

North Huish Parish Council

Mobile Telephone Signal Survey

Initial Report

Prepared by Cllr TTA Grevatt, March 2020. Revised July 2020.

1: Summary

Following concerns about the level of signal coverage in the parish, North Huish Parish Council carried out a survey of mobile telephone signals in Avonwick in February 2020. From just over 100 households in the village, 53 residents responded, and their responses indicate a very poor level of signal throughout the village.

- The majority (79%) of villagers are using either Network Group 1 (EE and associated) or Network Group 2 (O2 and associated).
- No network shows significantly better or worse signal than any other.
- There are no areas within the main village envelope that report a good signal.
- 69% said that they could not use their mobile telephones outside their house.
- 83% said that they could not use their mobile telephone in the main areas of their house.
- The strength of signal outdoors is significantly worse than assumed by official coverage maps.
- 74% reported specific difficulties as a result of the lack of signal, with a third reporting that their work or business was affected.

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3: Introduction

North Huish Parish Council had received concerns that long-term problems with mobile telephone signal, which had previously been an inconvenience, were becoming a serious impediment for parishioners. In particular, an increase in 'two-factor authentication' which requires users to receive one-time passwords or codes by SMS text message are locking Avonwick residents out of online services such as banking and payments.

The council was concerned that parishioners were being disadvantaged by the level of signal in the village and that the official estimates of coverage were over-optimistic. As a result, the council undertook a survey in February 2020 to determine the strength of mobile telephone signals in the village of Avonwick, and to see if particular networks or areas had better coverage than others.

4: Survey method

In order to obtain a representative sample of 'real world' signal strength, we decided to ask parishioners to check signal level with their own devices, rather than attempting to use a single device to survey the whole village. The council set up an online survey, including ten questions (Appendix 1). The survey was advertised to every household in Avonwick by hand-delivering leaflets and by advertising the survey online. The adverts invited every adult telephone user in Avonwick to answer the survey.

There was no limit to the number of entries that the survey could accept, and multiple entries from the same address were accepted in order to gain responses from all telephone users within each household. However, each survey response included the address of the respondent as a mandatory field in order to plot signal strength, which helps to identify duplication. In addition, 66% of respondents gave their personal contact details, which enabled a small number of duplicate submissions to be removed.

We asked respondents to state the signal strength in terms of 'bars' as shown on their devices' display, as this indication is well understood by the general public. We assume that different devices will allocate bars at different signal strengths, but believe this is still a reasonable indication of signal presence, particularly as in most cases the signal strength was clearly low by any measure. We also asked respondents to indicate whether the signal they received was 'useable' or not to try to determine what level of signal might be acceptable.

5: Key results

The total number of responses at 4th April 2020 was 54, excluding duplicates.

5.1: Network usage

There are four networks covering Avonwick, each of which serves a number of mobile telephone companies as well as a primary operator:

1. **Network Group 1: EE**; also used by ASDA Mobile, BT Mobile, Plusnet Mobile, Virgin Mobile, Utility Warehouse, 1pMobile, The Phone Coop, Orange, T-Mobile
2. **Network Group 2: 02**; also used by Giffgaff, Tesco Mobile, Sky Mobile, LycaMobile
3. **Network Group 3: Three**; also used by iD Mobile, Smarty, FreedomPop
4. **Network Group 4: Vodafone**; also used by Voxi, Lebara Mobile, Talk Mobile

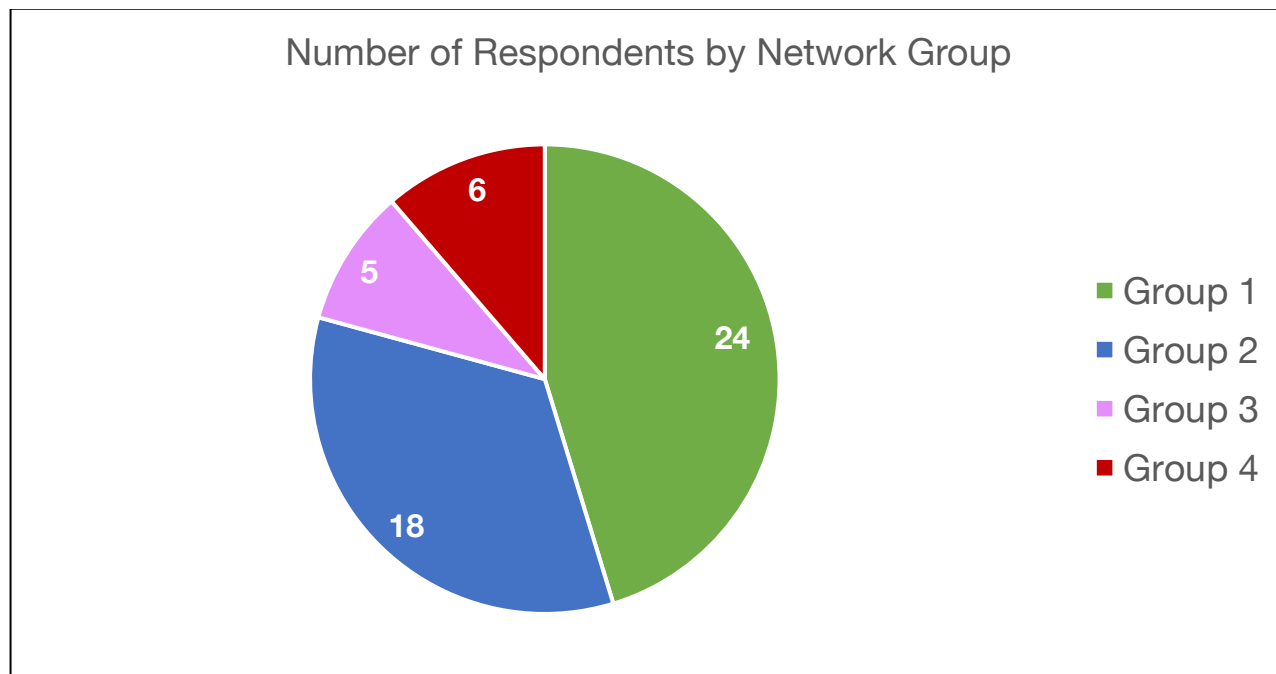


Figure 1: Number of respondents using each network

Figure 1 shows the network usage. The majority (79%) of respondents are connected to Groups 1 (45%) and 2 (34%).

5.2: Signal Strength Outside

All respondents answered this question.

- 68% said that they had no useable signal outside their house
- 32% said that they had a useable signal outside their house.

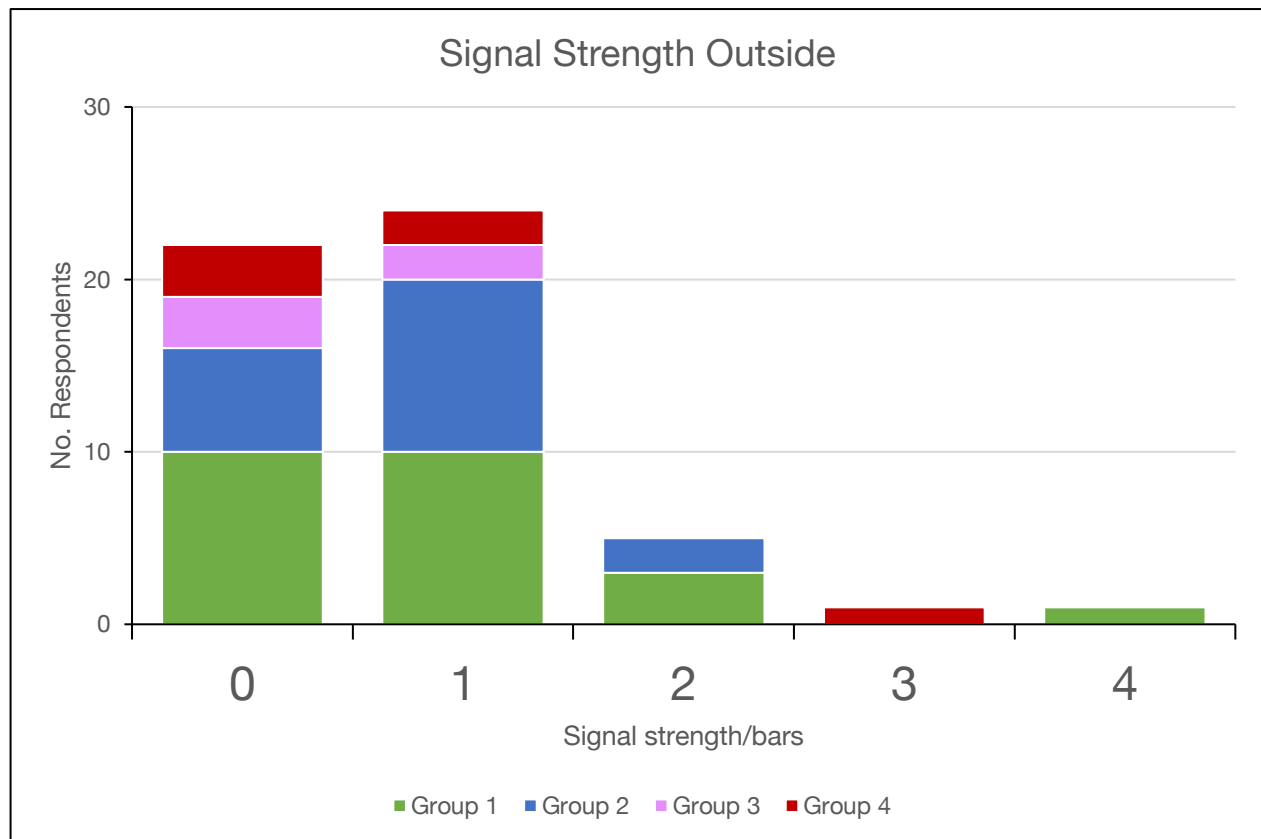


Figure 2: Signal strength outside respondents' houses

42% of respondents reported no signal at all outside their houses, while a further 45% reported just one 'bar' of signal. Section 6.2 below shows that this is significantly worse than official estimates.

Of those reporting 1 bar, over half considered this signal unusable.

Only two respondents reported signal strengths of 3 bars or more: one was located outside the main village envelope, the other is considered an inaccurate entry and has been discounted, as the respondent still considered the signal to be unusable.

Notwithstanding the strength of signal outside, in the responses to our question about the difficulties encountered with signal in Avonwick, one respondent made the relevant point that signal outside the house is unsuitable for confidential conversations such as financial discussions, as they can be overheard.

5.3: Signal strength in the Main Areas of the House

All respondents answered this question.

- 83% said they had no useable signal in the main areas of their house.
- 17% said they had a useable signal in the main areas of their house.

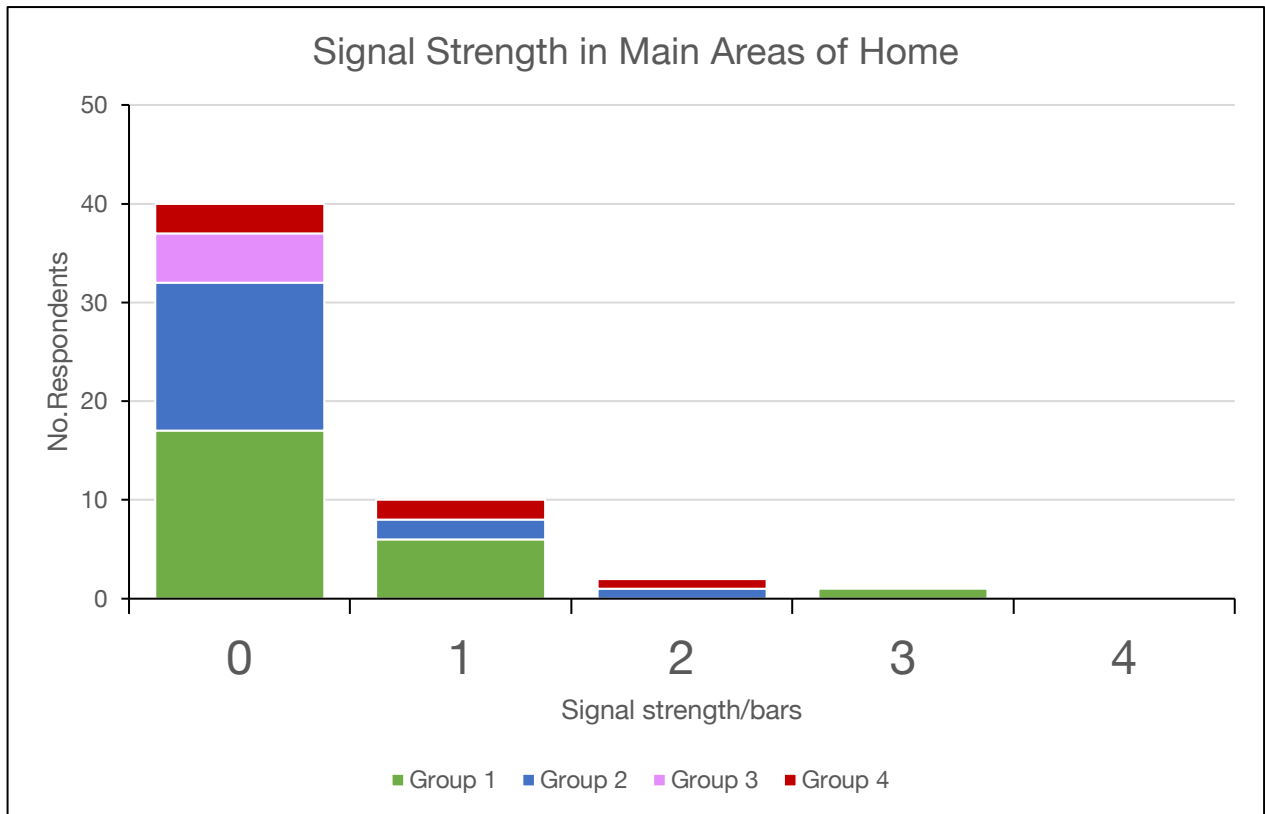


Figure 3: Signal strength in main living areas of respondents' houses

75% of respondents reported no signal at all in the main areas of their house, while a further 19% reported just 1 bar.

Half of those reporting 1 bar considered this unusable.

The only recorded signal strength of 3 bars is outside the main village envelope.

One of the responses recording 2 bars is considered an inaccurate entry and has been discounted, as the respondent still considered the signal to be unusable.

5.4: Maximum Signal Anywhere in the House

All respondents answered this question.

- 58% said they had no useable signal anywhere in their house.
- 42% said they had a useable signal somewhere in their house.
 - But 64% of those who could get a signal somewhere in the house said that they can only get a useable signal away from the main areas of their house.

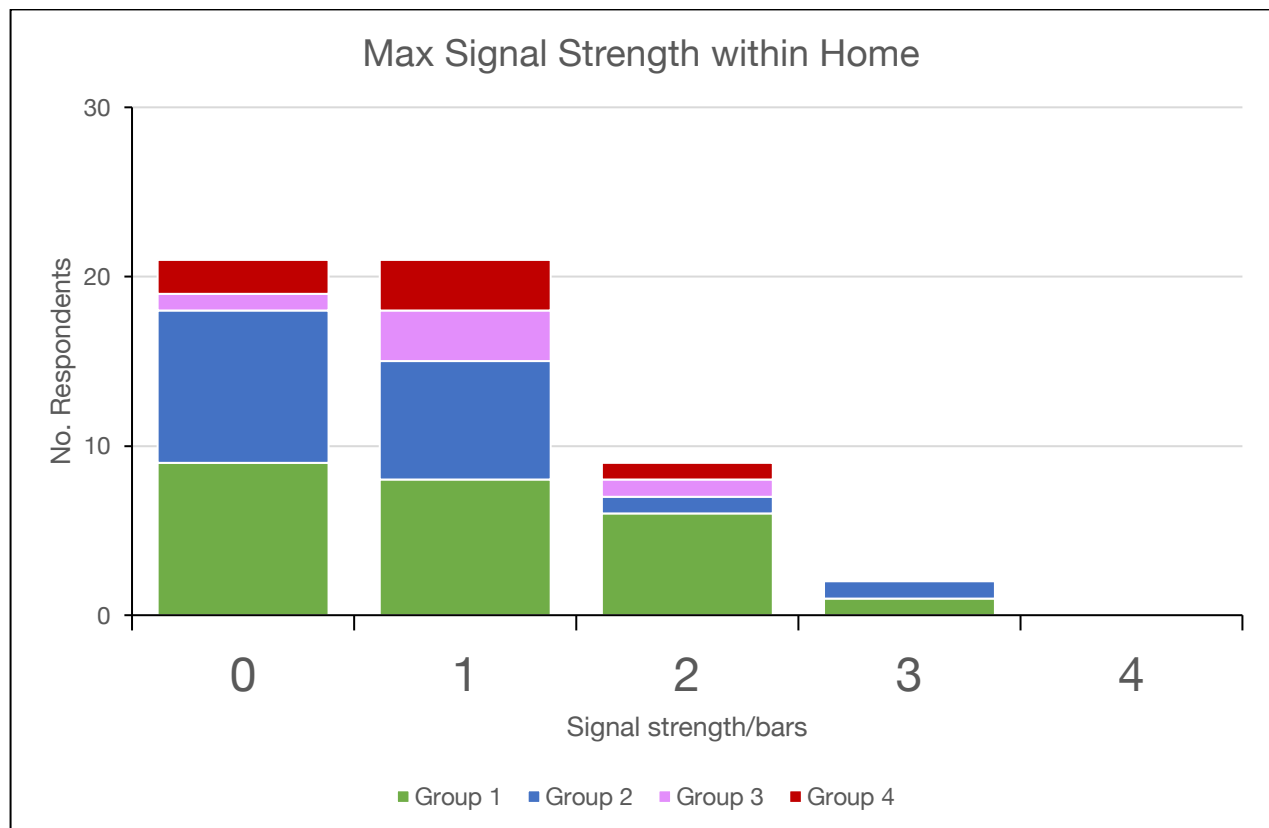


Figure 4: Best signal achieved anywhere in respondents' houses

40% of respondents reported no signal at all in the main areas of their house, while a further 40% reported just 1 bar.

Half of those reporting 1 bar considered this unusable.

One respondent recorded a signal strength of 3 bars inside the main village envelope, but noted in the written comments that this varied between 2 and 3 bars.

One of the responses recording 1 bar is considered an inaccurate entry, as the respondent noted a higher signal strength in the main areas of the house, and has been discounted.

5.5: Signal type

We asked respondents to tell us if they could obtain 2G, 3G or 4G signals in their houses. Most respondents did not answer this question, and it is assumed that it was not understood or that respondents did not know how to check this.

Most of the remainder noted either 3G or 4G signals. However, it is possible that these

have also misunderstood the question as at least one respondent reported a 3G signal but no 'bars', suggesting a confusion between mobile internet and domestic WiFi.

We therefore do not consider the results to this question to be reliable.

5.6: Location

All the respondents gave their location, with only one not providing a house number or name.

The majority of respondents were located in the central village envelope, from Higher Moor to the church and from Church Walk to Sunnyside.

Figure 5 shows the approximate locations of the majority of respondents, indicating that we received a good representation of signals across the central envelope of the village.



Figure 5: Approximate locations of respondents (map data © OpenStreetMap contributors)

5.7: Significant Inconvenience

We asked respondents to tell us if they had experienced significant inconvenience as a result of the mobile telephone signal at their house.

74% of respondents told us that they had experienced inconvenience, excluding one person who used the space to clarify a previous response.

- 36% of respondents mentioned the impact on their work or business (note that this is *before* the coronavirus pandemic forced more people to work from home)
- 15% of respondents mentioned difficulties with online banking and transactions
- 23% of respondents mentioned particular difficulties with SMS text messages
- 2 respondents specifically mentioned health-related concerns, including one who reported difficulty summoning help during a previous medical emergency.

There was widespread frustration expressed at the restrictions on mobile telephone functionality at home. Voice calls and SMS text messaging are very difficult for most respondents, with calls regularly missed and text messages received long after they were sent.

Several respondents mentioned that they successfully use "WiFi calling", pairing their mobile telephone to their home wireless network and using Voice Over IP (VOIP) to connect their mobile telephones to the networks. However, some felt this to be unreliable.

A few respondents commented that they would have no means of summoning help in a power cut as they rely on cordless telephones attached to their PSTN telephone lines; they should be reminded that a corded telephone would still work without mains power at present. However, it is uncertain if this will remain an option with current plans to discontinue PSTN telephone lines from 2025¹.

A full list of responses is given in Appendix 2.

6: Comparison with Official Signal status

According to Ofcom's official analysis, almost the whole of the parish of North Huish should have a 'good chance' of receiving a mobile telephone signal outdoors, which differs from our results. Avonwick is, officially, almost entirely without a signal strong enough to be used indoors, and this is both confirmed and amplified by our findings.

6.1: Indoors

Figure 6 shows the official coverage map of combined indoor voice signal availability without 4G-enabled phone (all networks), according to Ofcom²:

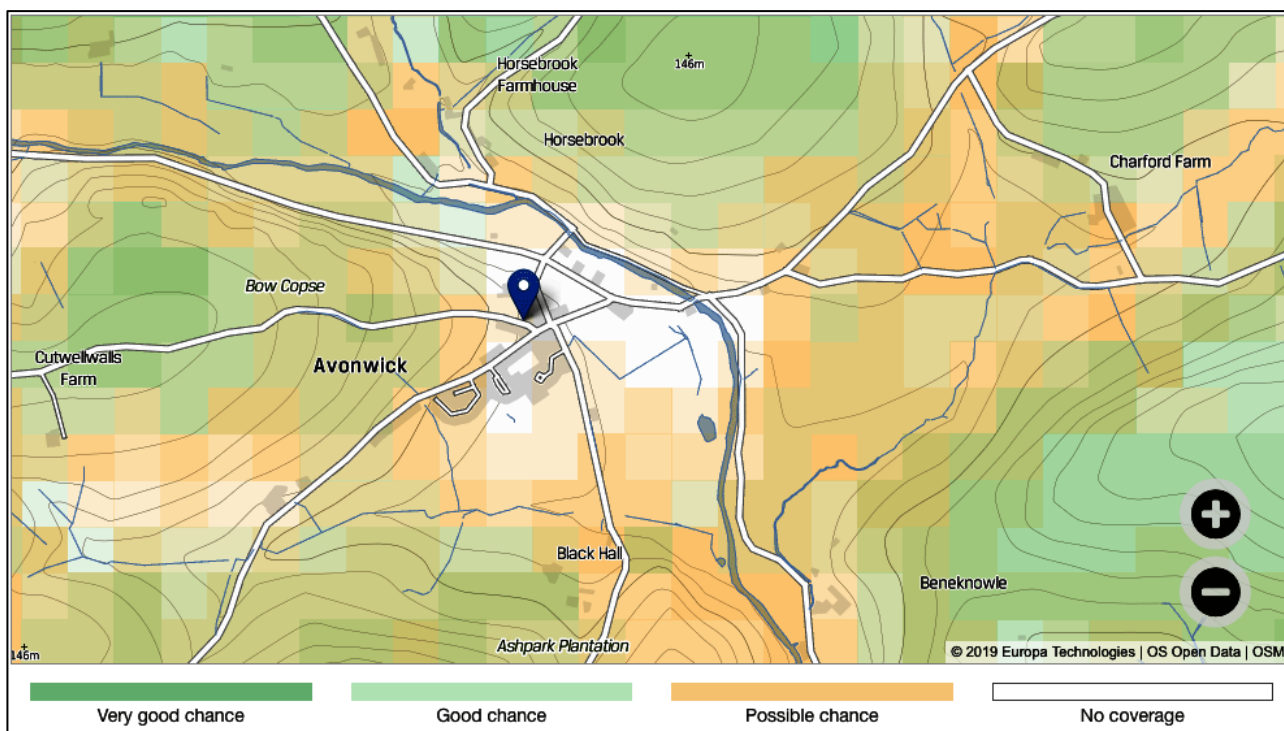


Figure 6: Official indoor signal coverage with maps for all networks overlaid

Although this map shows a large official 'not spot' across the village, the majority of our respondents live in areas marked as having a 'possible chance' of indoor reception on at least one network on Ofcom's official estimates. Our responses show that in reality the chance is distinctly low, with 58% having no useable signal indoors.

¹ <https://www.bt.com/about/special-services/latest-news/all-ip-plans1>

² <https://checker.ofcom.org.uk/mobile-coverage>

6.2: Outdoors

Official coverage maps indicate that the whole of Avonwick should be able to receive a good chance of a mobile signal outdoors³.

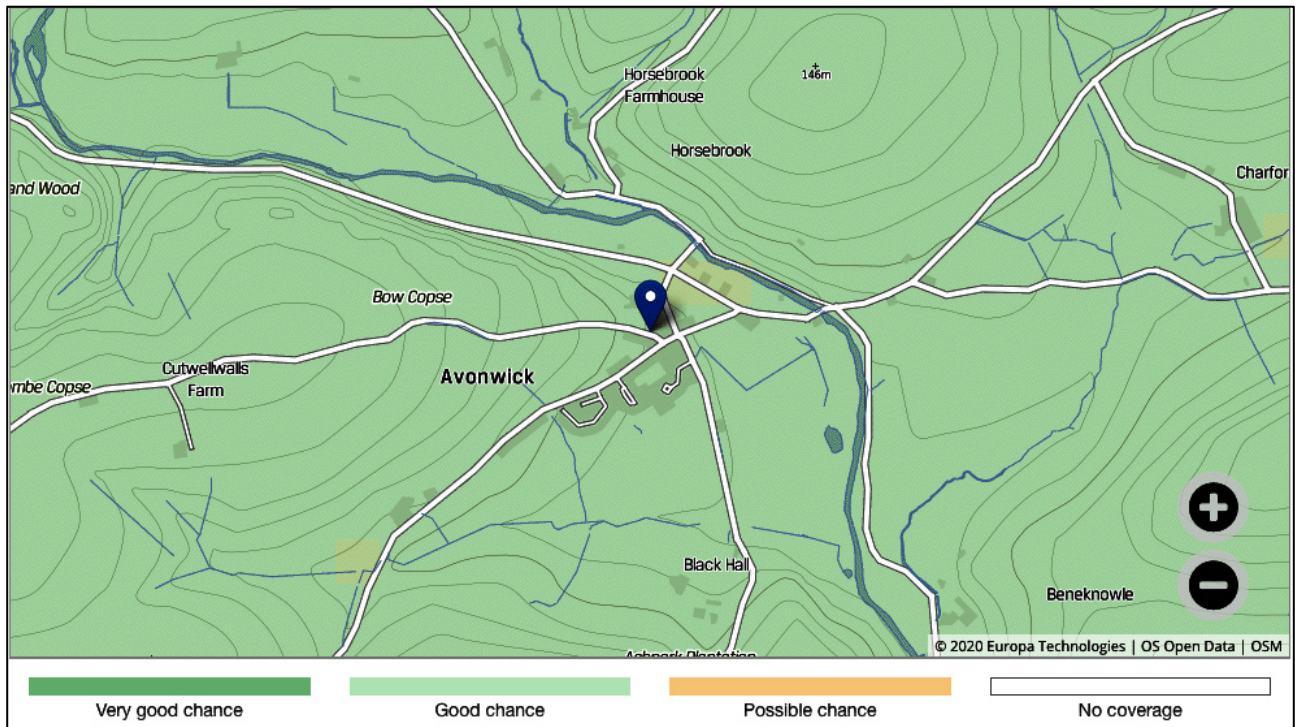


Figure 7: Official outdoor coverage with maps for all networks overlaid

Our responses show that 68% of the village find this not to be the case and report no useable signal outside their house. Their approximate locations are shown below.

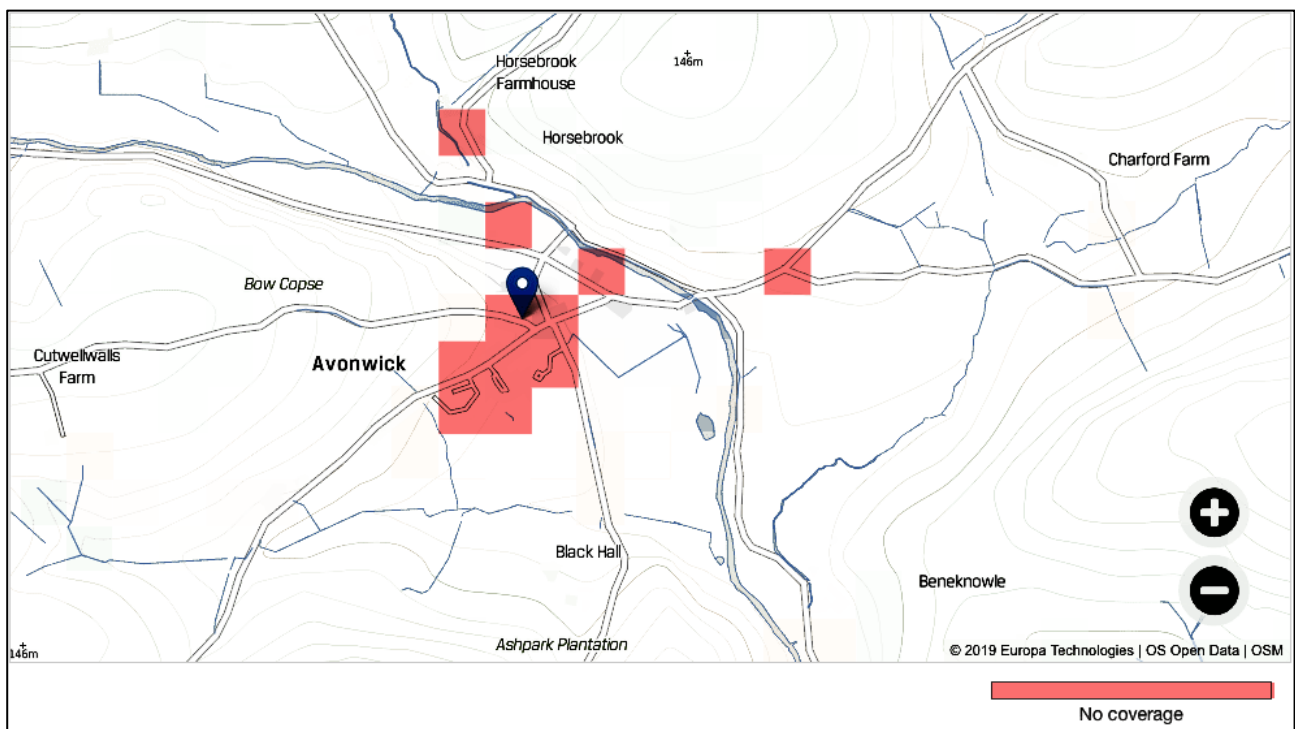


Figure 8: Areas which reported no useable signal outdoors using same grid

³ <https://checker.ofcom.org.uk/mobile-coverage>

This survey suggests that the strength of signal outdoors in Avonwick is being badly overestimated by the official coverage analysis, and that signal strength in Avonwick is much worse than the networks believe. This ties in with a comment from one respondent that their network provider blamed 'older mobile phones' rather than acknowledging a weak signal.

7: Implications

Mobile telephones have become an important part of most people's lives and there is a general expectation that people can be contacted by mobile device.

7.1: *Negative impact on business*

For businesses trying to keep in contact with their employees or people who work from home, poor connectivity can cause serious problems that affect people's ability to do their job or retain customers. Many of our respondents mentioned problems missing critical calls.

7.2: *Social isolation*

Social isolation is a concern for people whose mobile devices only function away from their homes, and where friends and family expect to use their mobile phone as a primary means of communication.

7.3: *Blocking access to online services*

Of particular concern are recent moves towards 'two-factor authentication' where one-time passwords or codes are sent by SMS text message to customers in order to log-in or approve transactions. This can be a problem for everything from signing up to services online to important financial transactions.

All banks, for example, are required to implement 'strong customer authentication' by March 2021, and many are choosing to do this by SMS codes. However, it is important to note that the Financial Conduct Authority has stated that it is not acceptable for banks to insist on SMS being the only authentication method, and alternative methods must be available⁴. A report from one of the respondents of a bank refusing to call a 'short'⁵ but perfectly valid number is, for example, unacceptable.

7.4: *Lack of connectivity in case of power failure*

WiFi and VOIP calling helps many of the respondents get around poor signal, but these fail if there is a power cut and some respondents mentioned that their broadband internet connection is unstable.

At present, most houses in Avonwick have a PSTN telephone line that will continue to provide a basic telephone service even if the mains power fails. However, the PSTN network is due to be withdrawn in 2025, and it is not yet clear if the replacement systems

⁴ <https://commonslibrary.parliament.uk/science/technology/new-online-security-measures-what-if-you-dont-have-a-smartphone/> and <https://www.fca.org.uk/firms/strong-customer-authentication>

⁵ Landlines in Avonwick are on the South Brent (01364) exchange, usually with five-figure numbers in the 72xxx and 73xxx number ranges. This is one of 40 exchanges with 'short' numbers.

will retain functionality without mains power⁶. Unless the signal problems are sorted by this date, there is a real danger that the residents of Avonwick will be left unable to summon help from their homes when the power fails.

8: Conclusions

The survey has shown that anecdotal reports of poor signal in Avonwick are widely confirmed by the responses.

8.1: Most of Avonwick has no useable mobile signal indoors

Signal is poor right across the main village envelope, with only outlying respondents reporting reasonable signal. Most households in Avonwick have no useable mobile signal anywhere inside the house, with only a minority able to get some form of signal somewhere inside, no matter how inconvenient.

8.2: Signal is even worse than assumed by the networks

While the mobile networks and Ofcom estimate that outdoor coverage in Avonwick should be good, this survey suggests that coverage is poor. This discrepancy may be affecting planning for improved coverage.

The survey also shows that a very weak '1 bar' signal is not, in practice, considered useable by most respondents.

8.3: Residents of Avonwick are experiencing genuine hardship

A significant number of parishioners are being caused inconvenience by the poor signal, which is detrimental to their business, social life and health. Recent developments in security authentication, particularly banking, threaten to cause hardship to parishioners who have no reasonable mobile telephone signal. These problems need to be addressed.

8.4: EE and O2 are the main networks to target

Respondents using all networks reported problems and no network is consistently better than any other in Avonwick. However, since the majority of respondents are users of the networks operated by EE and O2, these companies should be the initial target for requests for better signal.

⁶ https://www.ofcom.org.uk/__data/assets/pdf_file/0032/137966/future-fixed-telephone-services.pdf

Appendix 1: Questionnaire questions

Summary of responses in ***Bold Italic*** and detailed totals in tables.

Avonwick Mobile Telephone Signal Survey

A survey by North Huish Parish Council

We are often told that mobile phone coverage in the village isn't very good: so we'd like to know how good - or bad - your mobile phone signal is at home.

North Huish Parish Council is concerned that the official coverage maps for this area are not accurate. We hope to use the results of this survey to lobby for better signal from the main mobile phone providers in the parts of the village which really need it.

Please answer these questions honestly so that we can see the strength of signal in different parts of the village: please don't exaggerate, as we are trying to find the true extent of coverage.

If you have 'WiFi calling' enabled on your phone, please turn it off before checking your signal!

You can find out more about this survey, and the ways in which we will use the data we collect, at the parish council's website at northhuishparishcouncil.co.uk/further-resources/avonwick-mobile-telephone-signal-survey/

1. Which mobile telephone network do you use?

- ☐ Network Group 1: EE, ASDA Mobile, BT Mobile, Plusnet Mobile, Virgin Mobile, Utility Warehouse, 1pMobile, The Phone Coop, Orange, T-Mobile - **24**
- ☐ Network Group 2: 02, Giffgaff, Tesco Mobile, Sky Mobile, LycaMobile - **18**
- ☐ Network Group 3: Three, iD Mobile, Smarty, FreedomPop - **5**
- ☐ Network Group 4: Vodafone, Voxi, Lebara Mobile, Talk Mobile - **6**

2. Are you able to get a useable mobile phone signal directly outside your house?

- ☐ Yes - **17**
- ☐ No - **36**

3. Typical signal strength outside your house

- ☐ 0 Bars (no signal) - **22**
- ☐ 1 Bar - **24**
- ☐ 2 Bars - **5**
- ☐ 3 bars - **1**
- ☐ 4-5 bars - **1**

| | Bars Outside | | | | |
|------------------------------|--------------|----|---|---|---|
| | 0 | 1 | 2 | 3 | 4 |
| No. respondents Group 1 | 10 | 10 | 3 | 0 | 1 |
| No. respondents Group 2 | 6 | 10 | 2 | 0 | 0 |
| No. respondents Group 3 | 3 | 2 | 0 | 0 | 0 |
| No. respondents Group 4 | 3 | 2 | 0 | 1 | 0 |
| No. respondents All Networks | 22 | 24 | 5 | 1 | 1 |

4. Are you able to get a useable mobile phone signal in the main living areas of your house?

- ☐ Yes - **9**
☐ No - **44**

5. Typical signal strength in the main living areas of your house

- ☐ 0 Bars (no signal) - **40**
☐ 1 Bar - **10**
☐ 2 Bars - **2**
☐ 3 bars - **1**
☐ 4 bars - **0**

| | Bars in Main Areas | | | | |
|------------------------------|--------------------|----|---|---|---|
| | 0 | 1 | 2 | 3 | 4 |
| No. respondents Group 1 | 17 | 6 | 0 | 1 | 0 |
| No. respondents Group 2 | 15 | 2 | 1 | 0 | 0 |
| No. respondents Group 3 | 5 | 0 | 0 | 0 | 0 |
| No. respondents Group 4 | 3 | 2 | 1 | 0 | 0 |
| No. respondents All Networks | 40 | 10 | 2 | 1 | 0 |

6. Are you able to get a useable mobile phone signal anywhere inside your house?

- ☐ Yes - **22**
☐ No - **31**

7. Maximum signal strength in any part of your house

- ☐ 0 Bars (no signal) - **20**
☐ 1 Bar - **19**
☐ 2 Bars - **8**
☐ 3 bars - **2**
☐ 4 bars - **0**

| | Bars in Any Part of House | | | | |
|------------------------------|---------------------------|----|---|---|---|
| | 0 | 1 | 2 | 3 | 4 |
| No. respondents Group 1 | 9 | 8 | 6 | 1 | 0 |
| No. respondents Group 2 | 9 | 7 | 1 | 1 | 0 |
| No. respondents Group 3 | 1 | 3 | 1 | 0 | 0 |
| No. respondents Group 4 | 2 | 3 | 1 | 0 | 0 |
| No. respondents All Networks | 21 | 21 | 9 | 2 | 0 |

8. Are you able to get the following inside your house?

- ☐ 2G Voice only mobile telephone signal
☐ 3G Basic internet data signal
☐ 4G High speed 'mobile broadband' signal
☐ Don't know

Answers suggest question not widely understood.

9. What is your address?

(We need to know this so we can plot signal strength across the area; we won't use it to contact you unless you indicate below that you would be happy for us to do so.)

- ☐ First line of address
☐ Postcode
☐ If you would be happy for someone from the council to contact you about this survey, please tell us your name.
☐ If you would be happy for someone from the council to contact you about this survey, please give us either a phone number or e-mail address.

10. If you have suffered significant inconvenience as a result of the mobile telephone signal in your house, please tell us how.

☐ See Appendix 2.

Appendix 2: Examples of difficulties encountered

Personal details have been removed from these responses and edits are shown by [substitutions] or truncated information ...

- I am often unable to use my mobile phone at my address.
- My phone picks up Internet phoning
- Unable to take work calls at all (on O2) so have had to release my home (landline) number to my employer. My employer also provides equipment for mobile working to enable working from home, I can only use the equipment as I have installed broadband
- i often have to go into the garden to use my mobile ,not a very private place to hold a private conversation, ie talking to the bank, official people every nieghbour can hear what you are saying ,i can also hear other neighbours on there phones having private conversations ,not really ideal especially if you have to give you bank details out or explaining your financial situation ,i also have a land line but the line is very distorted so you can not hear on that ,i have complained to bt but they just say its fine there end
- Very inconvenient for working at home! Without wifi calling, it would be impossible.
- I have to use an i phone so i can get signal via wifi. I am [mobility disabled] so good signal is really important for emergencies if i fall etc
- We use wifi calling and whatsapp so we don't have too much of an issue. However we had to buy a special signal changer for my husband's mobile phone as he works from home and could not get a signal. Also, if the electricity cuts out we have no way of contacting anyone at all, and with a small baby that is a bit worrying.
- Missed some important work calls and texts
- I work from home and have to have a booster box installed to use internet for mobile coverage. Unable to have a smart meter fitted as they rely on mobile signal to send data.
- on line banking. delivery drivers calling ahead.
- i can only use the mobile phone if i enable WiFi calling. No visitors to my house can get a signal no matter which network they use
- Unable to get One Time Passwords by text from my Bank every time I make transactions. I have difficulties being in touch with my customers who prefer to use text or mobile to communicate.
- In the past (before wifi calling) I have missed business calls losing work
- We always used to get an o2 phone signal but in the last few years (we have lived here for [many years] this has been dreadful in the last 5yrs). We were contemplating ending our land line phone contract a few years ago but have been unable to pursue this given the increasingly terrible coverage). We have also experienced numerous problems with our BT landline (although this has been addressed) so have at times been cut off entirely. We welcome the investigation and have approached O2 on numerous occasions - they blame our older mobile phones (only a few years old and completely inaccurate excuse). We have considered changing our mobile provider so would welcome feedback about your

findings. With a [child] commuting to and from school walking up the village road independently, we feel there are safety concerns with the lack of service. We often have one bar upstairs but the quality of phone calls are dreadful (often breaking up). Unable to send texts due to no service. We have found what's app phone calls to be successful (not relying on o2). Many thanks, [Name]

- As the Technical Manager for [Business Name] I need to be contacted. Because of the lack of signal I have missed critical calls.
- Just to clarify, I sometimes have a usable signal downstairs (weather dependant) but can almost always get 2/3 bars upstairs.
- I have to use wifi to connect to people because of insufficient mobile signal
- We seem to suffer frequent WiFi router issues too (I think power surges on overhead telegraph lines causes faults to BT homehub), and when this happens we are pretty much cut off from the outside world with no signal in most of our house!
- Missed important work related calls. Missed text messages. Only get limited signal indoors if phone is left in certain windows.
- Need telephone for business calls, as no signal inside the house I only pick up missed calls and voicemails when I have driven down the road. This is a significant problem for my business.
- Yes, I couldn't use my mobile to call an ambulance during [a medical event]. Subsequently, having a severe ... allergy means the poor signal strength is worrying ... I had to get myself to the downstairs landline on my hands and knees to call the doctors ...
- Can't get texts from my bank giving one time passwords
- I rarely am able to phone or receive any calls successfully in my house. We have to step outside front door to send texts.
- I have to work from home at least once a week as well as covering a duty phone line 24/7 on a rota basis and my work (mobile) phone signal is very poor. Meaning I have had to talk outside in order to enable the signal to be good enough for me to be heard, with the phone often breaking up, leading to much frustration and me being unable to fully undertake my role.
- I have WiFi calling which helps
- It's just the whole inconvenience, for example, taking calls or messages from work, I don't receive texts or voice messages until I'm outside of the village this has caused confusion, as sometimes I don't get the messages until a couple of days later. If I need to change my password for internet access or bank transfers on my laptop, they usually require the password to be sent via text on my phone, but I can't receive any texts unless I drive out of the village.
- During the bad snow we experienced a few years ago in the area we lost power and our landline (wireless phones) did not work. We were snowed in ... we had no mobile signal or anything. We were fully cut off. My neighbours experienced similar issues. I now have a corded landline because our mobiles are just so unreliable. It's very frustrating and costly. ...
- Impossible to receive authorising phone calls from bank, when making payments. Bank say they are unable to phone our land line as it is 'one digit short'!?

- Not possible to have a fully audible conversation
- In a power cut I have no phone
- There have been a number of times when messages sent by family members have not been received at home for several hours. Luckily up to now this has not caused significant inconvenience as the nature of the messages have not been crucial. However, if for example someone was stranded without transport and in need of collecting from somewhere, the fact that we may not receive a message for hours could cause significant inconvenience.
- When trying to set up accounts or access online banking I am often sent a verification code By text but cannot receive these in my house. I also cannot receive important phone calls.
- Much of the time we get the signal indicated above. However often there is no signal or a poor signal. This can cause a particular problem if we need to receive a code to confirm a service, such as setting a new instruction to make a payment to a person or business.
- With [name] being self employed it didn't make it easy 2 communicate with customers and we r forever trying 2 return customer calls
- I run my business from my home office. I have wifi calling but it is very patchy. I cannot receive text messages at home.
- When I first moved here it severely affected my self employed work. I had to change network, buy a new phone and wait weeks for broadband and WiFi calling. WiFi calling is ok but not as reliable as a decent mobile signal so it still affects my work.
- Nobody can use their mobiles unless they go upstairs - which is inconvenient personally and from a safety aspect for me as I am [of pensionable age]. Also professionally it is a problem, as my children sometimes need to work from here when visiting.
- Rarely able to receive text messages. Phone calls, no hope
- Can't send or receive text messages. Can't receive security codes from bank when doing online banking.

Appendix 3: Local solutions

There are a number of options for boosting mobile signals on a household-by-household basis.

WiFi calling

Depending on your mobile telephone contract and the model of telephone you use, it may be possible to use 'WiFi calling' when your phone is connected to a wireless internet connection. This effectively allows your phone to connect to the mobile network through the WiFi signal rather than the phone's 2G, 3G or 4G connection, and allows you to make and receive calls and text messages as normal even without a mobile phone signal.

Information about this, and compatible tariff plans and phone models, is available directly from mobile providers such as:

- O2 <https://www.o2.co.uk/connectivity/wifi-and-4g-calling>
- Vodafone <https://www.vodafone.co.uk/network/calling-features/wi-fi-calling>
- Three http://www.three.co.uk/discover/three_intouch
- EE <https://ee.co.uk/help/help-new/getting-started-and-upgrading/using-your-phone-features/how-do-i-use-wifi-calling>

Femtocells

Femtocells are effectively extensions to the mobile telephone network that connect to the mobile network over a broadband connection and provide a local 'mast' for the mobile signal. If you have a reasonable broadband connection, you may be able to obtain a femtocell 'booster box' from your mobile telephone provider – but they are getting harder to find.

Vodafone: Sure Signal

- Discontinued

O2: Boost Box

- May be available through O2 directly for customers with no signal indoors
- <https://www.o2.co.uk/help/network-coverage-and-international/boostbox-guide>

Three: Home Signal

- Discontinued

EE: Signal Box

- Discontinued

Private signal boosters

Mobile telephone repeaters are regulated by Ofcom, and at present their use is highly restricted. Signal boosters are only permitted to be used if:

- The aerial that receives a signal from the mobile phone network is inside a building – i.e. it is not legal to mount an aerial outside
- The booster works on one network only – i.e. you cannot have a booster that amplifies two or more networks at a time

These boosters will only work if there is at least one bar of mobile signal somewhere in the building in which it will be used, such as by an upstairs window. The devices typically cost a few hundred pounds, and are available from specialist suppliers. It is important to note that many devices available on-line are not legal for use in the UK.