. The most deprived areas are around the Isle of Sheppey, Chatham, Gravesend and an area to the northwest of Ashford. Whereas the least deprived areas are around Sevenoaks, areas surrounding Tonbridge and an area north of Canterbury.

Figure 11: Indices of Multiple Deprivation (IMD) – overall deprivation quantiles for Kent and Medway study area (8 CCGs)

