

Chapter 4: The missing Headington Hospitals problem analysis: Impact assessment and mitigation plan

Introduction

1. This chapter focuses on two key issues that we believe are closely interrelated. Firstly, building on our findings in chapter one, we explain how we believe Oxford's hospitals pose a significant challenge to Oxfordshire County Council's traffic reduction policies – in this case, its congestion charge proposal. In this section, we also indicate what we believe are deficiencies of the current main options for modal shift for longer journeys into Oxford – namely park and ride – by reference to hospital traffic. In the second part of this chapter, we highlight the unhelpful role of mapping software in both encouraging traffic – in this case, hospital traffic – through Oxford's city centre, while also failing to encourage modal shift to avoid doing so. We conclude this chapter by reappraising Steer's analysis of the likely impact of Oxfordshire County Council's congestion charge proposals on Oxford's hospitals.
2. Having explored the challenges posed by vehicular access to Oxford's hospitals in this chapter, we develop solutions in chapter 5, with a particular focus on park and ride provision.

Part one: The centrality of Oxford's hospitals to traffic generation

3. To the best of our knowledge, Oxfordshire County Council has undertaken very little research into the traffic and congestion issues caused by Oxford's hospitals. This is surprising, given the extent to which the hospitals contribute to both. So far, we have located one page of analysis in Steer's Business Impact Assessment¹ (BIA), produced as part of its 2022 traffic filters analysis. Steer's more recent Modelling and Income Forecasting Report² dated June 2025, says nothing new on this topic.
4. The 2022 Steer BIA report contains a more extensive version of the chart below, which we present in modified form to focus on its hospital analysis. In this table, Steer's "-1" score under the "Effect in labour market – recruitment and retention" heading means Steer anticipates that hospitals will suffer from a slight adverse effect on recruitment as a result of the traffic filters – and, by extension, from the congestion charge. Otherwise, Steer believes, hospitals will be unaffected by the policy.
5. This report disagrees with Steer's analysis. In doing so, we begin by explaining the actual scale of the transport and traffic problems facing Oxford's hospitals, about which Steer appears unaware. We undertake this analysis with the aim of seeking to understand the likely impact of the congestion charge proposals on Oxford's hospitals, its visitors and its

¹ Steer. Oxford Traffic Filters Business Impacts. October 2022. Available [here](#).

² Steer. Traffic Filters Temporary Road Charging Scheme – Modelling and Income Forecasting Report. June 2025. Available [here](#).

workforce. In light of what we have found, chapter 5 recommends traffic and congestion mitigation measures, which we believe will be effective.

Table X.4: Steer's business impact assessment – effects on the public sector

Business type	Sub-group	Travel time	Direct costs	Effect on business operations	Effect on business demand / market	Effect on labour market-recruitment & retention
Public sector	Schools	0	0	1	0	-1
	Hospitals	0	0	0	0	-1
	Universities	0	0	0	0	0

- To aid our analysis, we have used publicly available data to produce a comprehensive report on the staff and visitor logistics, which support Headington's hospitals. Then, using simple process improvement tools such as customer journey mapping, we have used Google Maps, to devise what we regard as workable solutions. We aim to mitigate against the significant traffic impact of Oxford's hospitals, which also support Oxfordshire County Council's objective of reducing the use of the private car in Oxford. However, unlike the council's congestion charge proposals, our proposals are based on carrots, not sticks. They are also based, we hope, on a reasonable understanding of traffic flows into, and out of Oxford's hospitals, by both cars and buses.

Our problem analysis

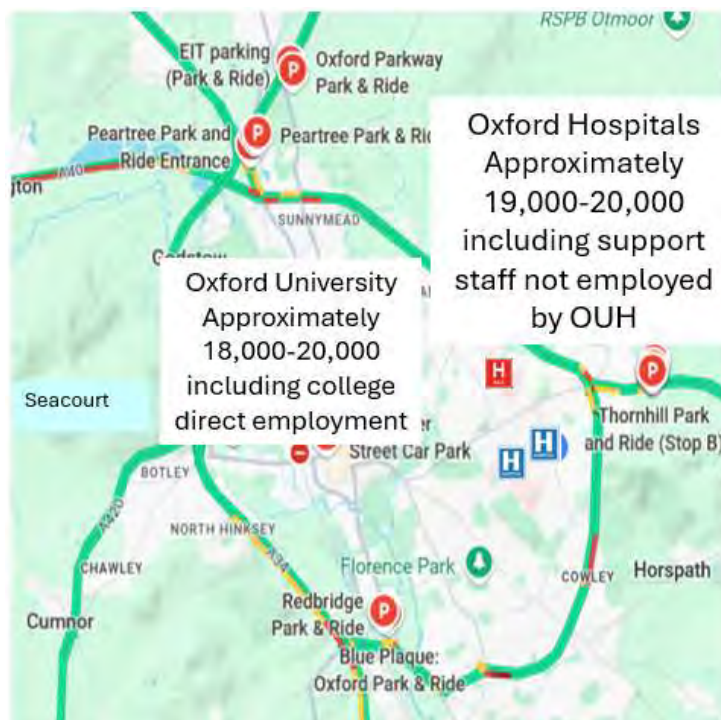
- By way of background, we understand that two of Oxford's largest employers are the University of Oxford and the Headington hospitals. Both are within the city's ring road. Oxford University's workforce is approximately 19,500³, whereas the Oxford University Hospitals (OUH) NHS Foundation Trust employs almost 14,000⁴ – with several thousand more also working indirectly for the organisation, via various third-party organisations.
- Understanding workforce headcount matters because, while the city centre is well served by existing bus services, Headington's hospitals are not. The deficiency in Headington's bus service is, we believe is the root cause of many of Oxford's traffic problems – especially given that Headington is a rapidly growing centre of employment.
- Another key reason why we believe that Oxfordshire County Council's current approach to traffic management – i.e. its congestion charge proposals – is misguided, is because the congestion charge focuses on Oxford city centre. However, the teaching side of the University of Oxford only operates for around 25 weeks each year. This explains why much of the city centre is deserted, and traffic and congestion is non-existent, for nearly half the

³ University of Oxford. Annual Report and Accounts 2023 – 2024. Available [here](#).

⁴ Oxford University Hospitals NHS Foundation Trust. Annual Report and Accounts 2024-2025. Available [here](#).

year. By contrast, Headington's hospitals work all year round. As a result, they likewise generate traffic and congestion all year round, especially in Headington. Oxfordshire County Council's planned congestion charge will not operate in this area.

Illustration X.1: The main locations of Oxford's major employers compared



10. The University reports that over 60% of its staff live outside the city. OUH, meanwhile, reports that 80% of its staff live outside the city⁵. Oxford Brookes did not give a precise figure in its Travel Survey 2022. However, in Appendix A of this report⁶, Brookes published the map below, showing the location of staff postcodes and travel modes into work. Brooke's more recent 2024 staff and student travel survey indicated that 31% of the university's staff commuted in by car alone, and a further 4% car shared. By contrast, just 8% of students came in by car alone, with 3% car sharing⁷.
11. With so many staff at major Oxford employers living outside the city and travelling in by car, it is useful to review the current provision of park and ride services that enable staff to get to work. We first explore park and ride provision in relation to Oxford city as a whole, before focusing on Headington's hospitals.

⁵ Oxford University Hospitals NHS Foundation Trust. Healthy Travel Strategy: 2025 – 2027, A framework for travel strategy for the John Radcliffe. Acting CEO's forward. Available [here](#).

⁶ TPS. Staff & Student Travel Survey Report September 2022. Available [here](#).

⁷ Oxford Brookes University. Staff & student travel surveys 2024. Overview of results. Available [here](#).

Illustration X.2: Oxford Brookes staff – home locations and travel to work modes

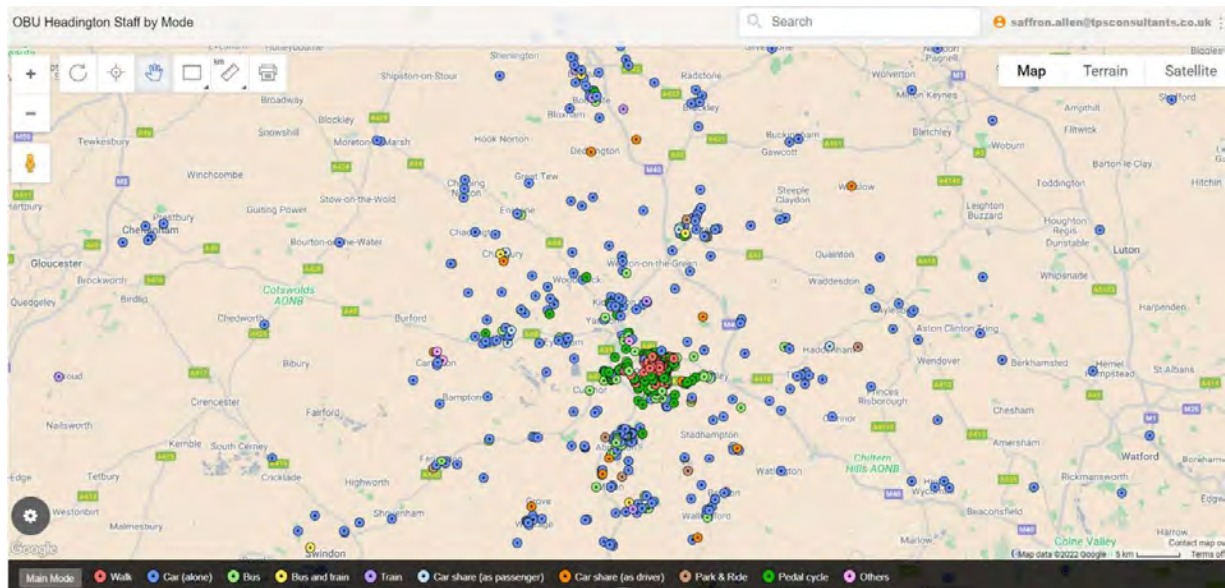
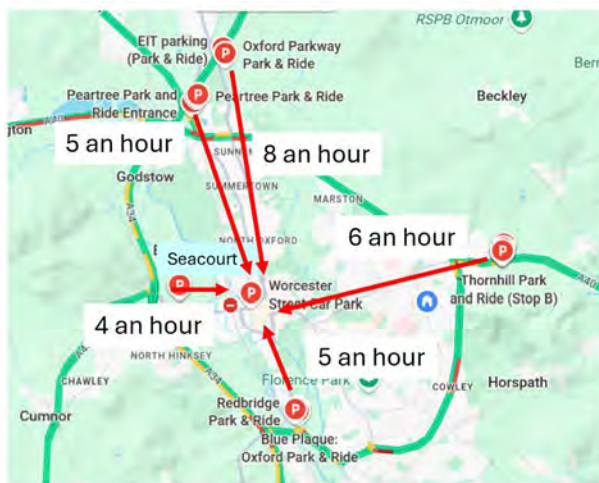
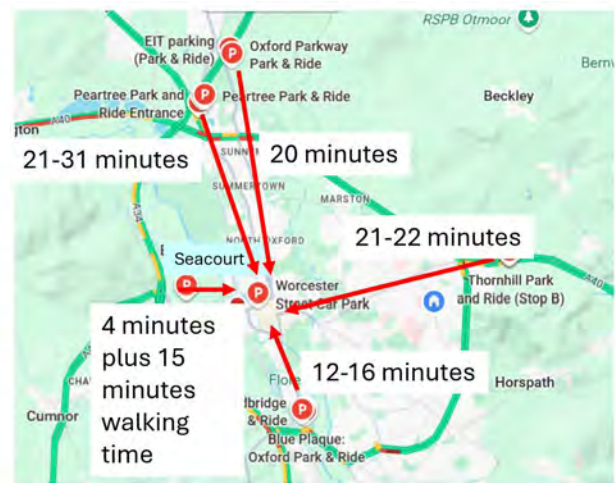


Illustration X.3: current park and ride arrangements for the city



Total 28 P&R buses an hour



Time to get in from 4/12 to 31 minutes

Illustration X.4: current park and ride arrangement for Oxford's hospitals



Total 7-8 P&R buses an hour to JR and Churchill/Nuffield
 Plus 6 an hour to Headington Shops on the 400
 Plus 2 from Oxford Rail Station

Time to get in from 14-47 minutes.
 400 takes 8 minutes to Headington Shops,
 then a 13-minute walk, total 21 minutes

12. Another way to portray the above is to weigh line thickness according to park and ride bus frequency. And, when park and ride bus frequencies are compared with Oxford's main population centres, it immediately becomes apparent there is a mismatch between the two. With the exception of Aylesbury, there are no large nearby population centres close to the east of Oxford. Instead, Oxfordshire's main population centres are primarily to the southwest and northeast of the city. This means that, to use Thornhill park and ride, commuters must commute around the ring road, out to Thornhill, and then into Headington. This all adds journey time, and contributes to park and ride being a less attractive option when compared with point-to-point travel.

Illustration X.5: The frequency of Oxford's park and ride services



High frequency from the east,
 less frequent from the south,
 infrequent service (every half
 hour) or no service from other
 directions

Illustration X.6: Oxfordshire's main population centres

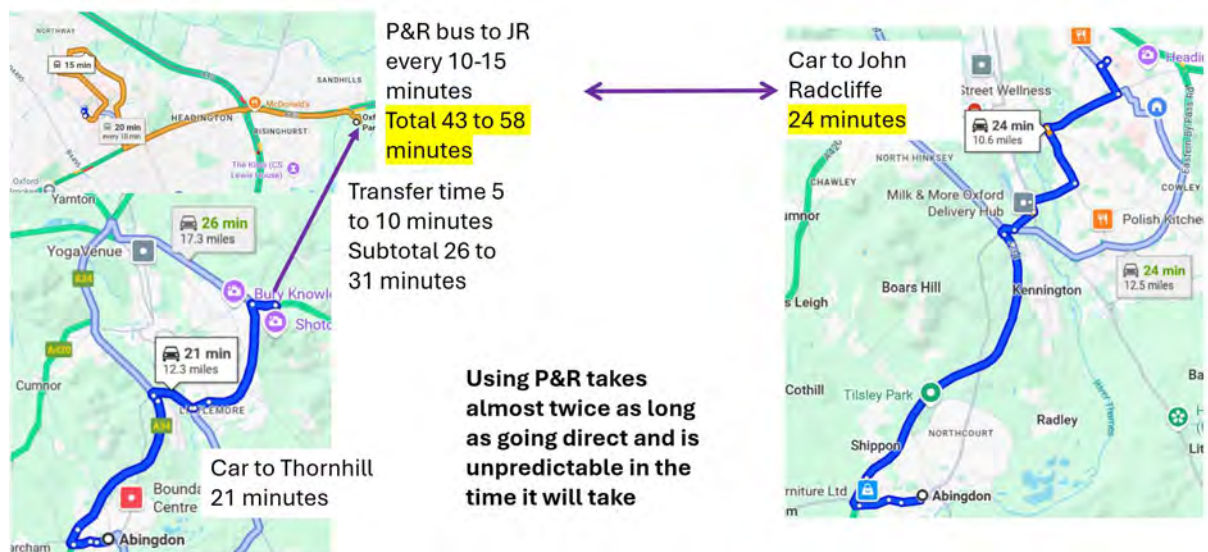


In 2023, the population of Oxford is estimated at 165,200 while the population of Oxfordshire is estimated at 750,000 in 2023. So roughly 78% of the Oxfordshire population, some 585,000, live in Oxfordshire but outside Oxford.

Populations in orange are outside OUH's primary catchment of Oxfordshire

13. To illustrate this point, we compare journey times from Abingdon to the John Radcliffe, both direct and via Thornhill park and ride. There is a clear winner (direct travel) and a clear loser (travel via park and ride). This matters, because journey unpredictability and total travel time are the two highest complaints about using public transport.

Illustration X.7: comparing car journey times from Abingdon to the John Radcliffe – direct versus Thornhill park and ride



Historical growth of employment in Headington

14. Headington has a long medical history: the Warneford hospital opened in 1826⁸, followed by the Nuffield Orthopaedic Centre in 1872⁹ and the first hospital on the Headington Manor site, now the John Radcliffe, opening in 1927¹⁰. The Churchill Hospital opened in 1942¹¹.
15. To illustrate the post-war growth in hospital employment in Headington, the John Radcliffe Hospital opened in 1972 with the construction of the maternity wing, which we estimate employed up to 600 staff initially. Phase 2 was then swiftly constructed with additional services frequently added on, such as the transfer of the Radcliffe Infirmary in 2007. The other hospitals in Headington, the Churchill, the NOC and the Warneford Hospital were developed over the same time period. Initially employing just 600 people, the hospitals' workforce is now estimated to be between 19,000-20,000. As increasing numbers of staff travel into work from around Oxfordshire, routes towards the hospitals have gradually become busier.
16. Given most staff live outside Oxford and most commute in by car, what are the routes they use? Across the county, from Oxfordshire's major population centres, it looks like this.

Illustration X.8: Oxfordshire's main commuting route into the city



⁸ Oxfordshire Health Archives. Warneford Hospital, Oxford. Available [here](#).

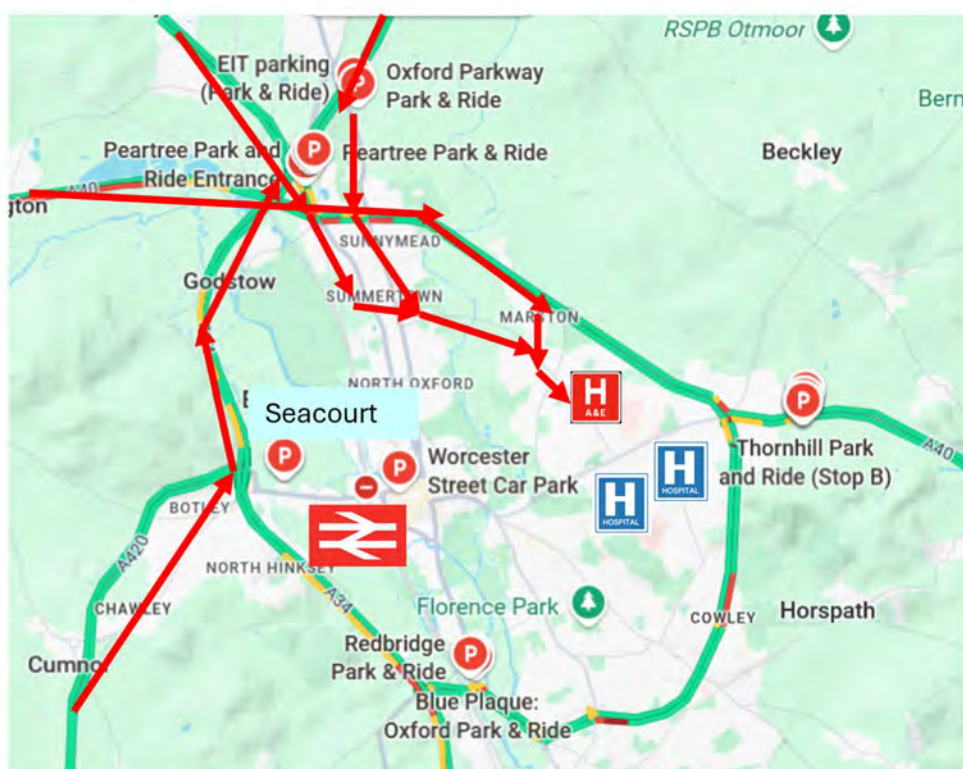
⁹ Oxfordshire Health Archives. Nuffield Orthopaedic Centre. Available [here](#).

¹⁰ NHS Oxford University Hospitals NHS Foundation Trust. Our history. Available [here](#).

¹¹ NHS Oxford University Hospitals NHS Foundation Trust. Our history. Available [here](#).

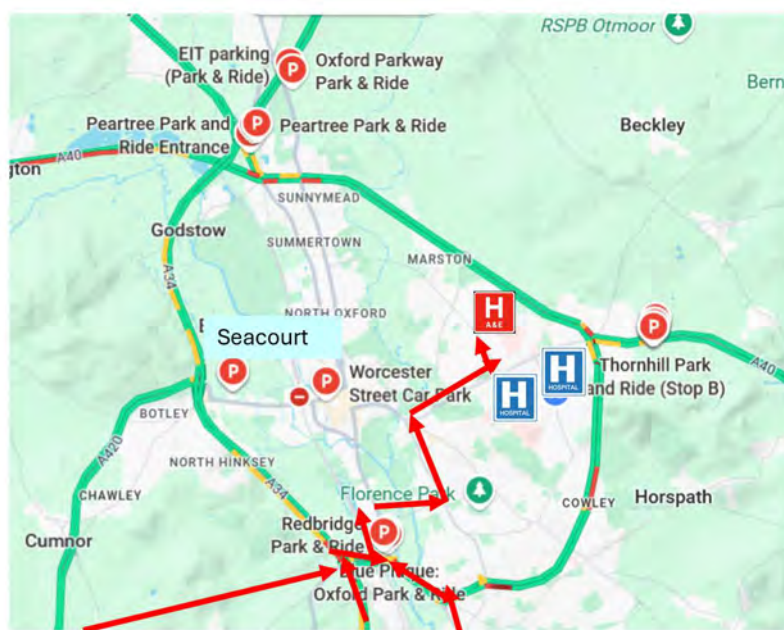
17. But when the traffic gets to Oxford, it splits into two principal routes to the hospitals. We will focus on the northern routes to the John Radcliffe first. There are two notable pressure points where commuter routes coalesce: firstly, around the Peartree park and ride, and secondly, on Marsh Lane in Marston. Travelling through the first pressure point, visitors enter the city via Woodstock or Banbury Road, and then continue onwards to Headington along Marston Ferry Road. This route also serves as a school drop-off point for parents who “trip chain” along their route into work (as an aside, we believe the Council’s equality impact assessment should acknowledge this known phenomenon). The second route to Oxford’s hospitals bypasses the Marston Ferry Road, instead entering the city via the highly congested Marsh Lane. In chapters two and three, we previously discussed how traffic levels on Marsh Lane are predicted to increase if the congestion charge is brought in. We have also previously discussed how Marston Ferry Road, while typically free flowing, will have a £5 daily congestion charge toll imposed on it if the congestion charge is approved.

Illustration X.9: Main hospital bound traffic routes from the north of Oxford



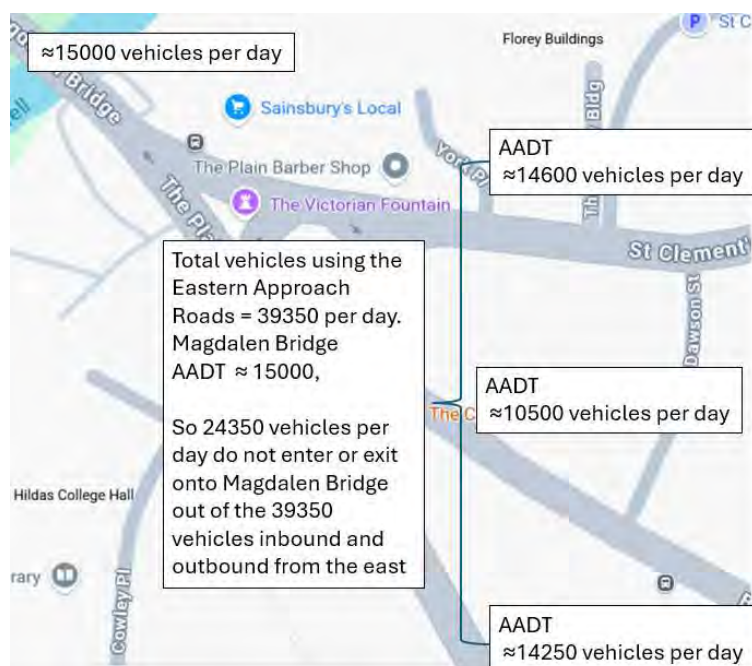
18. For access routes from the south, we made a surprising discovery, previously signposted in chapter two. For anyone using satellite navigation to guide them to the hospital area, the navigation software typically does not direct them, as we might hope, around the ring road. Instead, visitors are typically directed through Oxford’s suburbs – across Donnington Bridge, down Iffley Road and into the congestion hotspot that is the Plain. In truth, perhaps we should not be surprised, given that this route to the John Radcliffe from the south is somewhat shorter in distance compared with the ring road. Anyone whose satnav is set to the shortest distance is highly likely to be directed via this route.

Illustration X.10: Main hospital-bound traffic routes from the south of Oxford

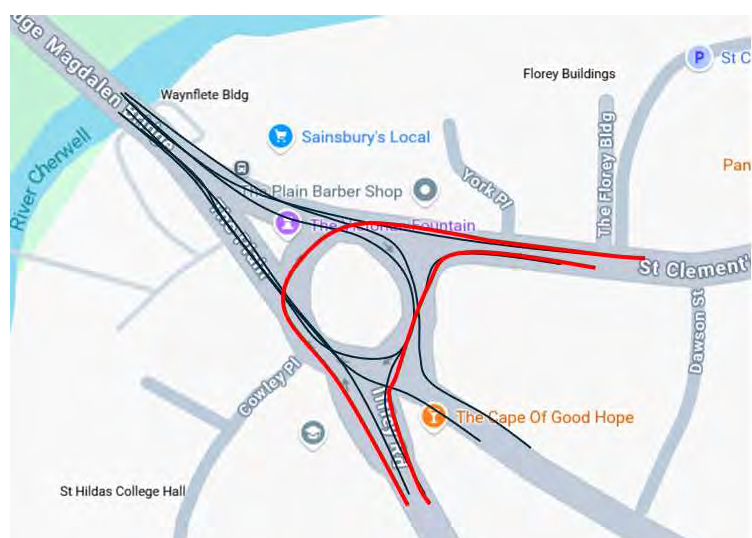


19. We made this discovery after noticing something odd about the average annual daily traffic (AADT) counts, as stated on Oxfordshire County Council's freely available online map¹². We noticed that, although the total average daily traffic count for the three roads approaching the Plain from the right added up to 39,350, the traffic count on the immediately adjacent Magdalen Bridge was just 15,000 vehicles. Clearly, more than half the vehicles using these three roads were not continuing westwards to the city centre – ironically, towards the proposed St Cross traffic filter site.
20. In light of this, we asked ourselves: how many vehicles a day are potentially taking this southern route into Oxford? On roads of this size, AADT covers vehicle movement both ways. On that basis, it looked as if up to 12,000 vehicles could be using the southern route each day. So where were these vehicles going? An hour's observation on the Plain yielded the answer: the main flow of car traffic through the Plain is not East-West, as we assumed – and we assume Oxfordshire County Council does too – into the city centre. Rather, traffic is generally travelling north to south, from Iffley Road to St Clements and vice versa.
21. Here though, we should distinguish between buses and other vehicles. Most car and other vehicles travel north to south, around the Plain roundabout and onwards towards Headington. By contrast, the main flow of buses and taxis is east to west – heading across Magdalen Bridge towards the High Street. This is understandable, given that the High Street is only open to buses and taxis for most of the day. While Oxford's High Street "bus gate" is in operation, cars and vans can only travel across Magdalen Bridge towards the perennially quiet St Cross Road – one of the six proposed congestion charge ANPR checkpoints.

¹² Available [here](#).

Illustration X.11: Disappearing traffic – not continuing across Magdalen Bridge

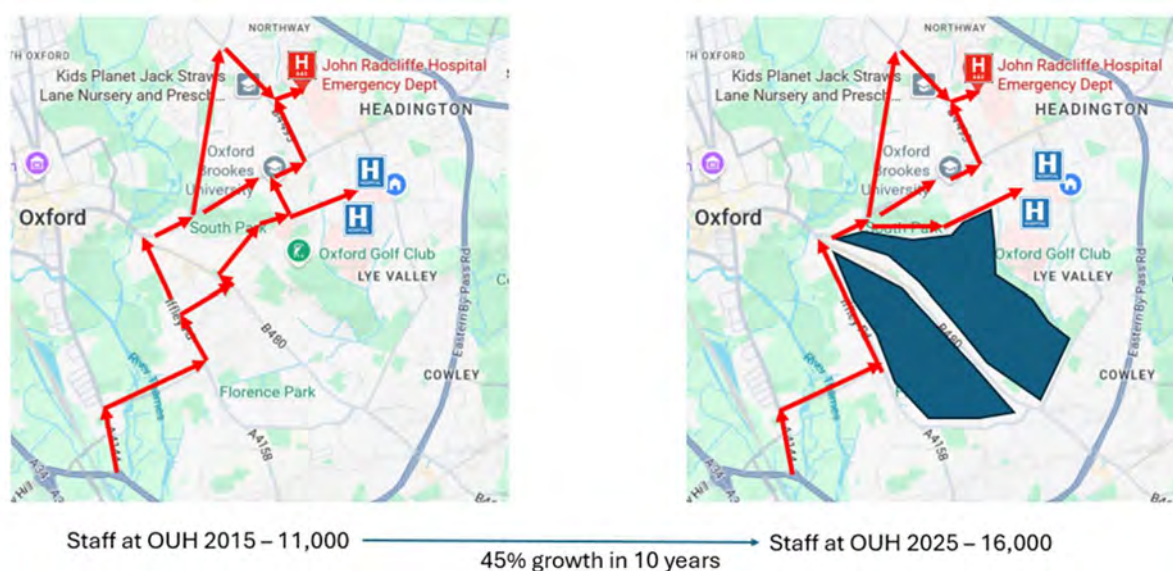
22. That said, this routing means that cars and vans on the one hand, and buses and taxis on the other, are cutting across each other, exacerbating congestion at the Plain. We proposed a possible solution to this problem (i.e. traffic lights in the Plain, prioritising access from Iffley Road), in chapter one.
23. These observations also led us to notice that no buses appear to travel from Iffley Road to St Clements, or in the reverse direction. We question whether this route has been identified and modelled in the Oxfordshire Strategic Model¹³. If it hasn't, we think that is a serious omission.

Illustration X.12: Observed bus and car flows, plus likely bus delay inducers

¹³ Available [here](#).

24. Returning to the subject of the East Oxford LTNs: below, we illustrate how they have exacerbated congestion around the Plain, by effectively cutting off through routes between large parts of East Oxford. The LTNs have cut off these through routes, hindering residents' ability to access their most direct routes to Iffley Road, Cowley Road, Morrell Avenue and others. The LTNs have also, in many cases, pushed local traffic onto the same roads (mainly, Iffley Road) as both private school traffic and hospital traffic.

Illustration X.13: The east Oxford LTN boundary road effect



25. Add in population growth in the south of the county – estimated at 10-15% between the 2011 and 2021 censuses – continuing population growth, and the 45% increase in the size of the OUH operation in Headington over the last ten years, and combine it the boundary road effect of the LTNS in East Oxford – which focused a great deal of hospital bound traffic on the Plain – and it not surprising that Luke Marion, managing director of Oxford Bus Company, says there are now “traffic jams during peak hours that previously did not exist”¹⁴.
26. To recap: so far, we have identified that:
- the working populations of Oxford University and the Headington Hospitals are similar in size;
 - that despite being similar in size and despite Oxford University primarily being in operation for only half the year – while the hospitals work constantly year round – there are roughly 50% less park and ride busses serving hospital sites that serve the city centre, where the university is mainly located;
 - that existing park and ride services to the hospitals only run into the city from a direction where there is no sizeable population outside the city;

¹⁴ Oxford Clarion. Oxford’s traffic emergency needs a bold approach – Luke Marion on the congestion charge. 1 July 2025. Available [here](#).

27. We have also identified that the catchment area served by the hospitals is approximately 3-4 million in number, with most patients coming from outside Oxford but from within Oxfordshire.
28. Running 50% less park and ride buses for the same working population is one oddity we have spotted. Running buses in from one direction, where few people live, is another oddity. Not running sufficient park and ride services from the directions in which people actually live is a third oddity. Collectively, Oxford's approach to park and ride adds up to an irrational logistical approach to serving Headington's hospitals.
29. We have also identified the main routes into the hospitals from the Oxfordshire population centres: the northern route and the southern route. The southern route is particularly concerning as it runs through the Plain, putting into conflict with the flow of traffic into the city at busy periods.
30. Turning now to the daily travel demand profile of the John Radcliffe hospital, based on the hospital's Framework Transport Strategy, published June 2025¹⁵.
31. First, it is worth noting that most staff arrive by 7am and leave between 4 and 8pm. For example, in A&E, it appears that many medical staff work 7.30am to 8pm as standard¹⁶.

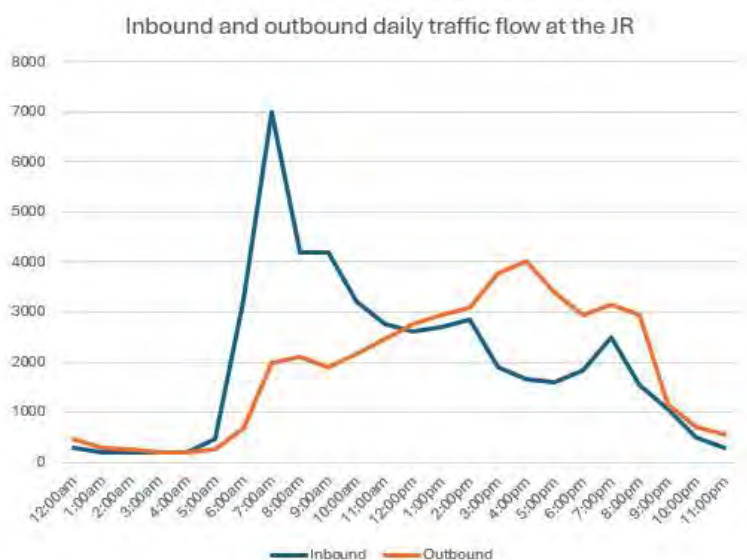
Illustration X.14: Staff arrival times at the John Radcliffe Hospital



¹⁵ Available [here](#).

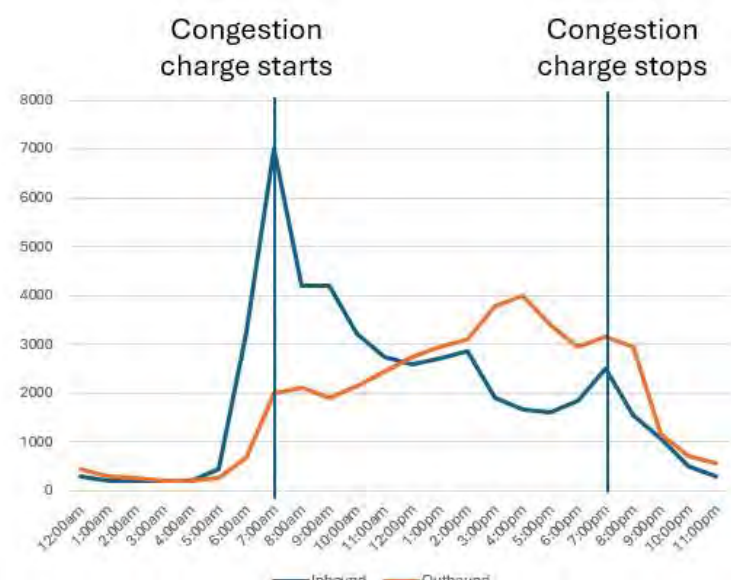
¹⁶ Oxford University Hospitals NHS Foundation Trust. Welcome to the John Radcliffe Emergency department. Available [here](#).

Illustration X.15: inbound and outbound daily traffic flow, John Radcliffe



32. We then grouped the inbound and outbound traffic together. And added Oxfordshire County Council's proposed congestion charge times – for most locations, accepting that the Marston Ferry Road and Hollow Way operate shorter hours, at least initially.

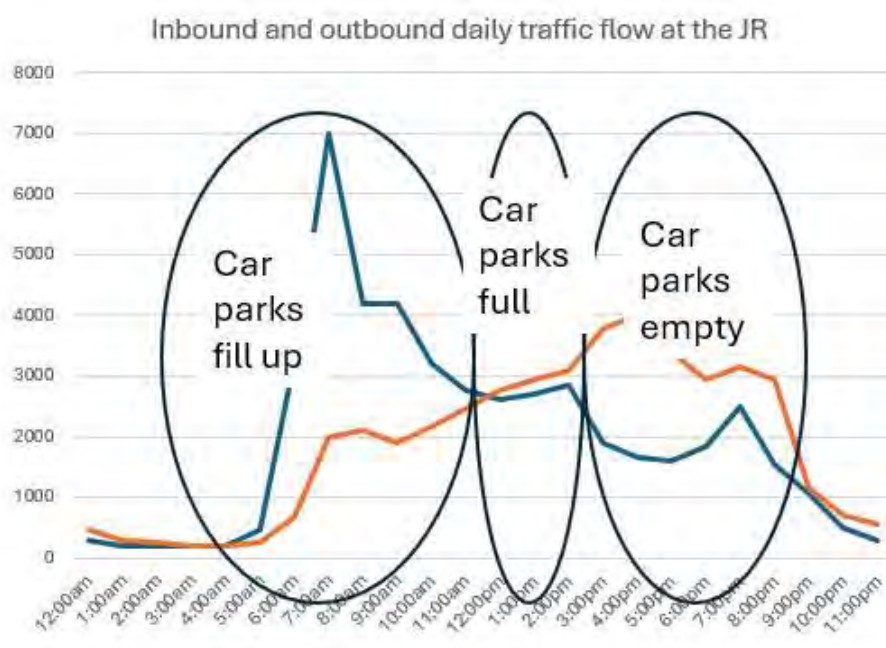
Illustration X.16: John Radcliffe traffic flow versus Oxfordshire County Council's congestion charge timings compared.



33. This graph demonstrates the causes of the congestion seen around the John Radcliffe. In the morning, the hospital shifts start before any other of Oxford's main institutions have started to generate significant amounts of traffic. By contrast, in the afternoon drivers leaving the hospital are unavoidably competing for the restricted road space around Headington with other road users.

34. Hospital traffic has a significant impact on bus services around the John Radcliffe, because several bus services are routed up and down Headley Way, to and from the John Radcliffe. It can often take 30 minutes at peak rush hour to travel from London Road to Marsh Lane. Despite this, Oxfordshire County Council is not recommending any congestion charge cameras on Headley Way. This, we believe, sends out mixed messages about the purpose of the congestion charge – especially given the weight given in public statements about the need to improve bus service. The council wish to install congestion charge cameras on two roads – Hythe Bridge Street and Thames Street – that currently have no bus service. However, the council has given no indication that it will deploy a congestion charge regime on probably the worst traffic-affected bus route within Oxford. To us, this inconsistency by Oxfordshire County Council is yet another sign of its irrational decision-making when it comes to transport policy.
35. Returning to the John Radcliffe inflows and outflows graph, we can see the impact on car parking. Please note, however, that the Y column contains numbers based on the John Radcliffe graph. As a result, we do not know for certain what these figures represent. However, we assume they are weekly total counts by hour, for each hour in a 24-hour-day. At this point, we feel it is more important to observe and understand the pattern of movement, rather than look at absolute numbers.

Illustration X.17: inbound and outbound daily traffic flows at the John Radcliffe



36. Depending on their chosen route, it is clear that many inbound staff to the John Radcliffe will not be affected by the congestion charge hours of operation because they arrive before 7am. Nevertheless, they may be if they leave before 7pm. However, the category “other” will be so directly affected by the congestion charge. So let’s put the staff to one side and look at “other” in more detail – shown on the graph in orange.

37. “Other” comprises several groups, such as deliveries, buses, taxis, patient transport and ambulances. However, it is likely that the largest group in this category will be patients and visitors. It is difficult to establish just how many visitors the John Radcliffe receives, because OUH reports on a whole trust basis, and not by site. Indeed, the trust readily admits that there is currently a lack of accurate data to assist it with its decision-making.
38. However, we can make some rough estimates. According to its 2022 – 2023 annual accounts, the hospital treated 95,000 inpatients, 1,250,000 outpatients, and carried out 228,000 diagnostic tests. Adding those together, this comes to 1,573,000 health activities. – the equivalent to 4,300 per day or about 6,000 during a five-day working week. Making some assumptions, it is plausible that around 5,000 patients, plus inpatient visitors, will visit Headington’s hospitals every working day.
39. Let’s now adjust these figures to allow for the young population of Oxford: around 43,300 students are included in Oxford’s population of 165,200. Thankfully, few students will need hip replacements or cancer treatment. Removing these from the equation gives a permanent Oxford population of around 122,000. This is roughly 17% of Oxfordshire’s 706,700 population.
40. Applying this to the number of patients visiting per day, it appears that between 4,000-4,500 visitors to Oxford’s hospitals are coming into Oxford each day from the wider county. This will result in two, or more, car journeys as they are dropped off and picked up. By contrast, we assume that less than 1,000 will be arriving from within the city.
41. Why does this matter? It matters because the congestion charge’s equality impact states, at page 15, the John Radcliffe is “Oxford’s largest hospital.” We believe this is something of an understatement: it is not just Oxford’s largest hospital, it is Oxfordshire’s largest hospital. Its catchment area is not just Oxford’s 122,000 permanent residents, but that of the entire county. Indeed, the John Radcliffe’s reach goes beyond this: it is also a regional hub for trauma serving Thames Valley, including Oxfordshire, Buckinghamshire and Berkshire, Milton Keynes, Wexham Park, Stoke Mandeville (Aylesbury) and Reading, with a total population of roughly 3 million. All told, Oxford’s Trauma Service treats about 26,500 people per year, or roughly 70 per day. We suspect the majority of these patients will come from outside Oxfordshire.
42. To this total we can add the Warneford Hospital, which is run by a separate trust – the Oxford Health Foundation Trust. This trust’s catchment area covers Oxfordshire, Buckinghamshire, Swindon, Wiltshire, Bath and North East Somerset. The Warneford is shortly to be expanded to become the Warneford Park mental health hospital¹⁷. We have been unable to locate visitor data for this trust’s facilities. However, our working assumption is that patients will travel in daily from the wide catchment area.

¹⁷ BBC News. Views sought on new £500m mental health centre. 5 December 2024. Available [here](#).

Illustration X.18: OOH's wider trauma catchment area

OUH's wider Trauma Catchment area in red with Oxford Health's catchment in blue, the overlapping catchment area of the two trusts in purple.

Estimated catchment population is circa 3-4 million people, not 165,000 as seems to be implied by the Congestion Charge documentation

43. Focusing back on the John Radcliffe: the OUH strategy paper reports 75,524 vehicle movements in a week. This works out at an average of 10,789 per calendar day. Allowing for quieter weekends, this could easily be around 13,000 vehicles per working day, plus around 5,000 per day at the weekend. With only 2,150 staff car parking spaces and 730 visitor parking spaces, the only way to explain the discrepancy in these numbers is that many vehicles must either be parking on site for a short time or dropping off and returning later. This would help explain the high numbers of daily vehicle movements. Moreover, this figure also loosely correlates with the number of vehicles travelling across the Plain. However, we accept that more work needs to be done to confirm the correlation in vehicle numbers between the Plain roundabout and those that arrive at the John Radcliffe entrance. We believe that Oxfordshire County Council should undertake this analysis as a matter of urgency, before it even considers approving the congestion charge.
44. For the next stage of our analysis, we will ignore the health component of this traffic and treat all the incoming patient traffic as visitors. Framing traffic in this way helps make comparisons with other visitor types.

Illustration X.19: Oxford's hospitals as its second largest "visitor attraction"

Oxford City's second largest "visitor attraction"

OUH treat roughly 5,000 patients & outpatients, plus visitors per working day in Oxford.

Oxford University greet 3,500,000 visitors a year, that's 9,500 visitors a day.

The key difference is that visitors to the University can use a variety of modes of transport.

As most hospital visitors are from outside of Oxford but from within Oxfordshire, we suspect that they are very restricted in their choice of transport.

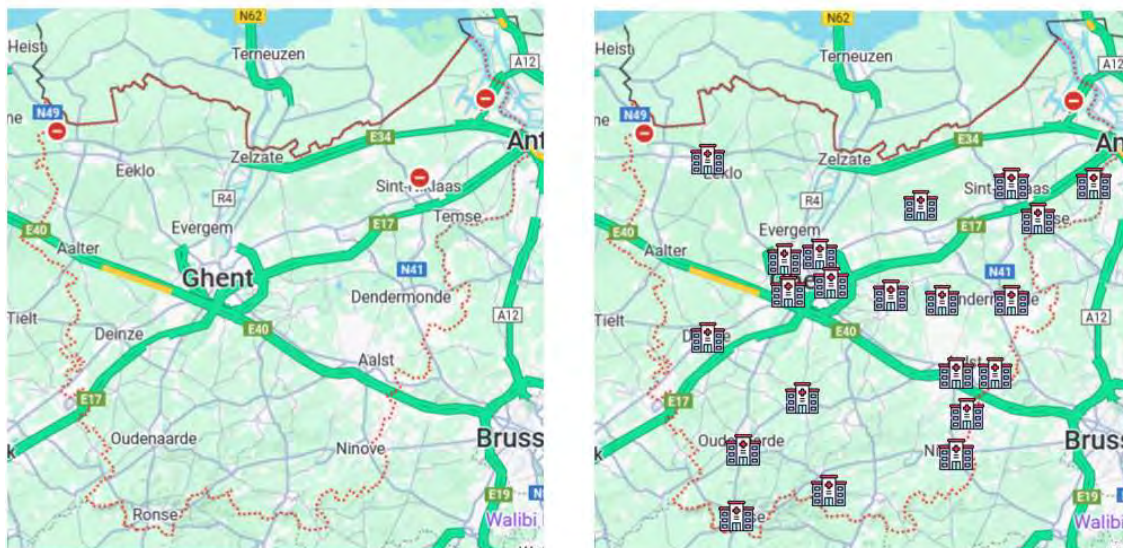


45. Again, as with employees working in the city centre, visitors to Oxford are well served by a variety of transport modes: the 2022 Steer survey indicates¹⁸ various travel modes are used, including bus (32%), train (17%) and taxi (11%) – and just 9% using a car. However, we repeat our observation that most of Headington's hospitals are notably less well served with viable alternatives to the car, including 50% less than park and ride provision than is delivered to the city centre. Indeed, most park and ride services run from a direction that visitors do not arrive from (i.e. south to North). Not surprisingly, therefore, car use is prevalent for reaching the hospitals, as the Steer report implicitly acknowledges in figure 4.13 – without then substantially exploring the issue any further.
46. Given that cars are also the sole target of Oxfordshire County Council's congestion charge schemes, we cannot reconcile the council's desire to see a significant reduction in car use across the county with the role of Oxford's hospitals as key regional health facilities. This disconnect is evident in the congestion charge consultation materials. More serious would be any attempt to make it harder to access Oxford's hospitals, for both staff and patients. If private cars cannot be used to bring in staff and patients, we believe this will have a significant and adverse impact on health care provision in Oxfordshire.
47. Given the importance of maintaining Oxford's hospital provision, we believe it is vital that alternative, viable, and attractive options are put in place before any coercive and regressive measures to reduce car use are implemented. However, we have not been able to identify any material alternative proposals in the congestion charge plan. We believe it is irrational of Oxfordshire County Council curb private car use before putting in place alternatives.
48. We believe that any car reduction targets adopted by Oxfordshire County Council must recognise the issue of elasticity of demand (or lack thereof) regarding hospital services. For example:
- Medical staff have to travel in to treat patients, normally from outside Oxford
 - We note that in the OUH transport strategy paper, over 50% of surveyed staff believe they could work from home. We believe that Oxfordshire County Council should use its influence to actively encourage this, where possible.
 - Many patients will need to visit the hospital to be treated, often supported by a chaperone. Many inpatients will be visited by friends and family.
 - Inpatient visitors do not always need to come in for follow-up meetings, but often will.
49. This demand will continue, regardless of any traffic interventions Oxfordshire County Council makes. Moreover, due to the scale of the Oxford hospitals' catchment areas, four in five patients, and four in five staff, will be travelling in from outside the city.
50. One other important factor comes into play here. We often hear comparisons between Oxford and Ghent, capital of East Flanders in Belgium. There is one very significant difference between the two cities, and the way in which healthcare is delivered. East Flanders has twice the population of Oxford but also has roughly 8-9 times the hospital beds, dispersed over the administrative area. By contrast, Oxfordshire has far fewer facilities, 75% of which are located in one city – Oxford.

¹⁸ Steer. Oxford Traffic Filters Business Impacts. October 2022. Available [here](#).

Illustration X.20: Hospital provision in Ghent

East Flanders – hospital provision – over 9000 beds including specialist beds



Only general hospital locations indicated, locations are approximate, information taken from Wikipedia

Illustration X.21: Hospital provision in Oxfordshire

Oxfordshire hospital provision – 1641 overnight beds for half the population



Abingdon 42
 Banbury 236
 Bicester 12
 Didcot 22
 Oxford JR 832
 Oxford Churchill 223
 Oxford NOC 160
 Oxford Community 20
 Wallingford 22
 Wantage 12
 Witney 60

Total

51. We also looked at scanning facilities, on the basis that this illustrative of healthcare service that cannot be provided remotely. Again, the majority of scanning facilities are concentrated in Headington's hospitals.

Illustration X.22: Locations of scanning facilities in Oxfordshire

Examples of Scanning facilities in Oxfordshire



Abingdon X Ray
 Banbury Mammography
 Bicester X Ray
 Henley X Ray
 Oxford JR Angiography, CT & MRI & X Ray
 Oxford Churchill CT & MRI & X Ray
 Oxford NOC Mammography
 Witney X ray

52. These two maps explain why private car use is so essential for healthcare delivery. With the concentration in Headington of most of the hospital beds and most of the advanced scanning facilities, there is little wonder why patients from all over the county travel to Headington on a daily basis. Once again, we think it irrational to limit private car use within Oxford when it is so essential for healthcare delivery – particularly when no detailed analysis of the use of private cars within the healthcare system has been carried out by Oxfordshire County Council and their consultants, Steer Consulting, and particularly when no robust alternative has been put forward as part of the congestion charge scheme.
53. We acknowledge that part of the long-term strategic problem for Oxford's transport system is that Oxfordshire's health provision is mainly delivered in Headington. It is perfectly understandable from an NHS point of view why this has happened. By concentrating services, it enables better health delivery, and supports research and teaching. However, given the growing population and given the traffic problems it creates, we wonder for how much longer this is sustainable.
54. Time for a second recap: we have established as best we can with the available data, that the Headington Hospitals are Oxford's 2nd biggest "visitor attraction" – but a visitor attraction that has inadequate public transport options, for staff and patients alike. We have also established that demand, and the flow of cars and people, is inelastic, and will continue to come to Headington because of the concentration of county-wide health provision in Headington. In the short term to medium term, there is very little we can do about this – apart from not making access even worse.
55. We now turn to non-park and ride bus provision across Oxfordshire, and its connections to the Headington hospitals. Drawing on bus timetables, red arrows denote direct services to the John Radcliffe, blue arrows denote non-direct services only. In order to realistically

expect modal shift to buses from cars for visits to the John Radcliffe, there will need to be a significant improvement in bus frequency from each of these outlying population centres.

Illustration X.23: Direct and non-direct bus services to the John Radcliffe Hospital



56. And now for Oxford City. We have mapped bus services and bus times from the major centres around Oxford City Centre. Remember, staff at the John Radcliffe are eligible for parking permits if public transport takes more than 45 minutes.

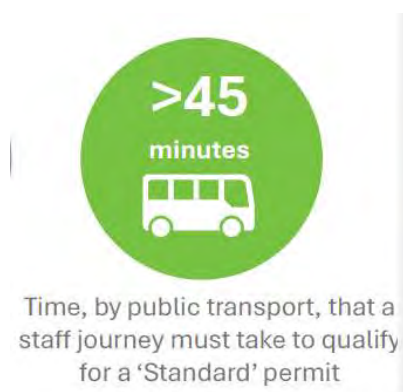
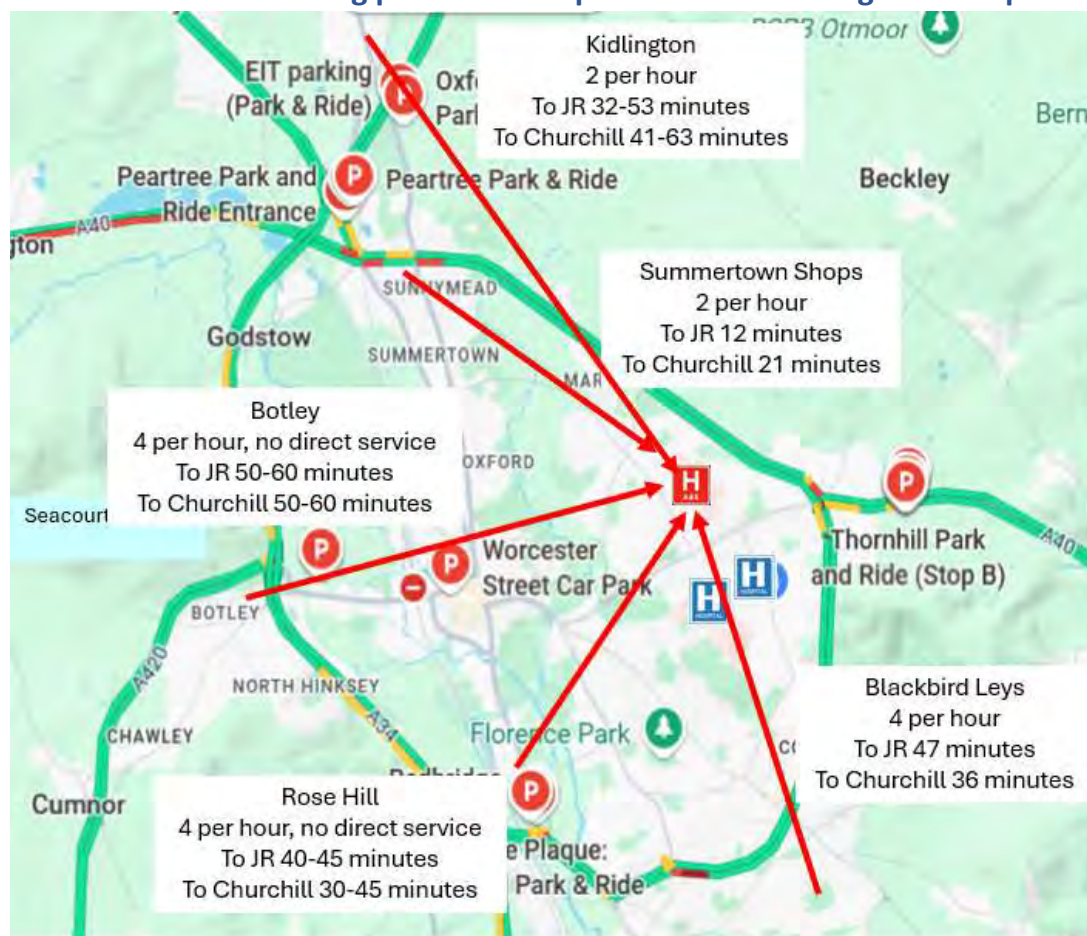


Illustration X.24: existing park and ride provision to Headington's hospitals

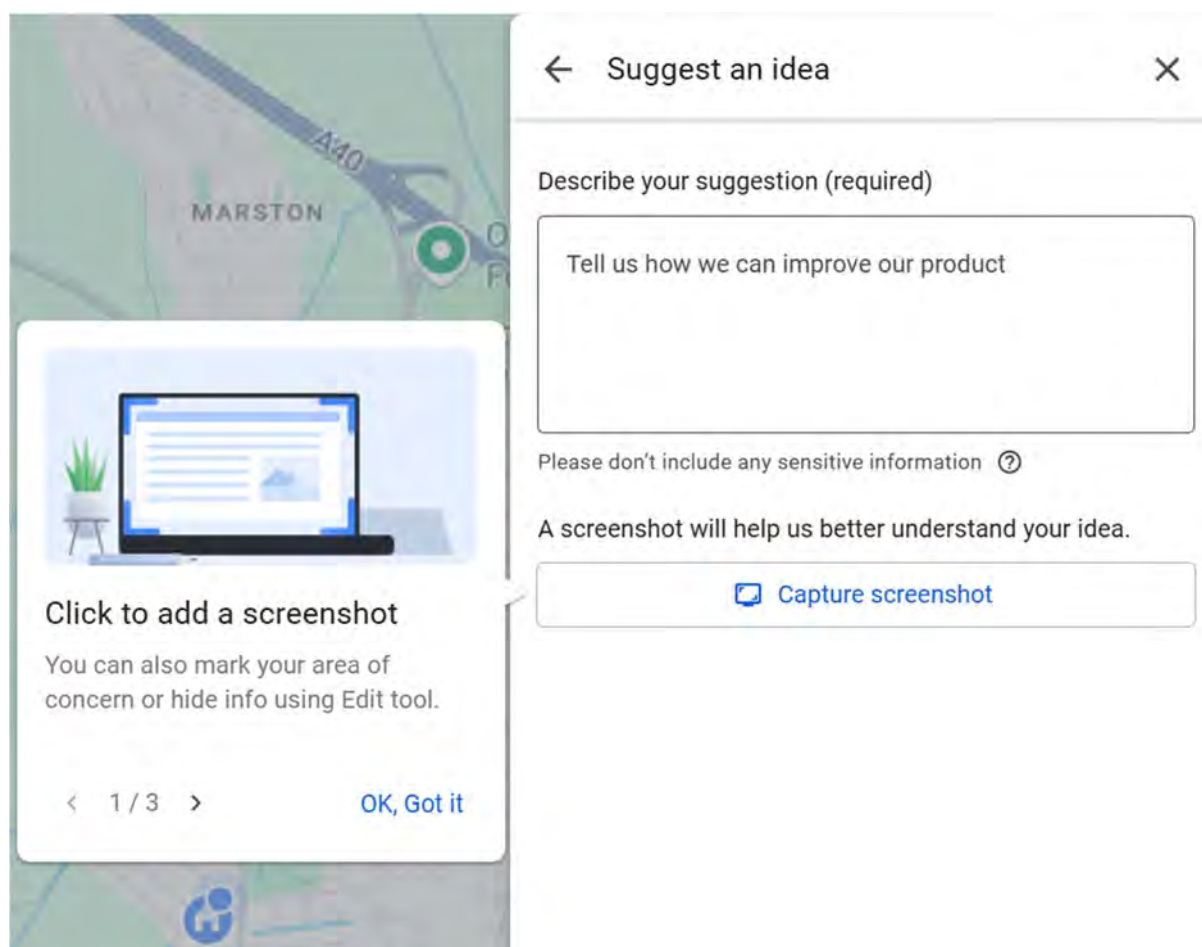
57. It appears staff living within the city boundaries in most of these outer centres are eligible for parking permits, as many services usually take around 45 minutes or longer, especially at rush hour. Obviously, cycling would be much faster than taking the bus. For example, cycling from Botley would take around 30 minutes. However, we appreciate not all staff can, or having worked a 12+ hour shift, want to cycle.

Part two: the unhelpful role of mapping software in encouraging city centre traffic while also not facilitating modal shift

58. We now move on to mapping applications and their influence in directing traffic flows, causing congestion. We do not pretend to be experts in mapping applications. However, we have noticed inconsistencies that require explanation. This is because we believe mapping applications will have a significant impact on the implementation of congestion charge zones in Oxford. Part of the problem is that local and regular drivers will drive the routes they know. By contrast, visitors – especially irregular visitors – will use mapping applications to find the best route.

59. By way of background, Google Maps has been downloaded more than 10 billion times. It is therefore a reasonable assumption that, for many people travelling to Oxford's hospitals, they will use Google Maps or one of its main competitors. It transpires that the application mainly runs on an algorithm name A* algorithm (pronounced A Star algorithm).
60. A * algorithm is very good at point-to-point route solutions. However, as we prepared this report, and considered how modal shift might take place, we realised that when we mapped a route into the hospitals, we were not offered a multi-modal solution. That is, the Google Map did not recommend that drivers to Oxford's hospitals to travel to a park and ride, take the bus, or cycle in. We understand that, on a global basis, algorithms struggle with multi-modal solutions, so generally do not offer them. However, because a core tenet of Oxford's transport strategy is to encourage modal shift out of cars, transport algorithms' collective failure to offer such a service presents a major problem for the council's policy, especially for hospital-bound visitors, who may well be infrequent visitors to the city.
61. Another issue is how the algorithm handles congestion charge locations. The algorithm will not know if a driver is an Oxford City resident (eligible for 100 permits per year) an Oxfordshire resident (eligible for 25) or an out-of-county Trauma Thames Valley regional catchment driver coming into the Headington Hospitals. Nor will the algorithm know how many permits the driver/car has used, and therefore whether they can use a specific route on a specific day or time of day. This matters: once the algorithm has been told the location and times of operation of the congestion charge, it will direct drivers accordingly.
62. A key component in Google Maps is the "Avoid tolls" option. When activated, this routing option should take the driver on routes that are toll free. We presume the congestion charge point will be treated by Google Maps as a toll point, rather than another form of vehicular restriction that the mapping software does not take account of: we invite Oxfordshire County Council to investigate this issue, as a matter of urgency. But, in any event, Google Maps will not offer park and ride as part of its routing option. When this option is not activated, it may – or may not – avoid the toll. Experimenting with the High Street Bus gate suggests that it will avoid the toll point, regardless of whether this option is activated or not.
63. It appears Google Maps is incorporating variable toll charges and times into its database. This opens up the option of using daily variations in toll point locations, and times, to influence the routes that the mapping application offers to drivers. We also note that Google Maps has a "suggest an idea" option. This option could be used to encourage the solution not to recommend routing visitors from outside Oxford to use the Donnington Bridge / Iffley Road / the Plain / St Clements route into Oxford's hospital district.

Illustration X.25: Google Maps' ideas suggestion option



64. In summary, we believe part of the issue with using a congestion charge format to influence route selection is that many of the mapping software solutions will not offer the driver multi-modal solutions – a core objective of the Congestion Charge scheme. As a result, drivers will not readily opt for multi-modal solutions – particularly if going direct remains the quick option, and especially if they have permits available.
65. One other aspect of the proposed congestion scheme that undermines its traffic reduction objectives is its permit regime: notably, giving Oxfordshire drivers 25 permits per year, and offering patients requiring continuing treatment unlimited permits for two vehicles. Given that many County visitors to Headington hospitals will make few visits to the city centre each year, we suspect that many will use their permits to access Headington's hospitals, if their mapping software suggests this is the best route to take.
66. For visitors arriving from the north of Oxford, this is unlikely to pose problems – except for those who seek to access the hospitals via Marsh Lane during rush hour. A more significant issue is access from the south of the city, given that the optimum route is around The Plain. As Oxfordshire County Council has already pledged to give Oxfordshire residents 25 permits per year, we do not foresee a substantial drop in visitor traffic on the South route into the hospitals – as predicted by the Oxfordshire Strategic Model – unless mapping applications direct all traffic onto different routes.

Reappraising Steer's 2022 traffic filter Business Impact Assessment

67. Now to assess the impact of everything discussed so far, and to reassess the Steer Business Impact Assessment (BIA) for traffic filters, published in 2022. The section on hospitals in the Steer Business Impact Assessment for Traffic filters, page 34, reads as follows:

Illustration X.26: Steer's business impact assessment for hospitals (narrative text)

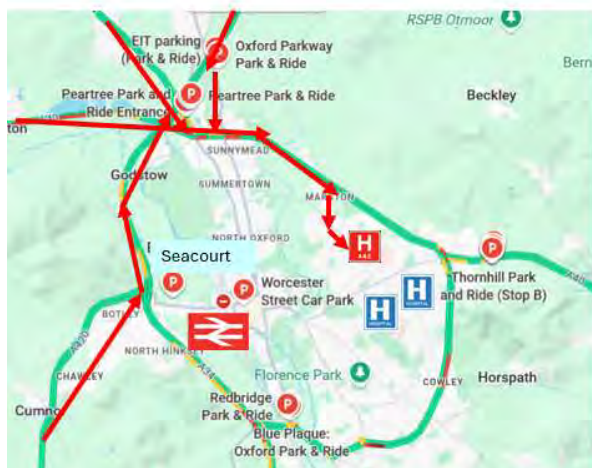
Hospitals	
5.53	Health and care workers, and emergency workers are exempt from the traffic filters.
5.54	There may be a moderate labour market impact (specifically recruitment and retention) as a result of the longer journey times for car journeys which may influence the decisions of some hospital staff about work location.
5.55	As with schools, the impact of the filters may be more negative for the recruitment and retention of staff that travel by car from across the city (and who may be deterred or inconvenienced) by the filters with positive impacts for recruitment and retention of staff who rely on other modes (and therefore benefit from more improved journeys).

68. This is an extremely short assessment. Indeed, we believe this is a deficiently short assessment, given that we understand Oxford's hospitals turn over £1-2 billion a year in the Headington area alone, and treat 1-2 million people per year. At the very least, we might have expected Steer to have built out its analysis of modes used to travel to city Centre, included in its 2022 traffic filters BIA – especially given that, in 2022 document (figure 4.13), Steer had identified explicitly that around 50% of those working in Headington arrived by car. In its 2025 analysis, perhaps Steer could have conducted an analysis of visitors' journeys, similar to the previous city centre study, specifically by reference to the John Radcliffe Hospital? Or, at the very least, it could have republished existing research into visitor travel modes, published by the hospitals (or universities) themselves?
69. Yet, despite the apparent shortcomings of Steer's 2022 analysis, Oxfordshire County Council does not appear to have requested a more thorough analysis of this issue in the three years leading up to its proposals to introduce a congestion charge. Nor is there any evidence of a more detailed assessment, not undertaken by Steer, shared as part of the congestion charge consultation process. If Oxfordshire County Council has more extensive insights into the traffic impacts of the city's hospitals, it is not making them readily available.
70. Please also note: in the three paragraphs of cursory analysis undertaken by Steer, patients and visitors are not mentioned. Nor is the congestion that already exists around the hospital sites. Nor is there any explanation for how the congestion charge will affect the large flows of inbound and outbound traffic around the sites. In fact, given that the congestion charge scheme and the traffic filter scheme are likely to have a major effect on hospital operations, it is peculiar how little time Steer spent analysing the impact of the congestion charge on the city's second largest employer. Indeed, taking the wider view, Steer should not just have focused on the hospitals' status as major Oxford employers: they are also crucial to the lives and health of Oxfordshire residents, and beyond.

71. In light of these findings, presented to Oxfordshire County almost three years ago, we are bemused why the council has – seemingly – not made any significant efforts to understand the centrality of Oxford's hospitals to the city's traffic, as it seeks to implement its various traffic reduction strategies. As we have previously explained, there appears to be precious little connectivity between the Oxfordshire County Council's congestion charge proposals and the actual sources of Oxford's congestion, as identified in this report. We challenge the council to explain how we are wrong. Moreover, we ask the council to explain why any analysis in its possession was not published as part of the congestion charge consultation.
72. In the absence of any published research produced by Oxfordshire County Council or its retained consultants, we will now attempt to do so, by reference to hospital traffic. If access to the southern route into Oxford's hospitals is hindered by the congestion charge, then the only two viable routes will be via Horspath Driftway, the Slade and Old Road / Windmill Road or via London Road, as per the maps below, or Marsh Lane in Marston. However, as illustrations 28 – 30 show, these routes are already badly congested in the morning and evening rush hours. In our view, these roads have very little spare capacity to take additional traffic at these times.

Illustration X.27: Post congestion charge routes into Oxford's hospitals for those without a permit or exemption

Hospital bound traffic from the north all focused down Marsh Lane between 7am to 9am and 3pm to 6pm



Hospital bound traffic from the south diverted via the ring road to approach Headington from The Slade and London Road

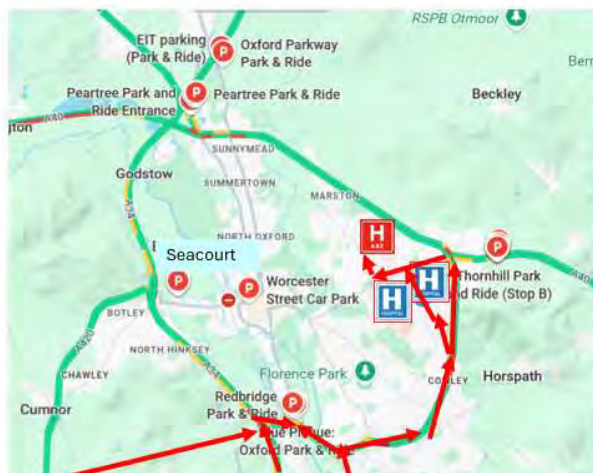


Illustration X.28: At capacity – Marsh Lane in Marston during the morning rush hour



Illustration X.29: At capacity – London Road in Headington during the morning rush hour



Illustration X.30: At capacity - Old Road in Headington during the morning rush hour



73. in light of what we have learned to date, we now offer an alternative scoring for the business impact of the congestion charge proposals to that proposed by Steer, focusing specifically on hospitals.

Travel time

74. We were unable to find any written analysis of travel time changes around the hospitals in Steer's BIA. We will now (briefly) attempt our own. Assuming:
- the southern route via St Clement's will be closed off to any hospital visitor without a permit (including those who simply do not know about the congestion charge); and
 - that two of the three northern routes inside the ring road (Marston Ferry Road and Hollow Way) will be closed between the hours of 7am to 9am and 3pm to 6pm to those without a permit; and
 - given the volume of traffic will not reduce – partly because demand is inelastic, and partly because there are no active measures in the congestion charge proposal to reduce it, we propose a "Moderate Adverse" (-2) effect on travel time, for both staff and visitors.

Direct costs

75. Steer interpret direct costs as being good for bus companies and taxis, as their assets will spend less time in congestion – ignoring the congestion shifted elsewhere. The congestion charge points will deliver a positive benefit of +2 for those businesses. However, hospitals have very few assets passing directly through these congestion charge points, apart from ambulances which already have priority. For these reasons, we leave Direct Costs at 0.

Effect on business operations

76. In light of the direct and indirect (i.e. extra Marsh Lane traffic) route restrictions placed on hospital staff and (potentially) on visitors, we believe the congestion charge will be highly disruptive on business operations. As a result, we believe a -3 ranking is warranted.

Effect on business demand

77. We will interpret this as meaning "impact on patient and visitor demand for the hospitals". In light of the ever-growing demand for healthcare services, as the UK's population ages and grows larger, our assessment is that the congestion charge will have no effect on demand. Because patients will continue to visit Oxford's hospitals, we will keep the score as 0 – i.e. neutral, no significant benefits or disbenefits. The important point to make is that "visitor" demand is inelastic.

Finally, the effect on market – recruitment and retention.

78. In its short section on hospitals, Steer acknowledged that the traffic filters would have an effect on recruitment and retention. The more recent congestion charge technical note makes no change to that assessment. However, if the congestion charge points work as modelled, then the likely extra traffic around the ring road and on pinch points such as Marsh Lane will undoubtedly have an impact on hospital retention and recruitment. We believe a maximum score of -3 is warranted, not least because the impact of any result staffing and recruitment problems would have a significant and severe impact on Oxfordshire's entire health system.

Our updated business impact assessment for hospitals

79. We present our final score below. In sharp contrast with Steer's -1 score, our score is -8. We believe the congestion charge scheme offers no net benefits but does offer several significant disbenefits to Oxford's hospitals.

Illustration X.31: Our alternative business impact on hospitals of the congestion charge

Business Type	Sub-group	Travel Time	Direct Costs	Effect on business operations	Effect on business demand / market	Effect on labour market- recruitment / retention
Public Sector	Hospitals	-2	0	-3	0	-3

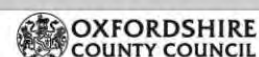
80. One final point, which reinforces our assessment: the permit list shown in the congestion charge consultation documents do not include unlimited permits for health care workers based at Oxford's hospitals. It appears that whoever drew up the hospital section of Steer's BIA had not been briefed on the difference between community care and hospital health providers: community care providers are eligible for permits, hospital-based health care providers are not. As the permit proposal makes clear, permits will not be issued for commuters. And, so far as we can tell, hospital staff whose place of work is the hospital itself are regarded as just another type of commuter. As a result, they will need to abide by the conditions of the congestion charge scheme: 100 permits for Oxford residents, 25 permits for Oxfordshire residents, and no permits at all for those living outside Oxfordshire.

Conclusions

81. As our analysis makes clear, Oxford's hospitals are a significant source of traffic and congestion in Oxford. Yet, remarkably, Oxford's congestion charge proposals – and the earlier traffic filters proposals – barely acknowledge this fact, let alone seek to mitigate it. We regard Steer's analysis of hospitals as deficient, and the scores it offers far too low.
82. We find Oxfordshire County Council's apparent incuriosity about this issue bizarre, especially in relation to its congestion charge proposals, to the point that we regard the council's blindness to be irrational. We directly challenge the council to demonstrate to us that they understand this issue better than we give them credit for, and to show how this understanding has informed the development of their congestion charge policy.
83. At present, we regard most alternatives to the car, especially park and ride, to be sub-optimal, and not currently an attractive choice, for hospital employees and visitors alike. We also note the less-than-helpful potential influences of mapping solutions in encouraging visitors travelling to Oxford from the south to travel in via the Plain. We encourage Oxfordshire County Council to explore this issue further, and see if mapping providers can be encouraged to discontinue this practice.

Illustration X.31: The lack of congestion charge permit options for hospital staff

Permit type	Who can apply	Details
Unpaid carers	An unpaid carer living in, or caring for someone who lives in, the Oxford permit area. To qualify you will need to be either: - in receipt of carer's allowance - registered as a carer with your GP	One car per permit, which must be registered at your home address. Up to two people can apply for an unpaid carer's permit per care recipient address. The person who you're caring for must not live at your address.
Community health or care worker	Professional or voluntary health or care workers working for a qualifying social care or health care provider whose role regularly requires them to: - provide clinical health services or social care services at multiple locations in the Oxford permit area on the same day or; - urgently and at short notice travel to a location in the Oxford permit area to deal with any matter involving patient or staff welfare, building security or safety, or - transport patients to or from any hospital or healthcare facility in the Oxford permit area.	Up to three cars per permit, all of which must be registered at your home address. Only one car may be used on any one day. For business purposes only. The community health or care worker permit must not be used for commuting on days when no operational journeys are expected to be made. You must supply written confirmation from your employer (or the organisation you volunteer for) that you are eligible for this permit. Your employer (or the organisation for which you volunteer) must be a registered healthcare provider providing services in Oxfordshire or a relevant provider of social care services.
Frequent hospital patient	Patient required to attend multiple planned appointments at a hospital in the Oxford permit area	Up to two cars may be nominated per permit. The permit will be valid until your last planned appointment, or for 12 months (whichever is sooner). You can renew your permit after 12 months if you need to attend more appointments.



		The cars may be driven through the congestion charging locations free of charge only when being used for, or in connection with, the transport of the person needing to attend hospital appointments. The nominated cars can be changed as required.
Emergency or health service car	Qualifying emergency or health service provider	The car must be registered to the qualifying provider