MOTT MACDONALD

Kent and Medway Sustainability and Transformation Plan

Integrated Impact Assessment: Pre-consultation report - Vascular services

17 January 2018

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Contents

Executive summary

The Kent and Medway Sustainability and Transformation Plan (STP)

The scope of the Kent and Medway STP service review is the eight clinical commissioning groups (CCGs)[1] across Kent and Medway. The 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 Review[2]); 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 vascular services.

In Kent and Medway, vascular services are currently provided at two acute hospitals; Kent and Canterbury Hospital (K&C) and Medway Maritime Hospital (MMH). The proposed change is to deliver vascular services for Kent and Medway at one single inpatient arterial unit. The options are as follows:

- Option A: An inpatient arterial unit at MMH
- Option B: An inpatient arterial unit at William Harvey Hospital (WHH)

Introduction to the integrated impact assessment

To support the proposals for changes to the way in which vascular services are delivered, Mott MacDonald was commissioned to undertake an independent integrated impact assessment (IIA). 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 aim of this IIA is to explore the potential positive and negative consequences of Kent and Medway's STP proposals and to identify associated enhancements and mitigation measures.

[1] 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.

[2] Department of Health (2015): 'Productivity in NHS hospitals'.

This IIA comprises 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 groups[3] and deprived communities are assessed) and a sustainability impact assessment.

Impact assessment findings

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 clinical outcomes for patients as teams will be undertaking a critical mass of inpatient vascular surgical procedures which is known to maintain clinical expertise.
- The creation on an arterial centre will enable sustainable on-call rotas to be achieved. Achieving appropriate workforce standards and on-call arrangements is associated with better outcomes for patients.
- Local non-arterial services are a crucial part of the vascular network. Creating a best practice network model which reflects this, has the potential to maximise positive outcomes and experiences for patients requiring these wider vascular services.
- The consolidation of inpatient vascular services to a single arterial centre will avoid the need to duplicate expensive resources.
- Proposed changes will create a more sustainable workforce for providing vascular services across Kent and Medway. This is in turn will support the recruitment and retention of current staff.

Negative impacts

- With inpatient vascular activity being consolidated into one arterial centre, there is a risk that capacity could become constrained within the service. This could, in turn, have a negative impact on the safety and quality of patient care.
- The co-location of inpatient vascular services with other emergency and specialist services was perceived by stakeholders to minimise hospital transfers which will be beneficial for patients. However, 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 vascular 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 be reduced for inpatient vascular surgical services, however the potential to improve outcomes is a balancing factor.
- Negative travel and access impacts may be experienced by patients requiring inpatient vascular surgery and their visitors, which may impact experiences of care and the recovery of patients.
- Potential transitional impacts could be experienced during the implementation of planned service changes.

[3] 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.

- In reducing the number of hospitals providing inpatient vascular surgery, there is less resilience in the hospital system.

Travel and access impacts

Positive impacts

- Option B does result in a small proportion of patients experiencing a decrease in travel time by BLA and private car in peak time compared to the baseline.

Negative impacts

- The proposed changes will mean that some patients will have to travel further to access a vascular service.
- The proposed changes will result in longer ambulance journeys for some patients, which will negatively impact the capacity of the ambulance service.
- Across both shortlisted options there is a reduction in the proportion of patients able to access vascular services by BLA within 30 minutes
- Option B has the highest proportion of patients experiencing an increase in travel time by BLA and private car in peak time.

Equality impacts

Positive impacts

- Patients groups identified as having a disproportionate need for vascular services[4] 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
  - Disabled people
  - Gender reassignment
  - Pregnancy and maternity
  - Race and ethnicity
  - People from deprived communities

Negative impacts

- Some patients and visitors will experience increased travel costs (due to longer journey times), which are likely to disproportionately impact upon those on lower incomes.
- Increased journey times or the need to make different and/or unfamiliar journeys to access care, are likely to affect some equality groups more than the general population.
- Option A would result in[5]:
  - patients aged 65 and over having less access than total patients to vascular services within 30 minutes by BLA and private car in peak time.
- Option B would result in:

[4] Evidence was reviewed to identify those groups with protected characteristics who may have a disproportionate need for vascular services. Disproportionate need for services = having a greater than average need for a service i.e. a need which is over and above the level of need that is typical of the general population.

[5] For the purposes of the executive summary we have only included patient activity data analysis for those aged 65 or older and those from a BAME background. In chapter 5 analysis for both patient activity data and population data has been conducted.

- patients from BAME backgrounds having less access than total patients to vascular services within 30 minutes by BLA.
- patients from BAME backgrounds being disproportionately impacted by the percentage point change from the baseline private car in peak time
- those from deprived backgrounds having less access than the population overall to vascular services within 30 minutes by BLA.
- those from deprived backgrounds being disproportionately impacted by the percentage point change from the baseline BLA and private car in peak time

Sustainability impacts

Positive impacts

Option B is expected to reduce emissions by 1.16 tonnes of carbon dioxide equivalent (tCO_2e) compared to the baseline.

Negative impacts

Option A is expected to increase emissions by 0.38 tCO_2e compared to the baseline.

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	• Monitor outcome information to ensure standards and outcomes of care are maintained. • Communicate changes to the public to reduce emergency presentations at a non-arterial site. • Continue to update STP activity modelling to ensure that sufficient capacity can be provided, including capacity of arterial services at neighbouring hospitals. • Develop a workforce plan and undertake engagement to further understand the consequences of the potential impacts and recruitment. • Continue to review the co-dependencies matrix to ensure that essential links are maintained. • Ensure that appropriate protocols are in place should an unforeseen incident restrict the use of the arterial centre infrastructure.
Travel and access	• Once 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. • **Review the current travel plans** for preferred hospital to account for any increase in patients and visitors. • **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	• Encourage flexible appointment times to allow patients to make journeys conveniently and during off-peak hours. • Maximise public transport accessibility of specialist centres through engagement with local transport providers. • Ensure effective communication of the future model of care to the local population and to groups that are more likely to require these services, so they understand how to access and use services and are aware of the potential increased journey times.

Impact assessment area	Summary of mitigations and enhancements
Sustainability	• No additional measures to enhance or mitigate sustainability impacts have been identified.

1 Scope and approach

1.1 Kent and Medway Sustainability and Transformation Plan

The CCGs 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 footprint[6]. 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 focuses on: productivity improvements (drawing on lessons from the Carter Review[7]); 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, 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 any changes 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.

IIAs are a key component of policy-making and help to 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, impact assessments 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]

[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.

[8] HM Government (2011) 'Impact Assessment Overview'

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

The aim is to explore the positive and negative consequences of different proposals 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 of proposed policies or projects.[10] It is important to note that the purpose of impact assessments is not to determine the decision about which option would be selected; rather they act to assist decision-makers by providing better information on how best to 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 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

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

- Understand the overall demography and the protected characteristic groups of the different CCG populations affected.
- Undertake a **HIA**[11] to identify the impact on patient safety, effectiveness of care and patient experience.
- Undertake an **EqIA**. The EqIA is critical in supporting the CCGs in meeting their obligations under the Equality Act 2010[12] and aims to:
  - 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.
  - Understand impacts on protected characteristic groups[13] across the CCG populations through a programme of stakeholder engagement.
  - Where impacts are disproportionate for certain groups, consider opportunities for mitigating negative impacts and enhancing positive impacts.
- Undertake a **travel and access impact assessment** to:
  - Consider increases and decreases in journey times.
  - Consider travel impacts for protected characteristic groups.
- Undertake a **sustainability impact assessment** to identify any sustainability impacts by reporting on the carbon footprint change.

[10] Herriott, N, and Williams, C (2010) 'Health Impact Assessment of Government Policy' .

[11] Please note the HIA will incorporate a quality impact assessment, as defined in the service specification of works.

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

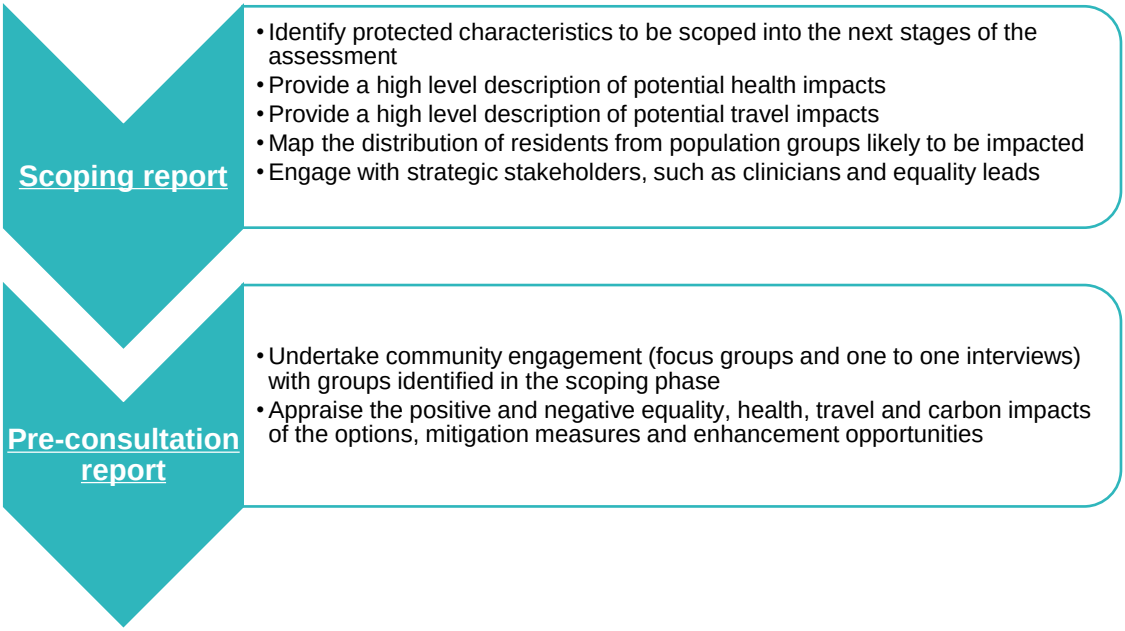
[13] As defined in Chapter 4.

1.5 The IIA approach

Phases of the IIA

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

Figure 1: Stages of the IIA



Source: Mott MacDonald

1.6 Purpose of the scoping report

The first output of the IIA was a combined scoping report covering all of the service areas included in the wave one review; it did not represent a full impact assessment and was 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 need[14] 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 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 will be three separate standalone reports covering: stroke services, vascular services and emergency services (including elective orthopaedics). **This report will be focussed on vascular services only.**

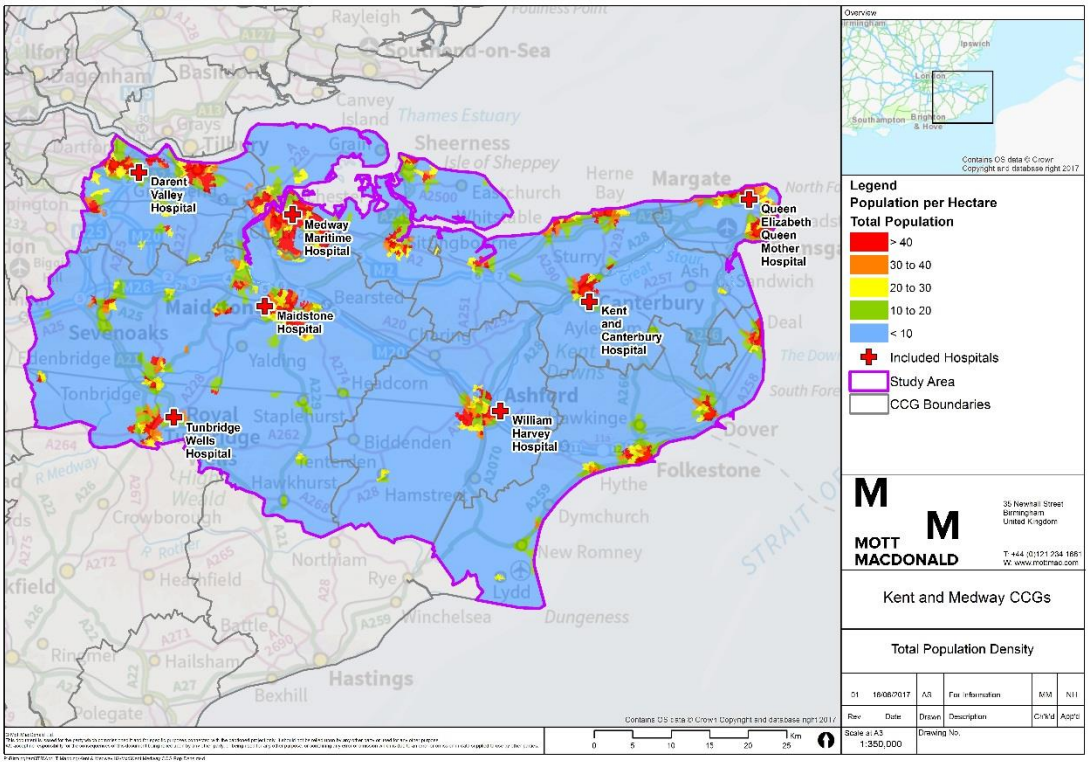
[14] The term 'disproportionate need' is used to identify a need for a service or treatment that is above the need of the general population.

1.8 The study area

The study area for this IIA consists of eight CCGs[15] across Kent and Medway. This is shown in Figure 2 along with all of the acute hospitals in the area and the population density. Two of the acute hospitals currently provide vascular services, which are:

- the Medway Maritime Hospital; and
- the Kent and Canterbury Hospital.

Figure 2: Study area and population density



Source: Lower layer super output area (LSOA) population estimates 2015, Office for National Statistics (ONS)

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.
- The following engagement has been undertaken to support this IIA:
  - Ten interviews were with clinicians.
  - Eight interviews with equality leads and service providers.

[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.

- Three interviews with community groups. *It should be noted that 68 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.*
- Two focus groups across Kent and Medway with groups considered to have a disproportionate need for vascular services.[16]

Table 1: Focus groups

Location	Composition	CCG area
Dartford and Gravesham	People from a BAME background	NHS Dartford, Gravesham and Swanley CCG
Sittingbourne	People from the most deprived quintiles in the local area	NHS Swale 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.
- Patient analysis has been focused on patients who reside within the Kent and Medway CCG boundary. This refers to the number of patients who have accessed services within the Kent and Medway CCG boundary and who are resident within the Kent and Medway CCG boundary.
- The proposed changes to NHS services have the potential to change the level of GHG emissions in three principal areas: travel, building energy use and procurement. At this stage, it is unclear how the changes will alter the energy consumption of NHS buildings, and how consumption of consumables (procurement) will be affected.
- 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

[16] Please note that the selection of participant groups for the focus groups was conducted at the direction of the STP.

2 Kent and Medway Sustainability and Transformation Plan

The overarching 'case for change' developed by the Kent and Medway STP[17] 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.[18] This growth is forecast to be distributed unevenly across Kent and Medway, with most housing growth in Medway, Dartford and Maidstone.
- **Ageing 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 65.[19] 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 areas[20]. 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 condition,[21] 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).[22] 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 resident[23].
- **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.[24]

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 are those identified in 'wave one' which are stroke, vascular, emergency care and elective orthopaedics. The table overleaf sets out the current provision for vascular services and the proposed changes.

[17] Comprised of Kent and Medway CCGs, Kent and Medway NHS Trusts, Kent and Medway local authorities
[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] Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'
[22] House of Commons Health Committee (2015): 'Managing the care of people with long-term conditions'.
[23] Kent and Medway NHS (2016): 'Transforming health and social care in Kent and Medway: Sustainability and Transformation Plan'
[24] Ibid

Table 2: Current provision for vascular services and the proposed changes

Service area	What are the issues?	Current provision	Proposed service model
Vascular	• Insufficient patient volumes to sustain expertise (800,000 minimum population required). • Core index procedure volumes are borderline/below recommended figure. • Insufficient workforce and unsustainable consultant rotas. • Lack of a vascular network across Kent and Medway. • Variable outcome performance across Kent and Medway.	• In Kent and Medway, vascular services care currently provided at two acute hospitals – K&C and MMH. • Inpatient surgery provided on two sites in Kent and Medway; circa 26% of patients who need surgery attend Guy's and St Thomas' NHS Foundation Trust (GSTTH) through choice. • The units provide all care: diagnostics, inpatient surgery, day surgery and outpatient care. • The units operate standalone services but also provide outpatient services in local communities. • The services are consultant led with specialist nurse support and work in partnership with interventional radiology. • East Kent Hospitals University NHS Foundation Trust (EKHUFT) provides the national Abdominal Aneurysm screening programme.	• Consolidated inpatient services in one arterial centre supported by local services in non-arterial centres; these include diagnostics, day surgery, and outpatient care. • Multi-disciplinary team patient care operates across the network and key relationships are in place with other associated disease networks and pathways i.e. diabetes. • As vascular services will be considered onto one site, the remaining site previously providing inpatient vascular services will cease to do so.

Source: Kent and Medway SEC Clinical Senate Submission

A long list of options was initially developed, which was eventually reduced to a short list of proposed service models using hurdle criteria.

Table 3: Short list proposed service models

Scenario	Proposal
Current	• In Kent and Medway, vascular services care currently provided at two acute hospitals – K&C and MMH.
Option A	• An inpatient arterial unit at MMH.
Option B	• An inpatient arterial unit at WHH.

Source: Kent and Medway SEC Clinical Senate Submission

2.1 The case for change

The case for change, developed by NHS England, states that the expected benefits for patients in Kent and Medway are:

- Continued improvement of the clinical outcomes, in particular lower limb amputation, working towards achieving the best rather than average performance;
- Development of skills and expertise so that patients are better able to manage their condition and recovery;
- A transparent and effective vascular network, that benefits from shared clinical expertise and clear effective pathways of care;
- Increased access to outpatient clinics in spoke units;
- Improved sustainability of the existing vascular services;
- Clear lines of accountability and clinical governance across the network that puts clinicians and patients at the heart of performance monitoring and service development;
- A sustainable specialist workforce; consultant surgeons, interventional radiology consultants and specialist nurses and the wider multi-disciplinary team;
- Standardised methods and promotion of best practice across the clinical teams;
- A more productive and efficient service (minimisation of duplication and waste);
- Improved opportunities for training, research and innovation;
- Reduced length of stay for patients and more effective pathway links with community providers to support timely repatriation of patients following surgery.[25]

[25] NHS England (2017) 'Vascular Surgery Review for Kent and Medway Case for Change'

3 Health impacts

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

Unless otherwise stated the impacts below will be realised regardless of the option chosen.

3.1 Health outcomes

3.1.1 Improve clinical outcomes

The proposed changes will improve clinical outcomes for patients as teams will be undertaking a critical mass of inpatient vascular surgical procedures which is known to maintain clinical expertise.

The Vascular Society of Great Britain and Ireland (VSGBI) recommends the creation of vascular service networks, to enable the lowest possible morbidity and mortality rates amongst patients.[26] The recommendations describe how two or more hospitals can collaborate to improve patient care, with one single hospital providing both elective and emergency arterial vascular surgical care (which may or may not be aligned with a major trauma centre). It is also recommended that consultants should be timetabled to provide outpatient and specialist care within the non-arterial hospitals.

Concentrating arterial surgery and more complex endovascular interventions in an arterial centre has many benefits, with evidence demonstrating that clinical outcomes are improved with increasing numbers of procedures (i.e. achieving critical mass). Outcomes following high-risk vascular interventions are improved when delivered by teams who have high case volumes, because regular team exposure to vascular procedures develops and maintains expertise in managing the condition and managing a breadth of patients.[27] The consolidation of inpatient and surgical vascular services will therefore enable a critical mass of patients to be achieved (for an 800,000-minimum population).

The VSGBI reported outcomes in 2012 as part of its quality improvement programme, and its results corroborated the need to move towards higher volume units. This research showed that comparing the low volume units (10 cases per year) through to the high-volume units (150 cases per year) highlighted a consistent reduction in mortality from 4.4% to 1.9%.[28]

[26] VSGBI "The Provision of Services for Patients with Vascular Disease 2012"

[27] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015

[28] VSGBI. Outcomes after elective repair of Infrarenal Aortic Aneurysms. [Society report]. 2012

3.1.2 Achieving appropriate workforce standards

The creation on an arterial centre will enable sustainable on-call rotas to be realised. Achieving appropriate workforce standards and on-call arrangements is associated with better outcomes for patients.

Patients with acute vascular conditions should be treated by a specialist vascular team of surgeons, radiologists, and anaesthetists to achieve superior clinical outcomes. These outcomes include lower mortality rates after abdominal aortic aneurysm (AAA) repair, lower amputation rates for critical lower limb ischaemia and lower stroke risks after carotid endarterectomy.[29] It is recognised that when clinical networks are set up to allow for arterial intervention on multiple sites, it can be difficult for on-call vascular surgeons and interventionalists to provide adequate care to all patients at all times of the day. This is especially true when several patients develop complications on different sites within the network at the same time, resulting in stretching of the expert cover arrangements. [30]

The consolidation of resources into a single arterial centre will therefore allow the service to better meet national guidelines, such as those around workforce standards, and will be able to create more sustainable on-call rota arrangements. Effective multi-professional training will be facilitated and this, combined with having the appropriate staffing and skill-mix, will benefit patient safety and have a positive impact on clinical outcomes. Clinical stakeholders also reflected this view.

Community engagement further highlighted that the centralisation of inpatient vascular surgery would enable confidence for patients and families. They would feel reassured that they are receiving the best possible care through the creation of a specialist vascular arterial centre and the concentration of clinical expertise.

3.1.3 Maximise positive outcomes and experiences

Local non-arterial services are a crucial part of the vascular network. Creating a best practice network model which reflects this has the potential to maximise positive outcomes and experiences for patients requiring these wider vascular services.

Most vascular patients do not require major vascular intervention and will therefore continue to receive care at the non-arterial network hospitals, providing local assessment, diagnosis, and less complex interventions. The VSGBI highlights that this local vascular service is crucial to the success of the network. A lack of well-supported non-arterial centres can lead to depleted local care, patients travelling long distances, and arterial centres becoming overwhelmed and unable to deliver safe, high quality care.[31]

Local services will therefore need to achieve the requirements outlined by the VSGBI for the non-arterial centre within the vascular network, including standards around vascular consultant presence; emergency cover; laboratory and diagnostic support; and clear written arrangements for the transfer of emergencies out of hours. This includes a recommendation that all vascular surgeons and interventionalists working in high volume services should be available to provide high quality care to those hospitals without arterial services who contribute to their network.[32].

The proposal to develop a Kent and Medway best practice network model where diagnostics, day surgery, and outpatient care are available locally in non-arterial centres will support

[29] VSGBI "The Provision of Services for Patients with Vascular Disease 2012"
[30] VSGBI "The Provision of Services for Patients with Vascular Disease 2012"
[31] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015
[32] VSGBI "The Provision of Services for Patients with Vascular Disease 2012"

developments within the arterial centre, promote improved outcomes for patients and will ensure that they are treated in the most appropriate setting. This reflects national guidance that the network will function best for the patient when travel to the arterial centre is only for specific arterial and complex endovascular interventions. The pre-procedure and post-procedure care related to these interventions should be delivered whenever possible at the local non-arterial centre.[33] Repatriation to the non-arterial centre for recovery and rehabilitation locally is therefore a key part of the care pathway. Outpatient clinics will be one of the main components of the service at local sites, enabling patients to be seen closer to home. One stop clinics will also be more convenient for patients, improving their experience of care (as well as reducing demand for follow-up appointments).

The development of the network will greater promote improvements in patient safety through the development and implementation of robust clinical governance structures and processes across the network providers.

The proposal to develop a Kent and Medway best practice network model includes a regular multi-disciplinary team meeting (to occur at least once a week) to manage the care of patients. Alongside these meetings there can be a more coherent approach to audit, education and training; complying with the best practices outlined by the national service specification from NHS England. This will ensure the network arrangements are documented and have clearly articulated governance arrangements.[34]

Reduced length of stay for patients and more effective pathway links with community providers to support timely repatriation of patients following surgery

The proposal to support a combined centre with higher number of patients/case volume will allow for the safe introduction of specific infrastructure, such as hybrid operating theatres that are equipped with advanced medical imaging devices (CT, MRI). The introduction of minimally invasive endovascular techniques (i.e. the use of interventional radiology to treat arterial disease thereby avoiding open surgery and reducing recovery time) have reduced hospital length of stay.[35]

3.1.4 Patient choice

Patient choice will reduce for inpatient vascular surgical services however, the potential to improve outcomes is a balancing factor.

Most vascular patients do not require major vascular intervention and will therefore continue to have choice in receiving this care locally at the non-arterial network hospitals.

It is recognised nationally that the way in which health services are configured should support patient choice as a principle, as in the NHS constitution. However, up to 50% of vascular patients present as emergency or urgent referrals[36] and are likely to be conveyed by ambulance to the centralised arterial centre, making the concept of patient choice less relevant.

The choice of hospital service is instead mainly pertinent to those admissions which are planned and booked. Whilst the proposed changes will reduce choice of hospital providing elective inpatient vascular surgery, there is potential for improved health outcomes for patients. There is

[33] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015

[34] NHS England (unknown) Service specifications Specialised Vascular Services (Adults)

[35] The Lancet (2005) Endovascular aneurysm repair versus open repair in patients with abdominal aortic aneurysm (EVAR trial 1): randomised controlled trial

[36] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015

therefore a necessary balance between improving the service through centralisation and establishing a network, versus having multiple hospitals that facilitate patient choice.

Participants in the community engagement felt that the choice of vascular services would be limited, and raised concern that patients will not be able to get a second opinion because of the proposed consolidation. However, they could also recognise the balancing benefits.

3.2 Service impacts

3.2.1 Use of resources

The consolidation of inpatient vascular services to a single arterial centre will avoid the need to duplicate expensive resources.

Through a reduction in the number of inpatient arterial vascular centres, there are likely to be economic benefits gained by avoiding the replication of expensive equipment, technology and staff. This is highlighted by both clinical stakeholders and national evidence. The latter also highlights that centralisation can maximise the use of expensive equipment and facilitate the introduction of new technology.[37]

Improved opportunities for training, research and innovation

Evidence has shown vascular services benefit from organisation into larger centres. This is supported by evidence that high volume centres are more likely to adopt new technologies which foster innovation and improvements in the delivery of healthcare.[38]

Such centres are most likely to be able to attract the highest calibre workforce better able to share, train and disseminate knowledge to other practitioners. Training boards look to centres of excellence to be involved in training the future generation of vascular clinicians. This not only benefits the service but invests in the future provision of excellence in patient care. Suitably sized centres with the appropriate population can also offer opportunities for quality audit and research.[39]

3.2.2 Capacity of services

With inpatient vascular activity being consolidated into one arterial centre, there is a risk that capacity could become constrained within the service. This could, in turn, have a negative impact on the safety and quality of patient care.

Consolidating inpatient vascular services onto one site will inevitably result in an increased volume of activity at the arterial centre, as well as resulting in increased demand for inter-dependent or clinical support services. Unless the capacity of these services is appropriately scoped and resourced, there could be a potentially negative effect on the responsiveness on vascular services and other acute services provided on site. Activity modelling has been undertaken by the STP Programme which should look to mitigate against this potential negative impact. This potential impact was also highlighted by clinical stakeholders and within national evidence.[40]

[37] VSGBI "The Provision of Services for Patients with Vascular Disease 2012"

[38] Dimick, J. B. and G. R. Upchurch, Jr. (2008). "Endovascular technology, hospital volume, and mortality with abdominal aortic aneurysm surgery.

[39] NHS England (2015) Vascular Surgery Review for Kent and Medway

[40] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015

3.2.3 Clinical inter-dependencies

The co-location of inpatient vascular services with other emergency and specialist services was perceived by stakeholders to minimise hospital transfers which will be beneficial for patients. However, if links between clinically 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 creation of an arterial centre which is located on the same site as other emergency and/or specialist services (option A) or a major emergency centre (option B), was perceived by stakeholders to minimise hospital transfers which will be beneficial for patients.

The South-East Coast Clinical Senate has thoroughly documented the co-dependencies between vascular services, and other acute services.[41] National guidelines from the Vascular Society also highlight links between vascular services, cardiac surgery, cardiology, care of the elderly medicine, clinical laboratory services, dermatology, diabetology, plastic surgery, renal services, and stroke medicine. [42] As part of the wider STP programme, it is important that these inter-dependencies are appropriately maintained to ensure that all hospital services remain safe and do not negatively impact patient care.

For example, it is recognised that neurologists or other physicians who manage the stroke service or rapid access TIA clinics should collaborate closely with the vascular service. The recommended service configuration is for such acute stroke units (providing 24/7 thrombolysis) to be co-located at the arterial centre. [43] Whilst three of the five shortlisted stroke options are aligned to both sites proposed for the arterial centre (MMH and WHH), under stroke options B and E, MHH will not provide HASU/ASU services. Therefore, if this stroke option was to be selected alongside vascular option A, this recommended clinical inter-dependency would not be maintained on the same site.

3.2.4 Resilience of services

In reducing the number of hospitals providing inpatient vascular surgery, there is less resilience in the hospital system.

If there was an unanticipated large number of patients requiring specialist vascular services, or clinical support services such as level 3 critical care support, the creation of a single arterial centre will have a negative impact in terms of the resilience of services to cope with potential unanticipated peaks in demand. This was highlighted by participants in the community engagement who felt that incidents such as IT failure or an MRSA outbreak may test service resilience.

3.2.5 Transitional impacts around implementation

Potential transitional impacts could be experienced during the implementation of planned service changes.

Community engagement participants felt that there may be confusion for members of the community in where to access services as part of the implementation of these proposals. For example, if a patient presents directly at a non-arterial centre but requires emergency inpatient surgery, awaiting a transfer to the arterial centre could result in negative clinical outcomes due

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

[42] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015

to delayed access to care. However, in reality many of these emergency patients are likely to utilise an ambulance to access services and will be conveyed directly to the arterial centre.

3.3 Workforce impacts

3.3.1 Workforce recruitment and retention

Proposed changes will create a more sustainable workforce for providing vascular services across Kent and Medway. This in turn will support the recruitment and retention of current staff.

It is recommended that a vascular surgeon needs to be supported by a combination of junior doctors, nurse specialists, surgical care practitioners and specialty registrars. This is another driver for centralising arterial services, as providing this full team of staff out of hours can be a challenge.[44] The consolidation of workforce onto one site will allow more appropriate rotas to be developed, which will likely improve the wellbeing of consultant staff, as well as supporting their retention.

Overall, the consolidation of workforce resources will enable the vascular services to establish appropriate rota patterns and a more sustainable working model for staff. National evidence also highlights that within centralised vascular units, opportunities for high quality multidisciplinary working, clinical research, multi-professional training, and postgraduate training should all be enhanced. This will begin to address the national issue of insufficient numbers of training opportunities which is perpetuated when the training opportunities are distributed around several providers performing small numbers of cases in a regional network.[45]

Clinical stakeholders have considered that these factors are likely to support the retention of current staff, as well as the recruitment of staff in the future. 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 vascular network, which offers a variety of specialist roles and training opportunities.

Community engagement and early local listening events corroborated that the creation of more coordinated and resilient teams, staff satisfaction, retention and recruitment will be positively impacted. This is due to a greater ability to develop roles and responsibilities, and increased availability of specialisation and training opportunities. [46] [47]

3.3.2 Workforce turnover

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

Clinical and community engagement stakeholders have identified that some negative workforce impacts may be created as part of the proposed reconfiguration. The proposed change is likely to require staff to change or rearrange their place of employment:

- Under option A, staff currently providing inpatient vascular surgery would be required to move from K&C to MMH.

[44] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015
[45] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015
[46] East Kent Delivery Board (March 2017) East Kent Listening Event: Feedback Report
[47] West Kent CCG (April 2017) West Kent Health and Care Listening Events: Feedback Reports

- Under option B, staff currently providing inpatient vascular surgery at both MMH and K&C would be required to move to WHH. This could potentially have a worse negative workforce impact than under option A.

This change in permanent place of employment may result in some staff having to travel further to their place of work, which is likely to have several impacts, for example: the personal costs of travel, the inconvenience associated with additional journey times and the implications on other personal commitments such as childcare.

Moreover, it was viewed that some of these staff (such as medical secretaries or general nurses) can 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, particularly during its transfer to a new site.

Some staff may also consider that they are not able or willing to change their working arrangements and will therefore not be retained as part of the implementation of proposals. 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 may be experienced when the proposals are implemented. The chapter presents impacts for BLA and private car during peak time for journeys made by patients accessing the services assessed. Quantitative and qualitative journey time analysis is provided for each of the shortlisted proposals.

Detailed analysis for each equality group is included within chapter 5 and further details (including mapping of the journey times from all areas across the study area) can be found in appendix C.

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 the arterial vascular centre, which may negatively impact the capacity of the ambulance service.

Up to 50% of vascular patients typically present as emergency or urgent referrals and a large proportion of these are likely to require conveyance by ambulance to the arterial site. The ambulance service will therefore 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.

National guidance also recognises this impact noting that consideration should be given to developing local protocols for the direct transfer of vascular emergencies, particularly ruptured AAA, to the arterial centre bypassing non-arterial sites. If a vascular emergency presents at a non-arterial centre there should be very clear guidelines to facilitate prompt ambulance transfer to the arterial centre when required.[48]

Stakeholders and the focus groups with members of protected characteristics have also highlighted this potential impact, noting that additional resources may be required to minimise the impact on the wider ambulance service and its response times.

4.1.2 Travel impacts

4.1.3 Travel impacts for patients

The proposed changes will mean that some patients will have to travel further to access inpatient vascular surgery, which may further impact their experiences of care.

Clinical stakeholders explained that patients may have to travel further to access inpatient vascular surgery services depending on their place of residence. It is likely that some patients will experience negative travel impacts in terms of longer journey times if travelling for elective surgery, or if being conveyed by ambulance to the single arterial centre.

[48] Vascular Society (2015) The Provision of Services for Patients with Vascular Disease 2015

4.1.4 Travel impacts for family, carers, and visitors

For the period that care is provided at the arterial unit, negative travel and access impacts may also be experienced by the visitors and carers of patients.

It is recognised that some family, carers, and other visitors may have to travel further to visit patients who have undergone inpatient vascular surgery at the arterial site (and before the patient is repatriated to a more local setting for rehabilitation if this is required). This may affect the frequency with which they are able to pay visits which impact on the patient's care experience.

4.2 Methodology for quantitative journey time analysis

4.2.1 Patient activity data

Travel and access analysis has been undertaken on the basis of available current patient activity for vascular services. Patient activity data[49], has been used to provide as accurate a picture as possible about the potential impacts for patient journey times and to understand the potential volume of patients which would require longer trips. It is understood that activity patterns will not be exactly the same in future, but it provides the best proxy available to understand the impacts.

The North East London Commissioning Support Unit (NEL CSU) have provided patient data for Kent and Medway covering vascular services being accessed at MMH and K&C.

Patient data includes information on the sex, age and ethnicity of the patient; complete data on disability status, pregnancy and maternity and deprivation is not available and therefore travel time impacts for these patient groups have not been identified. These impacts have been discussed separately within the equality impacts section which uses robust socio-demographic data for the Kent and Medway study area. Patient data is based upon non-elective patients accessing vascular services at these hospital sites.

4.2.2 Travel time data and analysis

Travel time data has been provided by Carnall Farrar[50] and as per their approach 'off peak car' has been used to represent travel times by BLA. Off peak car refers to travel times by private car between 10:00 and 16:00 Monday to Friday and peak car refers to travel times by private car between 07:00 and 09:00 and 16:00 and 19:00 Monday to Friday. The baseline travel time has been calculated based upon the patient data and calculates the travel time from patients' residential Lower Layer Super Output Area (LSOA) to the hospital based upon the service site they are currently using. Firstly, the future travel time for these patients under each option have been calculated by understanding whether the hospital they are currently accessing is still offering vascular services under each option. If this hospital is still within scope it is assumed that the patient would still attend this hospital site and thus the travel time will not change. If the hospital is no longer offering vascular services under each option then it is assumed that the patient will travel to the nearest hospital site offering vascular services.

[49] Data availability has permitted collation and analysis of activity for 2015/16 for patients who accessed services within Kent and Medway and who are also resident in the study area.

[50] Carnall Farrer are a separate consultancy employed by the programme board to assist with the STP

In some instances, where patients were not currently travelling to the nearest hospital site. As such, analysis showed that there would be some travel time savings under option B, as patients living near to the WHH will in the future be able to access care at WHH rather than travel to a hospital further away (as they do currently)[51].

The report has utilised thresholds of 30 and 60 minutes to report on the travel impacts.

Please note that the analysis below is based on patient activity data. For comparability with the population based travel and access undertaken by Carnall Farrar, we have conducted similar analysis, which is shown in Appendix D.

4.3 Quantitative journey time impacts by BLA

Based on current vascular patient activity data, 79 per cent of patients can access vascular services by BLA within 30 minutes and 100 per cent can do so within 60 minutes. Across both options there is a reduction in the proportion of patients that an access vascular services by BLA within 30 minutes. Option B sees the largest reduction, with only 23 per cent of patients able to access vascular services within 30 minutes by BLA, whereas option A reduces to 61 per cent.

Accessibility within 60 minutes by BLA is in line with the baseline as almost all patients can access vascular services within this timeframe for both options. This is shown in table 4 below.

Table 4: BLA journey times for the patient population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Baseline (current service configuration)	16%	41%	79%	96%	99%	100%
Option A	14%	35%	61%	76%	84%	98%
Option B	3%	6%	23%	74%	92%	100%

Source: Carnall Farrar travel time data

Table 5: Percentage point change from baseline for BLA journey times for the patient population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Option A	-2pp	-6pp	-18pp	-20pp	-15pp	-2pp
Option B	-13pp	-35pp	-56pp	-22pp	-7pp	No change

Source: Carnall Farrar travel time data

In summary, BLA journey time analysis concludes that:

- Option A has the least negative impact upon accessibility as 61 per cent of patients can still access vascular services by BLA within 30 minutes.
- Option B has the most negative impact upon accessibility within 30 minutes with only 23 per cent of patients able to access services within 30 minutes, which is a reduction of 56 percentage points. Option B also has the largest reduction in accessibility within 10 minutes reducing from 16 per cent in the baseline to 3 per cent of patients.

[51] Please note that some patients under option A would also experience travel time savings however these have been coded as experiencing no change in travel time as the Medway Maritime site is available in the baseline, and so positive travel time savings cannot be attributed to this option.

Table 6 provides a breakdown of patients experiencing reductions, no change and an increase in travel time accessibility by BLA under each option. This further reinforces the findings of the previous analysis and identifies that option B has the highest proportion of patients experiencing an increase in travel time by BLA, with 87 per cent experiencing an increase compared to 33 per cent in option A, largely due to the removal of both sites currently offering vascular services in the baseline (K&C and MMH).

However, it should be noted that option B would also result in some patients experiencing a reduction in travel times for patients (13 per cent)[52]. This is due to the addition of WHH as a site offering vascular services which is not available in the baseline scenario.

Table 6: Patient experiencing a change in journey time by BLA by option

	No Change	Increase	Reduction	No Change %	Increase %	Reduction %
Option A	2,232	1,108	-	67%	33%	0%
Option B	-	2,922	418	0%	87%	13%

Source: Carnall Farrar travel-time data

4.4 Quantitative journey time impacts by private car

Based on current vascular patient activity data, 77 per cent of vascular patients are able to access vascular services by private car in peak time within 30 minutes and 100 per cent within 60 minutes. Across both proposed options there would be a reduction in the proportion of patients able to access vascular services within 30 minutes by car in peak time. Option B would see the largest reduction, with only 22 per cent of patients within 30 minutes of vascular services by private car at peak time. Option A reduces to 60 per cent.

Accessibility within 60 minutes by private car in peak time is in line with the baseline as almost all patients can access vascular services within this timeframe under each option. This is shown in Table 7 below.

Table 7: Private car in peak time journey times for the patient population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Baseline (current service configuration)	16%	39%	77%	95%	99%	100%
Option A	14%	34%	60%	75%	84%	98%
Option B	3%	6%	22%	66%	90%	100%

Source: Carnall Farrar travel time data

[52] All reductions in travel times for patients in option A are grouped as 'no change'. These will occur where patients are not currently travelling to their nearest vascular site (Medway Maritime), and so under option A patients will be forced to travel to Medway Maritime resulting in a reduction in travel time. However these have been recorded as 'no change' to reflect the availability of this site under the baseline scenario. These positive travel time savings can therefore not be attributed to this option. Conversely option B reductions have been recorded as such due to the addition of William Harvey Hospital not available in the baseline scenario

Table 8: Percentage point change from baseline for private car in peak time journey times for the patient population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Option A	-2pp	-5pp	-17pp	-20pp	-15pp	-2pp
Option B	-13pp	-33pp	-55pp	-29pp	-9pp	No change

Source: Carnall Farrar travel time data

In summary, private care journey time analysis concludes that:

- Option B has the most negative impact upon accessibility, with only 22 per cent of patients able to access vascular services within 30 minutes, which is a reduction of 55 percentage points. Option B also has the largest reduction in accessibility within 10 minutes, reducing from 16 per cent in the baseline to three per cent of patients.
- Option A has the least negative impact upon accessibility as 60 per cent of patients can still access vascular services by private car in peak time within 30 minutes.

Table 9 provides a breakdown of patients experiencing no change, increases and reductions in travel time accessibility by private car in peak time under each option. This further reinforces the findings of the previous analysis and identifies that option B has the highest proportion of patients experiencing an increase in travel time by private car in peak journey times. 87 per cent of patients will experience an increase in journey times in option B compared to 33 per cent in option A, largely due to the removal of both sites currently offering vascular services in the baseline (K&C and MMH).

However, option B would also result in some patients experiencing a reduction in travel times (13 per cent)[53]. This is due to the addition of WHH as a site offering vascular services which is not available in the baseline scenario.

Table 9: Percentage point change from baseline for private car in peak times for the patient population under each option

	No Change	Increase	Reduction	No Change %	Increase %	Reduction %
Option A	2,238	1,102	-	67%	33%	0%
Option B	-	2,902	438	0%	87%	13%

Source: Carnall Farrer travel time data

[53] All reductions in travel times for patients in option A are grouped as 'no change'. These will occur where patients are not currently travelling to their nearest vascular site (Medway Maritime), and so under option A patients will be forced to travel to Medway Maritime resulting in a reduction in travel time. However these have been recorded as 'no change' to reflect the availability of this site under the baseline scenario. These positive travel time savings can therefore not be attributed to this option. Conversely option B reductions have been recorded as such due to the addition of William Harvey Hospital not available in the baseline scenario

5 Equality impacts

5.1 Overview

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 vascular services. This section provides a summary of the groups scoped in for vascular services. Please refer to appendix B for an indication of the demographic representation of each group in the local areas (where relevant and where the demographics of Kent and Medway differ from the national average).

5.1.1 Groups with a disproportionate need for vascular services

The following groups have been identified as having a disproportionate need for vascular services:

Table 10: Scoped in equality groups

Equality group	Summary of evidence presented in the scoping report
Age: Older people	Over time the vascular system can deteriorate which can lead to the furring of the arteries and the weakening of the aortic wall. This means that older people have a disproportionate need for vascular services.
Disabled people[54]	Disabled people with mobility problems are likely to have reduced levels of physical activity, which is a key factor that leads to the increased need of vascular services.
Gender re-assignment	Individuals who are transitioning are at a greater risk of developing vascular diseases if they are taking hormone treatments with oestrogen.
Pregnancy and maternity	Pregnancy can lead to the blood clotting more easily, which increases the risk of developing thrombosis and therefore a disproportionate need for vascular services.
Race and ethnicity	Certain cultural and hereditary factors, such as high blood pressure, are associated with an increased risk of developing vascular disease.
Deprivation	There are numerous lifestyle factors associated with an increased risk of vascular disease, such as smoking and physical inactivity; these lifestyle factors are more common amongst people from deprived backgrounds.

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

5.2 Impacts on health outcomes

As identified in the health component of this IIA, the proposals under the STP are likely to realise positive health impacts including improved clinical outcomes, and overall vascular inpatient 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 vascular services.

5.3 Service familiarity

Reconfiguring the delivery of services may impact certain equality groups due to the requirement to travel to a new location and be in an unfamiliar setting. These issues can increase levels of anxiety. Groups more likely to be affected by these issues include older people, disabled people and some people from BAME backgrounds, particularly those who do

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

not have English as a first language who traditionally find it more difficult to navigate the healthcare system.[55] [56]

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, the journey time analysis for equality groups has, where possible, been undertaken on the basis of available patient activity data for vascular services. Patient activity data includes information on the sex, age and ethnicity of the patient, so robust travel impact analysis has been possible on the following scoped in equality groups:

- age: older (patients aged 65 or over); and
- race and ethnicity (BAME patients).

Activity data is not available for the other equality groups identified as having a disproportionate need for vascular services (disabled people; women who are pregnant or on maternity leave[57]; and people from socio-economically deprived backgrounds[58]). As such, for these groups travel time analysis has been undertaken only the basis of population data, which is the best available alternative in the absence of activity data for these groups. We have also included population data analysis for people aged 65 or over and for those from a BAME background.

Population data is not available for the gender reassignment equality group and therefore travel time impacts for this group have not been analysed.

The tables in section 5.4.2 onwards highlight the travel times for vascular services by scoped in equality groups, comparing the baseline scenario with the future proposals. 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 patients / population from a given equality group is five percentage points or more lower than the proportion of overall patients / population.
- In terms of the percentage point change from the baseline, the proportion of patients / population from a given equality group change is five percentage points or more higher than the overall proportion of patients / population.

5.4.2 Baseline

For both BLA and private car, peak time, none of the groups identified as having a higher need for vascular care currently experience disproportionately higher journey times.

[55] NHS (2006) Promoting access to healthcare for people with a learning disability – a guide for frontline staff

[56] Department of Health (2006) Vulnerable groups and access to health care

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

[58] Deprivation is calculated using the 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.

5.4.2.1 Baseline travel time by BLA

Table 11: Baseline journey travel time by BLA (patient activity data)

	Within 30 minutes	Within 60 minutes
Total patients	79%	100%
Patients aged 65 and over	77%	100%
BAME patients	80%	100%

Source: Carnall Farrar travel time data

Table 12: Baseline journey travel time by BLA (population data)

	Within 30 minutes	Within 60 minutes
Population overall	66%	100%
Population aged 65 and over	64%	100%
BAME population	70%	100%
Females aged 16-44	68%	100%
Population with LLTI	65%	100%
Most deprived quintile	69%	100%

Source: UK Census 2011/ Indices of Multiple Deprivation (IMD) 2015

5.4.2.2 Baseline travel time by private car peak time

Table 13: Baseline journey travel time by private car, peak time (patient activity data)

	Within 30 minutes	Within 60 minutes
Total patients	77%	100%
Patients aged 65 and over	74%	100%
BAME patients	80%	100%

Source: Carnall Farrar travel time data

Table 14: Baseline journey travel time by private car, peak time (population data)

	Within 30 minutes	Within 60 minutes
Population overall	62%	99%
Population aged 65 and over	60%	99%
BAME population	67%	99%
Females aged 16-44	64%	99%
Population with LLTI	62%	99%
Most deprived quintile	67%	100%

Source: UK Census 2011/IMD 2015

5.4.3 Option A

5.4.3.1 Travel time by BLA

Table 15: Option A BLA travel time by BLA (patient activity data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Total patients	61%	-18pp	98%	-2pp
Patients aged 65 and over	56%	-21pp	97%	-3pp
BAME patients	72%	-8pp	98%	-2pp

Source: Carnall Farrar travel time data

The analysis above shows that there will be some disproportionate negative impacts for patients aged 65 or over with regard to BLA under option A:

- Only 56% of patients aged 65 or over will be able to access vascular services within 30 minutes by BLA, compared to 61% of total patients.

Table 16: Option A BLA travel time (population data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Population overall	43%	-23pp	97%	-3pp
Population aged 65 and over	39%	-24pp	96%	-4pp
BAME population	50%	-20pp	99%	-1pp
Females aged 16-44	45%	-23pp	98%	-2pp
Population with LLTI	41%	-24pp	96%	-4pp
Most deprived quintile	48%	-21pp	99%	-1pp

Source: UK Census 2011/IMD 2015

- There are no disproportionate negative impacts for the groups listed above in terms of access within 30 minutes or change from the baseline.

5.4.3.2 Travel time by private car in peak time

Table 17: Option A private car, peak time travel time (patient activity data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Total patients	60%	-17pp	98%	-2pp
Patients aged 65 and over	55%	-19pp	97%	-3pp
BAME patients	72%	-8pp	98%	-2pp

Source: Carnall Farrar travel time data

The analysis above shows that there will be some disproportionate negative impacts for patients aged 65 or over with regard to private car journeys during peak time under option A:

- Only 55% of patients aged 65 or over will be able to access vascular services within 30 minutes by private car during peak time, compared to 60% of total patients.

Table 18: Option A private car, peak time travel time (population data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Population overall	41%	-21pp	96%	-3pp
Population aged 65 and over	36%	-24pp	95%	-4pp
BAME population	47%	-20pp	97%	-2pp
Females aged 16-44	43%	-21pp	97%	-2pp
Population with LLTI	39%	-23pp	95%	-4pp
Most deprived quintile	47%	-20pp	99%	-1pp

Source: UK Census 2011/IMD 2015

The analysis above shows that there will be some disproportionate negative impacts for the population aged 65 or over with regard to private car journeys during peak time under option A:

- Only 36% of the population aged 65 or over will be able to access vascular services within 30 minutes by private car during peak time, compared to 41% of the population overall.

5.4.4 Option B

5.4.4.1 Travel time by BLA

Table 19: BLA travel time (patient activity data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Total patients	23%	-56pp	100%	No change
Patients aged 65 and over	27%	-50pp	100%	No change
BAME patients	20%	-60pp	100%	No change

Source: Carnall Farrar travel time data

- There are no disproportionate negative travel time impacts for the equality impacts listed above in terms of access within 30 minutes or change from the baseline.

Table 20: Option B BLA travel time (population data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Population overall	28%	-38pp	99%	-1pp
Population aged 65 and over	28%	-36pp	99%	-1pp
BAME population	27%	-43pp	99%	-1pp
Females aged 16-44	29%	-39pp	99%	-1pp
Population with LLTI	27%	-38pp	99%	-1pp
Most deprived quintile	23%	-46pp	100%	No change

Source: UK Census 2011/IMD 2015

The analysis above shows that those from a BAME background are likely to experience disproportionate negative impacts with regard to BLA travel times under option B:

- There will be a 43 percentage point drop in those from a BAME background being able to reach vascular services within 30 minutes by BLA, compared to only 38 percentage point drop for the general population.

The analysis above shows that those from deprived backgrounds are likely to experience disproportionate negative impacts with regard to BLA travel times under option B:

- Only 23 per cent of those from the most deprived quintile will be able to access vascular services within 30 minutes compared to 28% of the total population.
- There will be a 46 percentage point drop in those from the most deprived quintile being able to reach vascular services within 30 minutes by BLA, compared to only 38 percentage point drop for the general population.

5.4.4.2 Travel time by private car in peak time

Table 21 Option B private car, peak time travel time (patient activity data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Total patients	22%	-55pp	100%	No change
Patients aged 65 and over	25%	-49pp	100%	No change
BAME patients	15%	-65pp	100%	No change

Source: Carnall Farrar travel time data

The analysis above shows that there will be some disproportionate negative impacts for BAME patients with regard to private car journeys during peak time under option B:

- Only 15% of patients from BAME backgrounds will be able to access vascular services within 30 minutes by private car during peak time, compared to 22% of total patients.
- There will be a 65 percentage point drop in patients from a BAME background being able to reach vascular services within 30 minutes by private car under Option B, compared to the 55 percentage point drop for the total number of patients.

Table 22: Option B private car, peak time travel time (population data)

	Within 30 minutes	Percentage point change from baseline	Within 60 minutes	Percentage point change from baseline
Population overall	26%	-36pp	98%	-1pp
Population aged 65 and over	26%	-34pp	98%	-1pp
BAME population	25%	-42pp	99%	No change
Females aged 16-44	26%	-38pp	98%	-1pp
Population with LLTI	25%	-37pp	98%	-1pp
Most deprived quintile	23%	-44pp	100%	No change

Source: UK Census 2011/IMD 2015

The analysis above shows that those from a BAME background are likely to experience disproportionate negative impacts with regard to private car journeys under option B:

- There will be a 42 percentage point drop in those from the most deprived quintile being able to reach vascular services within 30 minutes, compared to the 36 percentage point drop for the general population.

The analysis above shows that there will be some disproportionate negative impacts for those from deprived backgrounds with regard to private car journeys during peak time under option B:

- There will be a 44 percentage point drop in those from the most deprived quintile being able to reach vascular services within 30 minutes, compared to the 36 percentage point drop for the general population.

5.4.5 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:[59]
  - 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.

[59] 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.

  - 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.
- **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 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.

Table 23: Groups affected summary– shortlist proposals

Proposal	Groups impacted
Option A	Patients aged 65 and over will have: • less access than total patients to vascular services within 30 minutes by BLA and private car in peak time under Option A.
Option B	Patients from BAME backgrounds will have: • less access than total patients to vascular services within 30 minutes by private car in peak under Option B • be disproportionately impacted by the percentage point change from the baseline private car in peak time under Option B.
	Those from deprived backgrounds will have: • less access than the population overall to vascular services within 30 minutes by BLA under Option B • be disproportionately impacted by the percentage point change from the baseline by BLA and private car in peak time under Option B.

Source: Mott MacDonald 2017

6 Sustainability impacts

6.1 Overview

This chapter details the assessment of GHG emission impacts under each of the shortlisted options for vascular services for Kent and Medway. It sets out the scope of the assessment, the methods used to estimate emissions, presents the results of the assessment and provides commentary on the results.

6.2 Methodology

By necessity the assessment has used a variety of assumptions to produce the results. Some of these assumptions may have resulted in over- or under-estimations of emissions. However, as the same methodology has been applied to all options, the assessment provides a useful comparison between options in terms of carbon emissions.

6.2.1 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 within the study area to travel to hospital under the baseline scenario and under each option during peak and off-peak periods. This data was then used as the basis for the carbon assessment for travel as follows:

- Each journey time was multiplied by the average speed of traffic on A-roads in Kent during 2016 based on statistics published by the Department of Transport[60]. This provided an estimated distance travelled.
- It was assumed that patients would travel using modes of transport in-line with the average proportion of each mode in the UK, excluding bicycle, rail and air travel[61]. This provided distances travelled using each mode of travel.
- The distances travelled using each mode of travel were then multiplied by average emissions factors for each mode published by the Department for Business, Energy and Industrial Strategy[62]. This resulted in estimated carbon emissions due to patient travel for each option during peak and off-peak periods.
- To quantify emissions over a year, it was assumed that the peak period would be representative for six hours, whilst the off-peak period would be representative for 18 hours. The results of the peak and off-peak periods were then factored in line with this assumption to provide an overall result.
- Across the NHS patient travel accounts for 44% of all travel emissions (NHS staff, visitors, patients, and contractors)[63]. 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 for each option.

[60] https://www.gov.uk/government/statistical-data-sets/average-speed-and-delay-on-local-a-roads-cgn05

[61] https://www.gov.uk/government/statistical-data-sets/tsgb01-modal-comparisons

[62] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017

[63] 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)

6.3 Impact assessment findings

Table 24 below provides details of the results in terms of tCO_2e per option per annum.

Table 24: Carbon assessment results

Emissions category	Baseline	Option A	Option B
Change in patient travel (tCO_2e)	6.06	6.44	4.90
Total change in emissions (tCO_2e)	13.77	14.63	11.14

The assessment shows that option A is expected to increase emissions by 0.38 tCO_2e (6%) compared to the baseline, whilst option B is expected to reduce emissions by 1.16 tCO_2e (19%) compared to the baseline.

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 2050[64]. The increase in travel emissions due to option A, and the reduction in travel emissions due to Option B are both expected to a very small proportion of the overall NHS carbon footprint, therefore the predicted changes in emissions are considered to be negligible.

[64] 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

7 Conclusions

This chapter brings together the impacts from across the impact assessment areas and outlines potential ways to enhance positive impacts that have been identified and to mitigate or reduce the effect of the 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 25: Impact summary table

Impact assessment area	Summary of positive impacts	Summary of negative impacts
Health	• The proposed changes will improve clinical outcomes for patients as teams will be undertaking a critical mass of inpatient vascular surgical procedures which is known to maintain clinical expertise. • The creation on an arterial centre will enable sustainable on-call rotas to be achieved. Achieving appropriate workforce standards and on-call arrangements is associated with better outcomes for patients. • Local non-arterial services are a crucial part of the vascular network. Creating a best practice network model which reflects this has the potential to maximise positive outcomes and experiences for patients requiring these wider vascular services. • The consolidation of inpatient vascular services to a single arterial centre will avoid the need to duplicate expensive resources. • Proposed changes will create a more sustainable workforce for providing vascular services across Kent and Medway. This is in turn will support the recruitment and retention of current staff.	• With inpatient vascular activity being consolidated into one arterial centre, there is a risk that capacity could become constrained within the service. This could have a negative impact on the safety and quality of patient care. • 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 vascular 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 inpatient vascular surgical services however, the potential to improve outcomes is a balancing factor. • Longer journey times for patients may impact on patient experiences of care and longer journey times for visitors may limit visit frequencies which could impact on the recovery of patients. • Potential transitional impacts could be experienced during the implementation of planned service changes. • In reducing the number of hospitals providing inpatient vascular surgery, there is less resilience in the hospital system.
Travel and access	• Option B does result in a small proportion of patients experiencing a decrease in travel time by BLA and private car in peak time compared to the baseline	• The proposed changes will result in longer ambulance journeys for some patients required to be conveyed to the arterial vascular centre, which may negatively impact the capacity of the ambulance service. • The proposed changes will mean that some patients will have to travel further to access a vascular service.

Impact assessment area	Summary of positive impacts	Summary of negative impacts
		• The proposed changes will result in longer ambulance journeys for some patients, which will negatively impact the capacity of the ambulance service. • Across all shortlisted options there is a reduction in accessibility within 30 minutes by BLA • Option B has the highest proportion of patients experiencing an increase in travel time by BLA and private car in peak time.
Equality	• Improved clinical outcomes for the equality groups who have disproportionate need for stroke services: – Age: older people – Disabled people – Gender reassignment – Pregnancy and maternity – Race and ethnicity – People from deprived communities	• [65]Option A: patients aged 65 and over will have less access than total patients to vascular services within 30 minutes by BLA and private car in peak time. • Option B: patients from BAME backgrounds will have less access than total patients to vascular services within 30 minutes by BLA. • Option B: patients from BAME backgrounds will be disproportionately impacted by the percentage point change from the baseline private car in peak time • Option B: those from deprived backgrounds will have less access than the population overall to vascular services within 30 minutes by BLA. • Option B: those from deprived backgrounds will be disproportionately impacted by the percentage point change from the baseline BLA and private car in peak time • Increased stress and anxiety from unfamiliar journeys • Increased costs associated with travel • Lack of acceptable alternative transport methods
Sustainability	Option B is expected to reduce emissions by 1.16 tonnes of carbon dioxide equivalent (tCO_2e) compared to the baseline	Option A is expected to increase emissions by 0.38 tCO_2e compared to the baseline.

7.2 Enhancements and mitigations

Arising from this assessment, are a set of actions which focus on potential ways to enhance the positive impact identified 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 proposals.

[65] For the purposes of the summary we have only included patient activity data analysis for those aged 65 or older and those from a BAME background. In chapter 5 analysis for both patient activity data and population data has been conducted.

7.2.1 Health impacts

Table 26: Mitigating actions

Impact area	Impact	Mitigating action
Health outcomes	Health outcomes	• 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. • Changes should be clearly articulated to the public to minimise the likelihood of patients requiring emergency vascular surgery presenting at a non-arterial site.
Service impacts	Capacity	• Continue to update STP activity modelling to ensure that sufficient capacity can be provided at the selected arterial centre for the increased volume of inpatient vascular surgery activity, as well as demand for inter-dependent and clinical support services. • The assessment of capacity and resources must have sensitivities applied including: – The capacity of arterial services at neighbouring hospitals (should this be closer to patients than their nearest service in Kent and Medway)
	Workforce	• 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 vascular network, despite potential changes to their local arterial service. This engagement should be commenced with all existing services in advance of the announcements of the preferred option. • A workforce plan for the network should be established which focuses on both the short-term and longer-term resource and succession planning of services. • 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 non-arterial centres, as appropriate.
	Clinical inter-dependencies	• As the wider STP programme develops and options are selected for programme such as vascular, continue to review the co-dependencies matrix to ensure that essential links are maintained with vascular services. • If the preferred option for the creation of a major emergency centre at WHH changes, this may have an impact on the location of the arterial service under option B. The review of potential impacts should be refreshed in this instance.
	Resilience	• Ensure that appropriate protocols are in place should an unforeseen incident restrict the use of the arterial centre infrastructure
Implementation	Communication	• 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.
	Governance	• Ensure that the clinical regimen currently established continues as the vascular programme progresses. This includes due process, an independent chair of the clinical reference group and clinical engagement.
	Enablers	• The South-East Coast Clinical Senate identified that 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

- Once 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 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.
- 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

Table 27: Mitigating actions

Impact area	Impact	Enhancement / mitigating action
Travel and access	Disproportionately longer journey times for equality groups for some of the proposals (deprived communities, those from a BAME background and those aged 65 or over)	• **Encourage flexible appointment times** to allow patients to make journeys conveniently and in off-peak hours. • **Maximise public transport accessibility of specialist centres** through engagement with local transport providers. • **Ensure the effective communication** of the future model of care to groups who disproportionately need vascular services and will be disproportionately impacted by the proposed service change, so they understand how to access and use services and the potential increased journey times.
	Increased stress and anxiety from unfamiliar journeys	
	Increased costs associated with travel	

7.2.4 Sustainability

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

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B. Equality chapter of the 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.[66] 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 have a disproportionate or differential need.

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.

Where possible, density maps and population data tables have also been provided. The population for Kent and Medway and east Kent[67] have been stated, along with national figures to act as a comparator.

The table below outlines the protected characteristics and their disproportionate or differential need for vascular services.

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

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

Table 28: Evidence of disproportionate or differential need for Vascular services

Protected characteristic	Evidence of disproportionate or differential need
Age: older people (65 and over)	✓
Disabled people	✓
Sex	✓(differential)
Gender re-assignment	✓
Pregnancy and maternity	✓
Race and ethnicity	✓
Sexual orientation	
Deprivation	✓

Source: Mott MacDonald 2017

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

B.2.1 Vascular services

Older people are likely to have a disproportionate need for vascular services. The vascular system can deteriorate over time, and the furring of the arteries and the weakening of the aortic wall is much more common in older people.[68] Many people experience reduced mobility as they grow older, and inactivity is a risk factor in developing deep vein thrombosis (DVT) and blood clots. The risk of developing peripheral artery disease also increases with age, affecting approximately 20% of people over 70 years of age and up to 60% of over 85s.[69] Likewise, people aged 75 and over are seven times more likely to develop an abdominal aortic aneurysm than those under 55.[70]

B.2.2 Demographic profile vascular services in Kent and Medway: older people

Changes to vascular 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%) then the national average. South Kent Coastal (23%) and Thanet (23%) CCGs all have proportions above the national average.

Table 30: 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%

[68] P. Benett et al, (2009): 'Ethnicity and peripheral artery disease', QJM: An International Journal of Medicine.

[69] P. Benett et al, (2009): 'Ethnicity and peripheral artery disease', QJM: An International Journal of Medicine.

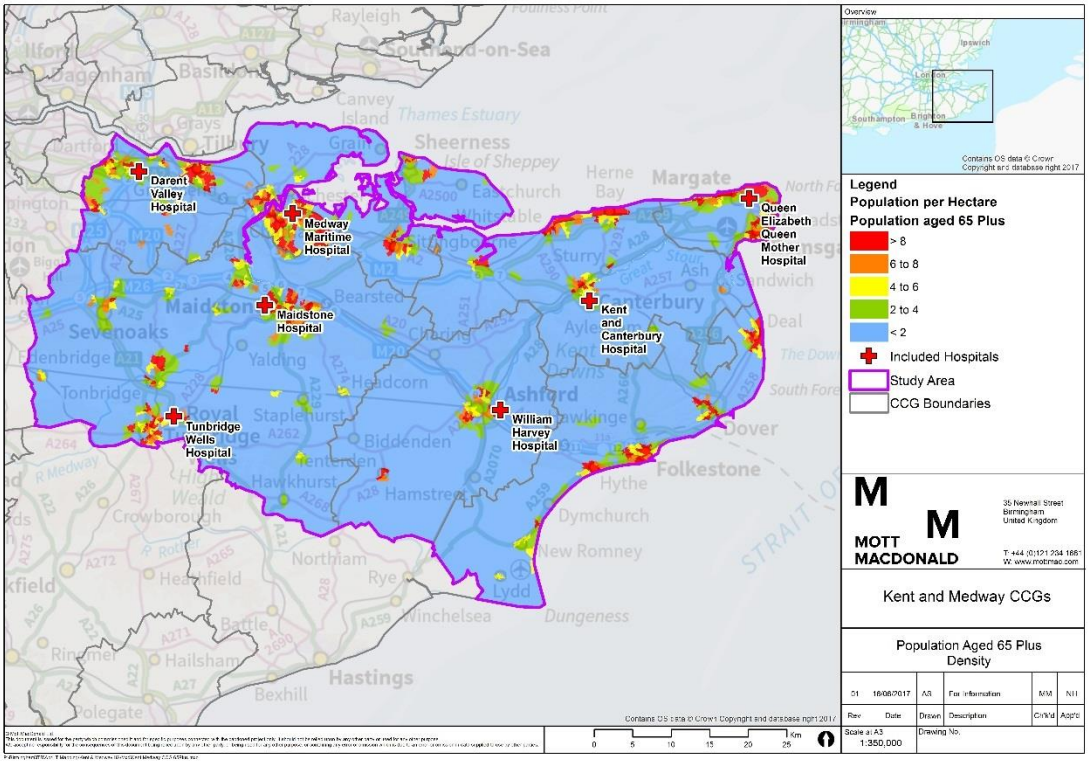
[70] NHS Choices (2016), 'Abdominal aortic aneurysm'.

Study area	Total population	Aged 65 and over	Aged 65 and over (%)
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 4: Population aged 65 and over



Source: LSOA population estimates 2015, ONS

B.3 Disabled people

B.3.1 Vascular services

Disabled people with reduced mobility are disproportionately likely to develop a range of vascular diseases due to lower levels of physical activity.[71] These include atherosclerosis, carotid artery disease, blood clots, peripheral arterial disease and pulmonary embolism.

People with learning disabilities are also more likely to have factors associated with increased risk of vascular disease. For example research shows that 81% of people with learning disabilities have high blood pressure, which is substantially more than the 64% of people without learning disabilities.[72] Obesity is also twice as common in people aged 18 to 35 with

[71] World Health Organisation (2011): 'World report on disability'.

[72] NHS (2016): 'Health and care of people with learning disabilities'.

learning disabilities. Having high blood pressure and being obese are known to increase the risk of needing vascular services.[73]

B.3.2 Demographic profile vascular services in Kent and Medway: disabled people

Changes to vascular 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 31: Disability

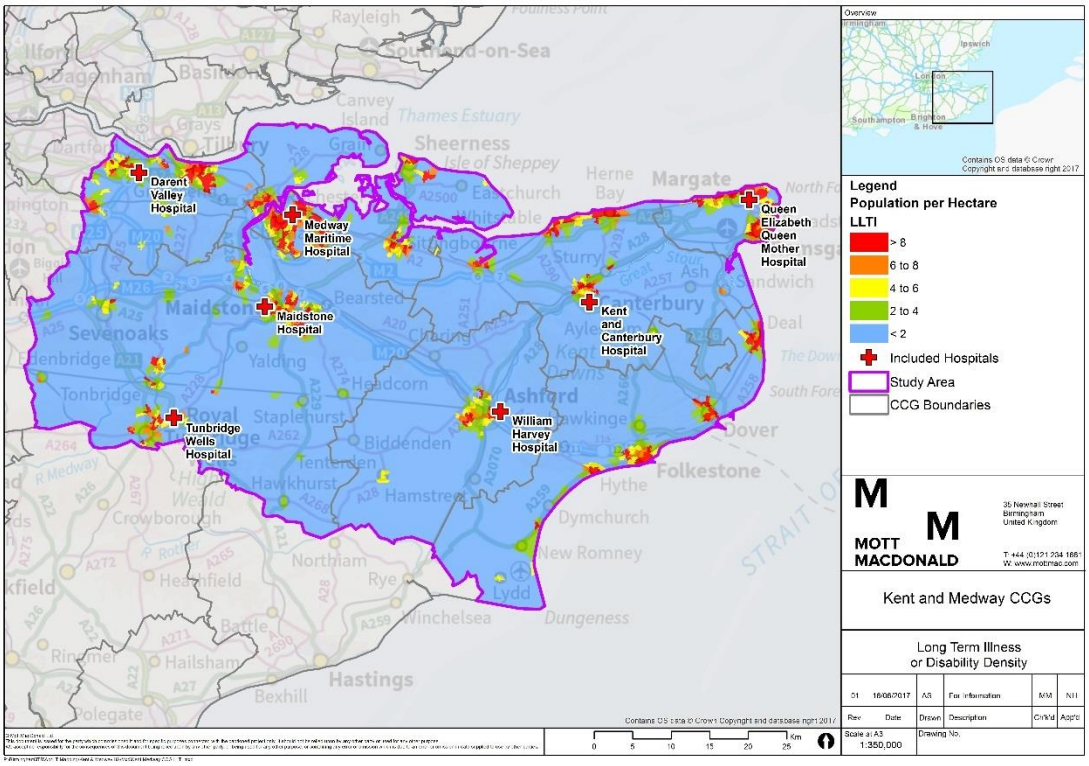
Study area	Total population 2011	LLTI	LLTI (%)
Ashford CCG	117,956	19,085	16%
Canterbury and Coastal CCG	198,275	36,138	18%
Dartford, Gravesham and Swanley CCG	245,999	40,043	16%
Medway CCG	263,925	43,354	16%
South Kent Coastal	201,924	42,440	21%
Swale	106,424	20,037	19%
Thanet CCG	134,186	31,348	23%
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.

[73] World Health Organisation (2011): 'World report on disability'.

Figure 5: Population living with an LLTI



Source: LSOA population estimates 2015, ONS

B.4 Gender reassignment

B.4.1 Vascular services

Oestrogen within hormone treatments can place some transitioning individuals at a greater risk of developing vascular diseases. In a study of 214 male-to-female transgender individuals, 5% developed a venous thromboembolism post-treatment, in comparison to 1-2% of the general population[74].[75]

B.4.2 Demographic profile vascular services in Kent and Medway: gender re-assignment

Population data is not available for this group.

B.5 Pregnancy and maternity

B.5.1 Vascular services

During pregnancy, the blood begins to clot more easily, in preparation for childbirth. Consequently, pregnant women are up to ten times more likely to develop thrombosis than non-

[74] Department of Health (2010): Demographics, Epidemiology and Risk of VTE

[75] J. Weinand & J Safer (2015): Hormone therapy in transgender adults is safe with provider supervision; A review of hormone therapy sequelae for transgender individuals in the Journal of Clinical & Translational Endocrinology.

pregnant women of the same age.[76] Expectant mothers are also disproportionately more likely to develop varicose veins than other sections of the population.[77] Therefore, vascular services are particularly important for expectant and new mothers.

B.5.2 Demographic profile vascular services in Kent and Medway: pregnancy and maternity

Changes to vascular 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%.

Table 32: 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%

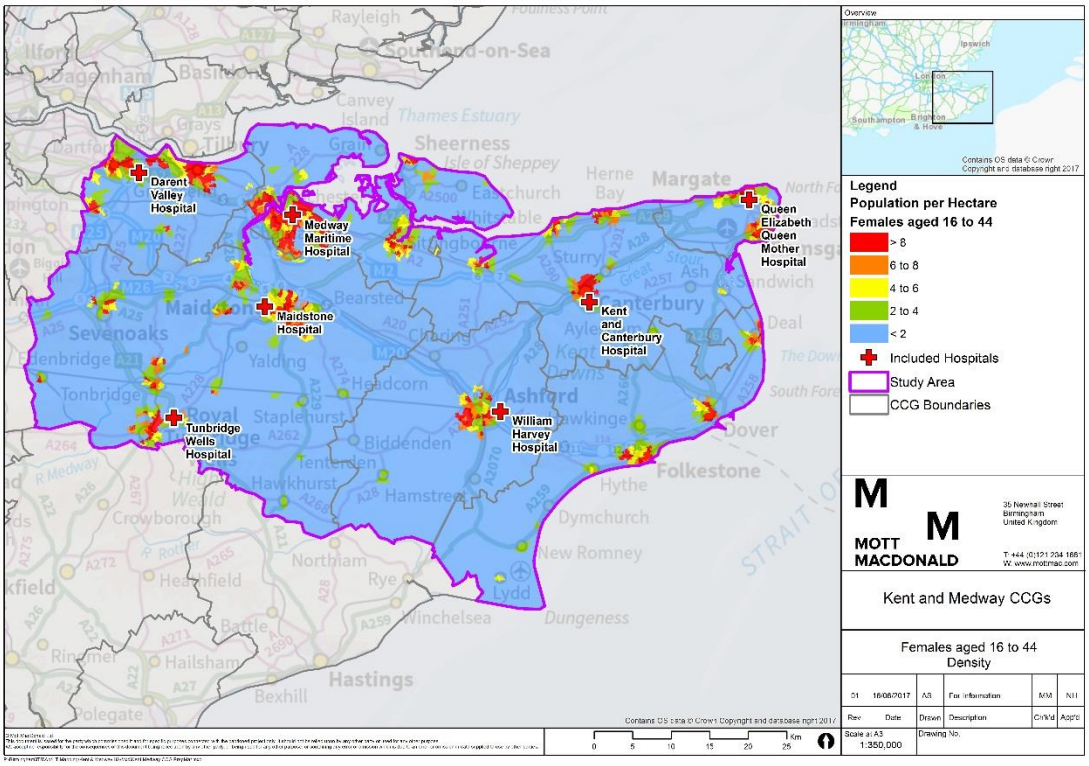
Source: LSOA population estimates 2015, ONS

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.

[76] NHS choices (2016): 'Causes of Deep Vein Thrombosis'.

[77] Circulation Foundation (undated): 'Varicose Veins: Symptoms, Causes and Treatment'.

Figure 6: Population of females aged 16-44



Source: LSOA population estimates 2015, ONS

B.6 Race and ethnicity

B.6.1 Vascular services

Some ethnic groups may be more predisposed to developing vascular diseases due to higher risk factors. For example, people of South Asian origin are six times more likely to develop Type 2 diabetes than white people, which is a key risk factor for a range of vascular diseases, such as carotid artery disease.[78] In addition, atherosclerosis is more prevalent amongst people from a South Asian, African or African-Caribbean background.[79] Certain types of vasculitis are more common amongst white people, for example, rates of giant cell arteritis in white people are seven times higher than in black people.[80]

B.6.2 Demographic profile vascular services in Kent and Medway: race and ethnicity

Changes to vascular 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%).

[78] Diabetes UK (undated): 'Diabetes in South Asians'.

[79] NHS Choices (2016): 'Atherosclerosis'.

[80] NHS Choices (2016): 'Giant cell arteritis'.

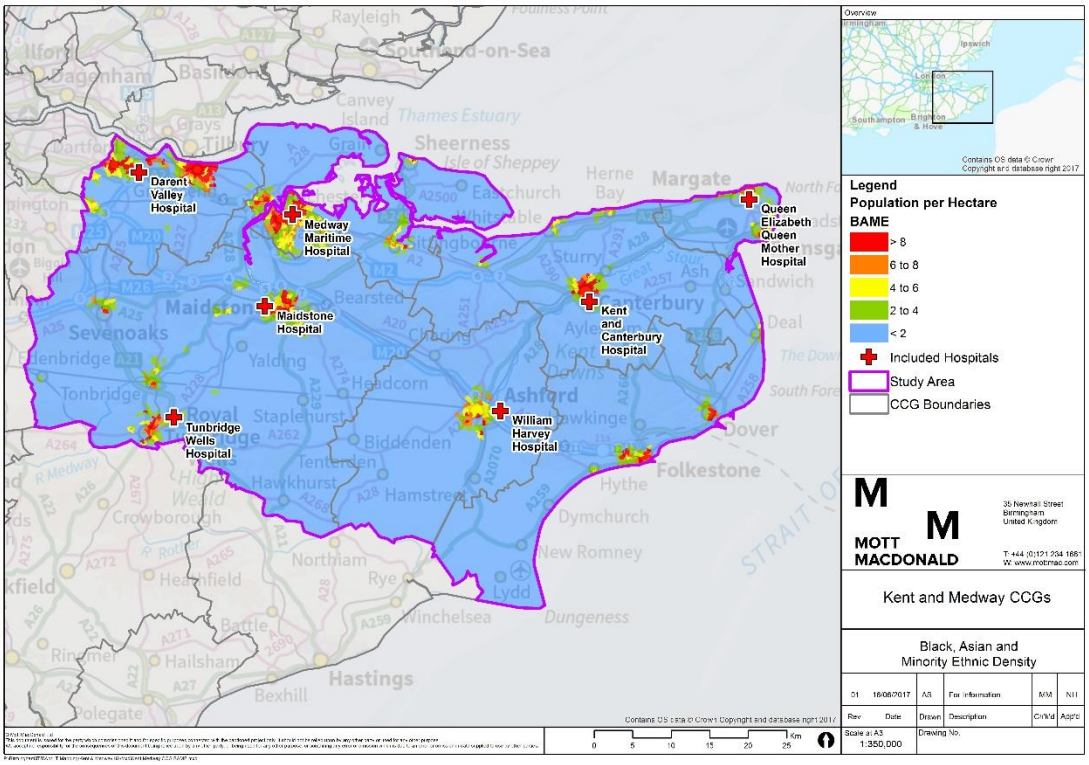
Table 33: BAME

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.

Figure 7: Population of people from BAME backgrounds



Source: LSOA population estimates 2015, ONS

B.7 Sex

B.7.1 Vascular services

Men and women both need vascular services, the reasons leading to this need are different. There are no disproportionate needs for either sex.

B.7.2 Demographic profile vascular services in Kent and Medway: sex

Changes to vascular services are under consideration within the whole of Kent and Medway. Table 34 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).

Table 34: 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.8 Deprivation

B.8.1 Vascular services

Sir Michael Marmot's 2010 review of health inequalities found that vascular disease represents over half of the mortality gap between rich and poor.[81] In addition, risk factors associated with vascular diseases, such as hypertension, obesity, smoking and limited physical activity are higher in socially deprived communities.[82]

Local information also shows that the Thanet and South Kent Coastal CCGs have the highest prevalence of hypertension and diabetes.[83]

B.8.2 Demographic profile vascular 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

[81] The Marmot Review (2010): 'Fair society, health lives'.

[82] The Marmot Review (2010): 'Fair society, health lives'.

[83] Kent and Medway Public Health Observatory (2015): 'Kent and Medway: stroke profile'.

CCGs have lower levels of people in the most deprived quintile – Ashford (11%), Canterbury and Coastal (10%), and West Kent (4%).

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.

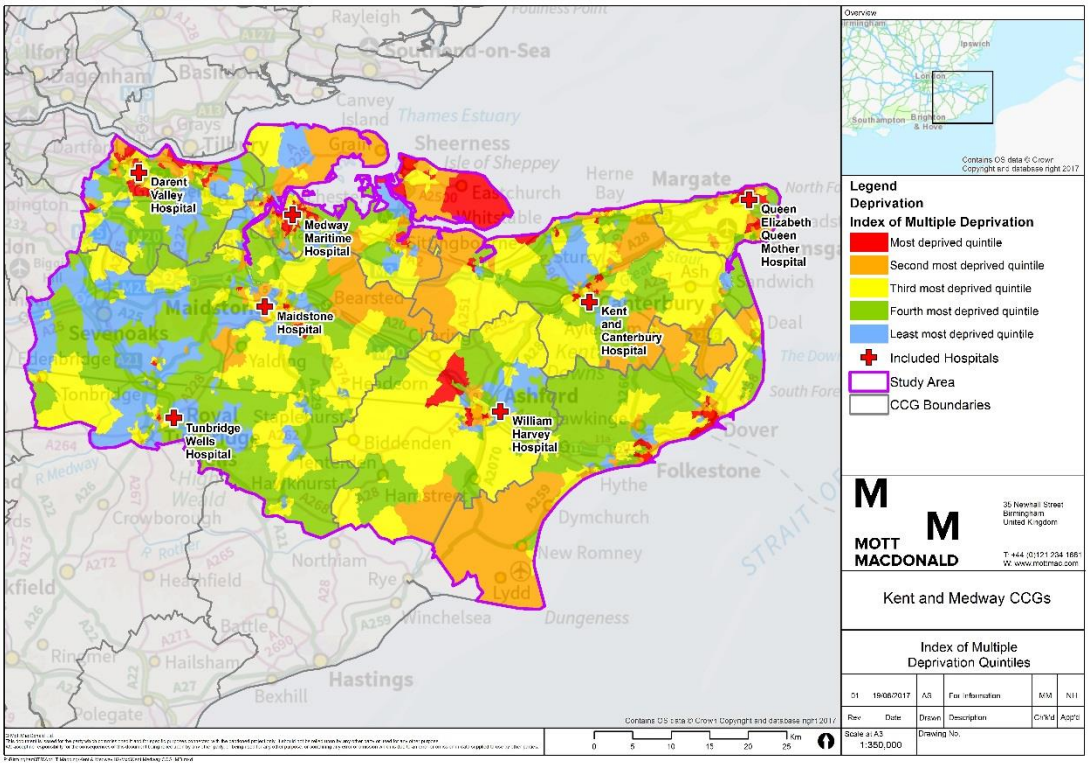
Table 35: Deprivation quintiles

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.

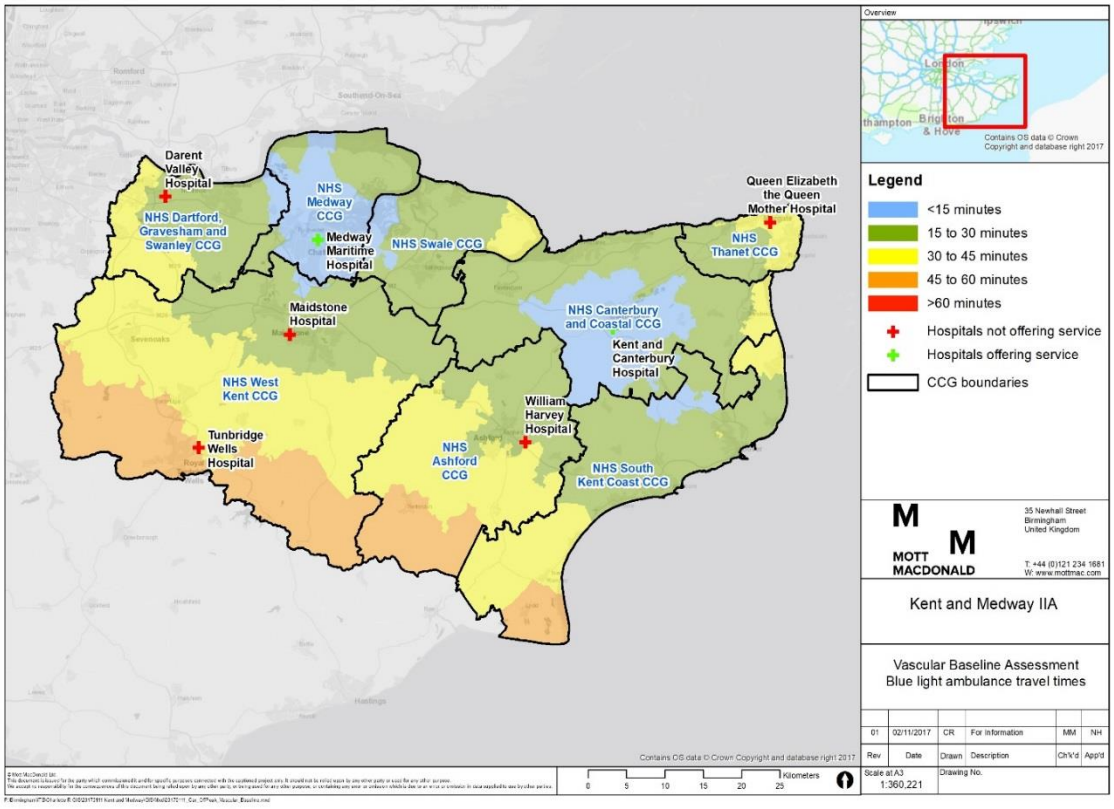
Figure 8: IMD – overall deprivation quantiles for Kent and Medway study area (8 CCGs)



C. Travel analysis maps

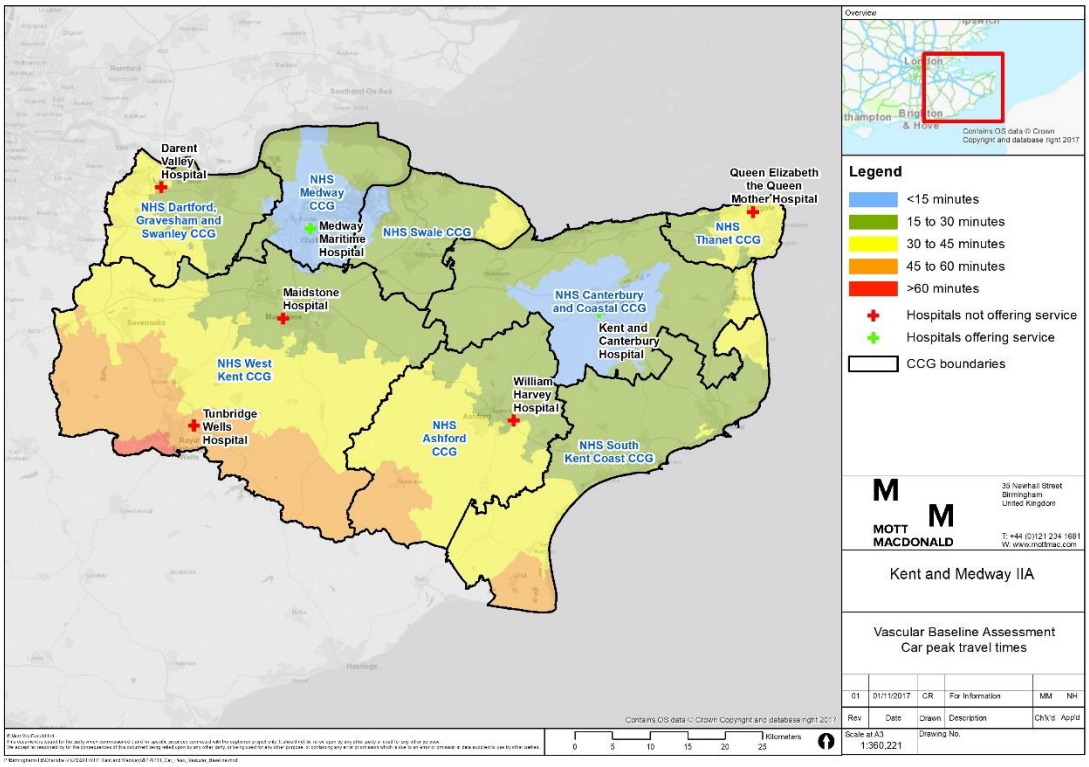
Transport accessibility plots are provided in the form of heat maps below. These are produced from accessibility planning software which takes travel time data provided by Carnall Farrar. The baseline travel time has been calculated based upon the patient data and calculates the travel time from the patients' residential LSOA to the hospital based upon the service site they are currently using. The future travel time for these patients under each proposal has then been calculated by firstly understanding whether the hospital they are currently accessing is still offering vascular services under each option. If this hospital is still within scope it is assumed that the patient would still attend this hospital site and thus the travel time will not change. If the hospital is no longer offering vascular services under each option then it is assumed that the patient will travel to the hospital site offering vascular services.

Figure 9: Travel time by blue light ambulance



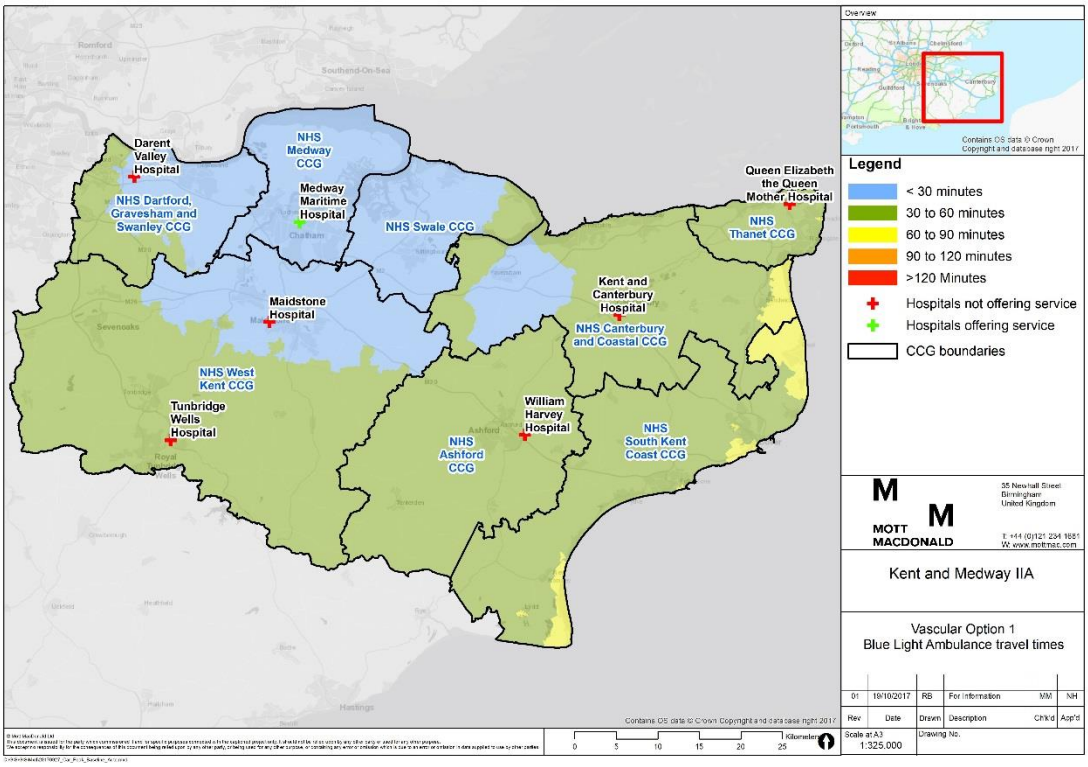
Source: Carnall Farrar travel time data

Figure 10: Baseline private car in peak time access map



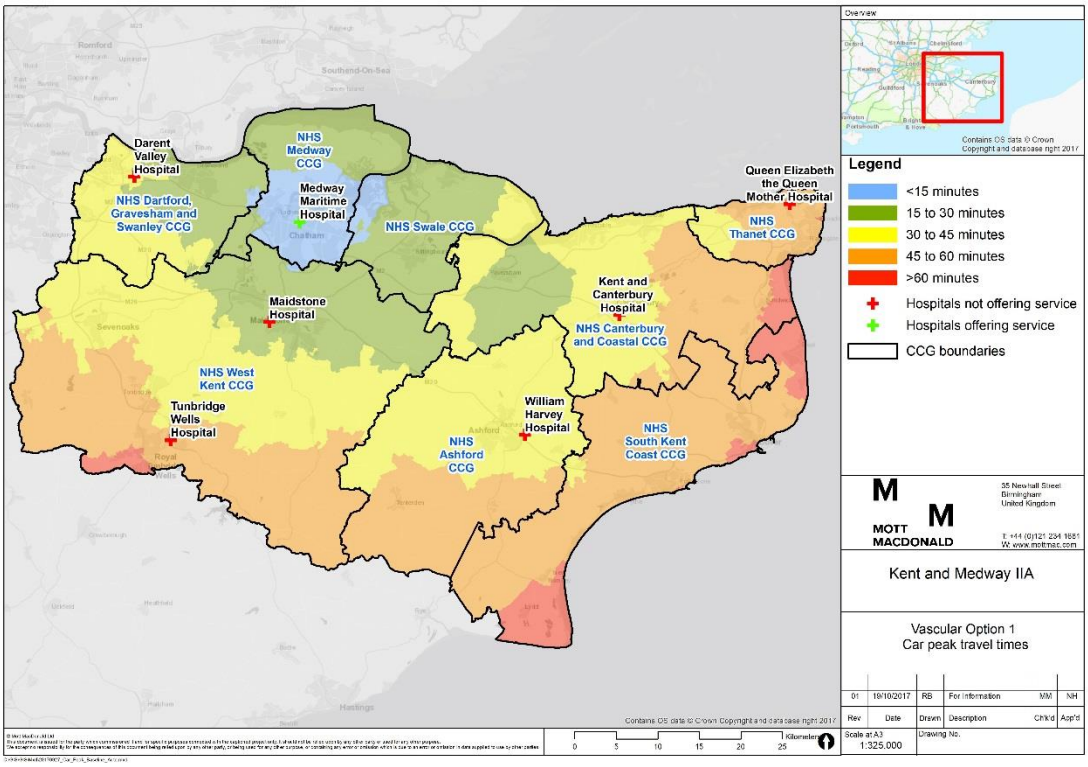
Source: Carnell Farrer travel time data

Figure 11: Option A blue light access map



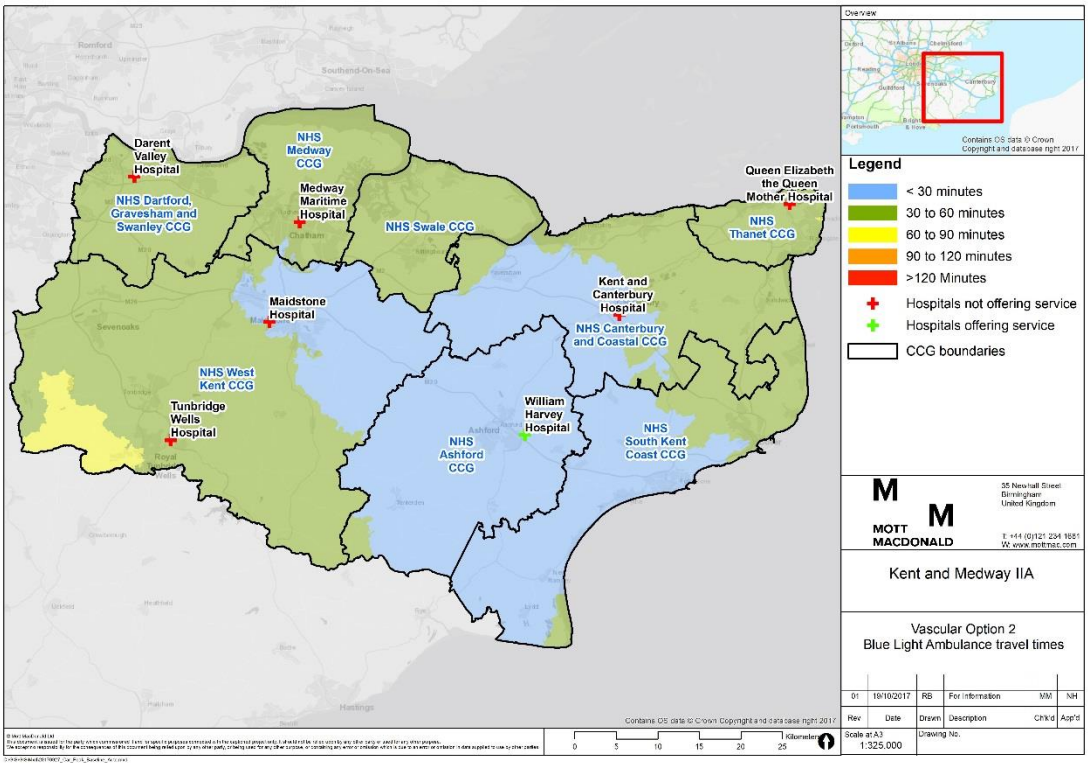
Source: Carnell Farrer travel time data

Figure 12: Option A private car in peak time access map



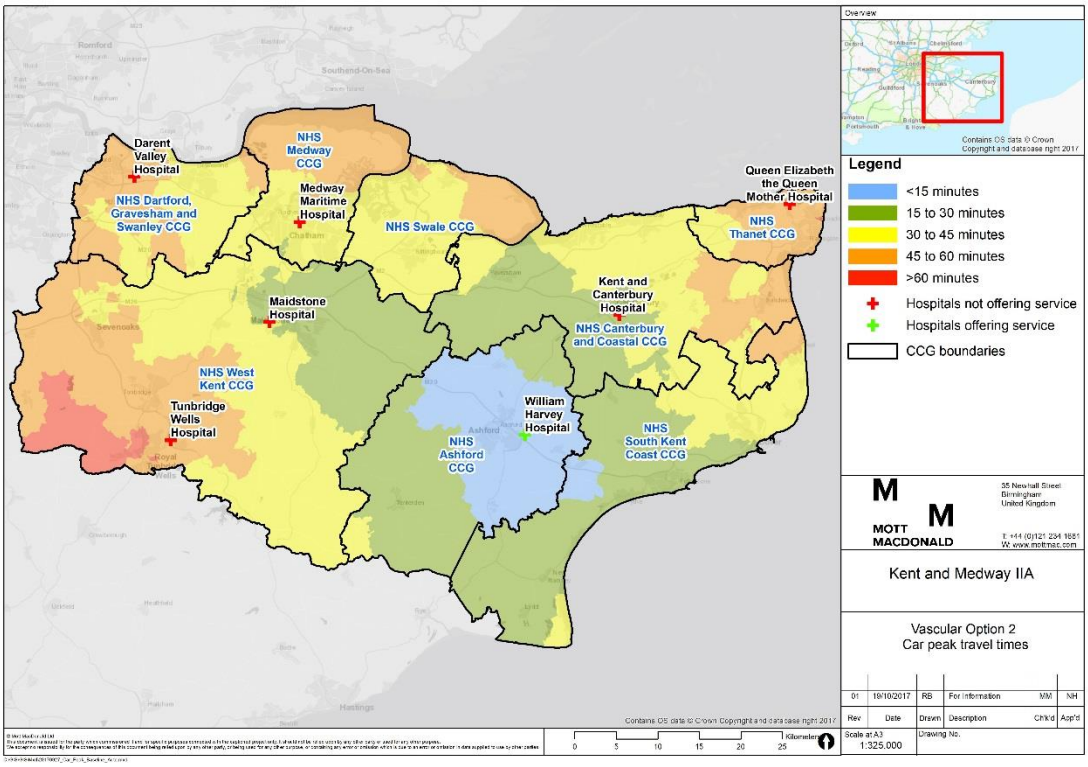
Source: Carnell Farrer travel time data

Figure 13: Option B blue light access map



Source: Carnell Farrer travel time data

Figure 14: Option B private car in peak time access map



Source: Carnell Farrer travel time data

D. Travel and access impacts: population data

D.1 Methodology for quantitative journey time analysis

D.1.1 Population activity data

Carnall Farrar has undertaken travel and access analysis using population data. We have conducted the same analysis as conducted in chapter 4 using population data to allow for comparability between the two sets of analysis.

D.2 Quantitative journey time impacts by BLA

Based on population data, 66 per cent of people can currently access vascular services by BLA within 30 minutes and 100 per cent can do so within 60 minutes. Across both options there is a reduction in the proportion of people that can access vascular services by BLA within 30 minutes. Option B sees the largest reduction, with only 28 per cent of people able to access vascular services within 30 minutes by BLA, whereas option A reduces to 43 per cent.

Accessibility within 60 minutes by BLA is in line with the baseline as almost all people can access vascular services within this timeframe for both options. This is shown in table 36 below.

Table 36: BLA journey times for the population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Baseline (current service configuration)	12%	29%	66%	87%	95%	100%
Option A	9%	22%	43%	66%	77%	97%
Option B	5%	7%	28%	62%	88%	99%

Source: Carnall Farrar travel time data

Table 37: Percentage point change from baseline for BLA journey times for the population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Option A	-3%	-7%	-22%	-22%	-18%	-3%
Option B	-7%	-22%	-38%	-25%	-7%	-1%

Source: Carnall Farrar travel time data

In summary, BLA journey time analysis concludes that:

- Option A has the least negative impact upon accessibility as 43 per cent of people can still access vascular services by BLA within 30 minutes.
- Option B has the most negative impact upon accessibility within 30 minutes with only 28 per cent of people able to access services within 30 minutes, which is a reduction of 38 percentage points. Option B also has the largest reduction in accessibility within 10 minutes reducing from 12 per cent in the baseline to five per cent of people.

Table 38 provides a breakdown of people experiencing reductions, no change and an increase in travel time accessibility by BLA under each option. This further reinforces the findings of the previous analysis and identifies that option B has the highest proportion of people experiencing an increase in travel time by BLA, with 68 per cent experiencing an increase compared to 32 per cent in option A, largely due to the removal of both sites currently offering vascular services in the baseline (K&C and MMH).

However, it should be noted that option B would also result in some people experiencing a reduction in travel times for people (12 per cent)[84]. This is due to the addition of WHH as a site offering vascular services which is not available in the baseline scenario.

Table 38: People experiencing a change in journey time by BLA by option

	No Change	Increase	Reduction	No Change %	Increase %	Reduction %
Option A	1,232,048	569,163	-	68%	32%	0%
Option B	360,002	1,226,992	214,217	20%	68%	12%

Source: Carnall Farrar travel-time data

D.3 Quantitative journey time impacts by private car

Based on current vascular people activity data, 62 per cent of vascular people are able to access vascular services by private car in peak time within 30 minutes and 99 per cent within 60 minutes. Across both proposed options there would be a reduction in the proportion of people able to access vascular services within 30 minutes by car in peak time. Option B would see the largest reduction, with only 26 per cent of people within 30 minutes of vascular services by private car at peak time. Option A reduces to 41 per cent.

Accessibility within 60 minutes by private car in peak time is in line with the baseline as almost all people can access vascular services within this timeframe under each option. This is shown in table 39 below.

Table 39: Private car in peak time journey times for the population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Baseline (current service configuration)	11%	27%	62%	85%	94%	99%
Option A	9%	20%	41%	62%	76%	96%
Option B	5%	8%	26%	58%	85%	98%

Source: Carnall Farrar travel time data

[84] All reductions in travel times for people in option A are grouped as 'no change'. These will occur where people are not currently travelling to their nearest vascular site (Medway Maritime), and so under option A people will be forced to travel to Medway Maritime resulting in a reduction in travel time. However these have been recorded as 'no change' to reflect the availability of this site under the baseline scenario. These positive travel time savings can therefore not be attributed to this option. Conversely option B reductions have been recorded as such due to the addition of William Harvey Hospital not available in the baseline scenario

Table 40: Percentage point change from baseline for private car in peak time journey times for the population under each option

	Within 10 minutes	Within 20 minutes	Within 30 minutes	Within 40 minutes	Within 50 minutes	Within 60 minutes
Option A	-3%	-7%	-21%	-23%	-18%	-3%
Option B	-7%	-19%	-37%	-27%	-9%	-1%

Source: Carnall Farrar travel time data

In summary, private care journey time analysis concludes that:

- Option B has the most negative impact upon accessibility, with only 26 per cent of people able to access vascular services within 30 minutes, which is a reduction of 37 percentage points. Option B also has the largest reduction in accessibility within 10 minutes, reducing from 11 per cent in the baseline to five per cent of people.
- Option A has the least negative impact upon accessibility as 41 per cent of people can still access vascular services by private car in peak time within 30 minutes.

Table 41 provides a breakdown of people experiencing no change, increases and reductions in travel time accessibility by private car in peak time under each option. This further reinforces the findings of the previous analysis and identifies that option B has the highest proportion of people experiencing an increase in travel time by private car in peak journey times. 68 per cent of people will experience an increase in journey times in option B compared to 32 per cent in option A, largely due to the removal of both sites currently offering vascular services in the baseline (K&C and MMH).

However, option B would also result in some people experiencing a reduction in travel times (13 per cent)[85]. This is due to the addition of WHH as a site offering vascular services which is not available in the baseline scenario.

Table 41: Percentage point change from baseline for private car in peak times for the population under each option

	No Change	Increase	Reduction	No Change %	Increase %	Reduction %
Option A	1,222,473	578,738	-	68%	32%	0%
Option B	352,257	1,219,678	229,276	20%	68%	13%

Source: Carnall Farrer travel time data

[85] All reductions in travel times for people in option A are grouped as 'no change'. These will occur where people are not currently travelling to their nearest vascular site (Medway Maritime), and so under option A people will be forced to travel to Medway Maritime resulting in a reduction in travel time. However these have been recorded as 'no change' to reflect the availability of this site under the baseline scenario. These positive travel time savings can therefore not be attributed to this option. Conversely option B reductions have been recorded as such due to the addition of William Harvey Hospital not available in the baseline scenario