

Freedom of Information Act 2000 (FOIA)

Decision notice

Date: 27 September 2019

Public Authority: Transport for London
Address: 55 Broadway
London
SW1H 0BD

Decision (including any steps ordered)

1. The complainant has requested information on Media Access Control addresses for London Tube stations from Transport for London (TfL). Having originally withheld the requested information under section 40 (personal data), TfL's final position is that the requested information is exempt from release under section 43(2)(commercial interests) and section 44(1)(a) (prohibitions on disclosure). TfL considers the public interest favours maintaining the section 43 exemption.
2. The Commissioner's decision is that the information the complainant has requested is exempt information under section 43(2) of the FOIA and the public interest favours maintaining the exemption.
3. The Commissioner does not require TfL to take any remedial steps.

Request and response

4. On 1 December 2018 the complainant wrote to TfL and requested information in the following terms:

"I would like a list of all tube station ids, with their corresponding name and the mac address of its virgin media wifi hotspot installed in the station itself.

A hypothetical entry in the list would look like this:

Station Id Station Name Station Wifi Router Mac Address

210032 Baker Street e4:0e:dd:1f:23:51

Even better would also be the lat/long of each station respectively, but the Mac address is key."

5. In its initial response to the complainant on 3 January 2019 TfL withheld the requested information under section 40(2) as it considered it to be the personal data of third persons. The complainant requested an internal review on 3 January 2019 and submitted a complaint to the Commissioner on 11 February 2019, when he did not receive one.
6. The Commissioner wrote to TfL on 21 February 2019 regarding the internal review. The complainant subsequently advised the Commissioner that TfL had written to him and advised him that it would not release the requested information and would explain its position in more detail "shortly". TfL did not go on to provide a substantive internal review and the Commissioner accepted the complaint for further consideration on 12 March 2019.
7. As a result of the Commissioner's investigation, TfL reconsidered its response and issued the complainant with a fresh response on 5 August 2019. It withdrew its reliance on section 40(2) and advised that it considers the requested information is exempt from release under section 43(2) and section 44(1)(a) by virtue of the European Convention on Human Rights/Human Rights Act, with the public interest favouring withholding the information with regards to the section 43 exemption.
8. TfL has confirmed to the Commissioner that it considers that all the requested information – the MAC addresses and station identification information – is exempt information under section 43(2).

Scope of the case

9. The complainant first contacted the Commissioner on 11 February 2019 to complain about the way his request for information had been handled. He has confirmed that he remains dissatisfied following TfL's fresh response of 5 August 2019.
10. The Commissioner's investigation has focussed on whether the requested information engages the exemption under section 43(2) and the balance of the public interest, and, if necessary, whether the exemption under section 44(1)(a) is engaged.

11. The complainant has also advised that he is dissatisfied with TfL's handling of the internal review. This is considered under 'Other Matters'. Provision of an internal review is not a requirement of the FOIA and the Commissioner cannot make a formal decision on this aspect of the complaint.

Reasons for decision

Section 43 – commercial interests

12. Section 43(2) of the FOIA says that information is exempt information if its disclosure would, or would be likely to, prejudice the commercial interests of any person (including the public authority holding it).
13. In order for section 43(2) to be engaged the Commissioner considers that three criteria must be met. First, the actual harm that the public authority alleges would, or would be likely, to occur if the withheld information was disclosed has to relate to the applicable interests within the relevant exemption.
14. Second, the public authority must be able to demonstrate that some causal relationship exists between the potential disclosure of the information being withheld and the prejudice which the exemption is designed to protect. Furthermore, the resultant prejudice that is alleged must be real, actual or of substance.
15. Third, it is necessary to establish whether the level of likelihood of prejudice being relied upon by the public authority is met – eg disclosure 'would be likely' to result in prejudice or disclosure 'would' result in prejudice. In relation to the lower threshold, the Commissioner considers that the chance of prejudice occurring must be more than a hypothetical possibility; rather there must be a real and significant risk. With regard to the higher threshold, in the Commissioner's view this places a stronger evidential burden on the public authority. The anticipated prejudice must be more likely than not.
16. Section 43(2) is subject to the public interest test.
17. In correspondence to the Commissioner the complainant argued that section 43(2) is not engaged for the following reasons:
 - (i) The requested data is already publicly available at each Underground tube station. A mobile phone could be used to scan local Wi-Fi networks, which would reveal a list of both the Service Set Identifier (SSID, ie the name of the Wi-Fi network) and the

BSSID (ie the media access control – or MAC - address). The complainant says he simply wants all the station details listed out.

- (ii) The ability to track a device (ie a mobile phone) on the Underground is not a concern. Furthermore, TfL openly provides geometric coordinates of bus stops on the London bus networks, so why not for the Tube network?
 - (iii) It would not be possible for one device to track another device as the login and password to access the Wi-Fi router would be needed in order to track other devices and the complainant notes that he has not requested this information.
 - (iv) If a user did not want to be tracked, he or she can turn off their mobile phone, disable Wi-Fi or uninstall any app that is facilitating the tracking.
 - (v) As Wi-Fi is enabled at each Underground station, a user already has the potential to view targeted ads on his or her device through apps regardless of the release of the data.
 - (vi) There is no proof to suggest that targeted adverts on software apps would directly correlate to a deficit in revenues streams for TfL.
 - (vii) In addition to tracking Underground users through their Oyster cards, TfL also uses the same Wi-Fi data the complainant requires for itself, to data to track movements of passengers on the Underground. The complainant considers that this is more of an infringement of privacy than what the software he is developing would do. If TfL is using the data for itself then why not allow others to use it?
18. The Commissioner considers that points (i) and (vi) are relevant to TfL's application of section 43(2) and that the remainder are more concerned with privacy issues and are therefore more relevant to TfL's reliance on section 44(1)(a). With regard to section 43(2), the Commissioner has therefore ensured TfL has addressed points (i) and (vi).
19. In its submission TfL has acknowledged that the complainant has made the point that the MAC address information could be obtained directly from the server at any given location. But TfL says there is a significant difference between picking up an individual physical device address and placing the entire list into the public domain. First, there is more than one Wi-Fi hotspot at many of the London Underground stations due to the complexity of the station layouts. But, TfL says, most importantly if any evidence of this systemic collection of information were to be suspected or discovered then it would seek to 'spoof' the physical device

address(es) to ensure that this [systematic collection of all the MAC addresses] would not be possible and that any data gathered was irrelevant and unusable. In the Commissioner's view, this addresses the complainant's point at paragraph 17(i).

20. TfL has explained to the Commissioner that it ran a four-week pilot between November and December 2016 to study how it could use de-personalised Wi-Fi connection data from customers' mobile devices to better understand how people navigate the London Underground network. TfL says this is now being rolled out in full across the network and is in place to support improvements on wayfinding, accessibility issues and journey planning.
21. Prior to this trial TfL says it did not have any data beyond the start and finish point of a passenger's journey. Since then it has been able to analyse the specific journey patterns passengers made, the interchanges that were most heavily utilised and which areas of the station concourse and platforms had the most footfall. TfL says this data collection has a huge operational and planning benefit for the organisation. It can help ease congestion, improve its wayfinding signage and better predict effects from engineering works and other closures. In the pilot TfL also explored how this information could be of commercial value to it.
22. TfL has referred the Commissioner to the following, from information it has published in its review of the pilot:

"By collecting and analysing WiFi data we will be able to understand aggregate customer movements at a given location and time. This can help companies that advertise at our stations to plan, monitor and measure their campaigns.

As the data will also enable us to identify the areas in our stations with the greatest footfall, we can understand which sites are most valuable to companies wanting to advertise. Using our digital advertising screens, where we have dynamic control over content, we can target advertising in the right place at the right time to maximise additional income. We will be able to frequently, and rapidly, measure how many customers could have viewed the adverts to enable companies to review their campaigns. And as WiFi can be used to split a station into many distinct areas, we can provide a detailed picture."

23. TfL has gone on to advise that in 2017/2018 more than 16,000 advertisements ran on its network, generating approximately £152m. As part of TfL's growth strategy, advertising is one of the key ways that it is making the most of commercial opportunities and building revenue.

24. TfL says its advertising estate accounts for 20% of the UK's, and 40% of London's, outdoor advertising by value. The money generated is invested back into the transport network and is, says TfL, absolutely critical in helping to keep fares down. As an organisation TfL says it does not make any profit and, for every pound it receives, around 79% is spent on the everyday running costs of the network and around 21% on improving it for the future.
25. Using the data it has available, TfL says it is able to more accurately value its advertising space based on evidenced footfall and 'prime locations'. This allows it the opportunity to maximise its revenue potential to generate more funds with which to invest back into the network.
26. TfL considers that disclosing the requested information would severely diminish the attractiveness of advertising on the London Underground. This is because it would be subject to being used by phone network providers and other application developers to utilise targeted advertising to commuters, including location-based advertising. This, in turn, would move advertisers away from traditional advertising and onto other forms of electronic advertisements via third parties, for which TfL would receive no income whatsoever.
27. According to TfL, third parties could seek to use this information to introduce targeted advertising – by which the Commissioner understands TfL to mean specific advertising targeted to specific individuals. TfL says it has included signs in its stations explaining its purpose behind data collection, and that it is not using this to track individuals. It has, it says, spent a considerable amount of time explaining how it would use the data it is collecting. If TfL was to enable others to track [individuals], particularly for the purpose of their own commercial endeavours, this would erode the trust TfL says it has with its customers.
28. As well as reducing the commercial viability of its advertising space, such an erosion of trust could have the potential to reduce the usage of the Wi-Fi network altogether. TfL says that if this were to occur, it would lose the opportunity to provide to customers and to its operations the rich information gathered from de-personalised Wi-Fi.
29. TfL concludes by noting that the London Underground, generally, has a captive audience and a footfall of millions per day which is currently extremely attractive to advertisers and is a crucial part of its overall revenue. If the location of customers was known to phone network providers and other application developers via Wi-Fi hotspot location data they would be able to track their movements and push targeted advertisements based on their whereabouts within the London

Underground network. TfL considers there is a strong likelihood this would lead to advertisers seeing less value in their advertisements being placed on the London Underground's advertising estate and, at the very least, it would reduce the income it is able to generate from individual advertisement placements. It may also lead to advertisers pulling away from advertising with TfL entirely which would have a significantly detrimental impact on its finances.

30. Having considered TfL's submission, the Commissioner is satisfied that the first criteria, at paragraph 13, has been met. The actual harm that the public authority alleges would occur, or would be likely to occur, if the withheld information was disclosed relates to the applicable interests within the relevant exemption ie it relates to TfL's commercial interests.
31. The Commissioner has gone on to consider the second criteria; the causal relationship exists between the potential disclosure of the information being withheld and the prejudice which the exemption is designed to protect. In addition to the explanation given above, TfL went on to provide the Commissioner with the following further detail on its position.
32. The 16,000+ advertisements that ran on the TfL network in 2017/2018 generated approximately £152m - £10m more than the £142m that had raised in 2016/2017. TfL has invested £82m in new state of the art innovative advertising platforms, such as full-motion digital video displays. As part of its new growth strategy, advertising is one of the key ways that it is making the most of commercial opportunities and building revenue. As has been noted, TfL's advertising estate accounts for 20% of the UK's, and 40% of London's, outdoor advertising by value.
33. Since the award of the Advertising Partnership Agreement to Global (formally Exterior Media), TfL has invested nearly £1m in data initiatives to increase occupancy and yield across the London Underground advertising estate. Most of this budget has been spent on understanding flows and patterns within its environments, by understanding Wi-Fi access point connections. In 2019 advertising revenue from aggregated ticketing data advertising campaigns increased by 24%, which has meant that further investment in data tools with Wi-Fi is important for TfL.
34. By releasing the MAC names and locations, any company with a significant customer base eg a Mobile Network Operator (MNO) or app developer will have access to commercially sensitive data that underpins TfL's advertising sales. These companies are likely to sell insights to TfL's advertising clients to navigate its sales, planning and measuring strategies – undermining TfL's commercial position in the market.

35. TfL has noted that the London Underground is a “connectivity black hole” (no phone signal, no GPS). It does have Wi-Fi but currently third parties do not know the locations of its access points. While third parties can probably infer that customers are in the Underground network, they do not have that direct knowledge or exact location.
36. TfL has gone on to give the Commissioner two hypothetical examples. The first is an example – ‘Advertising ID 123’ - of the current data that a MNO could utilise without the relevant MAC address; namely, the mobile device information, data and time stamp and IP address. This information would yield limited inferred information as to the possible location of the device owner. However, if the MAC address associated with the above example was disclosed, TfL’s second example indicates that the precise location of the device owner becomes clear.
37. TfL has explained that this is likely to have a detrimental impact to its advertising revenue in the following ways:
 - MNOs and app developers are likely to sell the above information to digital advertising exchanges in return for commercial fees. They could sell the advertising ID, date/time stamp and exact location
 - They can dump it into a digital advertising exchange or potentially in large segmented groups that are attractive to brands eg ‘The evening commuter with a London Underground journey pattern to/from Aldgate’
 - Brand X has identified that it wants to target people travelling to/from Aldgate at certain times of the day
 - Brand X can then effectively target Advertising ID 123 through non-TfL channels eg Advertising ID 123 is ‘seen’ on dailymail.com. Brand X knows to target that audience and pays a premium to do so
 - Brand X decides to invest more of its advertising budget into web advertising utilising Advertising IDs from TfL’s Wi-Fi network rather than TfL’s own advertising solution
 - Brand X no longer needs to buy TfL station advertising. It can target the exact same audience through different media. TfL would not generate any revenue through the transactions above and this is likely to have a detrimental impact on TfL’s advertising revenue
38. According to TfL, the likely detrimental impact would not only come from web media but also other Out Of Home (OOH) media. TfL says that over the past two years there has been significant investment in the

OOH advertising industry to utilise mobile network and location services data through mobile applications. This data is being used to identify advertising panels that offer advertisers the most efficient way of engaging with their target audiences. If the MAC addressees and associated station identifying information were to be released this would allow competitors to identify their advertising frames that most closely offer the same audiences as those provided by the London Underground. This would provide them with a way to attract investment away from TfL's estate.

39. Finally, TfL has said that the London Underground has a captive audience and a footfall of millions per day, which is currently extremely attractive to advertisers and is a crucial part of its overall revenue. If the location of customers were known to phone network providers and other application developers they would be able to track movements and enable (through third parties) targeted advertisements based on historic locations within the London Underground network. TfL confirmed that there is a strong likelihood this would lead to advertisers seeing less value in TfL's advertising estate which would erode many of its unique selling points. It may also lead to advertisers pulling away from advertising with TfL entirely which would have a significantly detrimental impact on its finances.
40. The Commissioner has considered TfL's explanation and is of the view that TfL has made a good case for demonstrating that a causal relationship exists between disclosing the withheld information and the prejudice envisioned under section 43(2). She is therefore satisfied that the second of the criteria has been met. If TfL was to disclose the MAC information and associated identification information that the complainant has requested, this information could also be used by others, such as phone network providers and other application developers, to target advertising to commuters as they travelled across the London Underground estate. Paying TfL to advertise on the London Underground estate could therefore become less attractive to third parties. This could result in third parties ceasing to advertise on the Underground estate altogether, or reducing their advertising on the estate. This would in turn result in a fall in the revenue TfL receives. The Commissioner is satisfied that such commercial prejudice would be of substance.
41. TfL's reasoning on this point addresses the complainant's point at paragraph 17(vi), in the Commissioner's view.
42. With regard to the third of the section 43 criteria, from its submission it appeared that TfL considered that the prejudice envisioned under section 43(2) *would* occur – rather than would be likely to occur. However, TfL subsequently confirmed that it considers that the

envisioned prejudice *would be likely to* occur and the Commissioner is satisfied that it is more than a hypothetical possibility and is a real risk.

43. Since the three criteria at paragraphs 13 - 15 have been met, the Commissioner has decided that the information the complainant has requested – the MAC addresses and associated station identifying information – engages the exemption under section 43(2) of the FOIA. Because she has found section 43(2) to be engaged, the Commissioner has not needed to consider whether section 44 is engaged. She has gone on to consider the public interest test associated with section 43.

Public interest test

Public interest in disclosing the information

44. The arguments that the complainant provided with regard to section 43(2) – at paragraph 17 – are more arguments that section 43(2) is not engaged rather than public interest arguments for the information's release. It is clear that the London Underground MAC addresses, and associated information, are of considerable interest to the complainant – the Commissioner understands he is seeking these for an app he is developing – but it is not clear what wider public interest the release of this information has.
45. Arguments for disclosure that the complainant has presented that could be said to have *some* wider public interest are, first, that restricting availability of MAC addresses can be viewed as an inhibitor to technological progress.
46. Second, the complainant argues that releasing requested information does not directly correlate to the disclosure of sensitive personal data. The user of the Underground has the choice to disable Wi-Fi on their device or to uninstall an app on their device which uses the data on the Underground network. This is enough to mitigate any potential 'risk'. The complainant considers TfL is acting like an autocracy by deciding what is best for each member of the public, instead of letting each member of the public decide what is best for themselves.
47. Finally, the complainant has told the Commissioner that he considers that an argument that targeted advertisements affect TfL's own revenue streams for its own advertising/marketing campaigns is very "far-fetched". The complainant did not provide any further detail on that point.
48. For its part, TfL has acknowledged that, given the volumes of people using the London Underground network there is significant public interest in informing the public of as much detail as possible regarding the Wi-Fi network available to them.

49. TfL also recognises that the information would be of commercial value to application developers who may wish to use the information to create mobile applications that serve the public and provide various travel benefits.
50. Finally, TfL accepts the inherent public interest in being open and accountable for its operations.

Public interest in maintaining the exemption

51. TfL says it has had unprecedented cuts to its operational funding from the Government over the last five years. Unlike the rest of the UK, local authorities within London are generally excluded from Government funding schemes. For example, 99.6 per cent of London's road network receives no sustained central Government funding for maintenance, with just those managed by Highways England receiving funding.
52. As a result creating and protecting revenue streams has been essential in ensuring TfL continues to make progress towards breaking even on the cost of day-to-day operations by 2022/23, for the first time in its history, while investing billions in vital transport improvements in London.
53. TfL says it is important to recognise that revenue gained by TfL is not profit and that all income received is invested back into the network.
54. It argues that if this revenue stream were to diminish due to advertisers going elsewhere there would be an essential need to replace this lost income via other means, most likely through increased fares. Given that fares already make up the largest proportion of its income and that all of its income is invested back into the network, there is a significant public interest in both keeping fares as low as possible and ensuring TfL's revenue streams remain as high as they can possibly be.
55. Avoiding any adverse affect to its commercial interests is, TfL says, essential to prevent any losses being passed on to the general public via fare increases, as well as to ensure TfL's programme of upgrade and maintenance works is able to continue, to be able to serve the millions of passengers using its services each day.
56. In TfL's view the weight of public interest falls on protecting its revenue streams to ensure that it remains able to invest into a network which is critical national infrastructure and of vital economic importance to the country, as well as retain fares as low as possible.

Balance of the public interest

57. The Commissioner does not consider the complainant's arguments for disclosure to be strong. She appreciates that the MAC addresses and associated information is of interest to him but she is not persuaded that there is any wider public interest to be served in disclosing this information, save for TfL demonstrating transparency. In contrast, it appears to the Commissioner that TfL has made a good case for there being stronger public interest in the information being withheld. This is because disclosure – and the possible decrease in TfL's revenue as third parties move away from its own advertising solutions – would be likely to detriment the public; though increased fares, the erosion of trust between TfL and the users of the Tube network and TfL not being able to provide an optimal service. The Commissioner is satisfied that the public interest favours maintaining the section 43(2) exemption in this case.

Other matters

58. The complainant is dissatisfied because TfL did not provide an internal review within the timescale outlined in its complaints procedure.
59. The Commissioner and the FOI Code of Practice consider it is good practice to provide a review within 20 working days of a request for one. A further 20 days should only be necessary in the most complex cases.
60. In this case the complainant requested a review on 3 January 2019. He received an 'interim' internal review following intervention from the Commissioner on 21 February 2019. That correspondence indicated that TfL would go on to provide a substantive review but this did not arrive and had not arrived at the point the Commissioner accepted the complaint for further consideration on 12 March 2019.
61. TfL did not provide the interim review within the 20 working days the Commissioner recommends and did not make a case that it needed further time because the case was unusually complex. TfL's indication that a fuller review would go on to be provided was ultimately unhelpful as such a review was not provided and the complainant's ability to submit his complaint to the Commissioner was therefore delayed further. The Commissioner considers that TfL mishandled the internal review process on this occasion.

Right of appeal

62. Either party has the right to appeal against this decision notice to the First-tier Tribunal (Information Rights). Information about the appeals process may be obtained from:

First-tier Tribunal (Information Rights)
GRC & GRP Tribunals
PO Box 9300
LEICESTER
LE1 8DJ

Tel: 0300 1234504

Fax: 0870 739 5836

Email: grc@justice.gov.uk

Website: www.justice.gov.uk/tribunals/general-regulatory-chamber

63. If you wish to appeal against a decision notice, you can obtain information on how to appeal along with the relevant forms from the Information Tribunal website.
64. Any Notice of Appeal should be served on the Tribunal within 28 (calendar) days of the date on which this decision notice is sent.

Signed

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