

2012

# THE CARBON IMPACT OF MENTAL HEALTH SERVICES

Case Study: A Service Line Analysis of Nottinghamshire  
Healthcare's Carbon Footprint



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# THE CARBON IMPACT OF MENTAL HEALTH SERVICES

## CASE STUDY: A SERVICE LINE ANALYSIS OF NOTTINGHAMSHIRE HEALTHCARE'S CARBON FOOTPRINT

Rachel Stancliffe  
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January 2012

### EXECUTIVE SUMMARY

Service lines provide a means of organizing clinical activities and linking expenditure to patient conditions and outcomes. Just as the 2010/2011 NHS Costing Standards mandate that costs be allocated to the services that generate them, so should carbon emissions be accounted for in terms of the services responsible for them. Allocating costs to services has been shown to have several advantages:

- helps to bridge the divide between doctors and managers
- allows drilling down from averaged costs to see where costs came from
- allows assembling new groups of services in response to changes, for example by Care Clusters

Much of the infrastructure for service line reporting of carbon emissions is already in place, having been established for monitoring economic sustainability. Given that most estimates of carbon emissions are based on expenditure, a natural first step toward service line reporting is to use service line categories mandated by existing reporting schemes. Two such reporting schemes are *Programme Budgeting* and the *Mental Health Minimum Data Set*. These examples illustrate that systems are in place for reporting expenditure and other activity data on the basis of services provided.

In this case study we used data provided by the Nottingham Energy Partnership to examine the carbon footprint of the Nottingham Healthcare NHS Trust (NHT). The available data allowed two general types of analysis. The first type was *Service Line Footprinting*, which sought to identify the carbon costs associated with specific services. Here the data were quite limited and it only was possible to provide Service Line Footprints of (a) the 3 top-level Directorates and (b) an ad hoc collection of 5 services: forensic high, medium and low secure, adult mental health and mental health services for older people.

The second type of analysis was a *Component Services Analysis* which identified the different services that contributed to specific carbon costs. For example, carbon emissions related to Local Services procurement may be analysed in terms of how much various Local Services contribute to the total. Several examples of this type of analysis are provided in Annex 1: Component Service Analyses, and others are available in Appendix I of the NEP report.

The Service Line Footprints of the Trust's 3 top-level Directorates differed significantly in terms of absolute levels of carbon emissions, with the Corporate Directorate accounting for 11% of the Trust's carbon emissions, and Forensic Services and Local Services accounting for 57% and 32% respectively.

The Directorate footprints differed from the Trust-top-level footprint and from each other. For example buildings energy use accounted for 38% of the Trust's carbon emissions but only 22% of Local Services emissions. Similarly, at the Trust-level 59% of carbon emissions were associated with procurement, whereas for both Corporate and Local Services over 70% of carbon costs came from procurement.

Comparing the carbon costs of different service lines requires using a suitable denominator to standardise the measure. Carbon costs may then be expressed as cost per patient, cost per contact, cost per admission and so forth. As an example only, we illustrated what a service line footprint would look like when standardised using ERIC data on available beds. Standardisation is necessary when comparing Service Line costs across Trusts, and is a step towards assigning carbon impact ratings to different patient care pathways.

*Component Service Analyses* can show which activities contribute to carbon emissions of particular services. For example, vehicles hire and taxi use represents 76% of Local Services travel emissions. By contrast, vehicle hire and taxi represent only 31% of Forensic Services travel. But Forensic Services report an additional 31% or 1503 tonnes of CO<sub>2</sub>e emissions under the heading of vehicle purchase. These findings raise questions about differences in carbon intensive activities in the different Directorates. For those charged with reducing costs, knowing how much each service contributes to travel costs is vital information.

### **Major Recommendations:**

- Carbon costs should be accounted for in parallel with and using the same principles as monetary accounting.
- Carbon footprints should be prepared for the top level Directorates, clinical service lines and care pathways wherever possible.
- Activity data across buildings, procurement and travel should be labelled using a common set of service identifiers.
- A standardised measure, e.g. carbon cost per patient, must be established. This is needed to compare one Trust to another or one service to another.



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## THE CARBON IMPACT OF MENTAL HEALTH SERVICES

CASE STUDY: A SERVICE LINE ANALYSIS OF NOTTINGHAMSHIRE HEALTHCARE'S CARBON FOOTPRINT

### 1. BACKGROUND

**A**t meetings hosted by the Royal College of Psychiatrists in March and October 2010, the importance of understanding the carbon emissions related to mental health care was a focus of discussion. In part this was because cutting carbon emissions is a legal requirement with the UK Government committed to a 34% reduction in emissions by 2020 and an 80% reduction by 2050.

But over and above the legal requirements, climate change presents unprecedented and potentially catastrophic risks to health and well-being. The Marmot Review of Health Inequalities<sup>1</sup> has identified those already deprived by their level of income, quality of homes, and their health as most vulnerable to the impacts of climate change. As guardians of already vulnerable populations, Mental Health Trusts have a particular responsibility to show leadership in reducing greenhouse gas emissions and creating sustainable communities.

Following the meetings in 2010, the Royal College of Psychiatrists (RCP) and the Centre for Sustainable Healthcare (CSH) embarked on a project to establish a service line framework for analyzing the carbon emissions associated with mental health services. Nottingham Healthcare NHS Trust (NHT) agreed to fund the initial work on the project and to provide carbon emission data through their local partner, the Nottingham Energy Partnership (NEP).

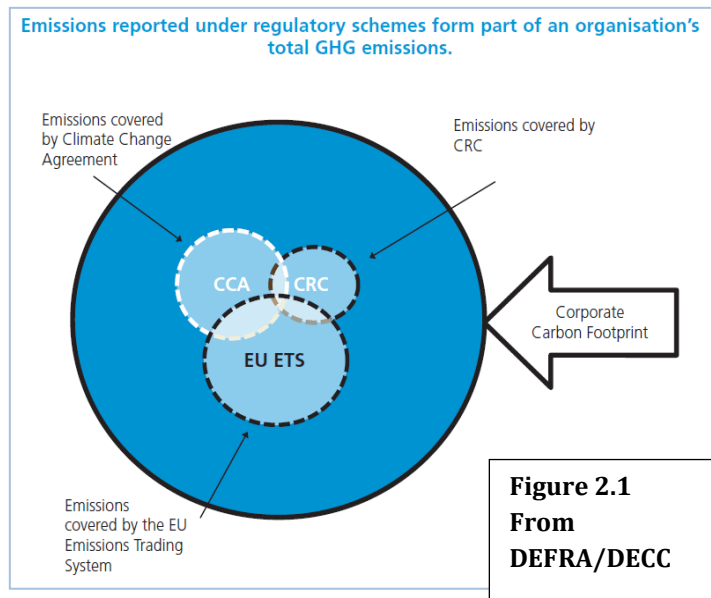
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<sup>1</sup> Department of Health (2010). Fair society, healthy lives (the Marmot review). London: Department of Health.  
<http://www.instituteofhealthequity.org/Content/FileManager/pdf/fairsocietyhealthylives.pdf>

## 2. WHY SERVICE LINE FOOTPRINTING AND ANALYSIS?

There are many reasons to measure carbon emissions and an organization may need to calculate carbon footprints in different ways to satisfy regulatory agencies and reporting requirements. Figure 2.1 depicts the relationship between three of the more common regulatory schemes – the Climate Change Agreement, the Carbon Reduction Commitment and the EU’s Emissions Trading System. The NHS also has additional reporting requirements such as the Estates Return Information Collection (ERIC), which is intended to inform estates and facilities management, and the Sustainability Reporting Template which is slated to become mandatory in 2011/2012<sup>2</sup>.

Many if not most of the established reporting schemes are directly concerned with direct energy use, i.e., buildings heat and electricity, and there is no question that huge savings, both monetary and carbon savings, can be made by reducing energy use.



**Figure 2.1**  
From  
**DEFRA/DECC**

However buildings energy use is not the whole story. The NHS Sustainable Development Unit estimates that about 23% of the NHS’s carbon footprint is from energy used for heating, lighting, ventilation, cooling. This means that even if hospitals were fully powered by renewable energy, total emissions would only be reduced by around one-fifth. As the NHS commits itself to meet the Climate Change Act’s target of 80% carbon reduction by 2050, one thing is clear: less of the same is not the answer. A transformation in clinical practice itself is required<sup>3</sup>.

**FIGURE 1. KEY TO CO2E REDUCTION POTENTIAL NHS ENGLAND.**

The NHS Sustainable Development Unit has identified 8 measures that illustrate the transformational change that is needed to achieve reductions in greenhouse gas emissions in line with government targets.<sup>4</sup> Although some measures such as ‘refurbish buildings’ arguably relate to heat and energy savings, most of the others relate to service delivery: less travel, less pharma, less med-tech, less procurement, leaner models of care.

- 1 ■ Refurbish buildings
- 2 ■ Replace buildings
- 3 ■ 20% less travel emissions
- 4 ■ 40% renewable electricity from grid
- 5 ■ 20% less pharma
- 6 ■ 20% less med-tech
- 7 ■ 20% less other procurement
- 8 ■ Model of care
- Baseline emissions

<sup>2</sup> HM Treasury. Public sector annual reports: sustainability reporting. 2010. [http://www.hm-treasury.gov.uk/d/frem\\_sustainability\\_reporting\\_201011.pdf](http://www.hm-treasury.gov.uk/d/frem_sustainability_reporting_201011.pdf).

<sup>3</sup> Mortimer, F. (2009) Less of the same is not the answer. <http://www.sustainabilityforhealth.org/clinicaltransformation/opinion-pieces/less-of-the-same-is-not-the-answer>

<sup>4</sup> SDU. Saving Carbon, Improving Health, Update: Carbon Reduction Strategy. <http://www.sdu.nhs.uk/publications-resources/42/NHS-Carbon-Reduction-Strategy-Update/>

## 2.1 ACCOUNTING FOR MONEY AND CARBON

It is vital that the NHS has good information about healthcare costs not only to inform day-to-day management decisions but also to support restructuring in response to new approaches to commissioning and the provision of services. Cost information, both monetary and carbon cost, needs to be relevant to commissioners, clinicians and other providers of services, and to consumers of healthcare, i.e. patients. In addition, cost information needs to be standardised or at least consistent enough to allow comparisons between alternative care pathways both within and between Trusts.

It is important to recognise that sustainability cannot be fully achieved without involving people in all parts of the organisation. Cost and the need for savings is something we are all familiar with and a key outcome from sustainability research is instilling the perspective that carbon costs should be accounted for along with monetary costs. Top-down organisational savings in, for example, heating and lighting costs, will only take us so far. We need to create an awareness of costs, both monetary and carbon, in all services and build from the bottom up.

The approach taken by the NHS to establish robust clinical costing is to encourage and support the implementation of *Patient Level Information and Costing Systems* (PLICS). These systems are distinctive in that they focus on the costs associated with delivering care to individual patients – money follows the patient. The advantages of PLICS are clear:

*Once identified, these individual patient costs can be aggregated to provide cluster or service level costs, with the added advantage that these higher level costs can be drilled into to provide full detail of how they have been derived. In essence, it takes a bottom-up approach rather than the top-down approach traditionally used<sup>5</sup>.*

Although it will take some time to transform existing accounting systems within Trusts to PLICS, the principle of understanding what feeds into activity and service costs is currently a Department of Health reporting requirement. As set out in the DOH document *NHS Costing Standards 2010/2011*:

*Costs should be matched to the services that generate them and should reflect the full cost of the service delivered. This will be best achieved by maximising the proportion of costs charged directly to services and adopting a standardised approach to the apportionment of overheads and indirect costs<sup>6</sup>.*

We propose to apply the principle that “costs should be matched to the services that generate them” to the assessment of carbon costs of providing healthcare. This will bring carbon accounting in line with financial accounting and help to achieve the overall objective of being able to compare alternative approaches to providing care, i.e., care pathways, in terms of both financial and carbon costs.

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<sup>5</sup> Mental Health Clinical Costing Standards 2010/2011

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_109699](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_109699)

<sup>6</sup> NHS Costing Standards 2010/2011.

<http://www.dh.gov.uk/en/Managingyourorganisation/NHScostingmanual/index.htm>



## 2.2 MENTAL HEALTH SERVICE LINES

Much of the infrastructure for service-line reporting of carbon emissions is already in place, having been established for monitoring economic sustainability. Given that most estimates of carbon emissions are based on expenditure<sup>7</sup>, a natural first step would be to use service line categories mandated by existing reporting schemes. Two such reporting schemes are *Programme Budgeting* and the *Mental Health Minimum Data Set*.

### 2.2.1 PROGRAMME BUDGETING

Programme budgeting data has been collected annually by the DOH since 2003/04. Programme budgeting requires healthcare providers to split their expenditure by program budget categories and sub-categories based on medical condition (see Table 2.2.1). As described in the guidance documents, this information is then “*used by commissioners to evaluate and prioritise investment decisions*”<sup>8</sup>.

**Table 2.2.1 Programme budgeting categories and sub-categories**

Code	Main Category	Sub-categories	
<b>05</b>	<b>Mental Health Disorders</b>	A	Substance Misuse
		B	Organic Mental Disorders
		C	Psychotic Disorders
		D	Child and Adolescent Mental Health Disorders
		X	Other Mental Health Disorders
<b>06</b>	<b>Problems of Learning Disability</b>	X	Problems of Learning Disability

### 2.2.2 CARE CLUSTERS AND PAYMENT BY RESULTS

A second example of service line reporting already in place is The Mental Health Minimum Dataset (MHMDS)<sup>9</sup>. The MHMDS has been a mandated data return since 2003. It is described as

*an [approved NHS Information Standard](#) that delivers robust, comprehensive, nationally consistent and comparable person-based information on people in contact with specialist secondary mental health services. It is unique in its coverage, because it covers not only services provided in hospitals, but also in outpatient clinics and in the community, where the majority of people in contact with these services are treated.*

<sup>7</sup>DEFRA. Measuring and reporting environmental impacts.

<http://www.defra.gov.uk/environment/economy/business-efficiency/reporting/>

<sup>8</sup> Programme Budgeting Guidance for 2010/2011.

<http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Programmebudgeting/index.htm>

<sup>9</sup> Mental Health Minimum Dataset 2012. <http://www.ic.nhs.uk/services/mental-health/using-the-service/datasets-databases-and-data-collections/mental-health-minimum-dataset-mhmds>

For example, using the DOH online reporting system it is possible to generate a report for each Trust that shows the number of patients looked after by different types of clinical teams over the year (see Table 2.2.2).

Importantly, the MHMDS also carries data on Mental Health Clusters, the proposed currency for [Payment by Results for mental health](#) which is scheduled to be introduced in mental health in April 2012. Like the MHMDS, Care Clusters describe groupings of people using services. The International Standards Board for Health and Social Care defines Care Clusters as follows (Standard ISB 1509)<sup>10</sup>:

*Mental Health Care Clusters (Care Clusters) are groupings of service users based on their characteristics. They are a way of classifying individuals using Mental Health services that is intended to form the basis for payment.*

The examples of programme budgeting and the Mental Health Minimum Data Set illustrate that systems are in place for reporting expenditure and other activity data on the basis of services provided. With the introduction of Payment by Results and the implementation of Mental Health Care Clusters there will be increasing pressure on providers to work at the level of services and service users. Sustainability measures too, whether economic or environmental, should be accounted for and reported on at the level of services and service users.

**Table 2.2.2 MHMDS Clinical Teams**

<b>general adult psychiatry</b>
<b>psychiatry of old age</b>
<b>substance misuse</b>
<b>crisis resolution</b>
<b>early intervention in psychosis</b>
<b>assertive outreach</b>
<b>other team</b>
<b>missing or invalid</b>

<sup>10</sup> International Standards Board 2010. Mental Health Care Clusters Version 1.0. Standard Specification. <http://www.isb.nhs.uk/documents/isb-1509/amd-39-2010/1509spec.pdf>

### 3. NHT SERVICE LINES

In this section we discuss the NHT data and the identification of service lines within the data sets. It is important to recognise Service Line footprinting and analysis are dependent on accounting practices and other reporting classifications. The analyses require knowing the full cost of services, including building use costs, procurement costs (both pharmaceutical and non-pharmaceutical) and travel costs, ideally for staff, patients and visitors<sup>11</sup>. Consequently the analysis requires that the same service lines are used throughout the Trust's accounting systems. For example, service lines used to categorise pharmaceutical procurement must also be used to categorise heat and energy expenditure. Otherwise the true cost of the service is distorted.

#### 3.1 DATA SOURCES

The Nottingham Energy Partnership (NEP) was commissioned by NHT to produce a carbon footprint of the Trust. The Service Line Analysis presented here is based on data provided by NEP and should be read in the context of the NEP report "Trust Wide Carbon Footprint 2010/2011".

NEP's report should also be consulted for information on how data were collected and on how carbon equivalents were calculated.

Four files were supplied by NEP: (1) An estates master list linking service lines and buildings, (2) a spreadsheet showing buildings energy use, (3) a spreadsheet with itemised procurement data, and (4) a listing of pharmaceutical expenditure by drug category. These files were used to extract data sets covering:

- Buildings energy
- Procurement
- Travel and transport

The available NHT data with but a few exceptions were not categorised using a common set of service line designators. Thus a true service line analysis of NHT carbon expenditure, focusing on the carbon cost of different services, is not possible. However there are sufficient data to illustrate what a service line analysis might look like.

In addition, within activity areas such as buildings energy and procurement, it is possible to breakdown carbon emissions by the component services. For example we can breakdown local services procurement by the component services. These analyses are presented in Annex 1. Component Services Analysis.

The Service Lines identified in the NHT data sets and used in the present analysis are discussed in the sections that follow.

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<sup>11</sup> Staff commuting is included in The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (<http://www.ghgprotocol.org/>). Visitor and patient travel is included in the Sustainable Development Unit's NHS Carbon Reduction Strategy. [http://www.sdu.nhs.uk/documents/publications/1237308334\\_qylG\\_saving\\_carbon\\_improving\\_health\\_nhs\\_carbon\\_reducti.pdf](http://www.sdu.nhs.uk/documents/publications/1237308334_qylG_saving_carbon_improving_health_nhs_carbon_reducti.pdf)

### 3.1 NHT SERVICE IDENTIFIERS: BUILDINGS ENERGY

Service lines were identified from Directorate coding in the Buildings energy spreadsheet. Buildings energy use was classified using the Local Services Directorate and Forensic Services Directorate acronyms shown in the first column of Table 1.

In most cases buildings (or offices, wards or departments within buildings) were associated with a single Directorate code. In those cases where multiple directorates had been assigned to a single site, e.g., Highbury Hospital, carbon data were apportioned and allocated to individual directorates.

TABLE 1. SERVICE LINES USED TO CATEGORISE BUILDING ENERGY USE.

<b>Local Services Directorate</b>	<b>Note</b>
AMH	Adult Mental Health (City and county)
MHSOP	Mental Health Services for Older People
CAMHS	Child and Adolescent Mental Health Services
LD	Learning Disorders
SMS	Substance Misuse Services
Corporate	Collection of additional services and administration
<b>Forensic Services Directorate</b>	<b>Note</b>
High Secure	All entries for Rampton Hospital
Medium Secure	All entries for Arnold Lodge and Wathwood Hospital
Low Secure & Community	All expenditure classified as Forensic not included in High or Medium Secure

*Note:* Waste data was not available at the time of this analysis.

The 'Corporate' directorate was used as an 'other' category, and included data from difficult to classify entries such as buildings that had been or were going to be disposed of, as well as direct building use data for administrative buildings.

### 3.2 NHT SERVICE IDENTIFIERS: PROCUREMENT

The budget categories used to classify procurement data, including travel and transport are shown in Table 3.2. The 'Second Level Hierarchy' designators were taken as broadly equivalent to service lines for the purposes of the service line analyses of procurement data.

TABLE 3.2. BUDGET CATEGORIES USED TO CLASSIFY PROCUREMENT ACTIVITY, INCLUDING TRAVEL AND TRANSPORT.

<b>TOP DIRECTORATE/Directorate</b>	<b>Second Level Hierarchy</b>
<b>CORPORATE</b>	
Chief Executive & Board	Chief Executive & Trust Board
	Institute Of Mental Health
Dir Finance Perform & Supplies	Ed Finance Perform & Supplies
Ed:Medical And Informatics	Exec Dir Medical & Informatics
Exec Dir Nursing & AHP	Nursing & Allied Health Prof
Capital	Trust Balance Sheet
<b>FORENSIC</b>	
Exec Dir Forensic	Forensic High Secure
	Forensic Medium Secure
	Nottinghamshire Community
	Offender Healthcare Dir
<b>LOCAL SERVICES</b>	
Exec Dir Local Services	Adult - City Services
	AMH County
	Improv Acc To Psych Therapies
	Local Services Non Clinical
	MHSOP
	Specialist Services

Note: Pharmaceutical procurement was not classified in the same way as other procurement data and consequently could not be included in the general procurement analysis.

### 3.3 NHT SERVICE IDENTIFIERS: TRAVEL AND TRANSPORT

Transport and travel items were identified from within the procurement data. All items with the NSV (National Supplies Vocabulary) codes shown in Table 3.3 were classified as relating to travel and transport.

**Table 3.3 Procurement codes used to identify travel and transport related items.**

NSV Code	Description
Air	Air
LJD999	Petrol and Derivatives
Rail	Rail
XAZ999	Vehicle Parts, Maintenance, Repair And Tests
XIZ999	Vehicle Purchasing Non Ambulance
XJZ998	Vehicle Hire And Lease (Vat Exempt)
XJZ999	Vehicle Hire And Lease
ZEZ998	Transport, Distribution And Removals
ZLC999	Taxi Hire Services

Note: The analysis of travel and transport does *not* include staff travel to and from work, patient travel, or visitor travel. Only travel data included in the procurement data were included.

### 3.4 SERVICE LINES COMMON TO 3 ACTIVITY AREAS

Service line identifiers available in the NHT data were to a large extent specific to the three activity areas (buildings energy, procurement, travel). Buildings energy for example used one set of service line identifiers, while procurement used another. Service line analysis consequently was possible only in the broadest sense. Service line analysis at the level of clinical services was not possible.

Two sets of common services could be derived:

- 1) Directorate level services
  - a. Corporate
  - b. Local
  - c. Forensic
  
- 2) Ad hoc services
  - a. Forensic High
  - b. Forensic Med
  - c. Forensic Low
  - d. Adult Mental Health
  - e. Mental Health Services for Older People

## 4. NHT CARBON FOOTPRINTS

The available data allowed two general types of analysis. The first type is identifying the carbon footprints of the individual Directorates and the Ad Hoc Service Lines described above. This is in keeping with the notion that the service lines are the natural business units of the Trust and can be treated separately. It is meaningful, for example, to talk about the economic and environmental sustainability of each of the independent service lines. These analyses are presented in the sections that follow.

The second type of analysis is the breakdown of the different component activities that contribute to carbon costs. For example, carbon emissions related to procurement may be analysed in terms of the how much various services contribute to the total. Several examples of this type of analysis are provided in Annex 1. Component Service Analyses and others are available in Appendix I of the NEP report.

### 4.1 DIRECTORATE FOOTPRINTS

Table 4.1 shows the relative contributions of buildings energy, procurement and travel to the carbon footprints of the Directorates. It is included to illustrate that the Organisational footprint is an average and that service line footprints are likely to differ.

Table 4.1 Directorate Footprints

Service Level	Buildings	Procurement	Travel
<b>Corporate Directorate</b>	21%	74%	5%
<b>Local Services Directorate</b>	22%	72%	6%
<b>Forensic Services Directorate</b>	47%	52%	1%
<b>NHT Organisation</b>	38%	59%	3%

Directorate footprints differed from the Trust-level footprint and from each other. For example buildings energy use accounted for 38% of the Trust's carbon emissions but only 22% of Local Services emissions. Similarly, at the Trust-level 59% of carbon emissions were associated with procurement, whereas for both Corporate and Local Services over 70% of carbon costs came from procurement.

## 4.2 SERVICE LINE FOOTPRINTS

Service Line Footprints are a measure of the environmental impact of specific mental health services. To be useful the service line definitions should be consistently applied and data consistently gathered in all activity areas (e.g., energy use, procurement and travel).

Figure 4.2 shows the service line carbon emissions for the service lines identified in the NHT data.

Together these 5 services account for 68.55% of the total carbon footprint of the Trust – 55,767 tonnes of carbon equivalent emissions. For most services procurement is the largest source of CO2e emissions, but Forensic High-Secure services stand out in their building energy use.

**Figure 4.2 Service Line Carbon Emissions**

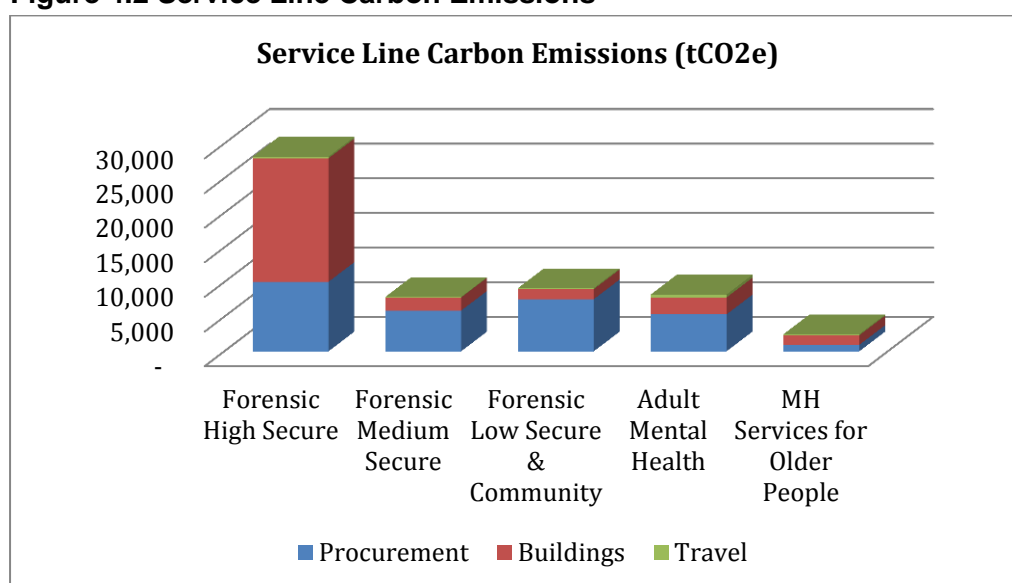
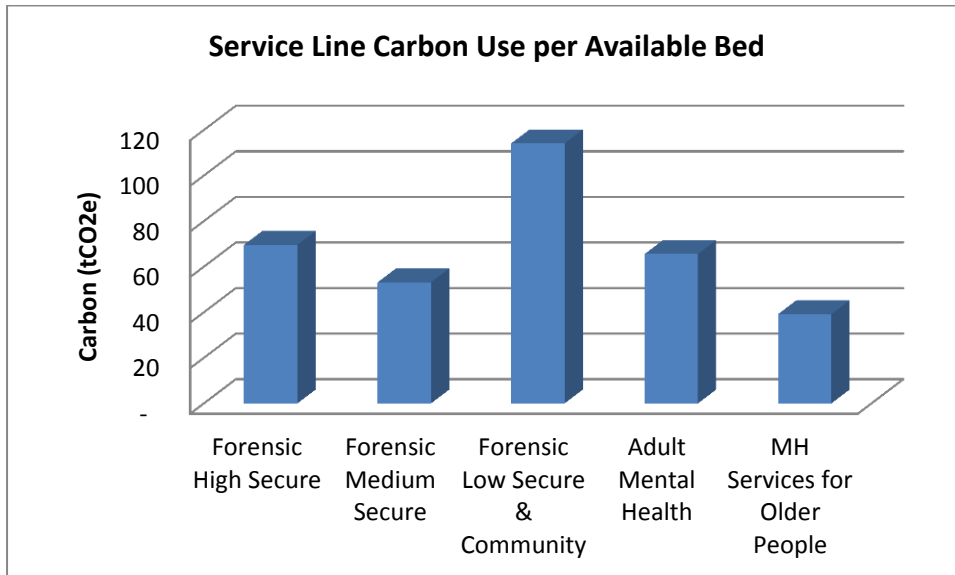


Table 4.2 shows the constituent parts of the carbon footprint for each of the 5 service lines. There is considerable variability and some service lines differ drastically from the Trust and National footprints. Procurement related emissions for example varied from 35.7% (MHSOP) to 82.5% (Forensic Low Secure & Community). Similarly Building Energy varies from 15.8% of the service line footprint to 63.4%.

Service Line	Procurement	Building Energy	Travel	Total
Forensic High Secure	35.7%	63.4%	0.8%	100%
Forensic Medium Secure	74.7%	24.1%	1.1%	100%
Forensic Low Secure & Community	82.5%	15.8%	1.7%	100%
Adult Mental Health	65.1%	29.7%	5.1%	100%
MH Services for Older People	37.9%	55.9%	6.2%	100%
Average	53.3%	44.8%	1.9%	100%



Comparing the carbon costs of different service lines is possible when a suitable denominator can be found to standardise the measure of carbon use. Carbon costs may then be expressed as cost per patient, cost per contact, cost per admission and so forth. As an example only, Figure 4 illustrates what a service line footprint would look like when standardised using NHT ERIC data on available beds<sup>12</sup>. Standardisation is necessary when comparing Service Line costs across Trusts, and is a step towards assigning carbon impact ratings to patient care pathways.



<sup>12</sup> We are not proposing to use 'Available Beds' as a measure. It was chosen simply because it was included in the NTC Eric return and consequently we had data for the 5 Service Lines being discussed.

## 5. CONCLUSION AND RECOMMENDATIONS

**U**nderstanding the carbon cost of mental health services and breaking down a Mental Health Trust's carbon footprint to the level of constituent services will support the engagement of clinicians and patients, and will allow the inclusion of carbon reduction as a driver in the redesign of services. As recognized by Monitor, which in future will license providers of and set prices for NHS services in England,

*the service line is the natural "business unit" of the hospital - a distinct unit with identifiable customers, products, revenues and costs that is run as an independent business with its own income and expenditure.*

### **Major Recommendations:**

- Carbon costs should be accounted for in parallel with and using the same principles as monetary accounting.
- Carbon footprints should be prepared for the top level Directorates, clinical service lines and care pathways wherever possible.
- Activity data across buildings, procurement and travel should be labelled using a common set of service identifiers.
- A standard unit, e.g. carbon cost per patient, must be agreed. This is needed to compare one Trust to another or one service to another.

# ANNEX 1. COMPONENT SERVICES ANALYSES

## A1 PROCUREMENT

Procurement accounted for over 50,000 tonnes of CO<sub>2</sub>e emissions, roughly 62% of the total footprint of NHT. In this section we examine the relative contributions to the procurement footprint first by the high-level Directorates and then by service lines within those Directorates.

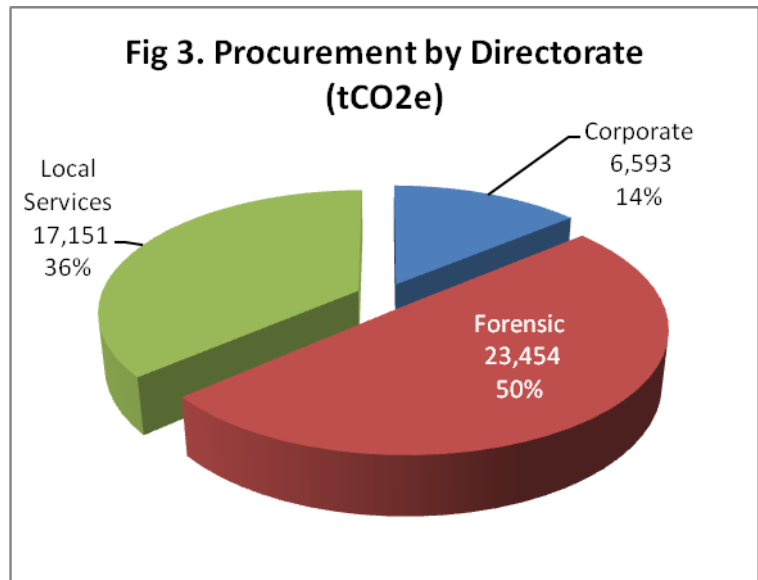
### PROCUREMENT BY DIRECTORATE

Figure 3 shows a breakdown of procurement related emissions by high-level Directorate.

Forensic services accounted for one-half of the Trust's procurement related emissions, the equivalent of over 23,000 tonnes of carbon.

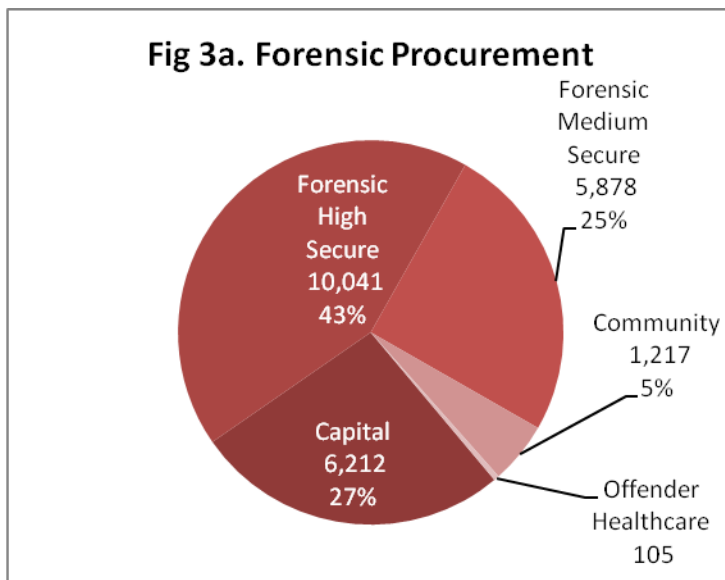
The second largest contribution to green-house gas emissions was from Local Services, with 17,151 tonnes CO<sub>2</sub>e or about 36% of the total.

Corporate activities accounted for 6,593 tonnes of CO<sub>2</sub>e, 14% of the total.



## FORENSIC PROCUREMENT

A breakdown of Forensic Procurement by second level directorate is shown in Figure 3a. High Secure Services were responsible for 43% of emissions in the Forensic Directorate which itself is responsible for 50% of procurement related emissions in the Trust. One quarter (25%) of Forensic procurement was related to Medium secure services.

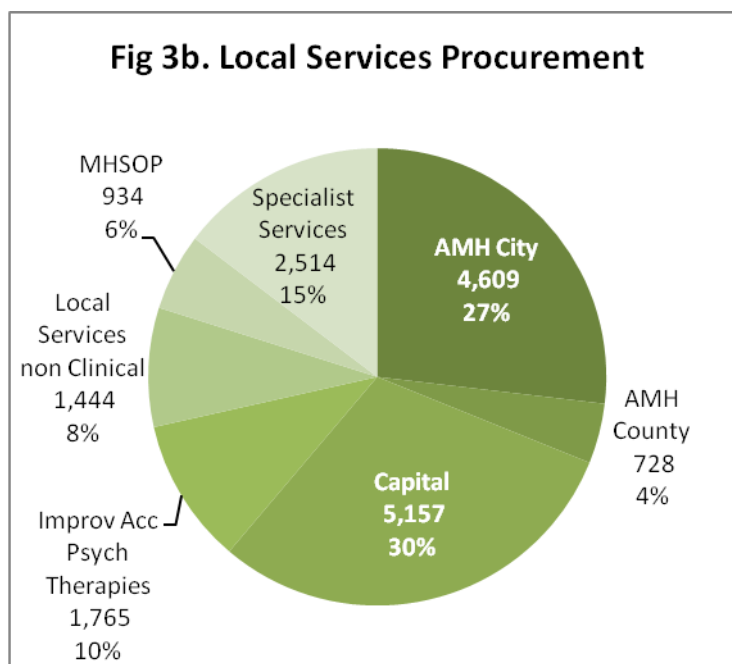


## LOCAL SERVICES PROCUREMENT

Figure 3b provides a breakdown of Local Services CO2e emissions related to procurement (see Table 1 above for an explanation of the acronyms).

Adult Mental Health (AMH) services were the largest contributor, with 27% from City services and 4% from county – almost 1/3 of the total.

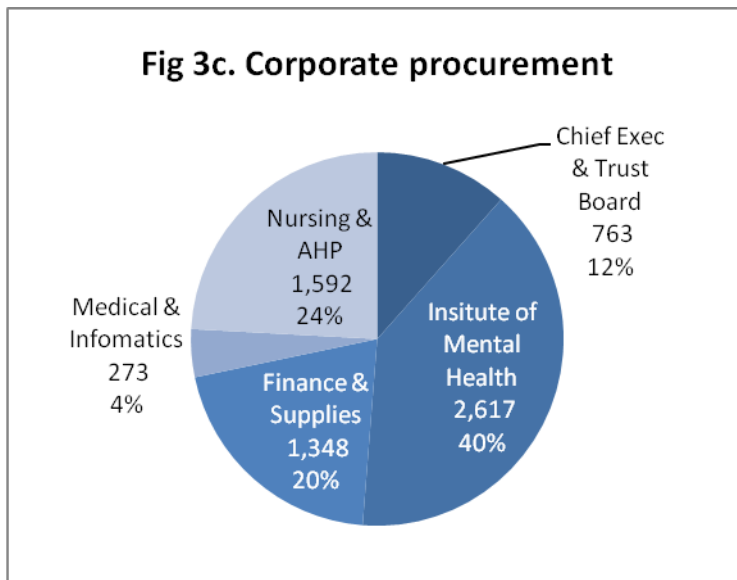
Capital expenditure, which included diverse items such as computer supplies, catering equipment and buildings maintenance, accounted for a relative large proportion of local services procurement.



## CORPORATE PROCUREMENT

Corporate procurement, which comprised 14% of the Trust's total procurement costs, is shown by service line (second level hierarchy) in Figure 3c.

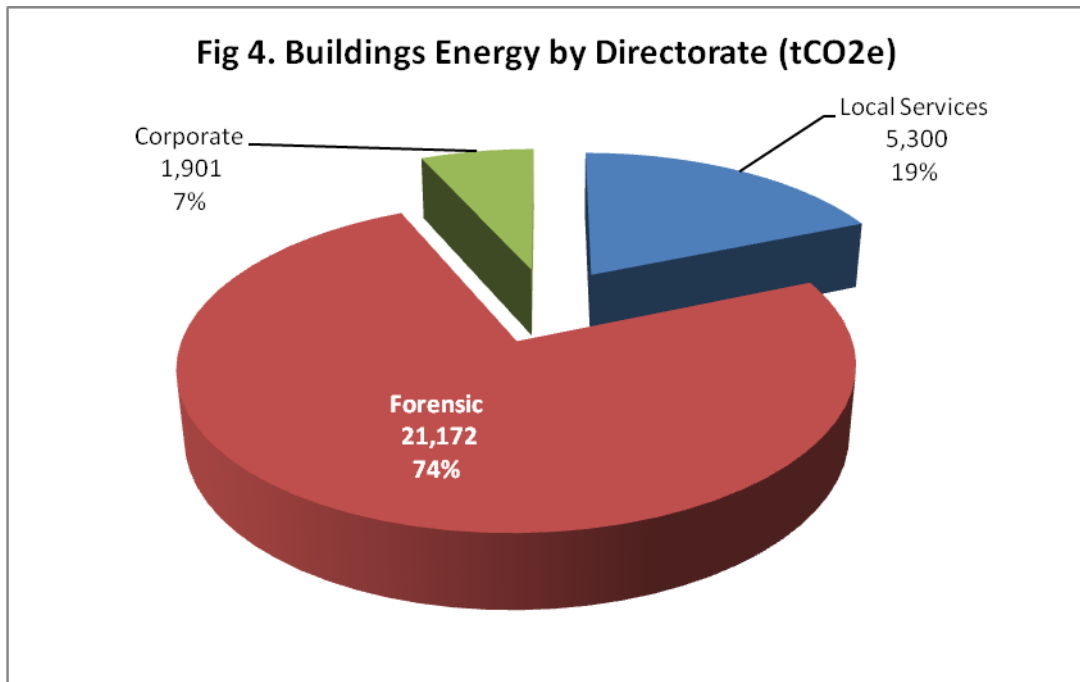
The Institute of Mental Health accounted for 40% of Corporate Procurement, while Nursing and Allied Health Professions accounted for a further 24%.



## A2 BUILDINGS ENERGY USE

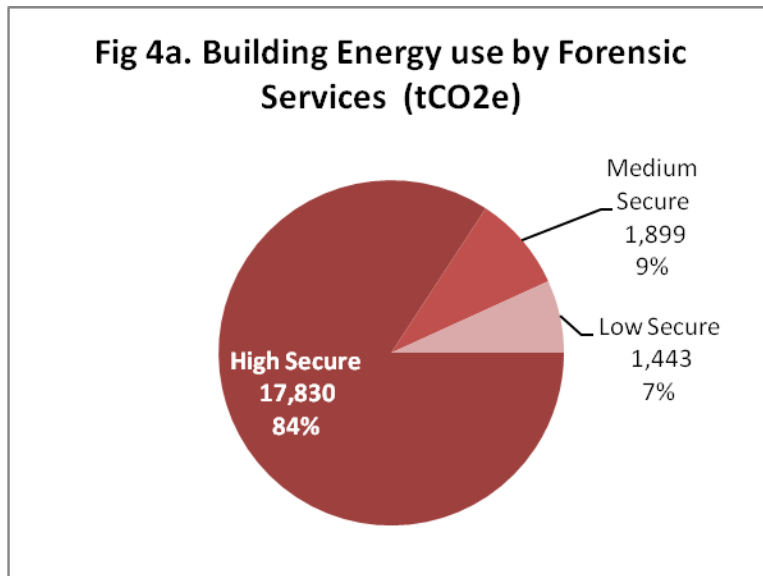
Figure 4 shows the top-level Directorate breakdown of buildings energy use. Forensic Services stand out as the major contributor to buildings energy carbon expenditure, accounting for nearly three quarters of the Trust total and producing over 21 thousand tonnes of CO<sub>2</sub>e per year.

Local Services accounted for 5,300 tonnes of CO<sub>2</sub>e emissions or 19% of the total building energy use, with the Corporate category associated with a further 7%.



## BUILDING ENERGY USE BY FORENSIC SERVICES

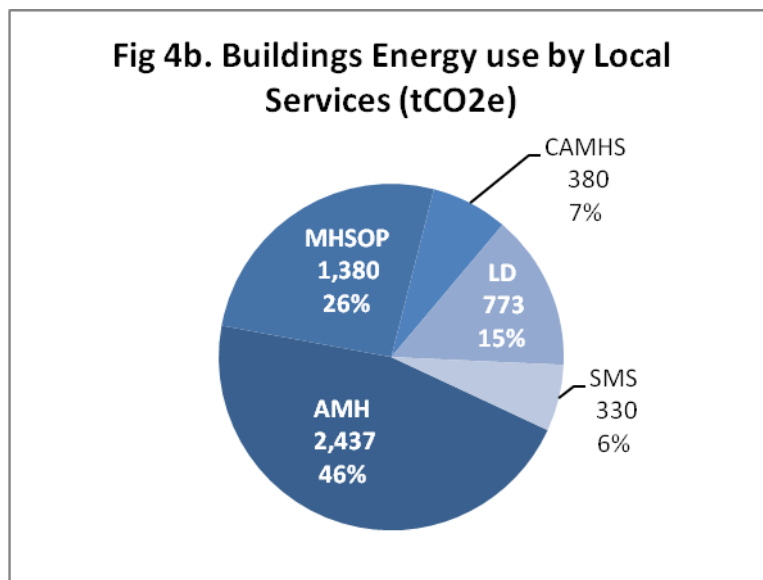
Figure 4a breaks down the total Forensic Services contribution to building energy use and documents that the majority of emissions are attributable to High Secure Services, which account for 84% of the total. Medium secure and low secure together account for about 16% of Forensic Services building energy use – although low relative to High Secure services this is still over 3300 tonnes of CO<sub>2</sub>e.





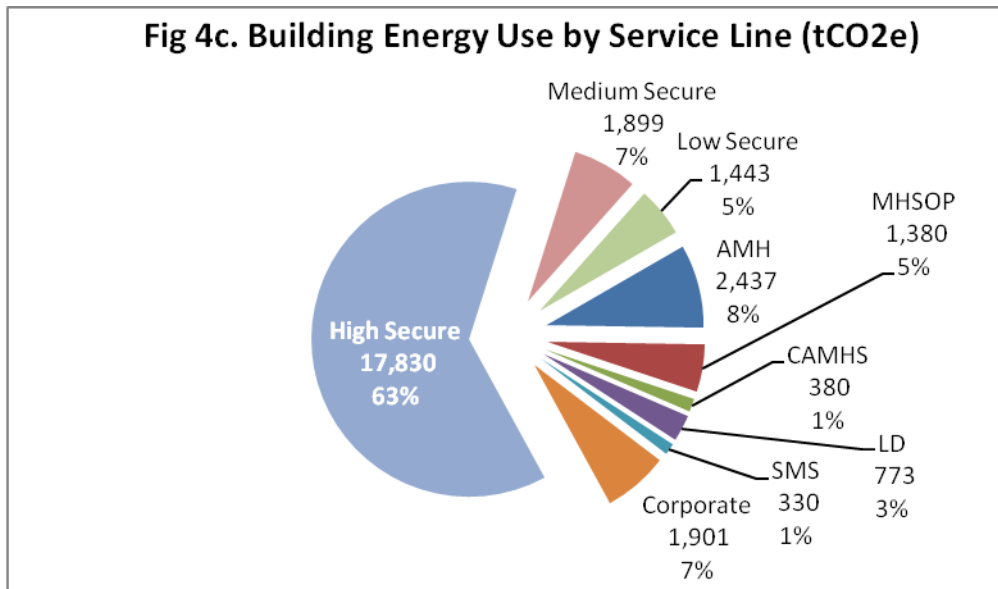
## BUILDING ENERGY USE BY LOCAL SERVICES

Figure 4b shows the breakdown of Local Services buildings energy use. Nearly one-half (46%) of the energy use was allocated to Adult Mental Health services, with a further one-quarter (26%) to Mental Health services for Older People. Learning Disorder services were responsible for 773 tonnes of CO<sub>2</sub>e emissions or 15% of the Local Services total building energy use.



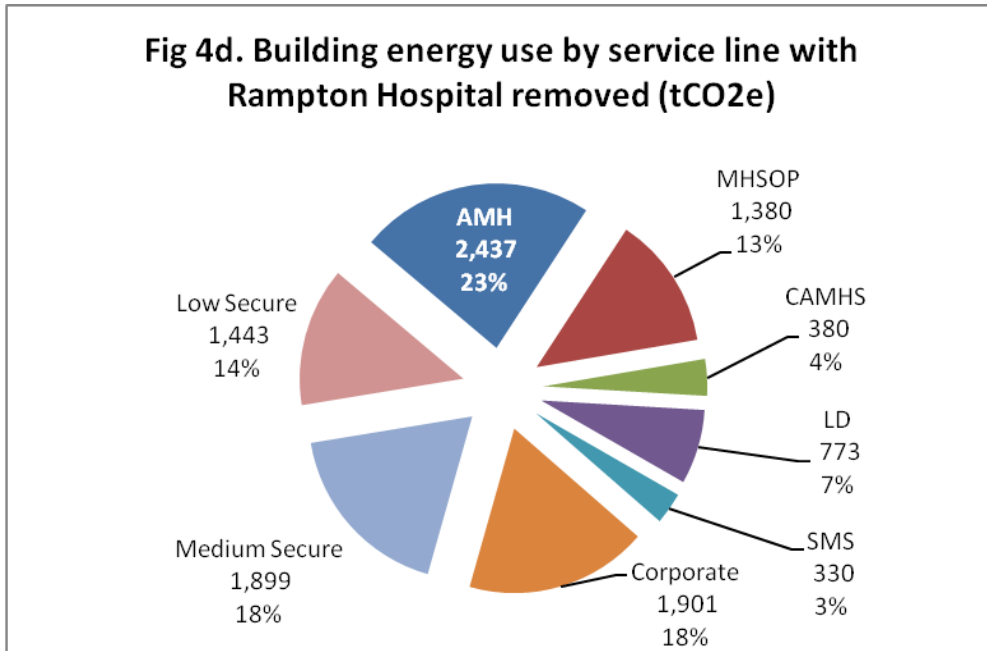
## BUILDING ENERGY USE BY SERVICE LINE

Figure 4c shows building energy use for services lines in Local Service, Forensic Services and Corporate Services. Note that for the purposes of this analysis Corporate Services are treated as a single service line.



## BUILDING ENERGY USE BY SERVICE LINE WITH RAMPTON HOSPITAL REMOVED

Figure 4d shows building energy use by service line with Rampton Hospital high secure services removed. This reveals a much more balanced picture. With High-Secure Services removed, Adult Mental Health accounted for 2,437 tonnes of CO<sub>2</sub>e or 23% of the remaining emissions, followed by Medium Secure Services and Corporate with about 1,900 tonnes or 18% each.



### A3. TRAVEL & TRANSPORT: 1. EMISSION DATA BY DIRECTORATE AND SERVICE LINE

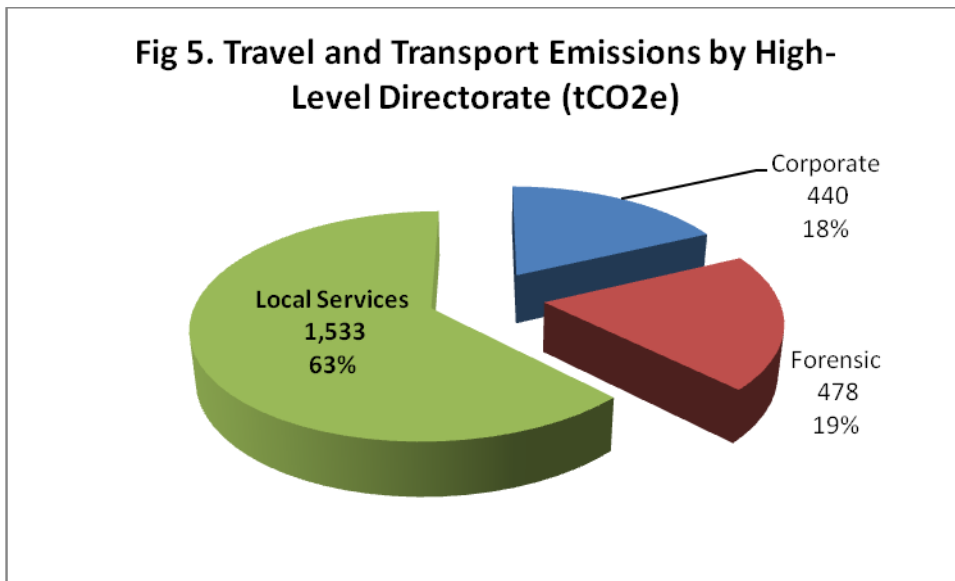


Figure 5 shows travel and transport related emission data broken down by high-level Directorate. Local Services are responsible for the bulk of emissions in this category, with emissions of over 1500 tonnes CO<sub>2</sub>e or 63% of the total.

## LOCAL SERVICES TRAVEL BY SERVICE LINE

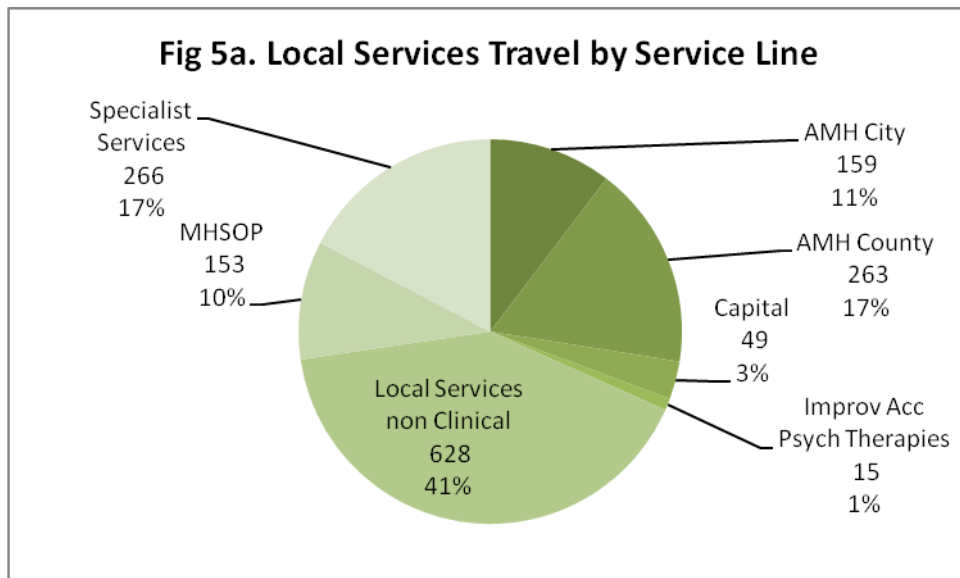
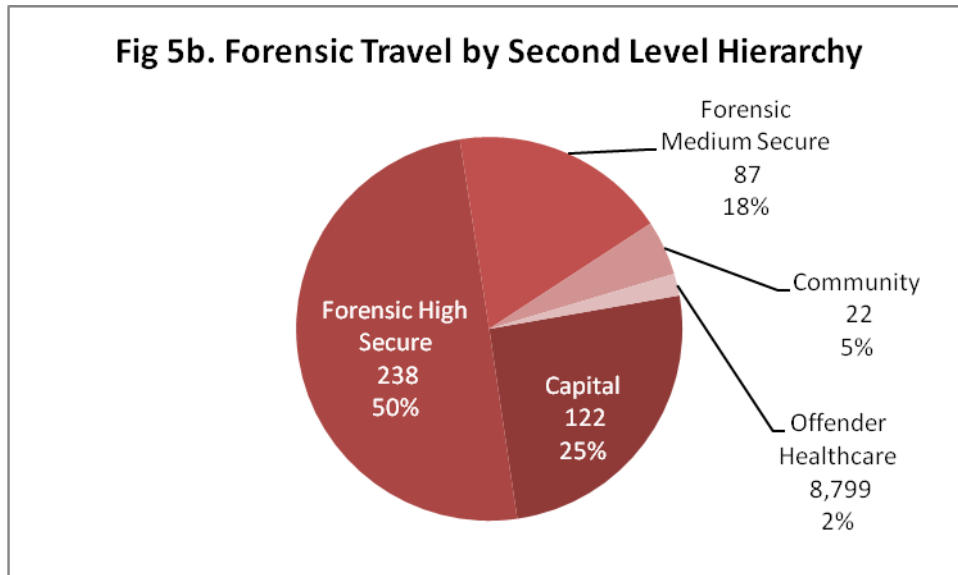


Figure 5a shows that within Local Services, the category 'Local Services Non-Clinical' dominated with 41% of the total or 628 tonnes of carbon emissions related to travel and transport. AMH County had higher travel related energy use than did AMH City. Together they accounted for 28% of the total Local Services travel related CO<sub>2</sub>e emissions.

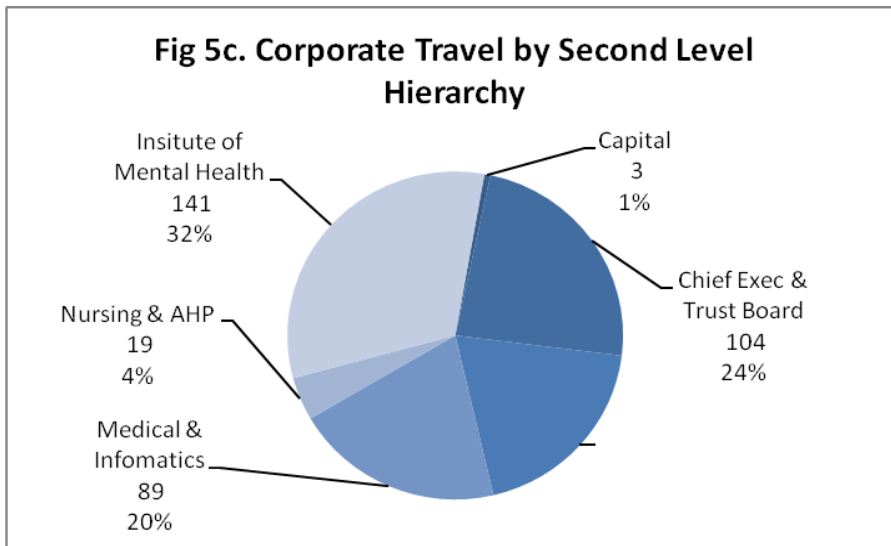
## FORENSIC TRAVEL BY SERVICE LINE

Figure 5b provides a breakdown of forensic travel by services. One-half of forensic travel takes place in the High-Secure service, with a further 25% associated with the budget category 'Capital'.



## CORPORATE TRAVEL BY SERVICE LINE

Figure 5c provides a breakdown of Corporate travel by service line. As the figure illustrates, around a third of Corporate travel emissions are attributable to the Institute of Mental Health with another quarter associated with the Chief Executive and Trust Board.

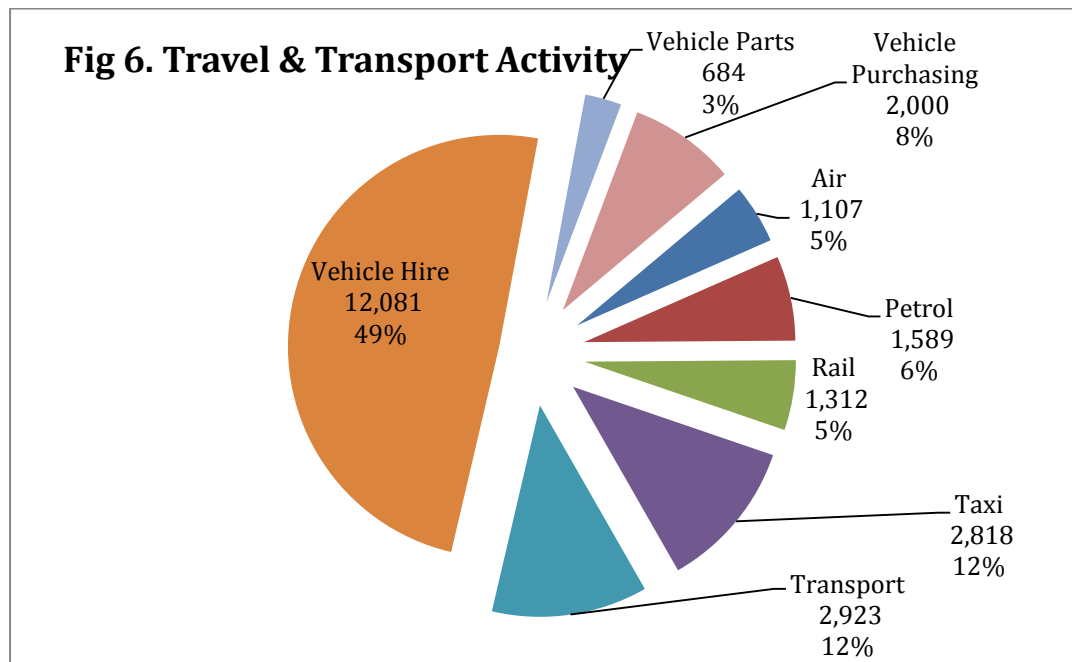


## A4 TRAVEL & TRANSPORT: 2. ACTIVITY DATA

Figure 6 shows travel and transport carbon emissions broken down by activity as defined by the transport related NSV (National Supplies Vocabulary) codes in the procurement data file.

Vehicle hire is clearly the single largest contributor to travel and transport emissions.

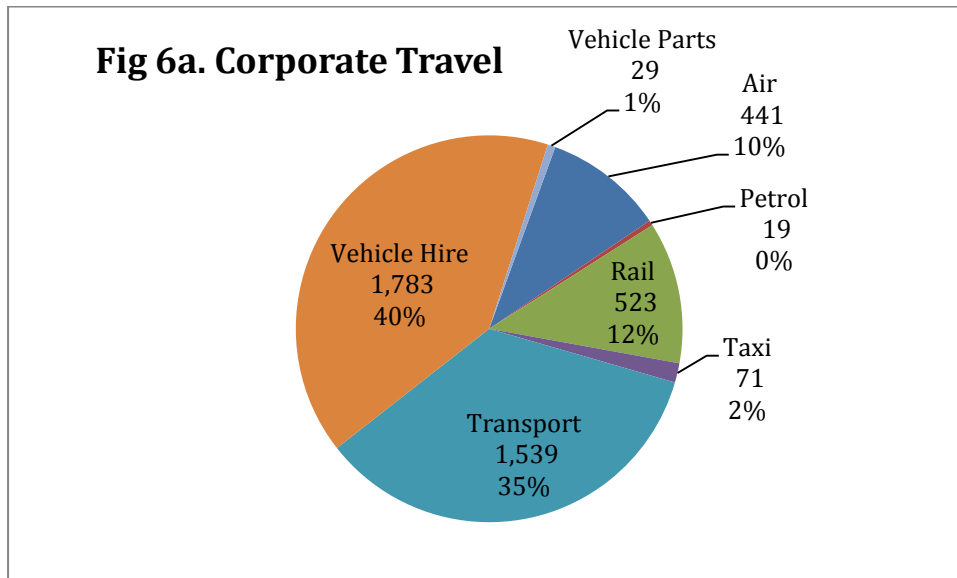
These figures are conservative and likely to increase dramatically once staff commuting, and patient and visitor travel are included.





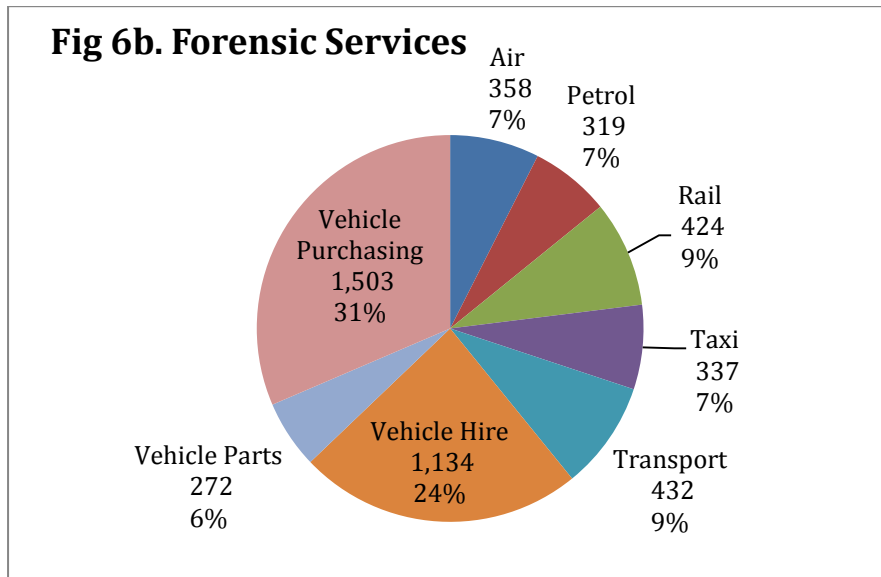
## CORPORATE TRAVEL

Figure 6a shows tonnes of CO<sub>2</sub>e emissions associated with Corporate travel and transport. Vehicle hire is the largest source of emissions, but transport is a close second and together they account for three-quarters of carbon use in this Directorate.



## FORENSIC SERVICES TRAVEL

Figure 6b shows the travel and transport activities for Forensic Services. Vehicle Purchasing stands out as the greatest contributor to carbon use with over 1,500 tonnes of CO<sub>2</sub>e.



## LOCAL SERVICES TRAVEL

Figure 6c shows travel and transport activity for Local Services. Vehicle hire and taxi use together represented 76% of Local Service travel emissions. Vehicle hire contributes over 9,000 tonnes of CO<sub>2</sub>e compared to 1,134 and 1,783 tonnes for Forensic Services and Corporate Services respectively.

