



Report and Recommendations from Glastonbury Town Council's 5G Advisory Committee



April 2020



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Report and Recommendations from Glastonbury Town Council's 5G Advisory Committee

Introduction by Chair, Cllr. Jon Cousins.

Glastonbury has been described as “*a town that punches above its weight*”, influencing other councils and levels of government both locally and nationally.

This is something that Glastonbury Town Council is mindful of when passing significant resolutions – be it anti-fracking, declaring ‘climate emergency’, banning Glyphosate, or acquiring ‘Earth Protector’ status – and it is certainly true of our resolution to adopt the Precautionary Principle with regard to concerns about the safety of fifth generation cellular network technology (5G) and its roll-out.

Indeed, within a week of our resolution, Parliament held a Westminster Debate on the subject; Hansard records the opening statement by Tonia Antoniazzi MP: “*This Westminster Hall debate is timely. It comes on the back of an historic decision by Glastonbury Town Council to oppose the roll-out of 5G because of a severe lack of evidence about its effect on the health of those living and working around 5G sites.*” [Hansard 25th June 2019, Volume 662].

In an attempt to explore the merit of our position, Glastonbury Town Council convened a ‘5G Advisory Committee’ comprising of both councillors and non-council members, to report back to the council – with recommendations – during the Spring of 2020.

The Town Council is greatly indebted to the members of this advisory committee, who have met regularly; collected and studied a large volume of literature – and received presentations from a number of academics and professionals, including the Director of Mobile UK, the organisation overseeing the roll-out of 5G in the UK.

As chair of Glastonbury Town Council's 5G Advisory Committee, I can say that this has been one of the most interesting times I have experienced as a councillor. I've also been impressed by the number of councils and local authorities who have contacted me to request copies of the committee's report and recommendations... The deliberations of Glastonbury's committee no doubt a microcosm of the wider debate yet to unfold on a national scale!

On a personal note, I would like to thank Glastonbury's Town Clerk, Gerard Tucker, for his untiring patience, commitment, and dedication to the committee and the process; without which, our task would have been infinitely more difficult.

Cllr. Jon Cousins
Deputy Mayor of Glastonbury

April 2020.

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Section 1: The Report

The 5G Advisory Committee was convened in accordance with:

- a) Glastonbury Town Council's Standing Order 46; and
- b) Glastonbury Town Council's resolution of the following motion on Tuesday, 11th June 2019:

Proposer: Cllr. Mike Smyth; seconder: Cllr. Jon Cousins.

This council has a social responsibility to protect the public and environment from exposure to harm, albeit unpredictable in the current state of scientific knowledge, and therefore opposes the roll-out of 5G in the Parish of Glastonbury – based on the precautionary principle – until further information is revealed from a newly convened 5G Advisory Committee (working group).

Background information for the resolution:

- For many months, members of the public have spoken to this council of their concerns about the safety of fifth generation cellular network technology (5G) informing Glastonbury councillors that this technology is hazardous to human health and the environment due to the higher radiofrequency, which can interfere with small cells, like those in the body and in plants.
- In April this year [2019], 5G internet roll-out was postponed in Brussels when Celine Fremault, Environment And Energy Minister, identified that 5G was not compatible with Belgian radiation safety standards of 9 V/m, or 95 mW/m².5.

Celine Fremault stated: *"I cannot welcome such technology if the radiation standards, which must protect the citizen, are not respected, 5G or not. The people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt."*

- Also, in April [2019], a planned upgrade to 5G in Geneva was stopped through the application of the precautionary principle, until independent findings on possible health damage become available.
- On 1st May [2019], more than 230 scientists and doctors from 40 countries appealed to the World Health Organisation calling for a moratorium on 5G wireless technology and that the 5G wireless signal should be moved from a Group 2B Carcinogen to a Group 1, the same as asbestos and arsenic.

Their appeal states: *"We, the undersigned scientists, recommend a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry. 5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment."*

Establishing the 5G Advisory Committee:

The purpose of the 5G Advisory Committee being to:

1. Write a report – to be presented to Glastonbury Town Council – about
 - a) the committee's findings and conclusions on the safety or otherwise of 5G cellular network technology, and
 - b) any proposed actions that the Town Council should undertake as a result of the report.
2. Reinforce, or not, Glastonbury Town Council's resolution to oppose the roll-out of 5G.

On Monday, 1st July 2019, the following eight Glastonbury Town Councillors committed to becoming members of the 5G Advisory Committee:

Cllr. Sue Barnett

Cllr. Jon Cousins

Cllr. Paul Lund

Cllr. Lindsay MacDougall

Cllr. Brian Outten

Cllr. Mike Smyth

Cllr. Ian Tucker

Cllr. Nick Cottle [*who subsequently resigned due to commitments as a Portfolio Holder in the Cabinet of Mendip District Council*]

By virtue of Standing Order 39 – the Mayor, Cllr. Denise Michell became an *ex-officio*, ninth voting member of the committee.

The 5G Advisory Committee's terms of reference were approved at the Town Council meeting of Tuesday, 9th July 2019.

The powers of the 5G Advisory Committee agreed by Council resolution were:

1. Lobbying:
 - a. Establish who has the regulatory power to approve the rollout of 5G in the Mendip District, with particular focus on Glastonbury.
 - b. Lobby the regulatory power to impose a moratorium on the rollout of 5G in the Mendip District by adopting the Precautionary Principle.
2. Research:
 - a. Approach experts to give presentations and specialist advice to the committee on the safety or otherwise of 5G cellular network technology.
 - b. Collect evidence demonstrating the safety or otherwise of 5G cellular network technology from robust sources.

On Sunday, 14th July 2019, Glastonbury Town Council published a call, inviting members of the public with an interest and/or expertise in the subject to apply to join the 5G Advisory Committee by sending a written expression-of-interest to the Glastonbury Town Clerk, Gerard Tucker by Monday, 29th July 2019.

All applicants were sent the agreed Terms of Reference together with Glastonbury Town Council's Code of Conduct that all town councillors and town council meetings are required to follow.

From the 20 expression-of-interest applications received, in the first week of August 2019, the nine town councillor members selected the nine members of the public to be invited to join the 5G Advisory Committee and asked to confirm their acceptance by Friday, 16th August 2019.

The non-councillor members of the 5G Advisory Committee:

Christopher Baker
Derek Cooper
Toby Hall
Susan Jones
Roy Procter
Carol Roberts
Sandra Spearing
David Swain
Mark Swann

The initial meeting of the 5G Advisory Committee was held on Monday, 2nd September 2019.

A total of 13 meetings were held over the next six months, the final meeting being held on Wednesday, 4th March 2020.

[A full record of the minutes of the committee meetings can be found in Appendix 5].

Library of evidence:

A library of evidence – containing 57 documents – was collected and curated by members of the committee to demonstrate the safety or otherwise of 5G cellular network technology.

This library was stored electronically and made available for members of the 5G Advisory Committee to use as a learning and reference resource.

[A full list of documents can be found in Appendix 2]

Expert presentations were given to the 5G Advisory Committee by:

Prof. Martin Pall, Professor Emeritus, School of Molecular Biosciences, Biotech, Washington State University [from USA via video conference] – who gave evidence in support of Glastonbury Town Council's resolution to oppose the roll-out of 5G.

Dr. Andrew Tresidder, MB BS MRCP Cert Med Ed. A GP based in Chard, Dr. Tresidder is practitioner health south-west clinical lead, a GP educator, Somerset clinical commissioning group GP patient safety lead, and GP appraiser – who gave evidence in support of Glastonbury Town Council's resolution to oppose the roll-out of 5G, and raised concerns around the impact on people who present as electro-sensitive or have Electromagnetic Hypersensitivity [EHS].

Hamish MacLeod, Director of Mobile UK and **Gareth Elliott**, Head of Policy and Communications at Mobile UK: Representing the trade association for the UK's mobile network operators – EE, O2, Three, and Vodafone – who both gave evidence against Glastonbury Town Council's resolution to oppose the roll-out of 5G.

Dr. Frank de Vocht, Reader in Epidemiology and Public Health at the University of Bristol; area of research (Radiation) Epidemiology and Public Health Research – who gave evidence against Glastonbury Town Council's resolution to oppose the roll-out of 5G but raised some interesting points about the issue of electro-sensitivity or Electromagnetic Hypersensitivity [EHS].

Prof. Tom Butler, Professor in Business Information Systems at University College Cork and a former IRCHSS Government of Ireland Research Fellow. Prof. Butler is the Principal Investigator of Ireland's Governance Risk and Compliance Technology Centre. [from Ireland via video conference] – who gave evidence in support of Glastonbury Town Council's resolution to oppose the roll-out of 5G.

Presentations were also given by the five of the Non-Councillor members of the 5G Advisory Committee:

Derek Cooper – who gave evidence against Glastonbury Town Council's resolution to oppose the roll-out of 5G.

Mark Swann BSC – who gave evidence against Glastonbury Town Council's resolution to oppose the roll-out of 5G.

Roy G. Procter C.Eng F.R.Ae.S – who gave evidence in support of Glastonbury Town Council's resolution to oppose the roll-out of 5G and raised concerns around the impact on people who present as electro-sensitive or have Electromagnetic Hypersensitivity [EHS].

Christopher Baker – who gave evidence in support of Glastonbury Town Council's resolution to oppose the roll-out of 5G.

Susan Jones – who gave evidence in support of Glastonbury Town Council's resolution to oppose the roll-out of 5G; raising some legal issues and concerns.

[A list of supporting documents from these presentations, and some selected examples, can be found in Appendix 4]

Section 2: Conclusions

The Glastonbury 5G Advisory Committee has been unable to come to a unanimous conclusion with regard to the safety or otherwise of fifth generation cellular network technology.

Issues:

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines on Limiting Exposure to Electromagnetic Fields

There was much debate concerning the International Commission on Non-Ionizing Radiation Protection (ICNIRP) [Guidelines on Limiting Exposure to Electromagnetic Fields](https://www.icnirp.org/en/about-icnirp/commission/index.html), which fell into three areas:

- 1) Questions around the integrity, transparency, and bias of the Commission's membership – with the proposition that ICNIRP members were not suitably independent of other regulatory bodies, the mobile phone network providers, and communications industry, and therefore had a conflict of interest.

Opinion on the validity of these questions and the evidence presented to the advisory committee was strongly contested by some of its members – and answers to the questions remain unresolved.

According to [their website](https://www.icnirp.org/en/about-icnirp/commission/index.html), ICNIRP is an independent non-profit scientific organization; its members being scientists employed typically by universities or radiation protection agencies – who do not represent their country of origin, nor their institute and cannot be employed by commercial companies.

[<https://www.icnirp.org/en/about-icnirp/commission/index.html>]

- 2) Debate concerning the robustness of the ICNIRP Guidelines with regard to the **thermal effects** of radiofrequency EMFs, which generate heat in the body and can cause burns.

Although it's generally accepted by the councillor-members of 5G Advisory Committee that ICNIRP guidelines are attempting to keep heat to a safe level, some councillors question the exposure intensity and exposure duration of the tests used to determine what constitutes 'suitable protection' against the adverse thermal effects of non-ionizing radiation.

- 3) Deliberation over the **non-thermal effects** of radiofrequency EMFs. This was a source of much controversy during the committee's meetings – and was a key issue for the committee. The contention being whether or not EMFs could stimulate 'voltage-gated ion channels' found in the membrane of cells.

In his presentation to the committee, Professor Pall described the "*EMF activation of voltage-gated calcium channels*" as a mechanism that allows an excess of calcium ions into cells creating 'free radicals' (aka reactive oxygen species) ...a hypothesis which was subject to a strong, robust rebuttal by one of 5G Advisory Committee's members.

However, the subject came up again in a later presentation, when Professor Butler also proposed to the committee that there was a potential for the non-thermal effects of radiofrequency radiation to “*over stimulate an influx of calcium ions into cells, creating free radicals.*”

Professor Butler suggested that the resultant ‘oxidative stress’ caused by these free radicals could be an important factor in the progression of chronic conditions – such as “*cancer, Alzheimer’s, and other neurodegenerative diseases.*”

When questioned about the validity of this non-thermal effect by the committee, Professor Butler suggested that one way to resolve the question would be to undertake an independent scientific study into the impact of high frequency, long duration exposure to radiofrequency EMFs on the levels of free radicals and antioxidants – biomarkers of neurodegeneration – in human subjects.

Interestingly, the potential for an unidentified “*non-thermal mechanism*” – which caused a “*doubling the lymphoma incidence in mice exposed to a low intensity 900 MHz radiofrequency field pulsed at 217 Hz*” – was reported in ICNIRP’s ‘[Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields \(up to 300 GHz\)](#)’ [Repacholi, et al. (1997), in Health Physics, p.506, Volume 74, Number 4 – April 1998].

The current ICNIRP Guidelines do reference “*a number of studies of potential adverse effects of radiofrequency EMFs on physiological functions that could adversely affect health*” including “*membrane ion channel currents and input resistance, Ca²⁺ [calcium ions] dynamics... biomarkers of neurodegeneration... and oxidative stress-related processes*” – but discounts them as “*their relevance to health has also not been demonstrated.*” However, the councillor-members of 5G Advisory Committee generally accept this is an area which needs to be investigated further.

Electromagnetic Hypersensitivity (EHS):

During the six months in which the 5G Advisory Committee met, the subject of electro-sensitivity or Electromagnetic Hypersensitivity (EHS) came up numerous times.

The World Health Organization acknowledges that the symptoms of EHS are “*certainly real and can vary widely in their severity [and] can be a disabling problem for the affected individual.*” However, they also state that “*EHS has no clear diagnostic criteria and there is no scientific basis to link EHS symptoms to EMF exposure.*”

This was another issue which proved controversial with some members of the committee – however, during his presentation to the committee, Dr. de Vocht asserted the merit in pursuing research into EHS, and – in general – the councillor members of the 5G Advisory Committee support his view. Public Health England, being the lead advisory body in this sphere, would be best placed to take responsibility for this research.

Recommendations:

That this Council:

- 1) Writes to identified MPs and asks them to establish a Select Committee or Committee Inquiry into the safety or otherwise of fifth generation cellular network technology – building upon the work already undertaken by the Glastonbury's 5G Advisory Committee investigation.
- 2) Writes to Public Health England and the UK Government asking them to convene an independent scientific study into the non-thermal effects of fifth generation cellular network technology – particularly the impact of high frequency, long duration exposure on the levels of reactive oxygen species and antioxidants biomarkers – in human subjects [see Appendix 3].
- 3) Writes to Public Health England and ask them to commission research into Electromagnetic Hypersensitivity (EHS).
- 4) Lobbies the International Commission on Non-Ionizing Radiation Protection (ICNIRP) to take into account the non-thermal effects of radiofrequency EMFs in their Guidelines on Limiting Exposure to Electromagnetic Fields.

Section 3: Appendices

APPENDIX 1a – Councillor Reflections and Conclusions:

Please note:

- *The personal reflections, views, and opinions of the council members of the advisory committee – presented below – do not necessarily reflect the official policy or position of Glastonbury Town Council.*
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Cllr. Brian Outten Reflection:

Firstly, I would like to express my gratitude and appreciation to Sandra Spearing, Chris Baker, Toby Hall, Roy Proctor, and Susan Jones for their dedication to the process of the Committee together with their professionalism and hard work in presenting their reports to the Committee at this challenging time.

Secondly, it is an opportunity missed that Mark Swann, Derek Cooper, and Carol Roberts all decided to leave the Committee after initially providing many important opinions as well as reports to the 'Reference Library'. Mr. Swann and Mr. Cooper offered painstaking contributions to the evidence provided to the Committee, including presentations. Their chance to affect the outcome of the Committee report to offer a more 'balanced' and 'broad spectrum' picture has therefore been sadly compromised.

Nevertheless, all the contributions that have been made to the Committee from Committee members and visiting speakers have been assimilated into my own personal conclusions and I would like to share these.

5G as a new technology according to the evidence provided by representatives of the Telecoms industry (Hamish McLeod – from Mobile UK) and Frank de Vocht (Specialist in Epidemiological Research at Bristol University); 5G has the potential to be less powerful than 4G, but nowhere could this be borne out in any contextual form, as other studies have stated that 5G signals will need to be more powerful in order to pass through walls and windows.

According to 5 of the 6 reports submitted by the non-councillor members – there is an agreement that 5G is likely to be deleterious to human health in the long term and that further research on the non-ionising effects on living tissue be carried out.

My assimilation from all of the documents that I read in the 'Reference Library' is that 5G (or even 3G or 4G) is not proven to be safe and that more and more studies and evidence is emerging over time questioning the safety and health implications of all 5G technology.

My findings from attending the meetings, listening to the presentations and debates was that there is a lack of clear evidence (in terms of the science) of pulse HF 5G radiation being trialled effectively to categorically assure the committee that it was tested to assure appropriate safety. In fact, Dr. de Vocht even agreed in the post presentation discussion that it should be tested in a wide ranging and long-term manner to identify the impact 5G (and even 4G) could have in terms of electro-sensitivity and that currently this is an area that lacks credible research.

My conclusions are that the technology is potentially unsafe and not suitable for implementation in the public domain until sufficient tests have been completed and evidence compiled.

I do not feel that ICNIRP's guidelines are robust or sufficient to protect people and nature. I believe that the agenda for 5G telecom companies is to ride roughshod over any health concerns and evidence to question the safety of the technology. I've also been unsure about the impartiality of ICNIRP and the validity and pertinence of their safety guidelines and limits. This has been argued well by the committee, and questions about the group's leanings towards the Telecoms industry are valid.

I feel that the thermal effects are not sufficiently tested, particularly at higher frequencies (above 3.5GHz), and that the likely proliferation of 'smart grid' devices and their associated high frequency emissions in the home is a real concern. This, together with the recent guidance from HM Government about limiting the amount of time using devices by children gives a clear message about how untriated and potentially unsafe this technology is. (I am also aware of industry trials with members of the public 'keen' on this new technology observing the excessive 'heat' being given off by their devices whilst using 5G!). It is possible that thermal effects are the least of the concerns, yet out of prudence, they should be studied and scrutinized.

I feel that ICNIRP should be lobbied to take into account the non-thermal effects of radiofrequency EMFs in their Guidelines on Limiting Exposure to Electromagnetic Fields. The evidence and scientific explanation is certainly plausible and supports further research and investigation. There are many reasons why we need to exercise caution and prudence and not take unnecessary risks with a technology that is neither tested or required by the majority of the population, as optical fibre is capable of delivering the speed that is needed for broadband and advanced telecommunications.

Non-thermal effects are more insidious than thermal effects and more liable to cause harm in the long term, which is and has been established by the evidence and discussions put forward in the meetings and some of the presentations.

I believe that there is merit in conducting research into non-thermal effects of high frequency on free radicals and oxygen as well the effects on melatonin production which is essential for breaking down free radicals. The effects should be verifiable by appropriate tests, which may be possible to ascertain in less time than

As Dr. de Vocht asserted, I felt that there is merit in pursuing research into EHS. Public Health England, being the lead advisory body in this sphere should take responsibility for this research. This will not be simple, as the electromagnetic field effects and the electrosensitive individual is an area where science has shied away from, as it requires use of equipment not normally attributed to human health (such as external mV meters and sensors and resistance / impedance measurements, which detect fluctuations in the human electromagnetic field). Nevertheless, where this is a will, there is a way, and this could and should be achievable.

Furthermore, just because as the WHO states: “EHS has no clear diagnostic criteria and there is no scientific basis to link EHS symptoms to EMF exposure”, this should not deter the investigation into conducting valid scientific investigations, as the scientific approach can be modified and adapted to look at ways to study it appropriately. It just requires far-reaching and innovative approaches, probably best achieved by collaboration with a wide range of scientific and holistic disciplines.

Subnote: I am also concerned that numerous planning applications have been made through the national media to allow telecoms companies to ‘side-step’ local planning permission to install technology which has been opposed by experts in the field as well as many of the residents in the community. There are many reasons why this should be taken seriously by Glastonbury Town Council.

Cllr. Sue Barnett's reflection:

Setting up the 5G Advisory Committee was a step into the unknown on many levels. There was a lot of information in the presentations, documents, and research papers, some very technical. I would like to thank the members and presenters who communicated the science in an understandable fashion. This gave me heart as it is important to the Town Council, residents, and the wider community.

There were difficult discussions as some members’ ‘listening ears’ were not on when views other than their own were expressed. Reminded of my Grandmother’s words: *“just because we can does not mean we should.”*

Due to the lack of research of 5G – Health, Well-being, and Environmental issues concerned me. Evasive answers from Industry did not help. Knowledge expands and evolves all the time. The self-interest from a commercial viewpoint only was worrying.

We have one Planet; many Species and Life Forms whose welfare did not appear to be taken into account or respected. Arrogance? Lack of Democracy? Abuse of Power?

How can Scientific Knowledge expand, and the welfare of the whole Planet be safeguarded in this restricted environment?

Cllr. Lindsay McDougall Reflection:

I feel that the current International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines on Limiting Exposure to Electromagnetic Fields are acceptable with regard to the **thermal effects** of radiofrequency EMFs, but a 6-minute test on a rat or grown man is not the same as a child with a thinner skull making a 20-minute call to their parent.

I agree that we should lobby for investigation into the **non-thermal effects** of radiofrequency EMFs.

Although Professor Butler suggested that there was a potential for the non-thermal effects of radiofrequency radiation to “*over stimulate an influx of calcium ions into cells, creating free radicals*”, from my ‘A’ level physics, any +ve/-ve imbalance might cause this, so this needs further investigation.

I am not convinced 4G/5G technology is completely non-ionising, just much less intensively dangerous than e.g. x-rays, but could be a danger over a longer period of exposure, especially to more vulnerable groups, e.g. children and those with chronic illness. A computer in use even causes ionization!

Re: Electromagnetic Hypersensitivity, I would like to offer here my own personal testimony. I have, though not tested as such, clearly had a bout of this pandemic virus (v mild symptoms, but confirmed as highly likely by doctor friends), due to exposure some 4 weeks ago now. One of the effects is a reduced immune system, which has made me electro-sensitive. Recently I was in the vicinity of the telecoms mast at Bridies Yard in Glastonbury, and very distinctly felt unwell (general weakness, and more of a desire to clear my airways) when exposed to it (perhaps 100 yards away), and well when a v large tree (50 -100 feet high) was between me and the mast, or when I was protected by Brides Mound itself. I have always been concerned for the minority of the population who are electro-sensitive, but now I am convinced we should be more careful.

Deputy Chair’s Reflection – Cllr. Mike Smyth:

I wish to acknowledge with great respect the contributions made by the members of our committee and invited speakers to completion of our difficult task. In particular, I wish to thank our Town Clerk and Deputy Mayor in devoting time and effort to do the same.

Throughout the six months enquiry, I have been contacted by a number of councillors and individuals throughout the UK – from the Shetland Isles to St. Ives, Cornwall – who have sought advice. Many of these councils await the outcome of our report.

We/I will continue to recognise a duty of care towards our electorate and attempt to provide solutions for the common good and well-being of our people however limited or otherwise our legislative powers are at the local level.

In summary, with regard to the **thermal effects**, I believe that the current international ICNIRP guidelines on limited exposure to EMFs are acceptable. However, I believe that ICNIRP should be lobbied to take into account the **non-thermal effects** of EMFs in their guidelines, presently there is no reference to this.

I feel there is merit in recommending Glastonbury Town Council writes to Public Health England and the UK Government asking them to convene an independent scientific study into the **non-thermal effects** of fifth generation cellular network technology – particularly the impact of high frequency, long duration exposure to radiofrequency EMFs/radiation on the levels of free radicals and antioxidants in the human body. In addition, for Public Health England to commission research into Electromagnetic Hypersensitivity.

Chair's Reflection – Cllr Jon Cousins:

5G proved to be such a complex, contentious, and divisive subject that probity and the committee's capacity for fair, impartial, and transparent debate was, at times, difficult to maintain.

On occasion, balancing competing interests and the ability of some members of the advisory committee to make non-prejudicial decisions gave way to predisposition and entrenched, opposing views – strongly held by those involved.

It must be stressed that councillor and non-councillor members of an advisory committee have different but complementary roles, and throughout the business of the committee, the council members kept within the parameters of the Third Report of the Committee on Standards in Public Life and adhered to the principles of Glastonbury Town Council's Code of Conduct.

Over the course of six months, I reflect that the subject produces a classic dichotomy. The division based upon the ability or not of the technology to impact on human health and wellbeing.

The crux of the matter being whether or not non-ionizing radiation is harmless below exposure levels where heating first occurs – principally, the possible biological response to the **non-thermal** (or 'a-thermal') effects.

While there is a strong scientific case for the safety of fifth generation cellular network technology – as presented to the committee by Dr. de Vocht and Mark Swann, supported by the evidence of Mobile UK's Hamish MacLeod and Gareth Elliott – there was also evidence presented that raised concerns; suggesting the need for more exploration and research.

Particularly poignant was Prof. Butler's assertion that 3,400 studies in Medline – the peer review library of journals – indicate quite strongly that radio frequency radiation is not only a carcinogen, but *"a neurotoxin and has other deleterious effects on humankind"*.

APPENDIX 1b – Non-Councillor Reflections and Conclusions:

Please note:

- *The personal reflections, views, and opinions of the non-councillor members of the advisory committee – presented below – do not necessarily reflect the official policy or position of Glastonbury Town Council.*
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Of the nine non-councillor members, six – Christopher Baker, Derek Cooper, Roy Procter, Sandra Spearing, Toby Hall, and Susan Jones – submitted their reflections and conclusions to be included in the report.

Conscious that the submitted reflections and conclusions do not fully represent the broad spectrum of opinion expressed by the non-councillor members – in the interest of objectivity – a number of additional observations made by non-councillor members, recorded during the period the committee was sitting, have been included.

Observations made by non-councillor members about particular issues:

(The issue is presented in **bold text**, and the observation in *italic*).

1. **Excessive intracellular calcium [Ca²⁺]_i and excessive calcium signalling caused by non-thermal microwave frequency EMF exposures:**

Professor Martin Pall's whole hypothesis is that VGCC's (voltage gated calcium cells) are affected by the electric current in an EM wave, causing them to produce excess calcium – however, EM waves do not carry a current, this unfortunately makes his whole hypothesis nonsense from the outset.

2. **An adverse health response is triggered by 5G frequencies:**

It has been claimed that '5G frequencies' trigger a health response, whereas '4G frequencies' have less of an impact. However, the frequencies used by the current 5G roll-out are in the same range as 4G. They are 700 MHz, 1400 MHz, and 3500 MHz. Therefore, it seems that the visual appearance of the mast has triggered the health response, not the frequencies used.

3. **The International Agency for Research on Cancer (IARC), a division of the World Health Organization (WHO), classification mobile phone signals as 'possibly carcinogenic' due to some study results suggesting a link to some types of brain cancers:**

The IARC classifications comprise of:

- *Group 1, which are agents that are carcinogenic to humans,*
- *Group 2a which are agents that are probably carcinogenic to humans,*
- *Group 2b, which are agents that are possibly carcinogenic to humans, and*
- *Group 3, which are agents that are not carcinogenic to humans.*

Non-ionising electromagnetic radiation (which includes the radio emissions from mobile phone masts and handsets) is classed as a category 2b carcinogen.

To put this in context, it should be noted that this classification also includes aloe vera, bracken fern, carpentry and joinery, Goldenseal, pickled vegetables, carrageenan, and coconut oil.

4. **5G will indiscriminately irradiate people in ever increasing doses:**
This is not true, with beam forming and beam steering 5G is selective and requires lower power. Even without beam forming, 5G transmission is more efficient at the cell boundaries and therefore transmission times are shorter than equivalent 4G transmissions. This results in shorter, lower power transmissions.
 5. **Because animals can sense and make use of the earth's magnetic environment, any artificial changes would have detrimental consequences:**
This claim takes no account of the fact that the earth's magnetic field frequently reverses; the north pole becoming the south pole and vice versa. In the transition period, which can last for between 1,000 and 10,000 years, the field can weaken to 5% of its normal strength and there are numerous mini north and south poles scattered around the globe. All existing species of insects, animals and plants have experienced and thrived in this chaotic magnetic landscape. When this phenomenon was first discovered, scientists speculated that most extreme polarity reversals (lowest field strength and longest transition time) would have coincided with extinction events. Careful study of the fossil record has shown no such events.
 6. **ICNIRP radiation limits will have to be increased by 30-40% in order to make 5G deployment technologically feasible:**
Nowhere has anybody suggested that radiation limits will have to be increased. This is based on the assumption that a higher density of antennas with more elements in each array will result in more intense radio transmissions, whereas the opposite is the case. The more antenna array elements the lower the power needed per element and the lower the power per array. The higher the density of antenna arrays, the smaller the area covered, resulting in the need for less power.
-

Christopher Baker – Non-Councillor Advisory Committee Member: Reflections

Please find below a short summary overview of observations, research and collected evidence relating to the 5G working party activities and its dialogues.

During the last six months of fortnightly meetings, this committee has invited various “expert witnesses” to give presentations to help the group members in order to obtain professional advice, information, and guidance with regard to the proposed use of 5G technology and to answer the groups questions.

The main focus of this group was to ascertain if non ionising radiation, which is a by-product and a frequency that is used by wireless devices, is harmful to the environment and to personal health.

The new 5G technology employs a much higher frequency than is currently used, and it has not been adequately tested over a period of time for adverse effects.

It has been questioned that the new 5G frequency and its power factor are not adequately covered for safety by the existing guidelines for exposure, and the “*specific absorption rate*” of radiation is at a much higher level and the Telco industry has never given categoric assurances of safety to health and well-being, and continues to say that it complies with the current guidelines for exposure to non-ionising radiation. These guidelines, which are not legislation, are outdated in this current time, and do not factor in any consideration for neurological or physiological harm for human beings or any other species.

This committee has looked in depth at the potential and unknown effects of exposure to 5G frequencies. The committee has also looked at this entity from a prospective of acceptance that it is completely safe, however the science dictates that it is safe, contradicts its self because there is already an issue with 3 and 4G exposure that has been well documented in terms of damage occurring at a cellular level and worldwide reports of same symptom sensitivity to radiation exposure.

The new 5G frequency, for which there is no comparison, will bring with it a level of exposure and intensity that we have never been exposed to before. It was recently switched on for the very first real time public exposure trial and at max strength when rolled out in Wuhan in China where, even after a short time it was noticed that this frequency had the potential to seriously deplete both the immune and nervous system and general well-being. It is interesting that this information does not ever make the main news?

This adverse effect on health was a subject that this committee has deliberated over as to whether this can happen within the Glastonbury community in the near future and put the inhabitants at risk, and it has looked at this prospect in order to understand if indeed there is a real risk to consider, and if so, how does this actually happen?

For more clarity, the committee sought the knowledge and advice from experts in this field from eminent people, and chose Professors of some world standing in the field of research into the effects of non-ionising radiation, and we invited them to Glastonbury Town Hall committee meetings (often via Zoom audio/visual link up) to explain and present to us by way of explanation the grey, and unspoken of void that the Telco and health advisory organisations will not discuss or admit to, and they still continue to deny that it exists. This is the main problem! The 5G industry in conjunction with its impending marriage to artificial intelligence, is a multi-billion-pound industry designed to revolutionise our future beyond recognition, and they will not let the accompanying health issues stand in their way to achieve this end, despite the massive medical and scientific evidence to the contrary.

Having listened to our guest professors who have publicly put their reputations in jeopardy to share their research and findings along with a thousand or so other eminent and respected others, I find it difficult to be dismissive of their status, research and findings, I find myself more inclined to accept that they are giving good and robust information, and even they find it ludicrous and laughable that the international health guidelines for radiation exposure are set so flimsy and vague, and do not protect our best interests.

References from the above narrative to advisors, presentations, and expert witnesses:

- Professor Emeritus Martin Pall B.A PhD (Biochemistry and Medical Science) Washington State University
- Professor Thomas Butler MSc PhD (Governance Risk and Compliance Technology) Cork University Ireland
- Professor Emeritus Anthony Miller MD. FRCP. MB. MRCP. (Cancelled personal visit due to CV outbreak but forwarded research info) Senior Medical Advisor National Cancer Institute Canada.
- Doctor Andrew Tressider MB. BS. MRCP. (Specialist Knowledge in Electro Sensitivity) GP practice in Chard UK
- Doctor Frank de Vocht (Epidermal Research Specialist) Bristol University UK
- Chris Baker (Electro/Mechanical Engineer and Public Speaker) Gave a presentation about ICNIRP history and its many failings.
- Roy Proctor (Engineer Retd) Gave a presentation about the debilitating effects and reality of Electro Sensitivity.
- Derek Cooper Gave an introduction and overview of how wireless communications work.
- Mark Swan BSc. Gave an overview science presentation of What is Radiation.
- Hamish McLeod (Director and Accountant of Mobile UK) Gave a presentation to dismiss any claims that 5G is dangerous to health, noted that he did not fully answer leading questions from the committee.

Conclusion and Recommendations

Having begun these committees meetings with a neutral attitude and a mindset to be only influenced by the evidence that presented itself, and despite there being three enthusiastic pro 5G members on this committee, I have found that I have been more polarised by the amount of medical and scientific evidence that suggests that there is cause to proceed with renewed caution.

I did not receive any conclusive evidence to categorically suggest that 5G is completely risk free and that we should embrace it, however there was an abundance of evidence both discussed or presented and accrued in our "*committee reference library*" to suggest that caution is the right approach. The Town Council has already invoked the Principle of Precaution and at the very least I would recommend that it is left in place or extended and I feel that it would be appropriate to consider establishing a Moratorium with a two year period of abstention in view of the unknown consequences of allowing full strength 5G frequencies into the Town.

I would recommend that the Council resists the installation of the multitude local urban aerials and antennae and keep Glastonbury a 5G free zone. For those that do want and require fast data etc, I would recommend that the Council approach the national fibre optic cable installation companies to arrange a contract to install ultra-fast wired Broadband certainly to all the homes in the BA6 area, effectively giving 5G speeds to home devices and making do with the existing 4G signal for their phones and mobile devices.

I am sure there is probably a grant funding for such an installation? This is a sort of win-win situation, and everyone gets what they want, however, if 5G goes into the town, then you have it forever and also the yet unknown health consequences along with it.

I strongly recommend holding back permissions to install the 5G antennae by way of a Moratorium and make an informed decision in the future when there is more evidence that 5G frequency emissions are safe. I think that your community would thank you for your caution and discernment.

Derek Cooper – Non-Councillor Advisory Committee Member: Reflections

Arguments for imposing a moratorium on the roll-out of 5G technology mainly claim that:

1. 5G technology is untested with respect human health and ecological impact;
2. There is evidence that similar technology is harmful to human health;
3. There is evidence that similar technology is ecologically harmful;

These arguments are typified by the material published by Prof Martin Pall and Ulrich Warnke. The claims depend upon the thesis that there is a conspiracy between governments, industry, international bodies, and academia to suppress or ignore adverse evidence. (It should be noted: claim 1 is incompatible with claims 2 and 3).

Having spent about 400 hours looking into these claims and counter claims, I have come to the following conclusions:

1. 5G technology is not novel; all its components have been tested in other technologies:
 - a. It uses the same frequencies as many other technologies, such as radar, satellite TV, earlier phone systems, and scanners.
 - b. Aerial arrays have been utilised since about 1906.
 - c. The transmitted waveforms are similar to 3G and 4G systems.
 - d. The power density and duration of transmissions are less than 4G.
2. The various international and national regulatory bodies concerned with public health (such as the World Health Organisation) continuously monitor and assess all research and have commissioned their own studies. They have concluded that:
 - a. There is no credible evidence that radio frequency emissions at the permitted levels are harmful to human health.
 - b. The fact that they have published rebuttals to a number of papers and claims of health damage put to them demonstrates that they have considered all evidence.
 - c. I reviewed many of the papers cited by Professor Pall, and found that they were all flawed, out of date, or irrelevant to his argument, (see the rebuttals in the library).
 - d. The anecdotal evidence presented by people such as Dr. Tresidder is worthless and has been addressed by the World Health Organisation International Workshop on Electromagnetic Field (EMF) Hypersensitivity. They could find no causal link between EMF Hypersensitivity and electromagnetic emissions.

3. I have not been able to find any credible evidence of ecological damage due to RF emissions at permitted levels. The thesis put forward by Warnke is nonsense and the papers he cites are all flawed, weak, or out of date. The various claims of harm to insects, birds, bees, and trees are all fake news.

Conclusion:

I have come to the conclusion that there is no credible scientific evidence of harm to either human health or the natural world from either 5G technology or similar radio frequency emissions.

In my review of the anti-5G claims, online, it has become apparent that there are malicious actors online deliberately spreading anti-5G lies and misinformation, particularly on YouTube and social media such as Facebook. Some are deliberately targeting vulnerable and anxious people for commercial gain.

This misinformation is also being sponsored by quasi-state agencies such as RT, a terrorist organisation (Black flags of the East), conspiracy theorists, and far right extremists. Presumably this is an attempt to undermine trust in our institutions and damage our economy.

If the Town Council aligns itself with such groups by declaring a 5G moratorium, it risks considerable reputational damage.

Roy Procter C.Eng FRAeS – Non-Councillor Advisory Committee Member: Reflections.

The effect of 5G on people cannot be considered in isolation from the existing 2G, 3G, and 4G systems as it is an extension of these together with Bluetooth, Wi-Fi, DECT phones, Smart meters, etc. – electromagnetic radiation (EMR). The existing systems are causing harm to a significant number of people.

We had presentations from three very pro-telecommunications people and one from an 'independent' (?) adviser. All supported the present official EMR safety guidelines. None mentioned concern about health or answered questions on this matter. One (now resigned) member of our group did not engage in discussing health issues but just denigrated any scientist who showed evidence of the dangers. He was quite rude to the eminent Professor Martin Pall who kindly presented to us by Skype from the USA.

The discussions were dominated by references to the presentations and peer reviewed papers, etc., almost to the exclusion of seeing what is going on in the many countries worldwide. There are very many protests movements against 5G on health grounds and lack of consultation and local control. There are also many court cases indicting various officials, local and government, for ignoring health aspects.

Estimates on the health effects of EMR on the UK population (67,000,000) concluded that:

- Symptom not recognised as EMR related 5 - 30% 3,000,000+ people Moderate effect 1.5 - 5% 1,000,000 - 3,000,000
- Severe effect 1.5% 1,000,000
- Work restricted 0.65% 435,500

Beavington's meta-analysis involving 20 studies (J Environ Health Sci 5(1): 01-12).

These are not trivial figures. Because the extensive official position is that there is no adverse effect, EMR is not often considered as a cause of ill health. This ignores the fact that bodies are regulated by electrical frequencies. viz: ECG used for measurement and heart pacemakers for treatment.

Over the last two decades there have been many detailed reports, and pleas from doctors to government regulators to adopt more relevant health based EMR limits in view of the very extensive and conclusive research evidence, also to take note of the experience of many people!

It is clear that the 1998 safety guidelines are no longer appropriate. We had a useful presentation on the domination by the telecom industry and their incestuous involvement in the World Health Organisation (WHO) guidelines. This was confirmed in a Skype interview with a Professor who was a WHO member.

Unfortunately, the telecom industry also has a very powerful and well-funded ability to lobby all levels of government in many countries and baffle them with the results of their flawed scientific research.

Although 5G will initially use similar frequencies to 4G, etc., it introduces a phased array method of focusing beams instead of current blanket broadcast methods. This can produce more powerful radiation within the beam, a development of military research and crowd control systems. 5G plans to use very much higher frequencies in the future with much shorter range resulting in a proliferation of masts and cells, including the launch of many thousands of orbiting satellites.

The world population is about to be subjected to a totally different electromagnetic environment without consent or ability to opt out; a fundamental violation! Cities and communities in several parts of the world are banning 5G roll out and many court cases are in progress, particularly in the USA.

Conclusion:

5G is a danger to the health and wellbeing of all life and is also has potential for very intrusive surveillance and control.

Recommendation:

The council should ban 5G on the precautionary principle and because the populace would be harmfully irradiated without being consulted or allowed any choice in the matter. This should also be well publicised.

Also, the council should insist that all telecommunications infrastructure be provided by wire or fibre cable and eliminate Wi-Fi.

References:

My main concern is the effect of EMR on ordinary people. Thus, I have not listed a large numbers of research papers indicating harm. The following are mainly focused on the effects of EMR on the population. No doubt other members of the group will provide many more scientific references.

As I was developing this listing, an email from ES-UK came in today. I make no apologies for reproducing it below in full (ref 6) as it is so relevant to the current global situation. Even if you do not lookup many of the details, I urge you to read this and ref 2 below.

1. Centre for research on globalisation.
5G Cell Phone Radiation: How the Telecom Companies Are Losing the Battle to Impose 5G Against the Will of the People:-
Lists a very large number of actions worldwide by organisations and lawyers against 5G. No 83 mentions Glastonbury.
<https://www.globalresearch.ca/telcos-losing-battle-impose-5g/5691065>
2. 5G Awareness.
Glastonbury Festival-goers are revelling in an EMF minefield. Reports on harm at festival due to 5G.
<https://www.5gawareness.com/5g/glastonbury-festival-goers-are-revelling-in-an-emf-minefield-the-evidence/>
3. Professor Dr Martin Pall PhD, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University
A 90-page, seven-chapter document on EMF effects, how they are produced in the body and the corruption of the international science.
<https://peaceinspace.blogs.com/files/5g-emf-hazards--dr-martin-l.-pall--eu-emf2018-6-11us3.pdf>
4. EMF*D. Book by Dr. J. Mercola. Published February 2020.
5G, Wi-Fi & cell phones: Hidden Harms.
Appendix B lists 171 papers showing harm under several medical categories.
5. ES-UK A charity providing good quality information on Electrosensitivity. A very large amount of relevant research papers are available here.
<http://www.es-uk.info/research/>
6. Email just received from ES_UK
China, 5G, And The Wuhan Coronavirus: The Emperor's New Virus
<https://www.electricsense.com/5g-coronavirus/>

Could there be a link between the Coronavirus and 5G? Researcher and building biologist Paul Doyon has just spent the last 18 months in China. He's written a brilliant article laying out the evidence. And how you can protect yourself—an EMF based protection strategy. Warning: this is a heavy science-based article with nearly 100 references to studies—neither Paul or myself want to be accused of fear-mongering:

My heart goes out to China and to all its people who have suffered so much due to this new “novel” Wuhan coronavirus outbreak (COVID-19). However, as someone who had become very sick and had his immune system break down and was sick for six months looking for answers before even suspecting that living in close vicinity to several cell phone towers was actually what was causing the problem and making him sick, I feel I cannot in good conscience remain silent, and I strongly suspect that China and the rest of the world are looking under the wrong stone for what is actually the problem here.

At the moment, with 10,000 recently installed 5G antennas plastering its city, Wuhan is probably one of the most 5G-electropolluted cities on the planet.

Electrosmog Warnings from Scientists for Over 40 Years

Respected scientists, researchers, doctors, and activists have been—for over forty years—warning us about the dangers of wireless radiation and electromagnetic fields.

In 1977, the reporter Paul Brodeur published a book called *The Zapping of America*; in 1985, the late Dr. Robert O. Becker (twice nominated for the Nobel Prize in Medicine for his work on cellular dedifferentiation and re-differentiation in the healing process) wrote *The Body Electric*, and later published *Cross Currents: The Perils of Electropollution, The Promise of Electromedicine* in 1990; in 1995 (and again later in 2007), B. Blake Levitt, author and researcher, published *Electromagnetic Fields: A Consumer's Guide to the Issues and How to Protect Ourselves*. Since then there have been a slew of other books and documentary movies put out on the subject. And the list goes on and on.

Dr. Leif Stafford, Swedish neuro-oncologist, has called this wireless rollout “*the largest biological experiment ever*.” And Dr. Robert O. Becker wrote in 1985 that the dangers of electropollution are real and well documented. It changes, often pathologically, every biological system. What we don't know is exactly how serious these changes are, for how many people. The longer we as a society, put off a search for that knowledge, the greater the damage is likely to be and the harder it will be to correct. (p. 304).

And finally, Dr. Martin Pall, PhD, and Professor Emeritus of Biochemistry and Basic Medical Sciences at Washington State University has stated recently that putting in tens of millions of 5G antennae without a single biological test of safety has got to be about the stupidest idea anyone has had in the history of the world.

The BioInitiative

In 2007, a report titled the [BioInitiative](#) was published, it was republished again in 2012, and there have been ongoing updates between 2014 & 2019. Its website states that the BioInitiative 2012 Report has been prepared by 29 authors from ten countries, ten holding medical degrees (MDs), 21 PhDs, and three MsC, MA, or MPHs. Among the authors are three former presidents of the Bioelectromagnetics Society, and five full members of BEMS. Highly respected scientists coming from some of the world's most respected universities and institutes.

The BioInitiative further warns that evidence for risks to health has substantially increased since 2007 from electromagnetic fields and wireless technologies (radiofrequency radiation). The Report reviews over 1800 new scientific studies. Health topics include damage to DNA and genes, effects on memory, learning, behaviour, attention, sleep disruption, cancer, and neurological diseases like Alzheimer's disease. New safety standards are urgently needed for protection against EMF and wireless exposures that now appear everywhere in daily life.

5G Warnings

With the coming advent of the newest in wireless technology, 5G, numerous researchers, doctors, and professionals and activist organizations have been administering health warnings regarding its coming implementation.

Sandra Spearing – Non-Councillor Advisory Committee Member: Reflections.

Expert witnesses were called over the last six months to aid our research, either in person or online to enable the gathering of information, and my observations are as follows:

Dr. Martin Pall, Professor Emeritus of biochemistry, Washington State University, presented online from America. He is very well respected in this field of research and has published numerous papers on wireless radiation effects. He confirmed finding neurological effects, cellular and DNA, cell death, endocrine effects, cancer, cardiac effects, very early onset Alzheimer's, and dementias. In particular, his specific findings on how microwave fields can open up voltage gated calcium channels in the cell membrane, which drives oxidative stress, and thereby accelerating the aging of cells, was extremely concerning to hear, and 5G being highly pulsed, will exacerbate the whole destructive process.

Dr. Martin Pall felt it was outrageous to roll out 5G without serious biological testing, also confirming that no independent studies have been instructed by the telecom industry, only thermal tests, and for a very limited time of exposure, six minutes.

Dr. Andrew Tresidder gave a very enlightening presentation concerning electro sensitivity, he explained, he was a practicing GP in Chard over twenty years ago, and since then has gained vast knowledge working with increasing numbers of those who have become electro sensitive. Common early symptoms found being; tinnitus, headaches, brain fog, palpitations, dizziness, and loss of concentration, often those suffering from such sensitivity are not taken seriously by mainstream doctors.

Referring to ICNIRP's guidelines, Dr. Tresidder felt, ICNIRP's outdated reliance that 'non-thermal = non-harmful' was in contradiction to thousands of scientific papers, and was, therefore, flawed. Bearing in mind, problems already exist for many people, from Wi-Fi, 3G and 4G, and governments worldwide, together with the telecom industry is prepared to roll out a whole new pulsed technology over all living things at speed, without adequate tests and trials, and without consultation with those who will have to attempt to exist 24 hours a day. This is a dangerous gamble for all living beings.

Dr. Tressider asked us to consider that those people who are already electrosensitive, even without 5G, may well be the canaries in the coal mine, warning us all of the potential effects upon our health.

Frank de Vocht, Reader in Epidemiology and Public Health at Bristol Medical School, overall, regarding safety, he did not feel confident, saying he had doubts / reservations, regarding health, “*still unknown*”.

Mark Swann gave a very narrow science view of 5G, which I felt was not at all reassuring, probably much more akin to an industry promotion, demonstrating no real understanding of any potential health effects or issues. Concerning.

Hamish MacLeod from Mobile UK – as expected, a glossy industry promotion of how wonderful 5G would be, without any mention of health concerns, and he declined to answer any health-related questions.

I was also not at all happy with Hamish MacLeod’s response to my question regarding trees being cut down due to the rollout of 5G, he responded by denying any trees had been removed, which is clearly not true.

Chris Baker gave an informative presentation about ICNIRP, the International Commission on Non-Ionizing Radiation Protection, and also referred to conflicts of interest between ICNIRP and the telecom industry, which is again extremely concerning.

Professor Tom Butler, from Cork, Ireland, gave an excellent presentation, sharing extremely important information. Professor Butler, a former satellite and microwave and radio communications engineer, went on to become an academic, involved with information technology, and for the last eight years has specialized in artificial intelligence, helping financial organisations improve their management of risks, both financial and none financial, mainly working with banks in London over the last three years.

In 2015 he commenced research into ionizing and non-ionizing radiation, and could not understand, why the minority view, held by so few scientists, members of ICNIRP, were referenced as safe guidelines, especially as they ignored thousands of studies and peer reviewed journals which focus on non-thermal effects, which he informed had been documented since the 1930s, where problems were found. Research began in the 50s and 60s, and in 1976 the US Navy Medical Research Institute published a Bibliography of 3,700 studies documenting significant non-thermal effects. Although it did not document about concerns for cancer, it did document the mechanisms that were appearing, which we now know cause single and double strand DNA breaks, and ultimately cause cancer.

Professor Butler also informed, studies were ongoing in America and the UK throughout the 80s were finding biological effects, however, in 1996 Bill Clinton defunded this group, and handed over responsibility to FCC, at the same time the International Commission on Non-Ionizing Radiation Protection was set up by the industry, with its headquarters in Munich. A ‘closed shop’ only those scientists who agree with the ‘thermal’ position are invited.

ICNIRP technical 'guidelines', published in 1998, Professor Butler said, those are the guidelines we are working with, and there have been twenty-two more years of research since, and were never relevant to protect humans from non-thermal effects from day one. Unfortunately, revised guidelines show no change of note.

Professor Tom Butler, when asked for advice regarding 5G and Glastonbury, without hesitation, he responded, "*don't let 5G in, a moratorium should be implemented*".

Expert witness, **Professor Anthony Miller**, had agreed to meet with us in Glastonbury, however, due to Coronavirus news, he returned home to Canada early.

Recommendations:

- Glastonbury Town Council should continue to uphold the Precautionary Principle, and proceed towards a Moratorium.
- Glastonbury Town Council should resist the installation of multiple urban aerials and antennae, and keep Glastonbury a 5G free zone.
- Prof. Butler's recommendations for truly independent research, with a starting point as outlined in his presentation to the committee, should be acted upon.

Thank you for allowing me to participate.

It is unfortunate, safety always lags technology, we are all worth more, our world and children are worth more, and, to quote Professor Tom Butler, "*it would be absolute madness to expose the human population to this type of environmental toxin*".

Toby R Hall – Non-Councillor Advisory Committee Member: Reflections.

What I have learnt about Microwave and Radio Frequency Radiations, (RFRs).

RFRs were developed by the military as a stealth weapon.

This US Navy report from 1972 laid out that microwave and RFRs was damaging to humans on a cellular level. See Chapter 1 Pages 7-11, for list of the detrimental effects of RFRs.

<https://secureservercdn.net/198.71.188.149/4cd.eb7.myftpupload.com/wp-content/uploads/2019/06/Navy-Medical-Research-Institute-Military-Microwave-Radiowave-Report.pdf>

Thousands of scientific peer reviewed reports since have backed this up. Retired military and defence industry engineers concur, including: USA; Nancy Hopkins, Canada; Gerry Flynn, UK; Barrie Trower and Mark Steel.

No studies show that 5G is safe. Why then are industry, regulatory bodies, and Governments, continuing to ignore these peer reviewed scientific reports, whilst racing to blanket the world in 5G antenna?

Money, power, surveillance, and control. They have managed till now to get away with this by 'fixing' the terms of reference. Knowing RFRs-EMFs were highly dangerous weapon grade stealth frequencies that caused human cell damage they limited the terms of reference to purely the thermal effects of these radiations, ignoring the proven serious health effects. They raised the 'permissible levels' to a very high threshold, a lose-lose for humans, animals, and plants that are being negatively impacted by these genotoxic frequencies.

Humans, animals, flora are bio-electrical beings. Our brain and hearts generate electrical pulses. Consequently, we are sensitive to electrical fields and RFRs. Leading cell biologist Dr Bruce Lipton, is clear that even low level RFRs weaken our immune system making us more vulnerable to illness, including COVID-19 currently causing much harm around the world. Wuhan was one of the first 5G cities 10,000 antenna activated in late 2019.

WHO, World Health Organisation, organised a symposium in 1973 entitled 'The Biological Effects and Health Hazards of Electromagnetic Radiation'.

<https://www.emfoff.com/symposium/>

Now the WHO fails to recognise the Biological effects of RFRs! Why?

The WHO EMF Project and ICNIRP have been intertwined.

<https://microwavenews.com/news-center/can-who-kick-icnirp-habit>

The EMF Portal of the University of Aachen (<https://www.emf-portal.org/en>) contains over 28,000 studies on the biological effects of electromagnetic radiation. FDA, FCC, in the USA are two more regulatory bodies who are 'owned' by the telecoms industry and fail in regard to researching and presenting the facts in regard to the health issues of RFRs.

Surveillance, IOT- Internet of Things, and 5G.

Crowd control, mind control, 'voice to skull', and the ability to manipulate individuals or groups of people emotionally, even to self-harm are achieved via RFR programming. This patented technology is being used worldwide. 5G is the vehicle for total control and the 'surveillance state', this is pernicious and dangerous.

Medical/Health damage.

RFR damage can be slow and accumulative. With higher levels it can be lethal and dramatic. Such as flocks of birds falling out of the sky dead when 5G is turned on. People get nose bleeds and suicide rates increase.

Cities, Countries, and locations that have banned 5G.

Switzerland has introduced a national moratorium, Brussels the EU HQ, The White House, Mar a Largo etc.

<https://larryhannigan.files.wordpress.com/2019/12/places-stopping-5g-2.pdf>

Insurance companies such as Lloyds and Swiss Re will not cover again harm from RFRs.

<https://www.rfsafe.com/lloyds-of-london-insurance-wont-cover-smartphones-wifi-smart-meters-cell-phone-towers-by-excluding-all-wireless-radiation-hazards/>

The reason for this is that they know RFRs are both carcinogenic and neuro toxic. See also >2ND LARGEST INSURANCE FIRM CLASSIFIES 5G AS A “HIGH IMPACT” LIABILITY

<https://www.silverdoctors.com/headlines/world-news/2nd-largest-insurance-firm-classifies-5g-as-a-high-impact-liability/>

Conclusions:

There is overwhelming peer reviewed scientific evidence that RFRs-EMFs are seriously damaging to human health across the 2G, 3G, 4G, and 5G spectrums. The industry knows this but will not admit it.

The regulatory bodies are often compromised and working with the industry. Causing great harm to people. We can choose whether we wish to use a smart phone, but we cannot opt out from being ‘wi-fried’ by cell towers. It is important we minimise exposure for our health and wellbeing, especially for our children.

Recommendations:

- Set up a Glastonbury information advise body on RFRs (website).
- Have a qualified person able to scientifically monitor with appropriate equipment RFR levels especially in schools and businesses.
- Encourage the community to protect themselves by adopting safer use of the technology.
- Shungite is a cheap and helpful preventive, available in several Glastonbury shops.
- 5G Bioshield <https://5gbioshield.com/> We use this device and find it helpful.
- Safe G website: <https://safeg.net/home/> Practical information to implement safer methods of connectivity.

I hope that the Glastonbury Town Council, will resist the roll of 5G in the town, by upholding to the Precautionary Principle and working to a moratorium to ban 5G.

Connectivity of businesses and the community can be met by 4G and hi-speed broadband fibre-optic cables which can be brought into homes and businesses.

Susan Jones – Non-Councillor Advisory Committee Member: Reflections.

THE CASE AGAINST 5G

Pulsed millimetre wave technology/phased array system:

5G, is at a much higher frequency range, up to 30 GHz. Inside the 5G cell phone there are eight antennae which track the nearest base station aiming a focused beam, *et al.* The effective power of those beams could be 20 watts; multiple beams will be unavoidable.

The FCC (USA) allow a base station operating at millimetre range to emit an effective radiated power of up to 30,000 watts per 100 MHz of spectrum. These base stations will be approximately 100 meters apart, mainly on top of utility street lighting (ref. '[From Blankets To Bullets](#)' by Arthur Firstenberg, USA).

The International Commission on Non -Ionizing Radiation Protection (ICNIRP) is a self-appointed group whose members around 50% of whom have close links and interests with the telecom industry/other organisations. Dr Sarah Starkey lists omissions and misleading information in ICNIRP guidelines which are followed by Public Health England and the World Health Organisation (WHO), recognising only the short-term thermal effects of radiation and not non-thermal long-term effects. Focus is placed on average energy absorbed 'Specific Absorption Rate' (SAR) which have standard guidelines and have recently been extended from 2 W/Kg ICNIRP SAR unit for 10 grams of tissue. Local SAR up to 6 GHz.

However, Bio-Initiative recommends 0.1 W/cm², one tenth of a microwatt safety unit. Children will absorb up to 10 times the radiation of an adult. Prof. Yuri Grigoriev, Russian National Committee on non-ionizing radiation protection advises those under 18 refrain from using them. RF/EMF exposure guidelines address acute thermal and chronic non-thermal effects based on scientific research, ('[International policy and advisory response regarding children's exposure to radio frequency electromagnetic fields \(RF-EMF\)](#)' by Mary Redmayne, Australia).

Evidence is accumulating that pulsed radiation can be more effective in producing biological effects than continuous radiation. High frequency waves have sufficient energy to knock electrons out of their orbits causing an atom to become charged or ionised which can directly cause chemical changes and cellular damage.

Research illustrates that if a change in phase is rapid a quasi-static field known as 'Brillouin precursor' is generated when the radiation penetrates the body causing an opening in the cell structure leading to DNA breaks, gene toxicity, cancer (Ref. to [Dr R Albanese, USAF and Dr Kurt Oughstun, Vermont Uni, USA](#)). [FDA guidelines USA](#) failed in risk assessment of non-thermal chronic exposure ([Dr Lennart Hardell](#)).

Health problems can be found not only in humans but all living creatures. In 2018 it was confirmed RF causes cancer. (see '[Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission](#)' Ramazzini Institute, Italy).

DNA damage is well documented by a number of eminent scientists (Ref. [Martin Pall, Professor of Biochemistry, Washington University](#)) (Research by [Professor Igor Belyaev](#) and [Vladislav M. Shiroff](#)). DNA and enzymes can only carry out their functions through natural electromagnetic oscillations.

Neurological effects have been researched. Many scientific papers are written illustrating leakage through the blood-brain barrier. A single 2-hour exposure to cell phone radiation can result in blood-brain barrier damage. Five days later neurological damage can be seen (see '[Increased blood-brain barrier permeability in mammalian brain 7 days after exposure to the radiation from a GSM-900 mobile phone](#)' by Henrietta Nittby, *et al*, Lund University, Sweden, 2009)

The link to RF radiation and cancer is well researched ('[Electromagnetic fields may act via calcineurin inhibition to suppress immunity, thereby increasing risk for opportunistic infection: Conceivable mechanisms of action](#)' Dr Olle Johansson, Neuroscientist, Karolinska Institute Stockholm).

Research indicates worsening of public health when second generation 1800MHz cellphones introduced; mortality statistics for various cancers especially lung cancer closely paralleled degree of exposure to radio frequency during past 100 years.

Nitric Oxide free radical oxidative stress research (Ref. to [BioInitiative Report 2012](#), updated 2019) illustrates a catalogue of symptoms and derived diseases.

Wi-Fi modulation uses a 10Hz frequency which is in range of human alpha brainwaves which range from 8-13 Hz. Electromagnetic hypersensitivity (EHS) is a condition caused by electromagnetic radiation to which biological markers exist (Ref. to [Prof. Lebrecht von Klitzing](#)) who sought an injunction to ban Wi-Fi in Israel's schools.

The nonstop pulsed radiation in US homes averages 2.4GHz and increasing with 'smart' appliances and the internet of things.

Bio effects are clearly established to occur with non-thermal exposure to electromagnetic fields and radio frequency exposures. Humans and other creatures are bio-electrical in nature. We are tuned in to the Schuman resonance of earth and its biosphere. Artificial EMFs can interfere with biological processes. The effects on our spirit/life force energy remains unresearched and completely ignored so we are clueless as to the effects that artificial RFs will have accordingly.

Migratory birds and bees' orientation is adversely affected by stronger artificial radio frequency fields. Examples of the utilisation of earth's magnetic field parameters support the existence and the vital control functions of biologically active magnetic and electromagnetic fields with a special frequency structure and corresponding information content arranged to suit biological systems ('[Bees, Birds, and Mankind – Destroying Nature by Electrosmog](#)' by Dr Ulrich Warnke, Bioscientist).

At 26 GHz bees die, crop pollinators leading to food shortages and global famine. An EU funded report by the EKLIPSE project studies how electromagnetic radiation may affect the environment concluded that it posed a “*potential risk*” to birds, insects, and plants’ health (Malkemper Erich P., Tscheulin Thomas, Vanbergen Adam J., Vian Alain, Balian Estelle, Goudeseune Lise (2018). ‘[The impacts of artificial Electromagnetic Radiation on wildlife \(flora and fauna\). Current knowledge overview](#)’). Forest die-off around masts and leaf damage has been noted.

Alfonso Balmon (in ‘Science of the total environment’ [Vol. 518-519 2015 pp 58-60](#)) states that electromagnetic fields are “*an emerging threat to wildlife orientation*”.

An experiment at Huijgenspark, The Hague, on 30th October 2018 tested RF radiation at a frequency of 7.4 GHz wavelength of 4.05cm, mast 400 metres. Starlings suddenly dropped dead. Vet of bird care found internal bleeding, 150 deceased (Principa Scientific International) Many other similar incidents have occurred.

EMF proven to be harmful for humans, animals, and the environment (Ref. to [Professor Ed Rainer Nyberg Vasa, Finland](#)).

Evidence for litigation for artificial electromagnetic radiation regarding associated health risks and harm. Ray Broomhall, Australian Barrister, advises clients to follow certain steps in a procedure to take action legally against the telecom industry and the authorities, advising that a notice of objection should be sent to the emitters/council. Councils can order an abatement notice or refuse planning permission for the siting of masts/antennae. Many individuals may join together in a class action to sue the emitters and authorities, who have a duty of care.

In criminal law it can be regarded as an assault as the beam of radiation penetrates the aura and physical body of humans. In court, medical takes precedence over scientific or technical. Success was demonstrated by Telco cancelling the rollout in Sydney.

Whilst UK cities roll out 5G cities like Brussels and countries like Switzerland have refused the rollout on accumulating evidence by eminent scientists and doctors.

There have been a number of international treaties ignored i.e. the Treaty on the Prevention of Placement of Weapons in Space: 5G was developed by USA military as crowd control weapon initially. The Nuremberg code of human rights 1949 for non-consensual experimentation has been violated completely.

Notices of liability have been issued in Hawaii. Individual commercial liability of corporate executives and government representatives, the telecom industry have a duty of care and to ‘turn a blind eye’ or ‘cherry pick’; ignoring thousands of research papers illustrating harm from pulsed millimetre wave technology extends beyond negligence.

I would recommend reading the full [BioInitiative Report](#) that includes a collective of eminent scientists including Prof. Henry Lai, Emeritus Washington Uni USA.

EU Article 174 policy requires a precautionary approach to judging health and environmental risks. I would therefore advise that the precautionary principle is upheld, and a moratorium should be taken at County level, the removal of which would require a Crown Court order accordingly. The evidence of harm to humans, every living creature and the environment is apparent, as is earth's ionosphere and the destruction of the Van Allen Belt through the deployment of 2,000+ satellites by rockets. Decisions made on a local level, national and global, will determine the future of life on earth. Contemplate a superficial world without nature.

I would recommend fibre cable broadband as an alternative! If the government can finance 5G in my opinion they can finance fibre cable broadband, as Labour's Jeremy Corbyn intended, had he won the election.

Charters and Peoples Assembly is another useful legal instrument for a community wishing to engage in the principle 'do no harm'.

The global pandemic of COVID-19 is a genetically engineered virus (a SARS, HIV, Coronavirus cluster). French and Indian scientific reports confirm this. It originates from the Chinese Academy of Science BSL4, Wuhan.

Original research/development was initiated at North Carolina BSL4, USA (Ref. [Professor Francis Boyle, Illinois](#)). The link between 5G and COVID-19 is simple since 5G causes a breakdown of the immune system, leaving the body unable to fight infection, especially in those with other health issues whether exacerbated by 5G or otherwise.

APPENDIX 2 – Bibliography: the ‘library of evidence’

The documents were submitted to the ‘library of evidence’ by the members of the 5G Advisory Committee – providing a comprehensive background reading resource for all the members.

Each document has a unique three-digit number, related to the order in which the documents were submitted, e.g. the first document to be submitted was given the three-digit number 001, the second was 002, and so forth.

Six categories were agreed by the committee and the documents were filed appropriately.

Environmental

046 International Appeal: Stop 5G on Earth and in Space

Guidelines

- 006 OFCOM – Enabling 5G in the UK
- 007 OFCOM’s Annual Plan 2019/20
- 008 A 5G Strategy for the UK – DCMS & HM Treasury
- 014 ICNIRP RF Guidelines
- 027 House of Commons Library Briefing on 5G
- 045 The Precautionary Principle – Policy and Application
- 056 How all the anti 5G and EMF groups are connected

Health

- 002 Tresidder Story – Removed as Out of Date – see 055 – Dr Andrew Tresidder for most recent version.
- 005 UNHRC – Written Statement submitted by Planetary Association for Clean Energy – including rebuttal
- 011 Scientists warn of potential serious health effects of 5G – including replies from European Commission
- 016 The first report of 5G injury from Switzerland – including rebuttal
- 017 Health Effects from Radiofrequency Electromagnetic Fields
- 023 Bees Birds and Mankind by Ulrich Warnke – including rebuttal
- 037 Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields
- 038 Gaps in assessment – Gaps in protection by Dr Yael Stein
- 039 Bristol’s 5G concern – including rebuttal
- 040 ES UK reply to ASA – plus ASA rulings of 04/04/2019 and 08/01/2020
- 041 Serious flaws in 5G safety claims
- 042 Lancet Dec 2018
- 043 Electromagnetic Hypersensitivity
- 044 Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposure
- 049 Use of mobile phones and risk of brain tumours

Health (continued)

- 050 Brain tumour risk in relation to mobile telephone use
- 051 We have no reason to believe 5g is safe – Joel Moscovitz
- 053 The Largest Biological Experiment Ever – Arthur Firstenberg
- 054 Joel Moskowitz on the health risks of cell phone radiation
- 059 Navy Medical Research Institute Military Microwave Radiowave Report
- 061 Global Public Health Scandal

Legal

- 009 Permitted Development
- 018 DCMS – A New Electronic Communications Code
- 019 Legal Aspects of the Precautionary Principle
- 025 5G Submit Legal Documents – this document has a disclaimer saying that it is not intended to be legal advice.
- 026 Digital Economy Act 2017 Explanatory Notes
- 047 5G Moratoriums – Legal Instruments or Hollow Gestures
- 052 Global public health scandal

Scientific

- 003 5G Risk by Martin Pall – including rebuttal
- 010 ICNIRP Note – Critical evaluation of two animal field studies
- 012 Ionisation levels of atoms in the Human body
- 013 ICNIRP Scientific Expert Group
- 015 Investigation of radiation emissions from video display terminals
- 020 Radiation Biology Handbook
- 021 The Effects of 5G Frequencies
- 024 Inaccurate official assessment of radiofrequency safety by the Advisory Group on Non-ionising Radiation by Sarah J. Starkey – including Rebuttal
- 029 Cell Phones and Cancer Risk Fact Sheet – National Cancer Institute
- 030 Electromagnetic hypersensitivity and Wi-Fi allergies – Bogus diagnoses with tragic real-world consequences
- 031 The Nation indulges in fear mongering about cell phones and cancer – Science-Based Medicine
- 032 Bad Faith – When conspiracy theorists play academics and the media for fools – Science-Based Medicine
- 033 Critique of “Risk of Brain Tumours from Wireless Phone Use” – Science-Based Medicine
- 034 Scientists Sign Petition Warning about EMF – Science-Based Medicine
- 035 Human beings emit electromagnetic radiation
- 057 A full description and analysis of Scientific Studies regarding EMR

Technical

- 001 Mother of all Crimes – 5G Technology by Gerry Flynn – including rebuttal
- 022 5G Mobile Technology Fact Check
- 028 5G Technology POST Brief
- 036 Output Power Levels of 4G User Equipment and Implications on Realistic RF EMF Exposure Assessments
- 060 Press Intimidation, Science Suppression And The 5G Rollout by Jeff Prager

APPENDIX 3 – Recommendation 2: further information.

The second recommendation of the advisory committee is that Glastonbury Town Council write to Public Health England and the UK Government asking them to convene an independent scientific study into the non-thermal effects of fifth generation cellular network technology – particularly the impact of high frequency, long duration exposure on the levels of reactive oxygen species and antioxidants biomarkers – in human subjects.

During his presentation to the committee, Professor Tom Butler reflected that: “*the scientist fall into two groups, one is: ‘absolutely no non thermal effects’, the other group: ‘significant non-thermal effects’...*”

This apparently irreconcilable difference of opinion was evident to councillor members during the six months in which the committee met. It permeated the investigation – the dichotomy contributing to the advisory committee being unable to come to a unanimous conclusion with regard to the safety or otherwise of fifth generation cellular network technology.

Fundamental to the dichotomy is the controversial, contested, but persistent claim that high frequency, long duration exposure to radiofrequency EMFs stimulates ‘voltage-gated ion channels’ found in the membrane of cells; impacting on levels of reactive oxygen species (free radicals) and antioxidants – biomarkers of neurodegeneration – potentially causing oxidative stress.

If an independent scientific study *were* to be conducted, imperative to the advisory committee’s recommendation is that the scientists involved must be both independent and ‘in the middle ground’. If such scientists could be identified, then – in the words of Professor Butler – the research would “*be acceptable to both camps*”.

Speaking about the potential of such a study, Professor Butler proposed: “*a control group of humans not exposed or with very low levels of exposure and another group of humans with a relatively high level of exposure*”.

Professor Butler suggested that, at the end of the research, if non-thermal effects are evident: “*we should see a comparative difference in the biomarkers. In the exposed group, I would expect that they are at very high risk and that the levels of reactive oxygen species would be, relatively speaking, quite high; and I would expect to find that the levels of antioxidants would be relatively much lower...*”

Professor Butler went on to say: “*I think the time is ripe for such a study. It is that type of study would be extremely helpful in furthering politicians and policy-makers understanding, and I can’t understand for the life of me why such a study has not been done!*”

APPENDIX 4 – Supporting documents from the presentations

A list of the supporting documents from the committee presentations, followed by some selected examples of the documents.

Please note:

- *The views and opinions expressed in these supporting documents – presented below – do not necessarily reflect the official policy or position of Glastonbury Town Council.*
 - *The third-party rights of the authors of these documents are not authorised under the Open Government Licence v3.0, and permission must be obtained from the individual copyright holders concerned.*
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- 5G: Great risk for EU, US, and International Health! Compelling Evidence for Eight Distinct Types of Great Harm Caused by Electromagnetic Field (EMF) Exposures and the Mechanism that Causes Them [Prof. M Pall]
 - Exodus of species from Mount Nardi Australia as a result of EM technology - Mark Broomhall UNESCO [Prof. M Pall]
 - Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation by Alfonso Balmori [Prof. M Pall]
 - EMF appeal – 42 expressions of high-level concern drafted by scientists and/or medical doctors regarding health impacts of low-level EMF exposures [Prof. M Pall]
 - Increasing incidence of burnout due to magnetic and electromagnetic fields of cell phone networks and other wireless communication technologies by Ulrich Warnke and Peter Hensinger [Prof. M Pall]
 - Massive Predicted Effects of 5G in the Context of Safety Guideline Failures [Prof. M Pall]
 - Very High Level VGCC Sensitivity to Low Intensity EMFs and Especially to Pulsations Feb. 25, 2020 [Prof. M Pall]
 - Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression, [Prof. M Pall]
 - Radiofrequency radiation injures trees around mobile phone base stations Cornelia Waldmann-Selsam, et al [Prof. M Pall]
 - Electromagnetic Fields Act Similarly in Plants as in Animals: Probable Activation of Calcium Channels via Their Voltage Sensor [Prof. M Pall]
 - Eight Repeatedly Documented Findings Each Show that EMF Safety Guidelines Do Not Predict Biological Effects and Are, Therefore Fraudulent [Prof. M Pall]
 - The Consequences for Both Microwave Frequency Exposures and Also 5G Second Edition, May 23, 2019 [Prof. M Pall]
-
- Simply 5G – A Layman’s Guide to the 5G Mobile Phone System [Derek Cooper]
 - Simply 5G – Presentation Questions & Answers [Derek Cooper]

- Seeing the Wood from the Trees [Roy Proctor]
- 5G Statement [Dr Andrew Tresidder]
- Electrosensitivity - A Personal Story [Dr Andrew Tresidder]
- Electrosensitivity Briefing v3 Oct19 [Dr Andrew Tresidder]
- ES GP patient letter Aug 19 [Dr Andrew Tresidder]
- ES letter psych paper Novengineers 2018 [Dr Andrew Tresidder]
- ICNIRP Mobile Phone critique 2019 [Dr Andrew Tresidder]
- Letter to Scientific American from IEMFA - Misconception of 5G-1 pdf [Dr Andrew Tresidder]
- Politics 5G and the Suppression of Non-thermal RFR Science [Dr Andrew Tresidder]
- Serious flaws in the ICNIRP and WHO claims on 5G and RF wireless radiation- Oct.1 [Dr Andrew Tresidder]
- Mobile UK – Presentation [Hamish MacLeod and Gareth Elliott]
- 5G Deutsche Telecom Study [Prof. T Butler]
- Adverse health effects of 5G mobile networking technology under real-life conditions [Prof. T Butler]
- Genotoxic Effects in Human Fibroblasts Exposed to Microwave RFR [Prof. T Butler]
- Prof Tom Butler Letter to Jeffery Shuren, Director FDA 2020 [Prof. T Butler]
- The Bioeffects Resulting from Prokaryotic Cells and Yeast Being Exposed to an 18 GHz EMF [Prof. T Butler]

Simply 5G

*A Layman's Guide to the 5G Mobile
Phone System*

PRESENTATION OVERVIEW

- This presentation addresses the following topics
 - Mobile networks in general
 - 5G Physical infrastructure compared with 4G
 - 5G Radio transmissions compared with 4G
 - The social and environmental impact of 5G on Glastonbury
-

WHAT DOES 5G MEAN

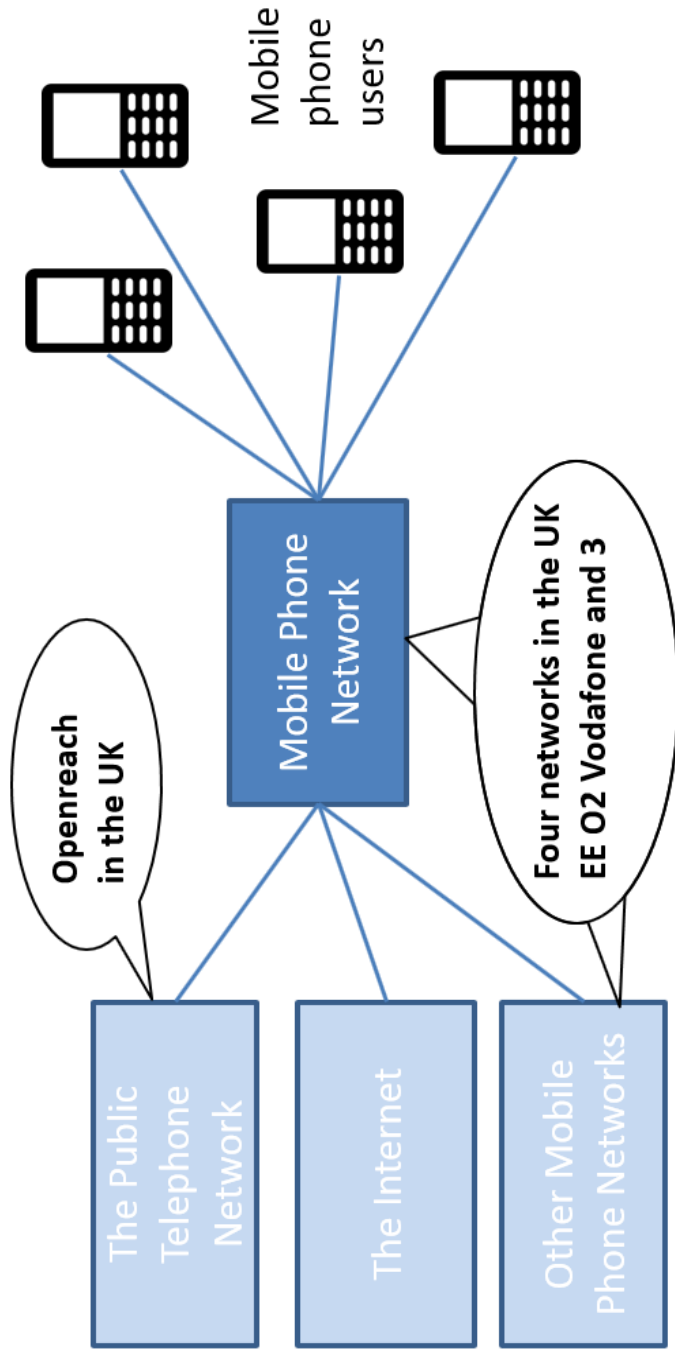
- 5G is the latest set of standards applicable to mobile phone networks
 - Previous sets of standards were called 2G, 3G and 4G
 - The G just means Generation
-

GENERAL DESCRIPTION OF MOBILE NETWORKS

MOBILE PHONE NETWORKS

GENERAL DESCRIPTION

A mobile phone network provides a connection between the public telephone network, the internet, and other mobile phone networks and mobile phone users

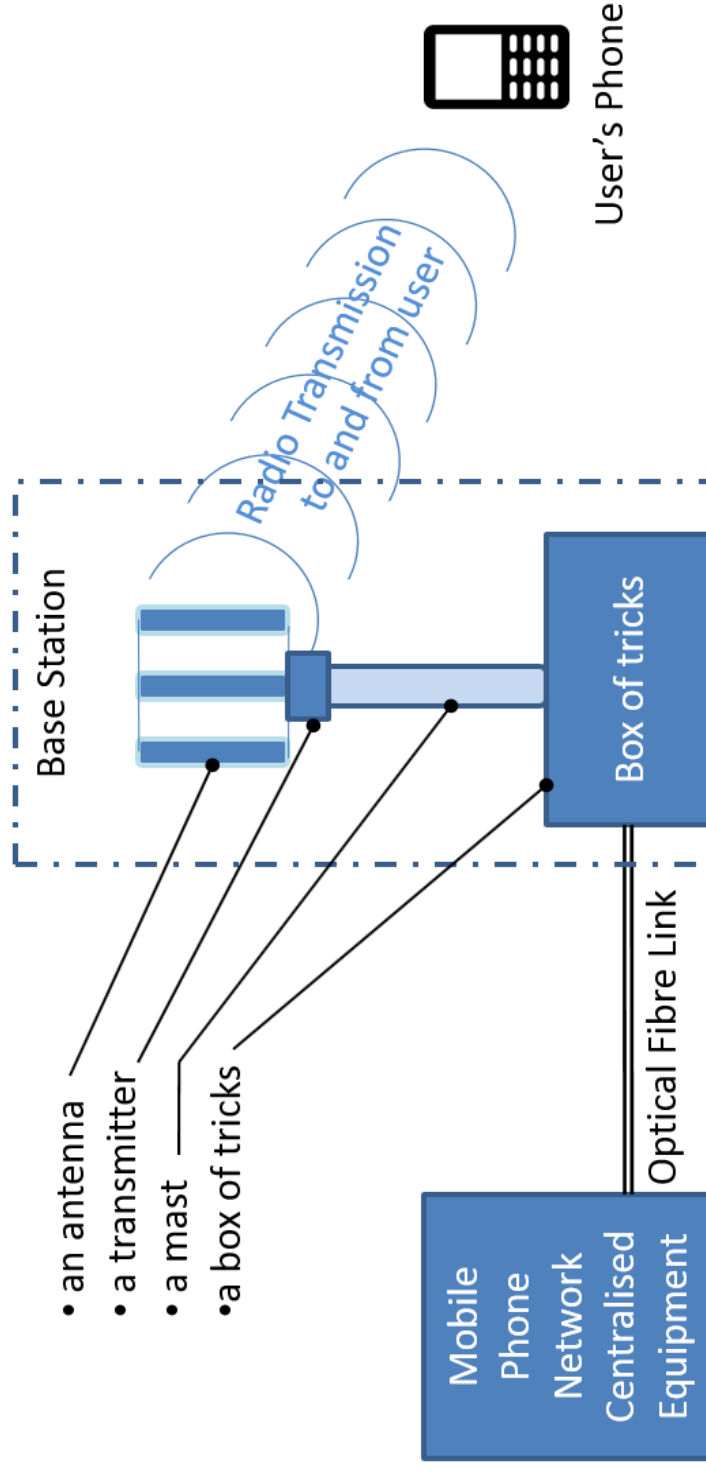


MOBILE PHONE NETWORKS

BASIC BUILDING BLOCKS

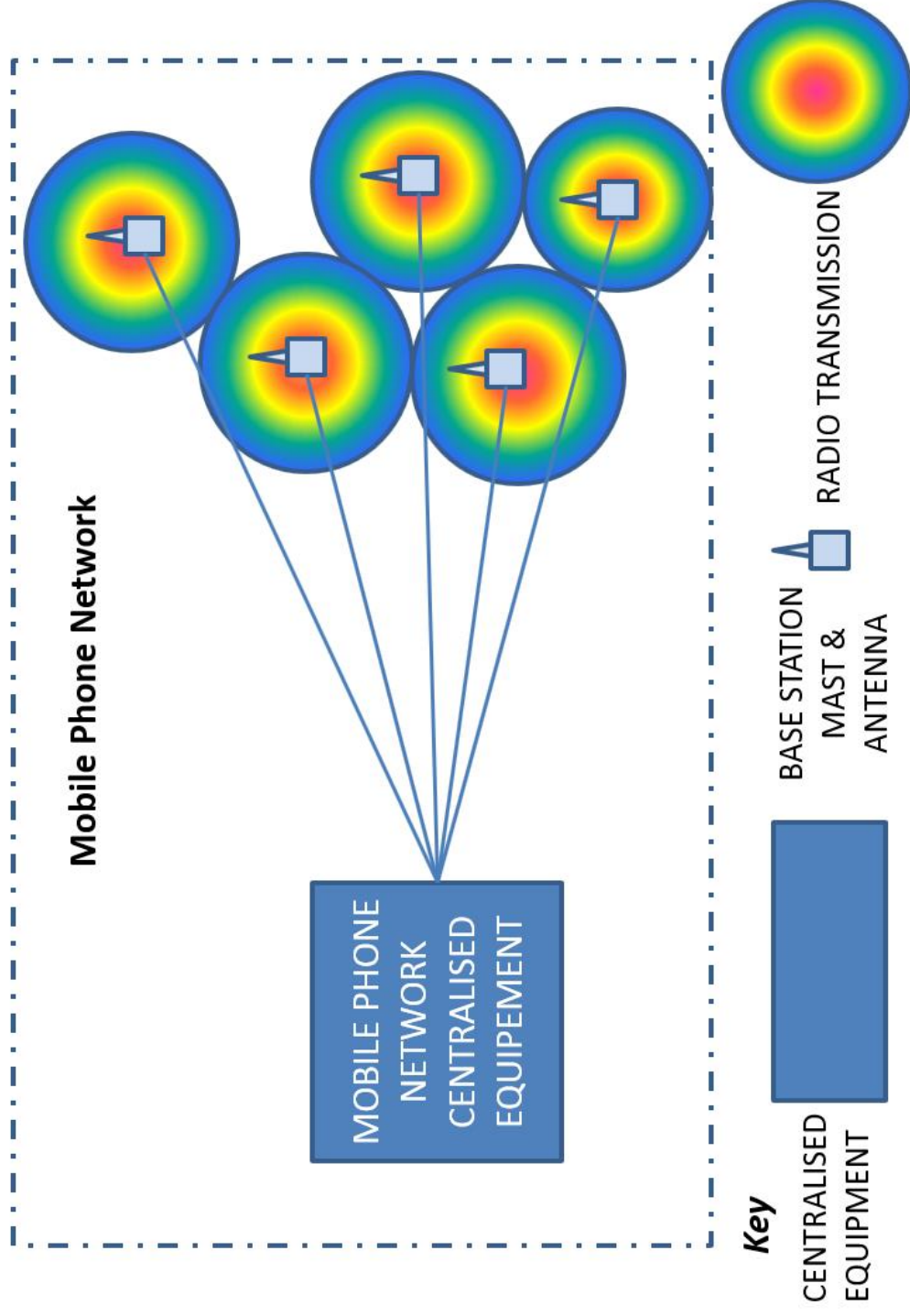
All mobile phone networks comprise two basic elements:

- Centralised equipment for data processing and routing
- Remote base stations each comprising:



MOBILE PHONE NETWORKS

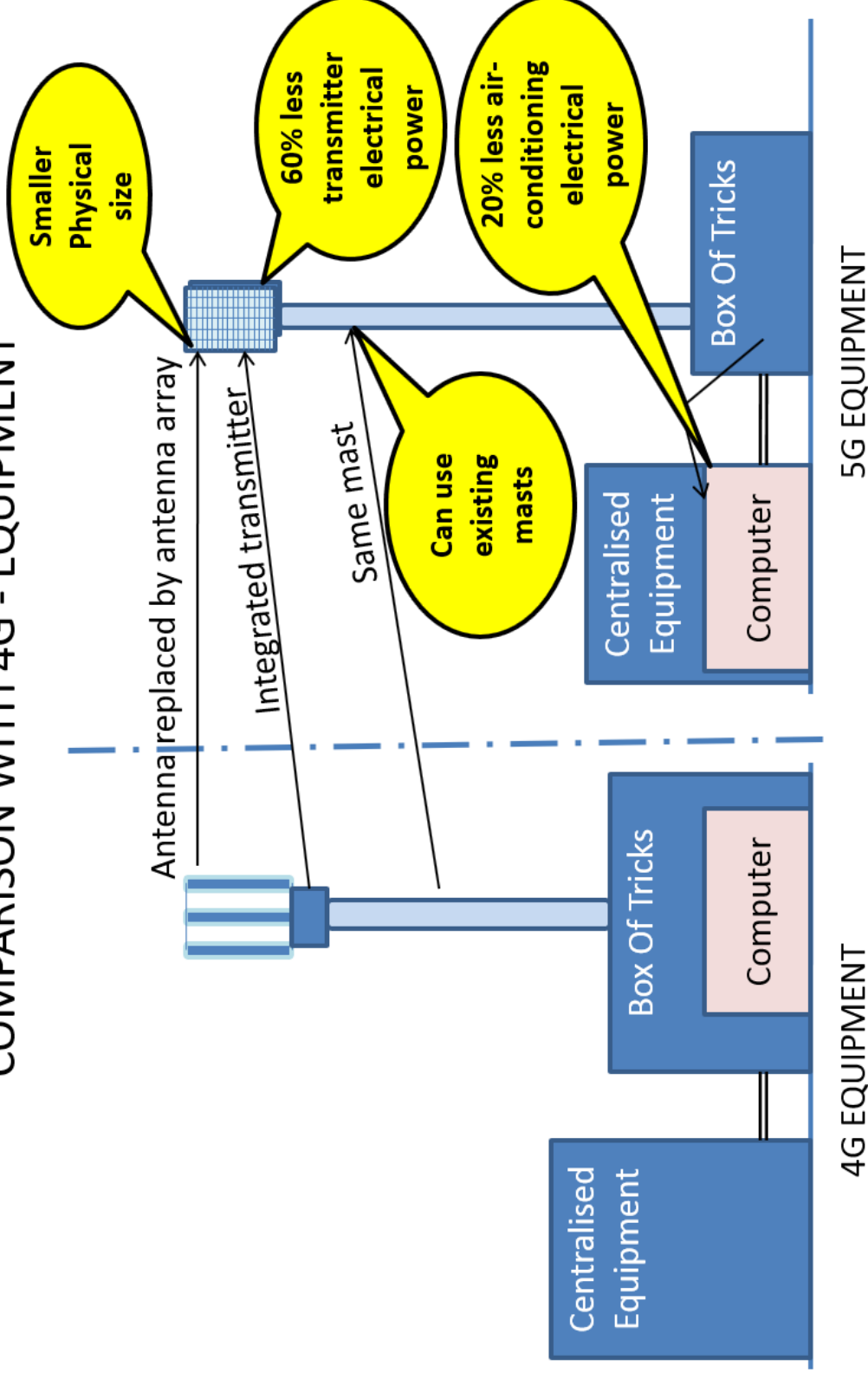
GEOGRAPHICAL VIEW



COMPARISON OF 5G INFRASTRUCTURE WITH 4G INFRASTRUCTURE

5G PHYSICAL INFRASTRUCTURE

COMPARISON WITH 4G - EQUIPMENT



5G PHYSICAL INFRASTRUCTURE

COMPARISON WITH 4G – NETWORK ORGANISATION

- 2G, 3G and 4G Networks are single tier systems
 - They use the same infrastructure for areas of high usage and low usage
- 5G Networks are two tier systems
 - One set of infrastructure, called the coverage tier, is used in low usage areas
 - Another set of infrastructure, called the Hotspot Tier, is used in high usage areas

5G PHYSICAL INFRASTRUCTURE

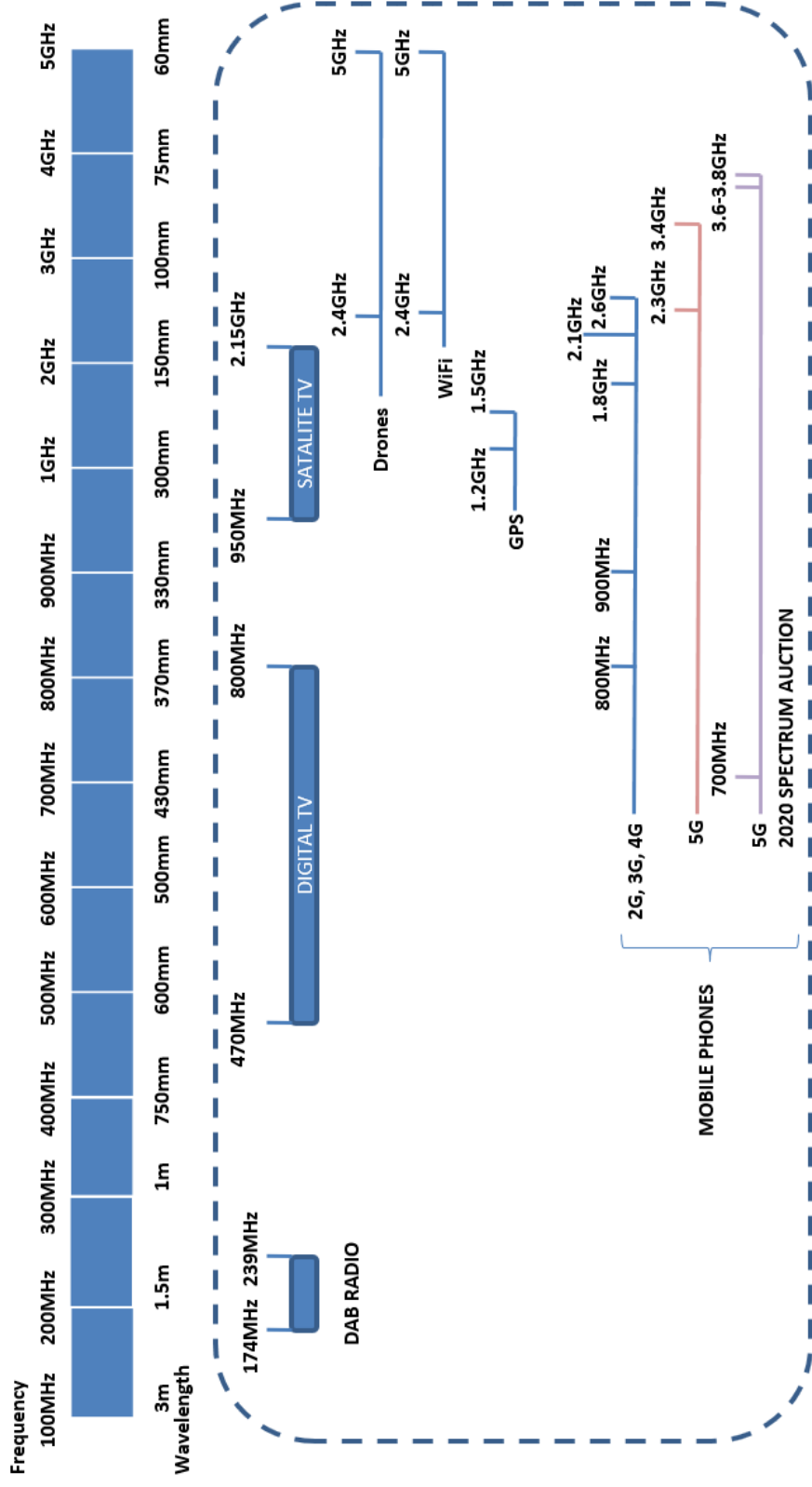
COMPARISON WITH 4G – COVERAGE AND HOTSPOT TIERS

- Coverage tier
 - Used in suburban and rural areas such as Glastonbury
 - Uses the same masts as 2G, 3G and 4G
 - Uses similar radio frequencies to 2G, 3G and 4G
 - Gives better coverage and performance
- Hotspot Tier
 - Used in dense urban areas, train stations, sports stadia etc. Could be used at festivals such as Glastonbury Festival
 - Needs new infrastructure such as masts
 - Uses radio frequencies above 6GHz, typically 26GHz
 - Very short range, typically 50m to 500m (For example, signal would not be received outside Worthy farm)

COMPARISON OF 5G RADIO TRANSMISSIONS WITH 4G RADIO TRANSMISSIONS

5G RADIO TRANSMISSIONS

RADIO SPECTRUM ALLOCATIONS IN THE UK



5G RADIO TRANSMISSIONS

MOBILE PHONE NETWORK SPECTRUM USED IN THE UK

Frequency							
Network	800MHz	900MHz	1.8GHz	2.1GHz	2.3GHz	2.6GHz	3.4GHz
EE	4G		2G 4G	3G		4G	5G
O2	4G	2G 3G	2G	3G	5G		5G
Vodafone	4G	2G 4G	2G	3G		4G	5G
3	4G		4G	3G			5G

EXISTING 2G, 3G, AND 4G NETWORKS SHOWN IN GREEN

5G NETWORKS CURRENTLY BEING ROLLED OUT SHOWN IN PINK

PLANNED EXPANSION IN THE UK (2020 SPECTRUM AUCTION)

- 700MHz Spectrum
 - Formerly used for analogue TV
 - Restricted Licence
 - To provide phone coverage to at least 140,000 additional users in rural communities such as Glastonbury
 - Fixed wireless broadband to 39,000 homes and businesses
- 3.6-3.8GHz Spectrum
 - New spectrum allocation
 - Unrestricted Licence for mobile telephony

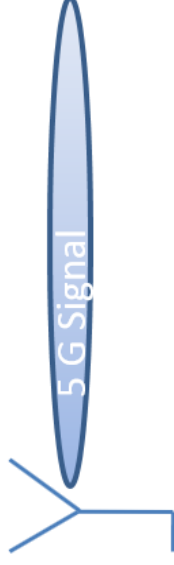
5G RADIO TRANSMISSIONS

TRANSMISSION PATTERN COMPARISON

- 4G Radio transmissions are like a lantern, they illuminate the whole coverage area



- 5G Radio transmissions are like a torch, they have a narrow pencil beam that only illuminates the individual user's phone



5G RADIO TRANSMISSIONS

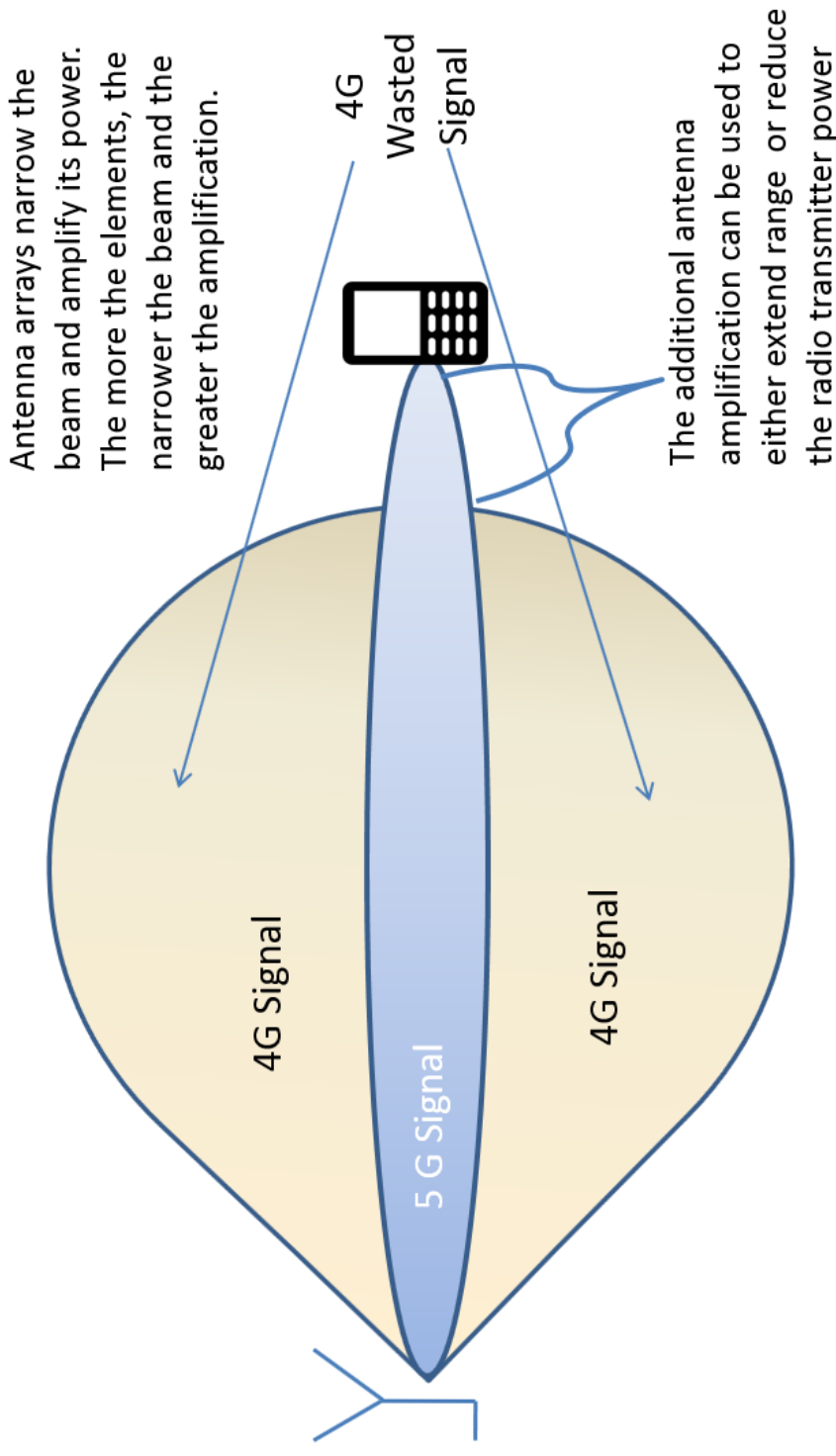
5G TRANSMISSION PATTERN DESCRIPTION

- The benefits of the 5G narrow pencil beam radio transmissions are due to precise beam control comprising
 - Beam forming which makes the beam narrower
 - Beam steering which points the beam at the user's phone
 - Signal path optimisation which can point the beam at a reflector if there is no direct path

These three precise beam control techniques are illustrated in the next three slides

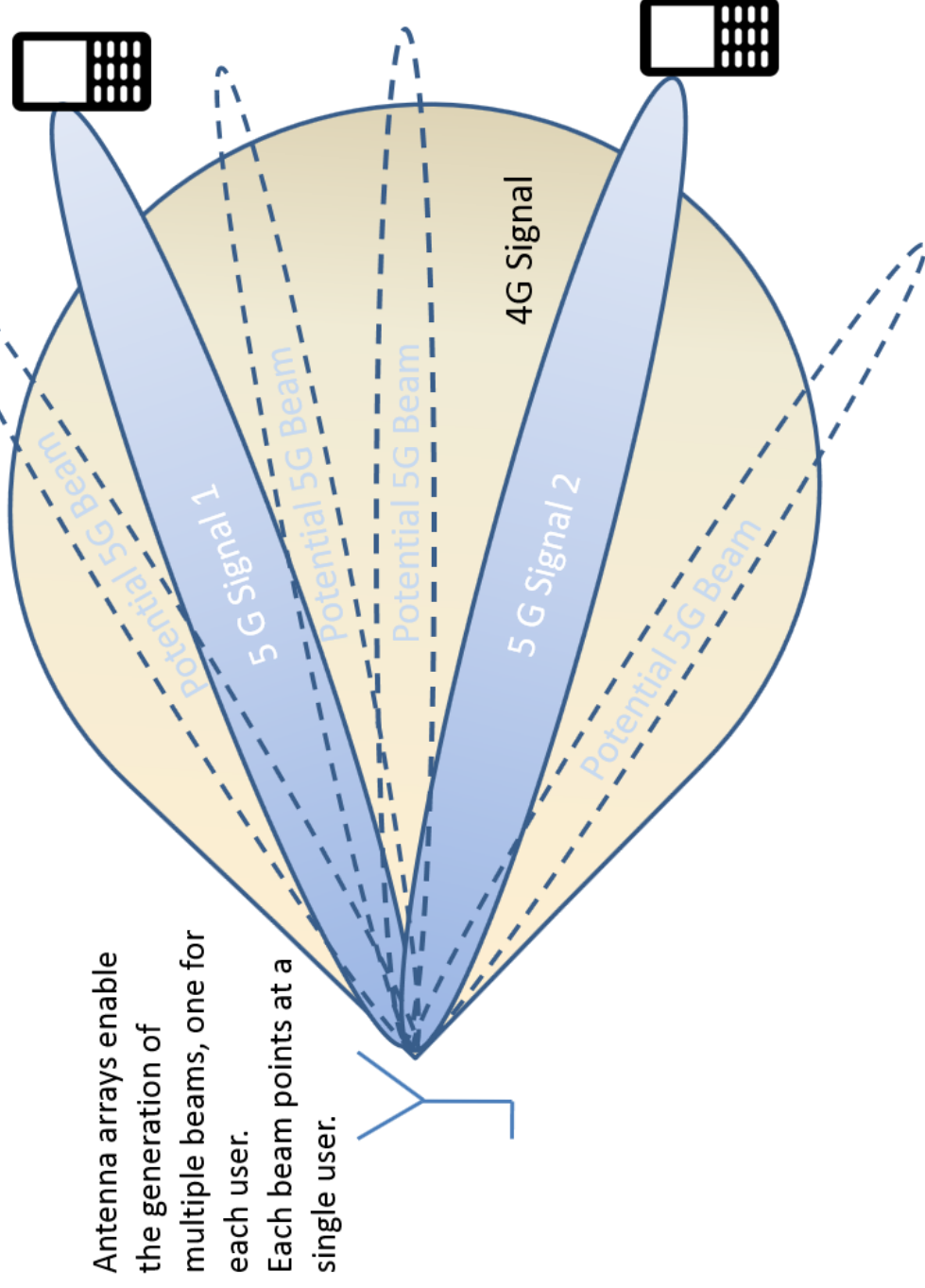
5G RADIO TRANSMISSIONS

PRECISE BEAM CONTROL-BEAM FORMING



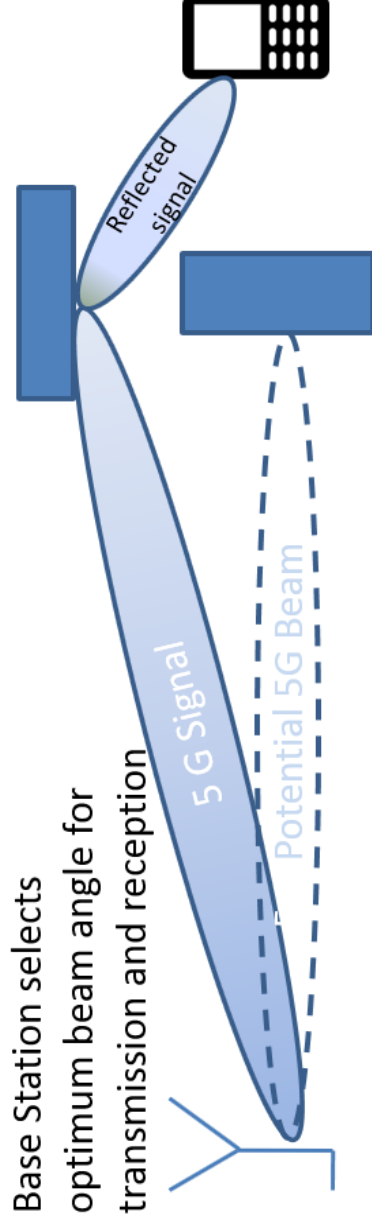
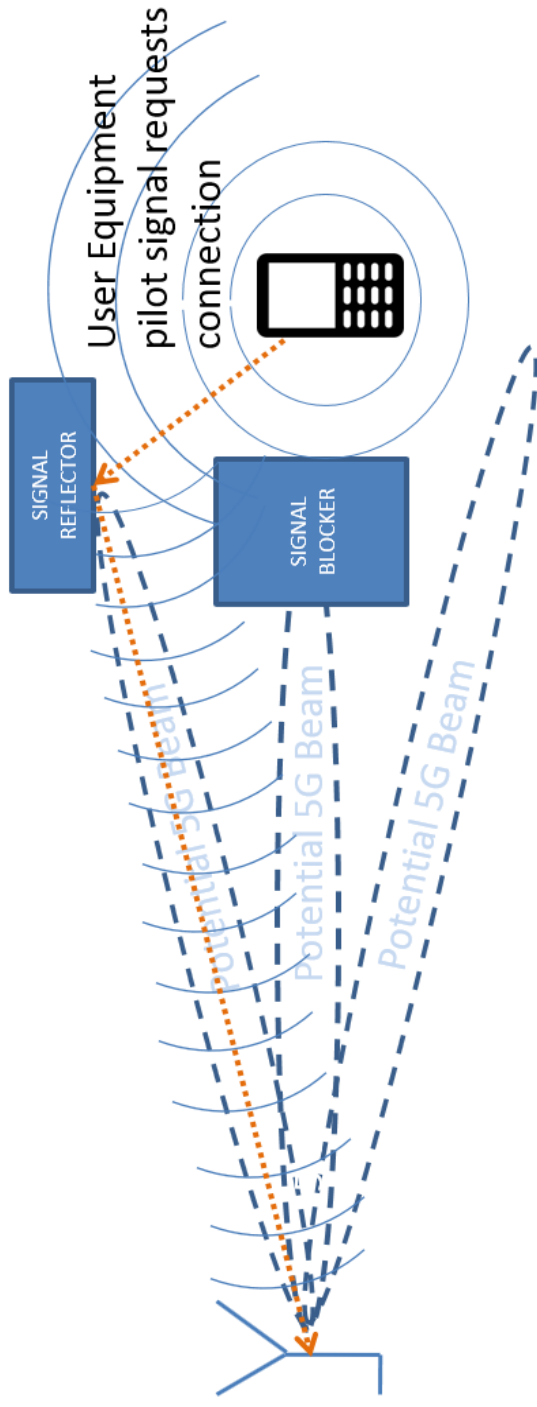
5G RADIO TRANSMISSIONS

PRECISE BEAM CONTROL-BEAM-STEERING



5G RADIO TRANSMISSIONS

PRECISE BEAM CONTROL-SIGNAL PATH OPTIMISATION



THE SOCIAL AND ENVIRONMENTAL IMPACT OF 5G ON GLASTONBURY

SOCIAL AND ENVIRONMENTAL IMPACTS

- ***Social benefits***
 - Better phone coverage than 4G
 - Provides wireless broadband in rural areas
- ***Benefits for those concerned about global warming***
 - 71% Smaller carbon footprint than 4G, 80% less than 3G and 90% less than 2G
- ***Benefits for those concerned about RF emissions***
 - Same range of frequencies as 4G in rural and suburban areas
 - Narrow beam only points at the individual on the phone
 - Transmission times are shorter
 - Signal from 5G handset is approximately 100 times weaker than 4G phone

Simply 5G Presentation Questions and Answers

A record of the questions and answers arising from the discussion of the Simply 5G Presentation given to the 5G Working Group and Town Councillors on 18th September 2019 are tabulated below.

Question	Answer
What are the drivers behind 5G rollout.	<p>The government is promoting 5G rollout for the following reasons:</p> <ul style="list-style-type: none">• It helps to meet the legal requirement for mobile phone coverage• It helps to meet the legal requirement for universal broadband coverage by providing an alternative to fibre connection.• It cuts down carbon emissions by using less power and enabling people to work from home or remote hubs.• It supports health monitoring and mobile data access• It supports the rural economy
Why was there no mention of satellites?	<p>Satellites were not mentioned because there are none associated with 5G. 5G is a terrestrial mobile phone standard which is not applicable to satellite communications systems. The confusion occurs because there are satellite broadband systems being deployed that are being described as 5G by their publicists. This is misinformation; they should be described as "like 5G". They are in competition with terrestrial 5G: the more 5G, the less satellites.</p>
Are trees being cut down in preparation for 5G roll out?	<p>It is no more necessary to cut down or pollard trees for 5G, than it is for 4G. In the coverage layer, the same range of frequencies are used for 5G and 2G,3G and 4G. 5G also copes with reflections and dead spots better than previous systems. The reports on the internet are fake news. Photographs claiming to show trees aggressively pollarded in preparation for 5G in Holland are in fact pictures</p>

Simply 5G Presentation Questions and Answers

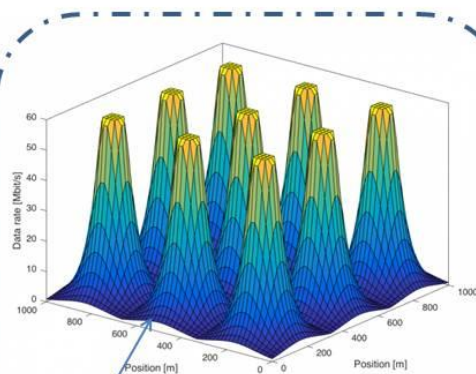
	<p>of a street in the Belgian town of Wijgmaal. It was part of a tree replacement program, and the trees have now been replaced. Railtrack have confirmed that their aggressive cutting back of track side scrub and trees was part of their annual maintenance program and is nothing to do with 5G roll out. Details are given on the Railtrack website.</p>
<p>Isn't 5G harmful to insects, such as bees?</p>	<p>No, loss of habitat and increased use of insecticides account for the world-wide decline of insects. There is no correlation between the population density of insects and the intensity of mobile phone signal.</p> <p>Many bee colonies thrive adjacent to radio transmitters and mobile phone transmitters. The reports of Colony Collapse Disorder (CCD) being associated with mobile phone signal intensity or frequency are not true. The majority of the reports of CCD have been shown to be due to either misdiagnosis, bacterial infections, viral infections or parasites. Of the few instances where the cause could not be identified, fumigation of the affected hives prevented reoccurrence of CCD.</p>
<p>Isn't 5G harmful to birds.</p>	<p>No, the claim that 5G testing in the Hague resulted in the death of 297 starlings is false. The Dutch Ministry of Economics Affairs and Climate Policy and the Dutch government's antenna information office have confirmed that there were no 5G tests in the Hague in the month in question. Autopsies carried out on 15 of the birds, identified that the cause of death was physical trauma, which is not uncommon in flocks of birds.</p>
<p>Will the roll out of 5G increase the intensity of RF emissions.</p>	<p>No, as the services transfer to 5G, transmission intensities will decrease in both the long-range coverage layer and short range hotspot layer. This is for three reasons:</p> <p>1 Due to the increased efficiency of</p>

Simply 5G Presentation Questions and Answers

the antenna arrays, weaker signals, both from the base stations and the handsets, are used.

2 Due to the signal encoding techniques used by 5G, transmissions at cell boundaries are significantly more efficient (due to the reduction in interference) and therefore the 5G transmissions are shorter than 4G, as shown in the diagram below.

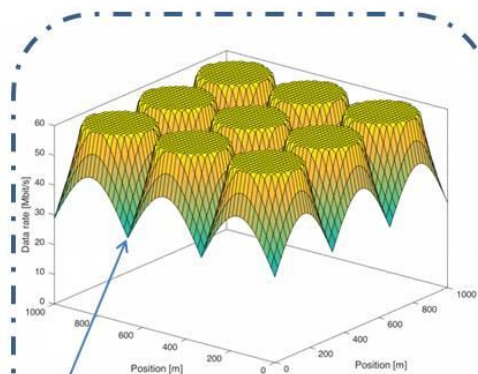
3 Away from cell boundaries, 5G Data rates are greater than 4G data rates, so the duration of transmissions will be shorter.



**High Interference levels
at cell boundaries**

- **Base station transmits continuously**
- **No data received by the user, only noise**

4G



**Very low Interference
levels at cell boundaries**

- **Base station transmits for a short time**
- **All transmitted data received by the user**

5G

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PROFESSOR EMERITUS OF BIOCHEMISTRY & BASIC MEDICAL SCIENCES,
WASHINGTON STATE UNIVERSITY

5G RISK: THE SCIENTIFIC PERSPECTIVE

- **The Intracellular Mechanism** of Harm from Wireless Radiation
- **The Eight Primary Areas** of Biological Harm




AWARENESS & ACCOUNTABILITY

the5Gsummit.com

5G Risk: The Scientific Perspective

**Compelling Evidence for Eight Distinct Types
of Great Harm Caused by Electromagnetic
Field (EMF) Exposures and the
Mechanism that Causes Them**

Written and Compiled by

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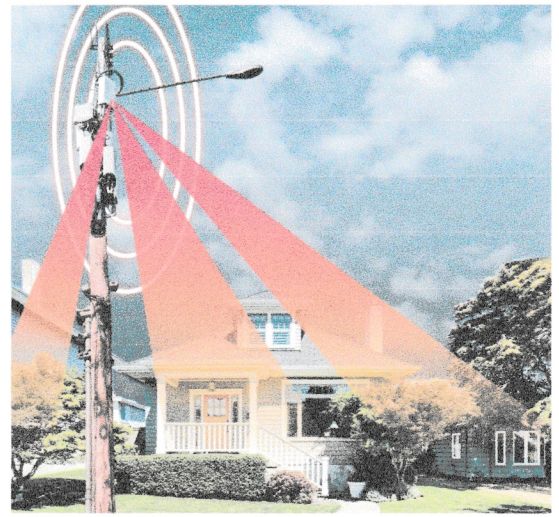
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SUMMARY

We know that there is a massive literature, providing a high level of scientific certainty, for each of eight pathophysiological effects caused by non-thermal microwave frequency EMF exposures. This is shown in from 12 to 35 reviews on each specific effect, with each review listed in [Chapter 1](#), providing a substantial body of evidence on the existence of each effect. Such EMFs:



1. **Attack our nervous systems including our brains leading to widespread neurological/ neuropsychiatric effects and possibly many other effects. This nervous system attack is of great concern.**
2. **Attack our endocrine (that is hormonal) systems. In this context, the main things that make us functionally different from single celled creatures are our nervous system and our endocrine systems – even a simple planaria worm needs both of these. Thus the consequences of the disruption of these two regulatory systems is immense, such that it is a travesty to ignore these findings.**
3. **Produce oxidative stress and free radical damage, which have central roles in essentially all chronic diseases.**
4. **Attack the DNA of our cells, producing single strand and double strand breaks in cellular DNA and oxidized bases in our cellular DNA. These in turn produce cancer and also mutations in germ line cells which produce mutations in future generations.**
5. **Produce elevated levels of apoptosis (programmed cell death), events especially important in causing both neurodegenerative diseases and infertility.**
6. **Lower male and female fertility, lower sex hormones, lower libido and increased levels of spontaneous abortion and, as already stated, attack the DNA in sperm cells.**
7. **Produce excessive intracellular calcium $[Ca^{2+}]_i$ and excessive calcium signaling.**
8. **Attack the cells of our bodies to cause cancer. Such attacks are thought to act via 15 different mechanisms during cancer causation.**

There is also a substantial literature showing that EMFs also cause other effects including life threatening cardiac effects ([Chapter 3](#)). In addition substantial evidence suggests EMF causation of very early onset dementias, including Alzheimer's, digital and other types of dementias ([Chapter 3](#)); and there is evidence that EMF exposures in utero and shortly after birth can cause ADHD and autism ([Chapter 5](#)).

cell phone tower and cell phone radiation substantially. Smart meters, if needed, can work via wired connections.

Over 60% of this document ([Chapters 5 & 6](#)), is focused on the failures of statements from SCENIHR, the telecommunications industry, the U.S. FCC and the U.S. FDA to reflect the science. Their statements repeatedly omit much, often all of the most important science. Their statements are rife not only with omissions, but also with easily demonstrable falsehoods and with false logic. These have often occurred at times where we know that they knew better. These have occurred along with vigorous efforts by the telecommunications industry to corrupt the science by attacking individual scientists whose only fault is that they have obtained important findings that the industry does not like. These attacks have occurred along with vigorous efforts to corrupt two agencies that have important regulatory roles.

There are also possible concerns about individual industry-linked research studies. All wireless communication devices put out polarized EMFs that carry information via pulsations. Both the pulsations and the polarization make these EMFs much more biologically active. There are three other factors that also influence the production of effects. Several industry-linked studies may have used these factors, along with using very tiny numbers of individual animals in their studies, to produce studies which may have been designed to fail (Chapter 5). It is not clear at this point whether this type of concern is quite limited or whether it is very broad.

The European Commission has done nothing to protect European citizens from any of these very serious health hazards and the U.S. FDA, EPA and National Cancer Institute have done nothing to protect American citizens. The U.S. FCC has been much worse than that, acting vigorously with wanton disregard for our health.

Electrosensitivity – A Personal Story – Dr Andrew Tresidder MBBS MRCGP

I've always considered myself healthy, but had mumps as a junior doctor. This hit me so hard that I had to take three months off work, for it took some time long to recover my energy – a post-viral fatigue (with the virus being mumps). As a result, I have always been more sensitive to things than many people – for instance for years after the mumps coffee and tea would give me a headache.

One year, I returned from holiday to find the computer screens changed. My black and white monitor had been changed for a colour cathode ray tube monitor. Within hours of sitting in front of this, I felt sick and unwell. The same happened the next day – so we changed the cathode ray tube for a flat screen monitor (at a time when they cost £700), and I felt well again. (A flat screen works on just a few volts, whereas a CRT bombards your body with charged particles if you sit too close (children are always told not to sit too close to the television...))

The next Electromagnetic insult was the first time I used a mobile phone – I developed a marked headache and slurred speech within seconds. Ever since, I have used mobiles and cordless phones (which have a similar, though less intense, effect) as minimally as possible. Instead, I use a corded phone on a landline whenever possible, and ring people back using one of these. Each time I use a mobile phone to my head, I still get the headache. So I use an earpiece and have the phone several feet away from me. (remember from physics that the intensity of the field diminishes with the inverse square of the distance – so a phone say 1cm away from your head has a field 10,000 times stronger than when it is a meter away)

At work, I have changed the fluorescent tubes for spot lighting, as this is softer and feels more comfortable. I am also able to look out the window at some plants, which is very calming.

With our last photocopier, I was unable to sit near it, especially if the computer a few feet away was on – the combined effect was most uncomfortable. The current photocopier has a less intense effect, but I still avoid being near it.

More recently I develop mild headaches on the motorway or road when approaching a mobile phone mast – the symptoms abate as I drive away again

Bluetooth in a car gives me an intense headache immediately, as the phone and device are in constant wireless contact.

Most recently we changed internet service provider to a large British one, who sent a wireless Home Hub. 30 seconds after switching this on, I developed an intense headache, the Hub being a few feet from where I sat at the computer. So I have returned to a wired router and a Local Area Network that uses the mains wiring system of the house.

I have a device that detects mobile phone, cordless phone and wifi and mast frequencies – needless to say it goes off very loudly with all of these.

At work, when the building was extended, we changed the alarm sensors from passive to active/passive. By the end of the first day I had a headache and felt irritable – but it took a few days for me to realize that the new sensor was the cause. Removing it made me feel better in my room, but I became more and more fragile in the rest of the building, to the point that I had to leave meetings after half an hour. So we had the whole building changed back to passive sensors. A week later, several of our receptionists said to me how much better the atmosphere felt, and one senior colleague stated “I’m not sure I did believe in this, but I have to say I feel much better, and think there is something in it now – it was right to have them removed”.

And in another workplace, one day I felt a headache developing within minutes of sitting at my desk. And then I opened the email that said how the wifi system in the building had just been upgraded. The building is also close to a major mast, and I have to limit exposure due headaches and brain fog in that building, continued exposure can make me feel edgy and irritable, with a tingling of the lips.

A recent trip meant that I spent the best part of three days in a wifi enabled hotel in a city, and was unable to get out from it much. Interesting.... First the strange dull headache, then the slight irritability, then mild fatigue. Also, presumably due to the duration, or the intensity, of the exposure, a tingling in my lips and metallic taste, and a sensation in front of my mouth, as well as a runny nose (not the same as a cold), which lasted a few days. Of course, removing self from exposure helped. It was very interesting to then use an electrosmog detector – scary...and how about everyone else.....

Changing my car recently gave me problems – my head felt unsteady and my legs ached – I was suspicious that there was an in-car alarm system and high magnetic fields round the legs from the alternator and wiring loom. Luckily for me actually the problem was partly too much static electric charge in the car, so an earthing strip has partially eased my symptoms in the car, however, there are high magnetic fields in the front of the car – some other cars with lower fields feel much less tiring to drive.

Some people use a silver bobbinet canopy to sleep under, to protect themselves in a type of Faraday cage

Putting all this together, I would diagnose myself as electro-sensitive

I have been fortunate in all these cases to recognise the cause – and eliminate it, thereby stopping myself feeling ill. Unfortunately, there is a phenomenon called Tolerance

Tolerance is when your body has an alarm symptom to a nasty stimulus – but if the stimulus is continued, it downgrades the symptoms so you don’t notice – but damage is still happening under the surface. Many people feel quite ill with their first cigarette – but as they continue to smoke, they get used to it.... This explains why when I was explaining this to a Doctor friend recently, she

said – “Yes – I got a headache when my husband put in wifi – but it wore off after four days”. Classic alarm symptoms followed by tolerance (but with long term ill effects likely). The General Adaptation Syndrome of Prof Hans Selye neatly explains the mechanism of tolerance

There are lots of people who have developed a level of tolerance, or resistance – but this actually is resistance to an ongoing harm, which will (like being exposed to other noxious stimuli longterm) cause immune system dysfunction and other adverse effects on the body, leading eventually towards illness

One important concept in the field of Health and of understanding contributory causative factors of Ill Health and Illness is that of a Maintaining Cause

If you have a stone inside your shoe, no matter how many times you change your socks, develop super strength support socks, or take specially designed pain killers – every time you walk on that foot, the stone will jab in and give you pain. The only (and very simple) answer is to remove the stone.....

One of my patients was getting three migraines every week – awful for her and expensive in time off and medication. Simply moving the cordless phone base station away from the bedside table (near her head) cut the frequency down to just one or two a month, as a menstrual migraine

In another case, a 22 year old woman developed headaches over a period of 2 months. She already had a good diet, with no additives and minimal coffee, and had previously cut out dairy products (this had cured her irritable bowel syndrome of abdominal pains, bloating, wind and loose stool). She, like many women, is intuitively sensitive and can often feel the emotions in a room, or in someone else. She used a mobile phone, but mainly for texting, and had no hands-free phone in the house. However, she did keep the mobile on charge next to her bed, with the transformer quite near her head every night, and also often on her person during the day. I asked her to change this, and this was her comment.

Hello Dr T ,I just wanted to email you to say I am feeling much better from not having my mobile on me. I always turn it off at night and put it in a different room. I have also noticed that turning my digital box on my tv in my bedroom off at night helps and not going on the internet just before going to bed gives me a better night's sleep. I have noticed a huge difference in my stress levels at work since I have not been having my mobile on me I feel a lot more relaxed. Even now while writing this email I can feel the pressure building in my head from being connected to the internet. Thank you for helping me solve my headaches even though everyone thinks I'm mad when I say my mobile makes me ill. I certainly notice a difference. Thank you.
See you soon from N

One child of 8 had developed headaches just six weeks before I saw him. When I asked, it became clear that the headaches had started very soon after a television was placed in the room next to his bedroom, close to his head. Disconnecting it stopped his headaches immediately.

A number of people have consulted me regarding poor sleep and waking up tired. A number of them have felt much better for getting rid of electrics and electromagnetics in the bedroom – or at least unplugging from the mains at night. (Leaving something plugged in but off at the mains eliminates the magnetic field – but not the electrical one). The main things to blame are cordless phones base stations on the bedside

table (many of these transmit, those that do not still have a transformer to charge the handset), mobile phones used as an alarm clock, especially if on charge from a transformer, clock radios on the bedside table, computers in the bedroom, televisions in the bedroom, and electric blankets on the bed.

Another patient (one with more than average sensitivity) came with a cold she had been unable to throw off for four weeks. Though not a severe cold, face pain had led her to seek help and already be given one course of antibiotics. I showed her how EM stress could cause a problem. She switched off the cordless phone in her small flat, and within hours felt completely restored to health. She remembered that when she had bought it and started using it, that it had given her a headache and she had not felt right – but that she had got used to it! (ie developed short term tolerance, but long term compromised vitality)

The Healthy House website has this useful info

What causes electromagnetic stress

"It must be remembered that ALL items connected to the mains electricity supply will give off both electric and magnetic fields when working. At low frequencies (usually the frequency of our mains electricity supply which vibrates 50 times every second), the electric and magnetic components of the fields are not related mathematically to each other and so it is necessary to think about them separately." When an electrical appliance is plugged in at a wall socket, it will give off an electric field, even when it is switched off at the appliance. The further you are away from an appliance, the weaker the field will be, as electric fields decrease with distance."

This means that although most people are completely unaware of it, during most of our day we are passing through electrical fields. For some people this causes no physical symptoms but it is not good for anybody to be exposing themselves to this type of stress.

Symptoms commonly experienced can include:

- Immune dysfunction: colds, flu and increasing ill health
- Psychological problems: Inability to concentrate, increased anxiety, depression, aggression, irritability, anguish, apathy, insomnia and memory loss.
- Increased instance of epileptic seizures
- Dizziness, vertigo, disorientation, breathlessness
- Loss of appetite, nausea
- High blood pressure, nosebleeds
- Eye problems: damage to cornea, early need for glasses, dry/itchy eyes.
- Skin problems: Eczema, dry, red, blotchy skin, dermatitis.
- Joint pains: unexplained wrist, arm, shoulder and back pain.
- Hearing a buzzing, high pitch vibration, other hearing difficulties
- Burning sensation and sweating
- Tingling in the fingers, shaking, nervous system agitation

As you can see from this list '*symptoms of electromagnetic stress vary considerably*'. Some people merely experience a feeling of lethargy, lack of concentration and fatigue, particularly when using the computer. Others have much more severe reactions to this form of pollution and studies have even linked Electromagnetic fields to childhood leukaemia.

Anyone can react to electromagnetic fields and it is becoming more and more common for people to do so

The cumulative effect of exposure on people is likely to handicap our immune systems, and decrease our health, let alone contribute to forgetfulness and more serious concerns

Some people can become seriously ill and unable even to stay in the house when a washing machine is on, or be near an iron or other field producing appliance

It'll be good when the industry starts to recognize these problems and take a precautionary approach, and when all doctors, and people in society, are informed about this as a potential health hazard and potential causative factor

for many common symptoms. With knowledge, people can assess whether it is true for themselves

www.es-uk.info and www.powerwatch.org.uk have a good deal of useful info, as does the Bristol University site from Prof Denis Henshaw www.electric-fields.bris.ac.uk

The Powerwatch handbook by Alasdair and Jean Philips is recommended, as is www.emfields.org/library/index.asp

www.magdahavas.com is useful (Canadian Professor)

In Sweden, the condition is well recognized by the professions. We await the interest in the UK that will start once people become more aware of the issue

For many years asbestos was considered a completely safe building material.....

Dr Andrew Tresidder MBBS (Lond) MRCPGP Cert Med Ed (Bristol) is a Somerset GP, Educator and author. He works in the NHS and Health care throughout Somerset, and has a particular interest in Health and the factors that influence it, both physical, nutritional and emotional, as well as Physician Health and Complementary Medicine. He also works for NHS Somerset (formerly Somerset PCT) and for the University of Bristol Medical School

5G Statement

As you know, much of society in urban and other setting is already bathed in manmade electromagnetic transmissions which the insurance industry classifies as a pollutant. I am told that 5G involves an intensification of this, together with a high degree of pulsation, which has been found to cause biological organisms more stress/distress than continuous wave. I cannot predict the additional adverse health effects of 5G beyond the known adverse effects that the current amount of 3G, 4G etc is causing (see many sources such as ehtrust.org, es-uk.info), but it does seem intriguing that whilst the pharmaceutical industry has to go through stringent safety tests for every new product brought to market, that the whole RF (radio frequency) industry is being rolled out with no premarket health studies.

Whereas with medicines, there is no presumption of safety unless extensive testing is done – the rollout of 3G, 4G and 5G Radiofrequency and electromagnetic radiation transmissions is proceeding with the opposite assumption – safe until proven otherwise as long as we keep within the ICNIRP thermal only six-minute only 1 degree C only (averaged over the whole body) temperature rise. This says nothing about longer exposures, and fails to admit all the science showing non-thermal effects

As Senator Blumenthal said, basically, 'Regarding safety, we are flying blind' at a congressional enquiry into the safety of 5G in Feb 2019

The precautionary principle does not appear to be being applied effectively

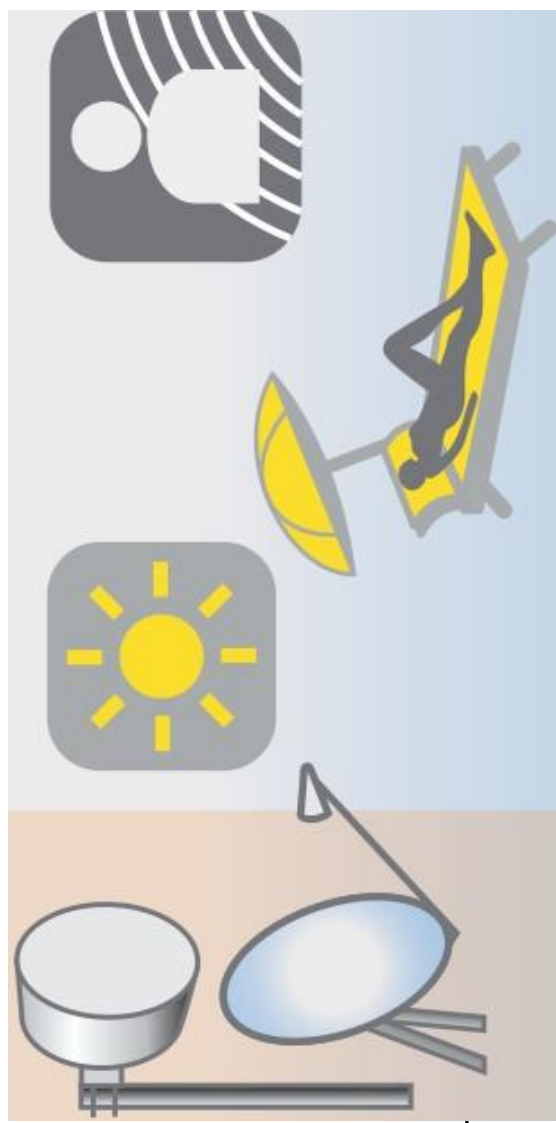
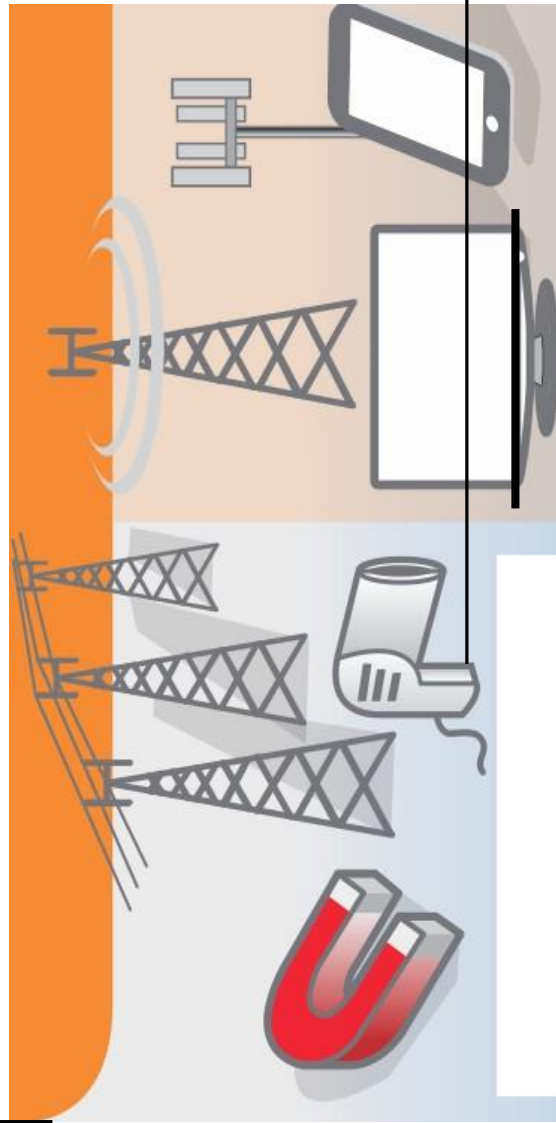
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The Safety Framework for Electromagnetic Fields (EMF) - Including 5G



Mobile Sector: The Basics

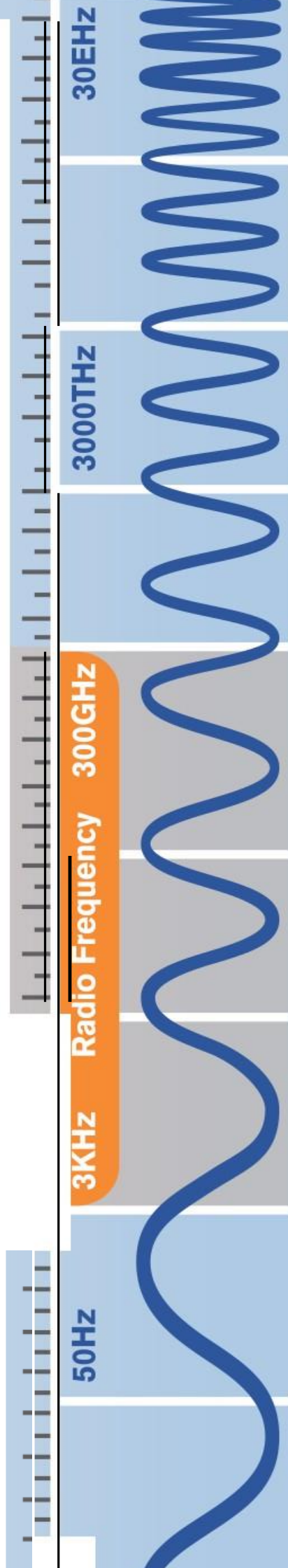
- 92m connections in the UK, 95% of us have a mobile
- Four mobile network operators with infrastructure and spectrum licences: EE, Three, O2, and Vodafone
- Voice and growing demand for data
- Many new applications: telehealth, smart cities, transport, inclusivity
- 20m 999 calls per annum



Static & Magnetic rays
 Alternating Electric
 & Magnetic Radioactive Fields
 TV & Radio
 Phones & Satellite
 Electric Mobile
 Sunlight

Visible Broadcast Sources
 Ultraviolet
 X-

OHZ



NON-IONIZING

IONIZING

Who decides on the appropriate guidelines?

ICNIRP Guidelines, endorsed by World Health Organisation

<https://www.who.int/peh-emf/standards/en/>

*“The exposure limits for EMF fields developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) - a non-governmental organization **formally** recognised by WHO, were developed following reviews of all the peer-reviewed scientific literature, including thermal and non-thermal effects.”*



Monitoring of compliance by Ofcom

- Telecommunications regulator Ofcom carries out compliance checks
- Post Stewart report
- Done on request. Schools and hospitals FOC
- <https://www.ofcom.org.uk/spectrum/information/mobile-operational-enquiries/audit-info>



Illustration of guidelines v reality – BBC Click 10/11/2019

1. Probe - c.30cm from the antenna – 5x times)

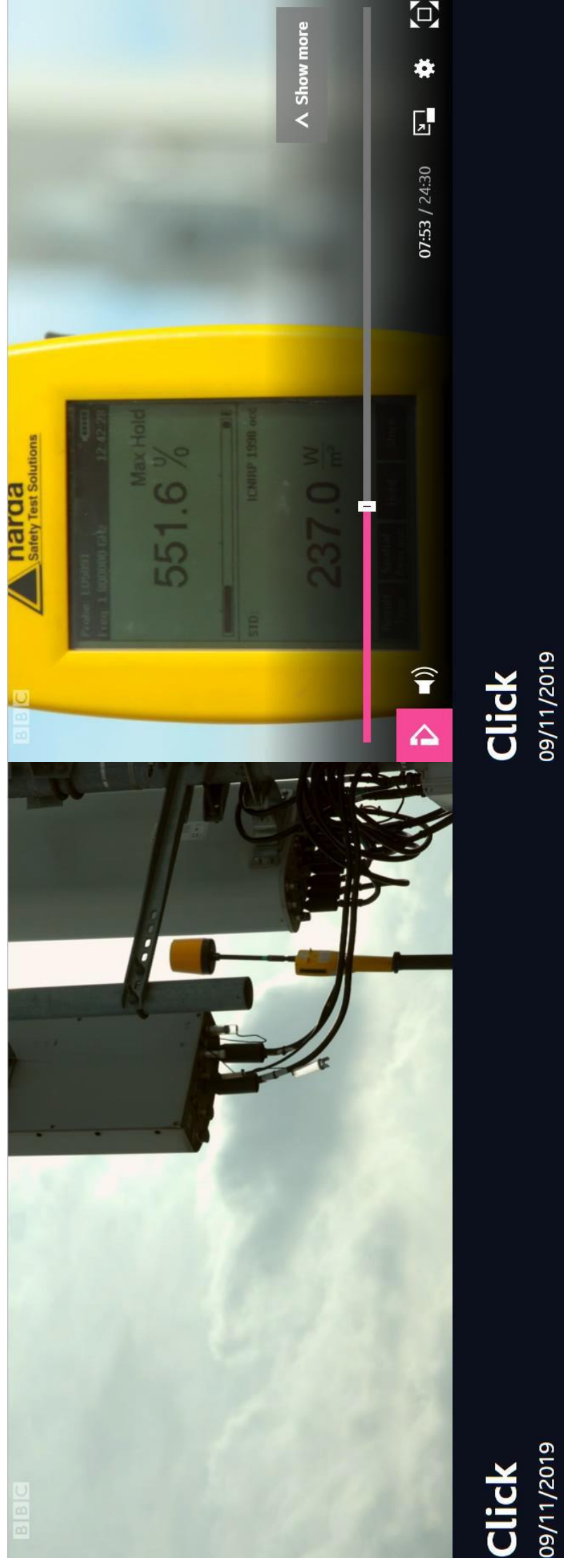


Illustration of guidelines v reality – BBC Click 10/11/2019

2. Probe 3m from antenna – 6.23% of Guidelines

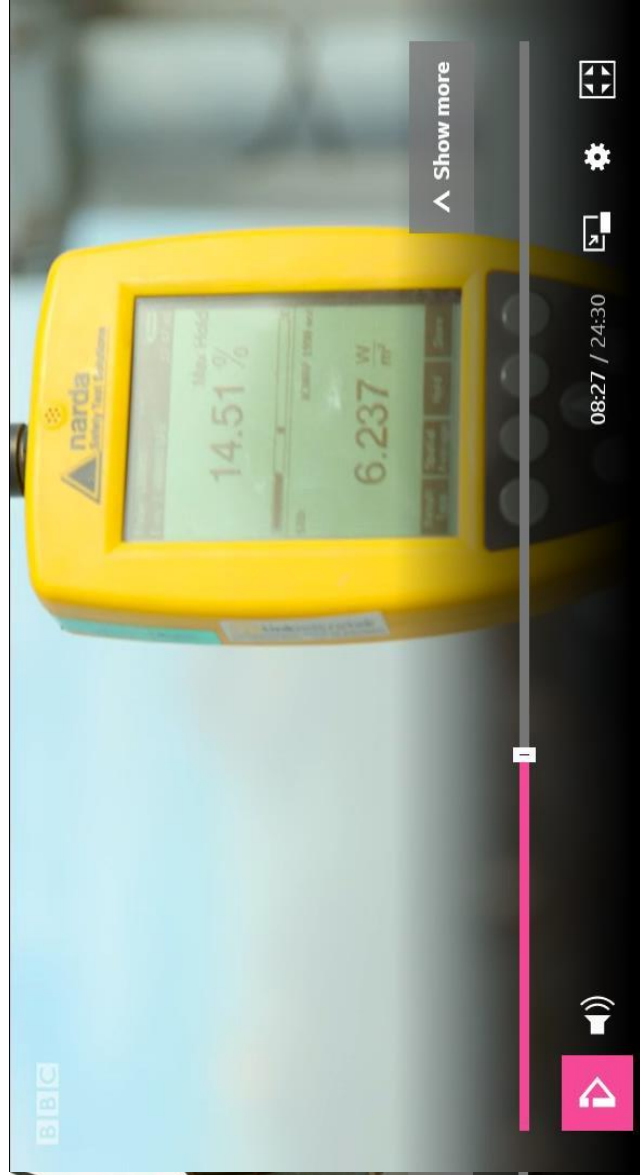
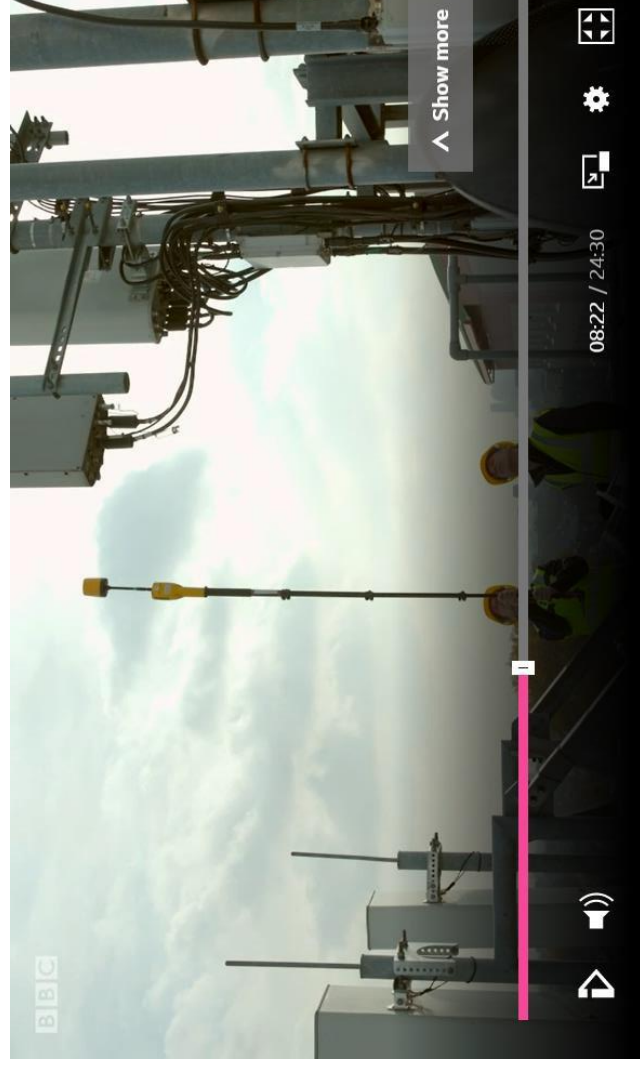
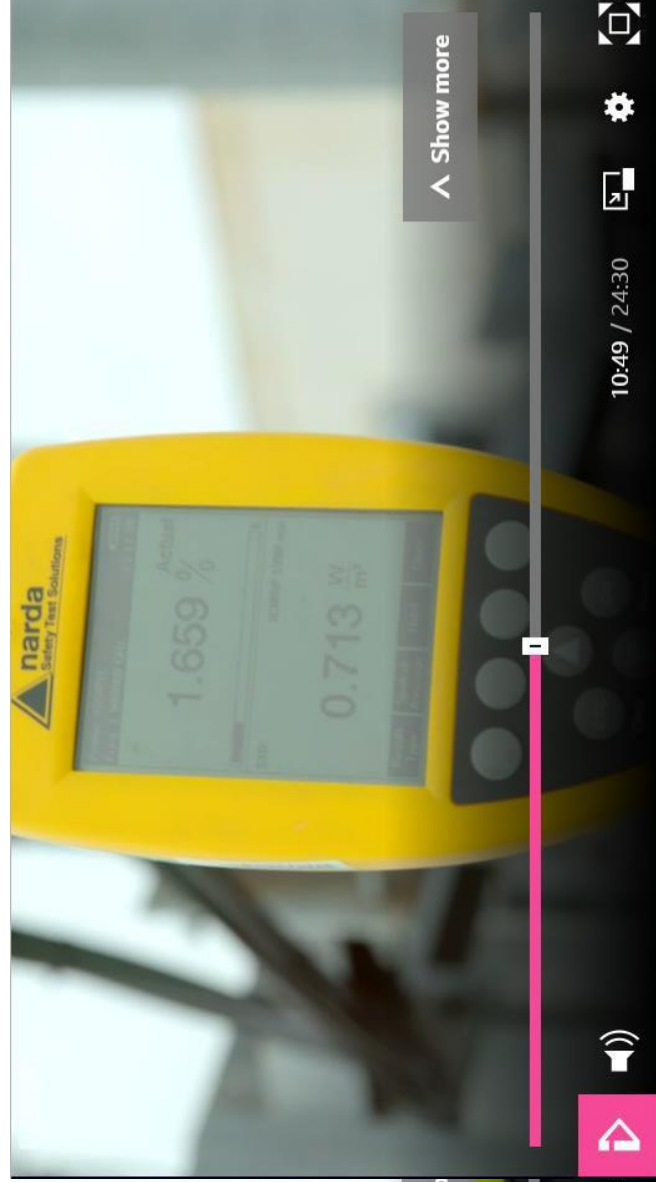
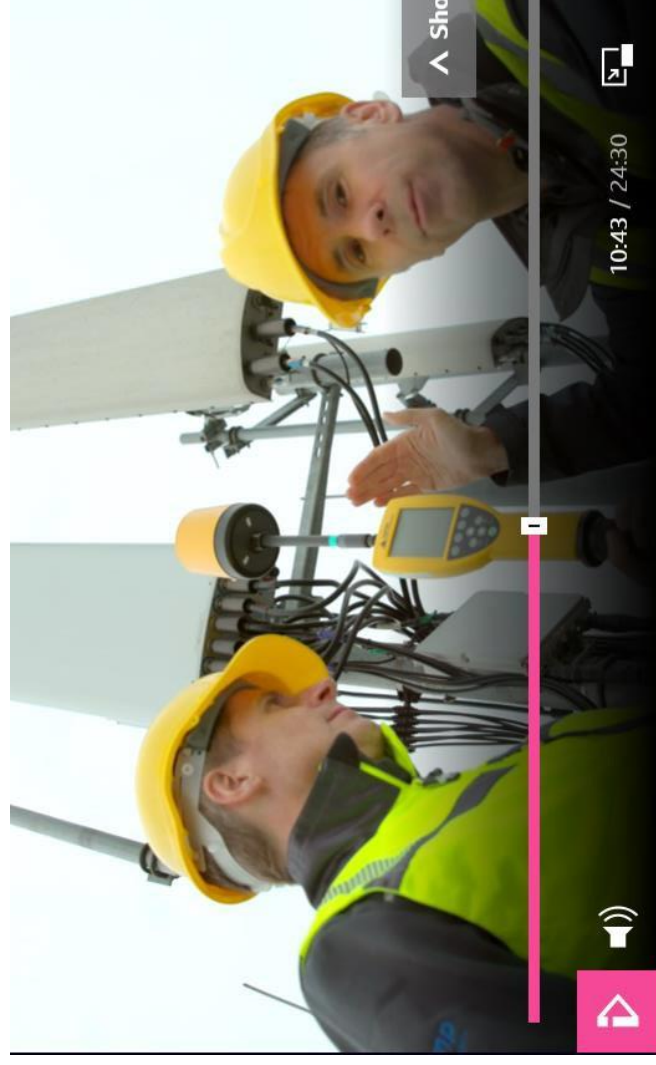


Illustration of guidelines v reality – BBC Click 10/11/2019

3. Standing just below the antenna – 1.66% of Guidelines



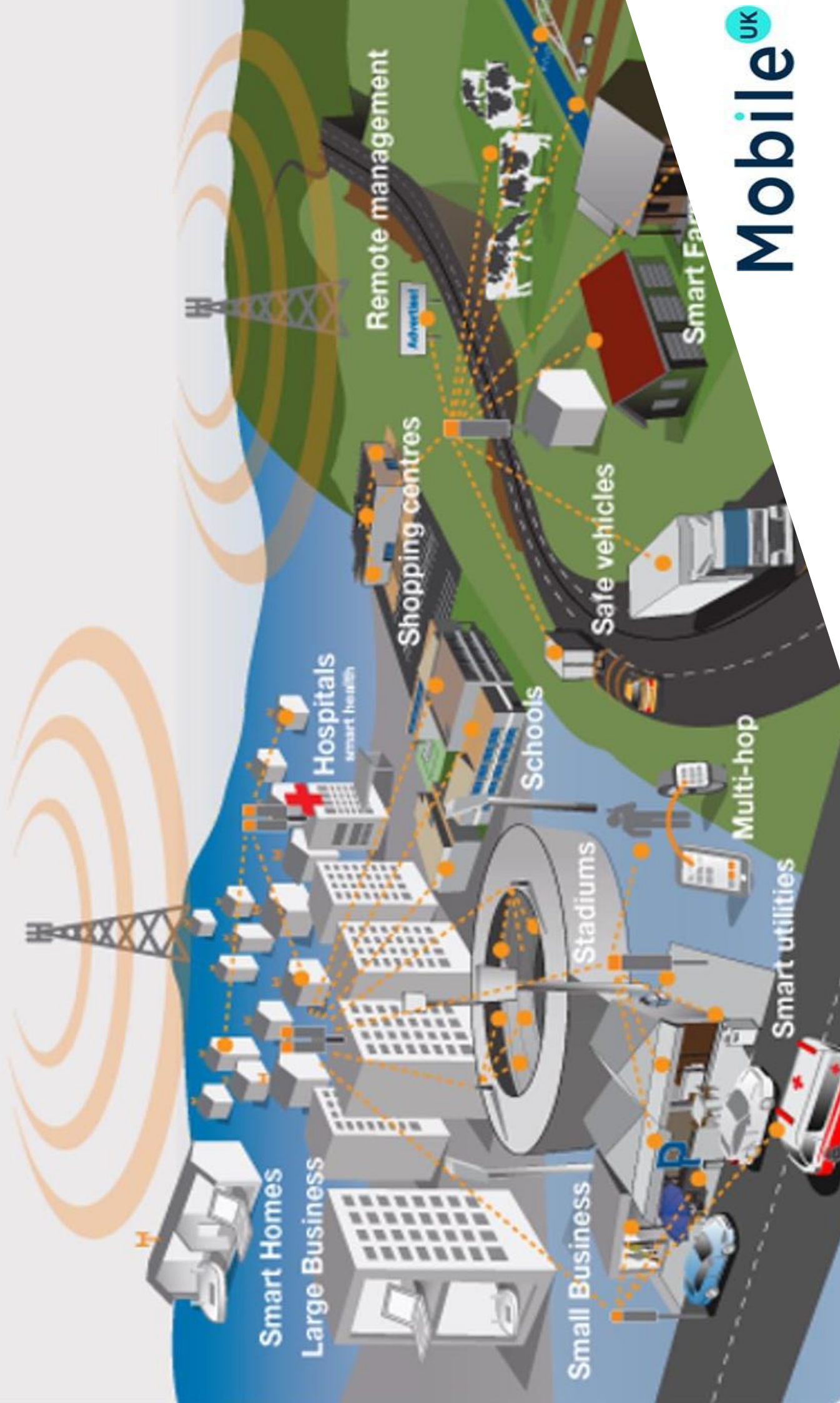
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The Connected Community



Further information

Scientific Committee on Emerging and Newly Identified Health Risks - SCENIHR)

https://ec.europa.eu/health/scientific_committees/emerging_en

“that exposure to electromagnetic fields does not represent a health risk, if it remains below the limits set by Council Recommendation 1999/519/EC1.”

Public Health England

<https://www.gov.uk/government/publications/mobile-phone-base-stations-radio-waves-and-health/mobile-phone-base-stations-radio-waves-and-health>

Mobile UK

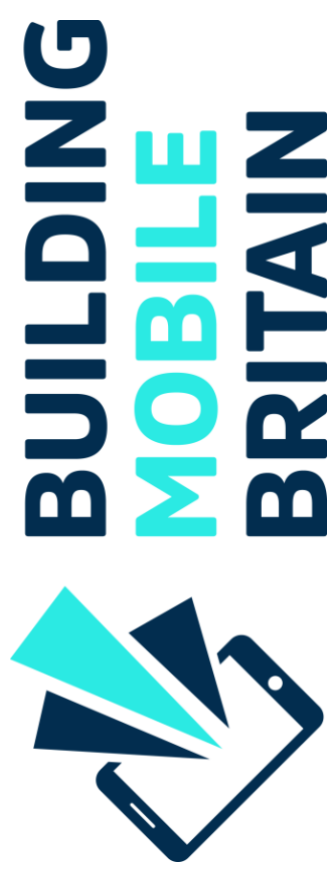
<https://www.mobileuk.org/health-and-safety>

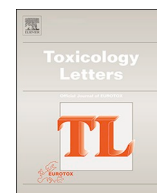




**Thank
You**

Mobile^{uk}





Adverse health effects of 5G mobile networking technology under real-life conditions



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GRAPHICAL ABSTRACT



Adverse Health Effects of Wireless Radiation on Humans

Metabolic Disturbance	Reactive Oxygen Species Generation	Genotoxicity and Carcinogenicity	Immunotoxicity and Inflammation	Apoptosis and Necrosis
Discomfort Symptoms	Sensory Disorders	Sleep Disorders	Congenital Abnormalities	Precancerous Conditions
CANCER	NEURODEGENERATION	INFERTILITY	NEUROBEHAVIORAL	CARDIOVASCULAR

ARTICLE INFO

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Non-ionizing radiation
Mobile networking technology
5G
Adverse health effects
Toxicology
Toxic stimuli combinations
Synergistic effects
Combined effects
Systemic effects
Real-life simulation

ABSTRACT

This article identifies adverse effects of non-ionizing non-visible radiation (hereafter called wireless radiation) reported in the premier biomedical literature. It emphasizes that most of the laboratory experiments conducted to date are not designed to identify the more severe adverse effects reflective of the real-life operating environment in which wireless radiation systems operate. Many experiments do not include pulsing and modulation of the carrier signal. The vast majority do not account for synergistic adverse effects of other toxic stimuli (such as chemical and biological) acting in concert with the wireless radiation. This article also presents evidence that the nascent 5G mobile networking technology will affect not only the skin and eyes, as commonly believed, but will have adverse systemic effects as well.

1. Introduction

Wireless communications have been expanding globally at an

exponential rate. The latest imbedded version of mobile networking technology is called 4G (fourth generation), and the next version (called 5G- fifth generation) is in the early implementation stage. Neither 4G

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nor 5G have been tested for safety in credible real-life scenarios. Alarming, many of the studies conducted in more benign environments show harmful effects from this radiation. The present article overviews the medical and biological studies that have been performed to date relative to effects from wireless radiation, and shows why these studies are deficient relative to safety. However, even in the absence of the missing real-life components such as toxic chemicals and biotoxins (which tend to exacerbate the adverse effects of the wireless radiation), the literature shows there is much valid reason for concern about potential adverse health effects from both 4G and 5G technology. The studies on wireless radiation health effects reported in the literature should be viewed as extremely conservative, substantially underestimating the adverse impacts of this new technology.

2. Wireless radiation/electromagnetic spectrum

This section overviews the electromagnetic spectrum, and delineates the parts of the spectrum on which this article will focus. The electromagnetic spectrum encompasses the entire span of electromagnetic radiation, including:

- ionizing radiation (gamma rays, x-rays, and the extreme ultraviolet, with wavelengths below $\sim 10^{-7}$ m and frequencies above $\sim 3 \times 10^{15}$ Hz);
- non-ionizing visible radiation (wavelengths from $\sim 4 \times 10^{-7}$ m to $\sim 7 \times 10^{-7}$ m and frequencies between $\sim 4.2 \times 10^{14}$ Hz and $\sim 7.7 \times 10^{14}$ Hz);
- non-ionizing non-visible radiation

short wavelength radio waves and microwaves, with wavelengths between $\sim 10^{-3}$ m and $\sim 10^5$ m and frequencies between $\sim 3 \times 10^{11}$ to $\sim 3 \times 10^3$ Hz;

long wavelengths, ranging between $\sim 10^5$ m and $\sim 10^8$ m and frequencies ranging between 3×10^3 and 3 Hz.

How are these frequencies used in practice?

- The low frequencies (3 Hz – 300 KHz) are used for electrical power line transmission (60 Hz in the U.S.) as well as maritime and submarine navigation and communications.
- Medium frequencies (300 KHz–900 MHz) are used for AM/FM/TV broadcasts in North America.
- Lower microwave frequencies (900 MHz–5 GHz) are used for telecommunications such as microwave devices/communications, radio astronomy, mobile/cell phones, and wireless LANs.
- Higher microwave frequencies (5 GHz – 300 GHz) are used for radar and proposed for microwave WiFi, and will be used for high-performance 5G.
- Terahertz frequencies (300 GHz–3000 GHz) are used increasingly for imaging to supplement X-rays in some medical and security scanning applications (Kostoff and Lau, 2017).

In the present study of wireless radiation health effects, the frequency spectrum ranging from 3 Hz to 300 GHz is covered, with particular emphasis on the high frequency communications component ranging from ~ 1 GHz to ~ 300 GHz. Why was this part of the spectrum selected? Previous reviews of wireless radiation health effects found that pulsed electromagnetic fields (PEMF) applied for relatively short periods of time could sometimes be used for therapeutic purposes, whereas chronic exposure to electromagnetic fields (EMF) in the power frequency range (~ 60 Hz) and microwave frequency range (~ 1 GHz–tens GHz) tended to result in detrimental health effects (Kostoff and Lau, 2013, 2017). Given present concerns about the rapid expansion of 5G communications systems (which are projected to use mainly the higher microwave frequencies part of the spectrum in the highest performance (aka high-band) mode) in the absence of adequate and rigorous safety testing, more emphasis will be placed on the

communications frequencies in this document.

3. Modern wireless radiation exposures

In ancient times, sunlight and its lunar reflections provided the bulk of the visible spectrum for human beings (with fire a distant second and lightning a more distant third). Now, many varieties of artificial light (incandescent, fluorescent, and light emitting diode) have replaced the sun as the main supplier of visible radiation during waking hours. Additionally, EMF radiations from other parts of the non-ionizing non-visible spectrum have become ubiquitous in daily life, such as from wireless computing and telecommunications. In the last two or three decades, the explosive growth in the cellular telephone industry has placed many residences in metropolitan areas within less than a mile of a cell tower. Future implementation of the next generation of mobile networking technology, 5G, will increase the cell tower densities by an order of magnitude. Health concerns have been raised about wireless radiation from (1) mobile communication devices, (2) occupational exposure, (3) residential exposure, (4) wireless networks in homes, businesses, and schools, (5) automotive radar, and (6) other non-ionizing EMF radiation sources, such as ‘smart meters’ and ‘Internet of Things’.

4. Demonstrated biological and health effects from prior generations of wireless networking technology

There have been two major types of studies performed to ascertain biological and health effects of wireless radiation: laboratory and epidemiology. The laboratory tests performed provided the best scientific understanding of the effects of wireless radiation, but did not reflect the real-life environment in which wireless radiation systems operate (exposure to toxic chemicals, biotoxins, other forms of toxic radiation, etc). There are three main reasons the laboratory tests failed to reflect real-life exposure conditions for human beings.

First, the laboratory tests have been performed mainly on animals, especially rats and mice. Because of physiological differences between small animals and human beings, there have been continual concerns about extrapolating small animal results to human beings. Additionally, while inhaled or ingested substances can be scaled from laboratory experiments on small animals to human beings relatively straightforwardly, radiation may be more problematic. For non-ionizing radiation, penetration depth is a function of frequency, tissue, and other parameters. Radiation could penetrate much deeper into a small animal's interior than similar wavelength radiation in humans, because of the much smaller animal size. Different organs and tissues would be affected, with different levels of power density.

Second, the typical incoming EMF signal for many/most laboratory tests performed in the past consisted of single carrier wave frequency; the lower frequency superimposed signal containing the information was not always included. This omission may be important. As Panagopoulos states: “It is important to note that except for the RF/microwave carrier frequency, Extremely Low Frequencies - ELF (0–3000 Hz) are always present in all telecommunication EMFs in the form of pulsing and modulation. There is significant evidence indicating that the effects of telecommunication EMFs on living organisms are mainly due to the included ELF.... While ~ 50 % of the studies employing simulated exposures do not find any effects, studies employing real-life exposures from commercially available devices display an almost 100 % consistency in showing adverse effects” (Panagopoulos, 2019). These effects may be exacerbated further with 5G: “with every new generation of telecommunication devices.....the amount of information transmitted each moment.....is increased, resulting in higher variability and complexity of the signals with the living cells/ organisms even more unable to adapt” (Panagopoulos, 2019).

Third, these laboratory experiments typically involved one stressor

(toxic stimulus) and were performed under pristine conditions. This contradicts real-life exposures, where humans are exposed to multiple toxic stimuli, in parallel or over time (Tsatsakis et al., 2016, 2017; Docea et al., 2019a). In perhaps five percent of the cases reported in the wireless radiation literature, a second stressor (mainly a biological or chemical toxic stimulus) was added to the wireless radiation stressor, to ascertain whether additive, synergistic, potentiative, or antagonistic effects were generated by the combination (Kostoff and Lau, 2013, 2017; Juutilainen, 2008; Juutilainen et al., 2006).

Combination experiments are extremely important because, when other toxic stimuli are considered in combination either with each other or with wireless radiation, the synergies tend to enhance the adverse effects of each stimulus in isolation. This was shown in several studies that evaluated the cumulative effects of chronic exposure to low doses of xenobiotics in combination (Kostoff et al., 2018; Docea et al., 2018; Tsatsakis et al., 2019a; Docea et al., 2019b; Tsatsakis et al., 2019b, c; Fountoucidou et al., 2019). For those combinations that include wireless radiation, combined exposure to toxic stimuli and wireless radiation translates into much lower levels of tolerance for each toxic stimulus in the combination relative to its exposure levels that produce adverse effects in isolation. Accordingly, the exposure limits for wireless radiation when examined in combination with other potentially toxic stimuli would be far lower for safety purposes than those derived from wireless radiation exposures in isolation.

Thus, almost all of the wireless radiation laboratory experiments that have been performed to date are flawed/limited with respect to showing the full adverse impact of the wireless radiation that would be expected under real-life conditions. Either 1) non-inclusion of signal information or 2) using single stressors only tends to underestimate the seriousness of the adverse effects from wireless radiation. Excluding **both** of these phenomena from experiments, as was done in the vast majority of the reported wireless radiation health effects studies, tends to amplify this underestimation substantially. Thus, the results reported in the biomedical literature should be viewed as 1) extremely conservative and 2) the very low ‘floor’ of the seriousness of the adverse effects from wireless radiation, not the ‘ceiling’.

In contrast to the controlled pristine environments that characterize the wireless radiation animal laboratory experiments, the wireless radiation epidemiology studies carried out to date typically involved human beings who had been subjected to myriad known and unknown stressors prior to (and during) the study. The real-life human exposure levels from cell tower studies (reported by Kostoff and Lau (2017)) that showed increased cancer incidence were orders of magnitude lower than those exposure levels generated in the recent highly-funded National Toxicology Program animal laboratory studies (Melnick, 2019). We believe the inclusion of real-world effects in the cell tower studies accounted for the orders of magnitude exposure level decreases that were associated with the increased cancer incidence. The laboratory tests were conducted under controlled conditions not reflective of real-life, while the epidemiology studies were performed in the presence of many stressors, known and unknown, reflective of real-life. The myriad toxic stimuli exposure levels of the epidemiology studies were, for the most part, uncontrolled.

A vast literature published over the past sixty years shows adverse effects from wireless radiation applied in isolation or as part of a combination with other toxic stimuli. Extensive reviews of wireless radiation-induced biological and health effects have been published (Kostoff and Lau, 2013, 2017; Belpomme et al., 2018; Desai et al., 2009; Di Ciaula, 2018; Doyon and Johansson, 2017; Havas, 2017; Kaplan et al., 2016; Lerchl et al., 2015; Levitt and Lai, 2010; Miller et al., 2019; Pall, 2016, 2018; Panagopoulos, 2019; Panagopoulos et al., 2015; Russell, 2018; Sage and Burgio, 2018; van Rongen et al., 2009; Yakymenko et al., 2016; Bioinitiative, 2012). In aggregate, for the high frequency (radiofrequency-RF) part of the spectrum, these reviews show that RF radiation **below the FCC guidelines** can result in:

- carcinogenicity (brain tumors/glioma, breast cancer, acoustic neuromas, leukemia, parotid gland tumors),
- genotoxicity (DNA damage, DNA repair inhibition, chromatin structure),
- mutagenicity, teratogenicity,
- neurodegenerative diseases (Alzheimer’s Disease, Amyotrophic Lateral Sclerosis),
- neurobehavioral problems, autism, reproductive problems, pregnancy outcomes, excessive reactive oxygen species/oxidative stress, inflammation, apoptosis, blood-brain barrier disruption, pineal gland/melatonin production, sleep disturbance, headache, irritability, fatigue, concentration difficulties, depression, dizziness, tinnitus, burning and flushed skin, digestive disturbance, tremor, cardiac irregularities,
- adverse impacts on the neural, circulatory, immune, endocrine, and skeletal systems.

From this perspective, RF is a highly pervasive cause of disease!

The response from industry has been that no mechanism could explain the biological action of non-thermal and non-ionizing EM fields. Yet, reports of clear perturbations of biological systems at levels near or even below 1000 $\mu\text{W}/\text{m}^2$ (Bioinitiative, 2019) were explained by perturbations in electron and proton transfers supporting ATP production in mitochondria (Sanders et al., 1980; 1985) exposed to RF or ELF signals (Li and Heroux, 2014).

To obtain another perspective on the full spectrum of adverse effects from wireless radiation, a query was run on Medline to retrieve representative records associated with adverse EMF effects (mainly, but not solely, RF). Over 5400 records were retrieved, and the leading Medical Subject Headings (MeSH) extracted. The categories of adverse impacts from both approaches match quite well. The adverse health effects range from myriad feelings of discomfort to life-threatening diseases.

The full list of MeSH Headings associated with this retrieval is shown in Appendix 1 of (Kostoff, 2019). The interested reader can ascertain what other diseases/symptoms were included. The 5400+ references retrieved are shown in Appendix 2 of (Kostoff, 2019).

5. What types of biological and health effects can be expected from 5G wireless networking technology?

The potential 5G adverse effects derive from the intrinsic nature of the radiation, and its interaction with tissue and target structures. 4G networking technology was associated mainly with carrier frequencies in the range of ~1-2.5 GHz (cell phones, WiFi). The wavelength of 1 GHz radiation is 30 cm, and the penetration depth in human tissue is a few centimeters. In its highest performance (high-band) mode, 5G networking technology is mainly associated with carrier frequencies at least an order of magnitude greater than the 4G frequencies, although, as stated previously, “ELFs (0–3000 Hz) are always present in all telecommunication EMFs in the form of pulsing and modulation”. Penetration depths for the carrier frequency component of high-band 5G wireless radiation will be on the order of a few millimeters (Aleksiev et al., 2008a, b). At these wavelengths, one can expect resonance phenomena with small-scale human structures (Betzalel et al., 2018). Additionally, numerical simulations of millimeter-wave radiation resonances with insects showed a general increase in absorbed RF power at and above 6 GHz, in comparison to the absorbed RF power below 6 GHz. A shift of 10 % of the incident power density to frequencies above 6 GHz was predicted to lead to an **increase in absorbed power between 3–370 %** (Thielens et al., 2018).

The common ‘wisdom’ presented in the literature and media is that, if there are adverse impacts resulting from high-band 5G, the main impacts will be focused on near-surface phenomena, such as skin cancer, cataracts, and other skin conditions. However, there is evidence that biological responses to millimeter-wave irradiation can be initiated

within the skin, and the subsequent systemic signaling in the skin can result in physiological effects on the nervous system, heart, and immune system (Russell, 2018).

Additionally, consider the following reference (Zalyubovskaya, 1977). This is one of many translations of articles produced in the Former Soviet Union on wireless radiation (also, see reviews of Soviet research on this topic by McRee (1979, 1980), Kositsky et al. (2001), and Glaser and Dodge (1976)). On p. 57 of the pdf link, the article by Zalyubovskaya addresses biological effects of millimeter radiowaves. Zalyubovskaya ran experiments using power fluxes of 10,000,000 $\mu\text{W}/\text{square meter}$ (the FCC (Federal Communications Commission) guideline limit for the general public today in the USA), and frequencies on the order of 60 GHz. Not only was skin impacted adversely, but also heart, liver, kidney, spleen tissue as well, and blood and bone marrow properties. These results reinforce the conclusion of Russell (quoted above) that **systemic results may occur from millimeter-wave radiation**. To re-emphasize, for Zalyubovskaya's experiments, the incoming signal was unmodulated carrier frequency only, and the experiment was single stressor only. Thus, the expected real-world results (when human beings are impacted, the signals are pulsed and modulated, and there is exposure to many toxic stimuli) would be far more serious and would be initiated at lower (perhaps much lower) wireless radiation power fluxes.

The Zalyubovskaya paper was published in 1977. The referenced version was classified in 1977 by USA authorities and declassified in 2012. What national security concerns caused it (and the other papers in the linked pdf reference) to be classified for 35 years, until declassification in 2012? Other papers on this topic with similar findings were published in the USSR (and the USA) at that time, or even earlier, but many never saw the light of day, both in the USSR and the USA. It appears that the potentially damaging effects of millimeter-wave radiation on the skin (and other major systems in the body) have been recognized for well over forty years, yet today's discourse only revolves around the possibility of modest potential effects on the skin and perhaps cataracts from millimeter-wave wireless radiation.

6. What is the consensus on adverse effects from wireless radiation?

Not all studies of wireless radiation have shown adverse effects. For example, consider potential genotoxic effects of mobile phone radiation. A study investigating "the effect of mobile phone use on genomic instability of the human oral cavity's mucosa cells" concluded "Mobile phone use did not lead to a significantly increased frequency of micronuclei" (Hintzsche and Stopper, 2010).

Conversely, a 2017 study investigated buccal cell preparations for genomic instability, and found "The frequency of micronuclei (13.66x), nuclear buds (2.57x), basal (1.34x), karyorrhectic (1.26x), karyolytic (2.44x), pyknotic (1.77x) and condensed chromatin (2.08x) cells were highly significantly ($p = 0.000$) increased in mobile phone users" (Gandhi et al., 2017). Also, a 2017 study to ascertain the "effect of cell phone emitted radiations on the orofacial structures" concluded that "Cell phone emitted radiation causes nuclear abnormalities of the oral mucosal cells" (Mishra et al., 2017). Further, a 2016 study to "explore the effects of mobile phone radiation on the MN frequency in oral mucosal cells" concluded "The number of micronucleated cells/1000 exfoliated buccal mucosal cells was found to be significantly increased in high mobile phone users group than the low mobile phone users group" (Banerjee et al., 2016). Finally, a study aimed at investigating the health effects of WiFi exposure concluded "long term exposure to WiFi may lead to adverse effects such as neurodegenerative diseases as observed by a **significant alteration on AChE gene expression** and some neurobehavioral parameters associated with brain damage" (Obajuluwa et al., 2017).

There are many possible reasons to explain this lack of consensus.

- 1) There may be 'windows' in parameter space where adverse effects occur, and operation outside these windows would show a) no effects or b) hormetic effects or c) therapeutic effects. For example, if information content of the signal is a strong contributor to adverse health effects (Panagopoulos, 2019), then experiments that involve only the carrier frequencies may be outside the window where adverse health effects occur. Alternatively, in this specific example, the carrier signal and the information signal could be viewed as a combination of potentially toxic stimuli, where the adverse effects of each component are enabled because of the synergistic effects of the combination.

As another example, an adverse health impact on one strain of rodent was shown for a combination of 50 Hz EMF and DMBA, while no adverse health impact was shown on another rodent strain for the same toxic stimuli combination (Fedrowitz et al., 2004). From a higher-order combination perspective, if genetic abnormalities/differences are viewed conceptually as potentially equivalent to a toxic stimulus for combination purposes, then a synergistic three-constituent combination of 50 Hz EMF, DMBA, and genetics was required to produce adverse health impacts in the above experiment. If these results can be extrapolated across species, then human beings could exhibit different responses to the same electromagnetic stimuli based on their unique genetic predispositions (Caccamo et al., 2013; De Luca et al., 2014).

- 1) Research quality could be poor, and adverse effects were overlooked.
- 2) Or, the research team could have had a preconceived agenda, where finding no adverse effects from wireless radiation was **THE** objective of the study. For example, studies have shown that industry-funded research of wireless radiation adverse health effects is far more likely to show no effects than funding from non-industry sources (Huss et al., 2007; Slesin, 2006; Carpenter, 2019). Studies in disciplines other than wireless radiation have shown that, for products of high military, commercial, and political sensitivity, 'researchers'/organizations are hired to publish articles that conflict with the credible science, and therefore create doubt as to whether the product of interest is harmful (Michaels, 2008; Oreskes and Conway, 2011). Unfortunately, given the strong dependence of the civilian and military economies on wireless radiation, incentives for identifying adverse health effects from wireless radiation are minimal and disincentives are many. These perverse incentives apply not only to the sponsors of research and development, but to the performers as well.

Even the Gold Standard for research credibility - **independent replication of research results** - is questionable in politically, commercially, and militarily sensitive areas like wireless radiation safety, where the accelerated implementation goals of most wireless radiation research sponsors (government and industry) are aligned. It is imperative that highly objective evaluators with minimal conflicts of interest play a central role ensuring that rigorous safety standards for wireless radiation systems are met before widescale implementation is allowed.

7. Conclusions

Wireless radiation offers the promise of improved remote sensing, improved communications and data transfer, and improved connectivity. Unfortunately, there is a large body of data from laboratory and epidemiological studies showing that previous and present generations of wireless networking technology have significant adverse health impacts. Much of this data was obtained under conditions not reflective of real-life. When real-life considerations are added, such as 1) including the information content of signals along with 2) the carrier frequencies, and 3) including other toxic stimuli in combination with

the wireless radiation, the adverse effects associated with wireless radiation are increased substantially. Superimposing 5G radiation on an already imbedded toxic wireless radiation environment will exacerbate the adverse health effects shown to exist. Far more research and testing of potential 5G health effects under real-life conditions is required before further rollout can be justified.

Transparency document

The [Transparency document](#) associated with this article can be found in the online version.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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APPENDIX 5 – Minutes from the 5G Advisory Committee meetings



Glastonbury Town Council

Meeting of the 5G Working Group held Monday 2nd September 2019 in the Council Chamber at 7 pm.

PRESENT: Cllr S Barnet, Cllr J Cousins, Cllr D Michell, Cllr B Outten, Cllr M Smyth, Cllr I Tucker; Chris Baker, Derek Cooper, Susan Jones, Roy Procter, Sandra Spearing, David Swain, Mark Swann.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

1. Introduction – presentation by Cllr. Mike Smyth and Cllr Jon Cousins.

Following a brief introduction from all present, Cllrs Cousins and Smyth presented a brief overview on the motion approved by the Town Council in June, why the group has been formed and how it is anticipated to conduct its business.

The previously distributed Code of Conduct recently reviewed by the Town Council was discussed. It was unanimously **RESOLVED** to accept this as the appropriate format from which to conduct the business of the Working Group.

The Terms of Reference previously prepared and circulated were also presented and unanimously **RESOLVED** to accept. It was noted the importance of the Glastonbury 5G Working Group was noted, with reference to the recent Parliamentary motion presented at a Westminster Hall Debate on 25th June 2019.

Having adopted a Precautionary Principal approach to the roll out of 5G, there is a requirement for additional research. Those present were encouraged to adopt an 'open mind' when receiving reports and presentations.

It was **AGREED** that the purpose of the Working Group is to:

- Analyse and debate 5G technology to ensure its safety
- Identify who has the regulatory power to stop the roll-out of 5G
- Research and collect evidence.
- Produce a report on the findings of the Working Group with recommendations to Glastonbury Town Council.

The group will try to understand the main drivers to 5G technology installation, particularly the financial motives. Further discussion, which was not concluded attempted to answer the question of what qualifies as an expert?

The timescale for undertaking the study was discussed and it was unanimously **AGREED** that the most suitable meeting time is Wednesday evenings, commencing at 7 pm. Further discussion concluded that the aim is to complete the study and report to the Town Council within 6 months.

It was **RESOLVED** that there will be regular reviews, with the first presentation to the Town Council at the November meeting. Other reviews will be presented as appropriate. To assist with these timescales, it was **AGREED** that the group is to meet every two weeks, with the next meeting planned for Wednesday 18th September.

2. Election of Chair and Deputy Chair

Denise Michell proposed Jon Cousins as Chair of the 5G Working Group. This was seconded by Ian Tucker and unanimously **AGREED**.

Denise Michell proposed Mike Smyth as Deputy Chair. Seconded by Brian Outten **AGREED** with one abstention.

3. Names and contact details

All present **AGREED** the use of email addresses previously provided to the Clerk. Further, any recommendations of appropriate research papers, sources of information or potential presenters were encouraged to be forwarded to the Clerk for wider distribution.

A discussion on the provision of a central library where research papers can be stored and accessed concluded that a secure link through the Town Council website should be explored. It was **AGREED** that the Clerk is to research this recommendation and either implement or report back to the group.

Contact with researchers and professionals will first be agreed by the Working Group, followed by an approach by the Clerk. Derek Cooper offered to make a 20-30-minute unbiased presentation on 5G, how it works, the risks and implications prior to the commencement of the next meeting on 18th September. The Clerk was asked to invite all Town Councillors to the presentation, although those not on the Working Group are not to attend the meeting that follows. Members of the group are encouraged to submit to the Clerk a list of people they consider in principal could contribute to the work of the group.

To encourage the presence of appropriate speakers, it was **RESOLVED** that the Clerk is to include an agenda item for the next meeting of the Town Council requesting a budget of £500 to contribute towards travel expenses.

4. Decision on whether the committee's meetings will be:

Following a detailed discussion, it was **RESOLVED** that meetings of the Working Group will be closed to the public. It was however recognised the importance of engagement and **AGREED** that when appropriate, interim presentations to the public will be made.

5. Date and times of next meeting

The next meeting is 18th September. This will commence with a presentation by Derek Cooper at 6 pm followed by a meeting of the Working Group at 7 pm.

The meeting closed at 9:35 pm.



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 18th September 2019 in the Council Chamber at 7 pm.

PRESENT: Cllr S Barnet, Cllr J Cousins (chair), Cllr P Lund, Cllr D Michell, Cllr M Smyth, Cllr I Tucker; Chris Baker, Derek Cooper, Toby Hall, Sharon Jones, Roy Procter, Sandra Spearing, David Swain, Mark Swann.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

1. Approve the minutes of the meeting held on 2nd September 2019

The minutes of the meeting held on 2nd September were considered accurate and duly signed by the chair. Matters for information included the approval of £500 from the town council to help cover the costs of future speakers expenses.

2. Inform of progress with creating a secure area for the review of documents and a library of approved documents.

The clerk informed that he has been working with Hazel Pegg who oversees the Town Councils website. A secure 'review' area has been set up which was demonstrated to the meeting.

Further, three headings have been added which broadly reflects the anticipated documents that will be submitted for review – technical, health and legal.

It was agreed that a fourth area be created – scientific.

Once papers have been placed on the review page and debated by the group, they will either be approved for transfer to the library or removed.

It was suggested and **AGREED** that within the library, the same sub-headings would apply, with an additional – entitled presentations.

On opening this folder, the same four sub-headings will feature.

It was **AGREED** by majority that the presentation made by Derek Cooper would be placed in the library, under the heading presentations/technical.

Proposed by Denise Michell, seconded by Ian Tucker and unanimously **AGREED** to accept the secure link through the town councils website

3. Review potential speakers to invite to future meetings.

Mike Smyth suggested that a standard letter format be prepared to send to all invited speakers, informing of the motion passed at Glastonbury Town Council in June and process of setting up the working group.

Numerous potential presenters were suggested. The following were agreed by the working group to be invited to involve including:

- Prof Rahim Tafazolli from the 5G Innovation Centre, based within the University of Surrey.
- Representative from the International Telecommunications Union
- Representatives from Mendip District Councils Planning and Environmental Health teams.
- Prof Martin Pall
- Frank de Vocht from the University of Bristol
- Oxford University Radiology department representative
- Erica Malory-Blyth.

Other suggestions require additional research or consideration before they are to be invited. These include:

- Dr Andrew Tresidder (Paul Lund to make available a pre-recorded presentation made by Dr Tressider)
- Ian Crane – Toby Hall to identify the You Tube links to Ian Crane and circulate.
- Yael Stein – located in Jerusalem, Sharon Jones to determine availability and content.
- Ray Broomhall, an Australian Barrister. Sharon Jones to determine availability and content.

It was **AGREED** to accept Mark Swann's offer to make a presentation to the next meeting on the subject of 'Electromagnetic radiation'.

4. Discussion on how to engage with the regulatory bodies

It was felt that this item had been covered off sufficiently at this pre-determined stage and would be reviewed again as required.

5. Method of evidence gathering

There was insufficient time to discuss this item and it was suggested it is held over to the next meeting.

6. Collaboration with other towns who are researching 5G e.g. Stroud, Totnes, Frome

There was insufficient time to discuss this item and it was suggested it is held over to the next meeting.

7. Date and times of next meetings

The next meeting is 2nd October. This will commence with a presentation by Mark Swann, followed by a meeting of the Working Group at 7 pm.

The meeting closed at 9 pm.



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 2nd October 2019 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr P Lund, Cllr D Michell, Cllr M Smyth, Cllr B Outten. Chris Baker, Derek Cooper, Susan Jones, Roy Procter, Sandra Spearing, Mark Swann, Carol Roberts.

APOLOGIES: Cllrs Barnet, MacDougall, and Tucker; Toby Hall, David Swain.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

1. **Approve the minutes of the meeting held on 18th September 2019**

The minutes of the meeting held on 18th September were amended slightly with one participants name wrongly recorded and Mark Swann offering to speak at a future meeting, not the next meeting. These amendments having been made; the chair signed the minutes as an accurate record.

Derek Cooper asked for any questions or comments following his presentation at the previous meeting to be forwarded directly to him.

2. **Secure area for the review of approved documents.**

Chris Baker proposed, Sandra Spearing seconded and it was unanimously **AGREED** that an additional section be added to the review section on the secure website entitled Environmental.

Roy Procter expressed a concern that a covering email had not accompanied the various papers he presented for inclusion on the website. It was **RESOLVED** that the clerk would email all members of the group Roy's original email and attachments.

The clerk read an email received from Hazel Pegg the website administrator regarding a breach of security which led to the temporary closure of the secure area while it was both researched and safeguarded. Sandra Spearing is an administrator for the Facebook group which appear to have accessed the information. It was **RESOLVED** by the majority present that Sandra removed the offending message.

Chris Baker expressed a concern that after the message was removed, he was still able to access the 404 message through a search of the Town Councils website. The clerk was asked to discuss this with the administrator.

The Chair reminded all present that it was not the objective of the group to challenge and argue against each other's positions. Rather, the Chair asked members to reflect that the purpose of the committee was to work together to research the subject of 5G – attempting to discover if there are any scientific, medical, environmental, or other reasons why the precautionary principle should be upheld (or not) – and to produce a report to be presented to Glastonbury Town Council on the committee's findings/conclusions.

The deputy chair encouraged everyone to remain focussed. In response, Sandra Spearing proposed, seconded by Cllr Cousins, and unanimously **AGREED** that the ability to leave comments on the secure area should be reinstated. The clerk is to liaise with Hazel Pegg to deliver this action. Further, the clerk is to discuss with Hazel the subject of site security and if it may be possible to breach the secure area in the future

Review potential speakers to invite to future meetings.

The clerk informed that Prof Rahim Tafazolli from the 5G Innovation Centre, based within the University of Surrey has been invited to present to the 5G working group. To date, a response to the invitation has not been received.

Other speakers have yet to be invited, mainly due to the absence of the clerks available time to write and follow up the list of speakers. Cllr Cousins asked that the invitation template be forwarded to him and he would write and follow up speakers leads.

3. Discussion on how to engage with the regulatory bodies

Derek Cooper informed that two acts with direct reference to 5G technology have been posted on the DCMS website with explanatory notes. Codes come from acts and there are many examples. Derek further reported that there are ministerial changes to the law. He continued by informing that an individual has a right to demand a phone signal and broadband. It is in response to these changes in legislation that government is focussing so much on broadband provision. Susan Jones has written to Christine Lawrence at Somerset County Council and asked for her availability to present to the group. It was **RESOLVED** that speakers from DCMS, Department of Health and Mendip DC planning and environmental services be invited to address the group.

Chris Baker informed that the precautionary principal of challenge is now internationally recognised. Government has agreed post Brexit to adopt all European laws, although this stance is likely to be challenged should we remain in Europe. The group were again reminded that we have to work robustly and collaboratively to review if there are reasons why the precautionary principal should be upheld.

4. Method of evidence gathering

On reinstating the comments on the secure site, members of the group are asked to leave a comment indicating that they have read each document. It was **RESOLVED** that when 2/3rds of the group (12 people) have read a document, it will be discussed at the next group meeting and either removed, or placed in the library on the town councils website.

A concern was expressed by Sandra Spearing that some people have yet to attend a meeting. It was **RESOLVED** that the clerk is to contact those who irregularly attend.

Derek Cooper offered to prepare a glossary of terms used which was widely accepted.

Carol Roberts responded by informing that she may have access to Wyley protected documents. She agreed to liaise with Mark Swann and Derek Cooper on this matter. Further, it was suggested that this be an item for the next agenda. Members were reminded of the Terms of Reference and the need to acknowledge them.

5. Collaboration with other towns who are researching 5G e.g. Stroud, Totnes, Frome

Derek Cooper informed that he has been asked to repeat his technical presentation, which was accepted, providing he made no reference to the 5G working group.

Discussion on the various levels of progress of other towns with regards to the precautionary principal of 5G was discussed. Further research is required, and the Clerk was asked to contact each of the towns Stroud, Totnes, and Frome to enquire on the methodology being used to obtain evidence. Each of these councils have to follow planning policy and are dependent on a higher tier of authority to determine applications. Chris Baker has information available for towns considering adopting the precautionary principal which he is willing to share with this group. Susan Jones read from a list the counties, cities and towns that are to conduct a 5G trial. This list to be forwarded to the clerk who will distribute it to the wider group.

Consultation is currently open to review the suggested changes in planning law which may allow easier legislation with regard to applications for broadband and 5G technology. Glastonbury Town Councillors are to be presented with the consultation detail at their next meeting and asked to consider submitting a response.

6. Date and times of next meetings

The next meeting is scheduled for Thursday 17th October (unless the majority respond informing, they are not available on that evening). The clerk informed he will not be present at that meeting as he will be on annual leave and will attempt to find replacement cover in his absence.

The meeting closed at 9:10 pm.



Glastonbury Town Council

Minutes of the meeting of the Glastonbury 5G Advisory Committee held at Glastonbury Town Hall on 17th October 2019 at 7 pm.

PRESENT: Cllr Mike Smyth (Deputy Chair), Cllr Brian Outten, Cllr Denise Michel, Cllr Ian Tucker, Derek Cooper, Mark Swann, Susan Jones, Carol Roberts, Christopher Baker, Toby Hall, Roy Proctor, Sandra Spearing.

1. APOLOGIES

Cllrs. Jon Cousins, Paul Lund, Sue Barnet, and Lindsay MacDougall.
The Town Clerk, Gerard Tucker was also unable to attend.

2. MINUTES OF PREVIOUS MEETING

Since these were not available, they will be seen at the next meeting on 6th November.

3. ADDITION OF EXTRA ITEM TO AGENDA

Cllr Smyth asked of the Committee:

- is everyone happy with the process of review on the Glastonbury Town Council website page?
- is everyone prepared to write in principle a conclusion of their viewpoint of up to 500 words?

Responses were for (a) 5 'yes' and 7 'no'; and 12 'yes' for (b)

Reasons for persons not happy with the process included: not enough emphasis on environmental and medical concerns regarding the effects of 5G; relative comparison with 4G not discussed; process needs greater clarification and more meaningful discussion; greater efficiency needed with less time recording and reading articles; difficulty in accessing the site to read the articles.

It was then agreed that there would be an agenda item for the next meeting on the review and library process.

4. OTHER BUSINESS

Christopher Baker asked if we could look into what happens next if we decide to escalate the process to a moratorium, depending on the final report of the Committee.

Committee voted in favour of placing this on the next agenda, (8 to 4).

It was asked whether the committee should be so reliant on the documents as there might be a need to take a broader view of other material and processes.

Others agreed that there is a risk of getting bogged down in the detail and we need to move the process on.

A discussion followed with various opinions expressed.

5. UPDATE ON SPEAKERS INVITED FOR FUTURE MEETINGS

No response from Guildford University invitation. It was suggested that Chris Buzby, Simon Harwood, and one other be invited to the next meeting to speak on environment and medical concerns.

It was agreed to invite Mendip District Council's Environmental Health Officer as soon as possible for a short presentation and question and answer session.

6. UPDATE ON METHODOLOGY BEING USED BY OTHER TOWNS

- Frome – Looking for guidance from Glastonbury.
- Stroud – Been quiet.
- Totnes – Asking whether to adopt same the strategy as Glastonbury.
- Brighton City council has refused planning permission for 3 masts for aesthetic reasons. It was stated that the Precautionary Principle (PP) is an EU regulation. There is an inference that PP could be included into British Law.

Cllr. Smyth then referred to a Daily Mail article (17th October 2019) in which it mentions a range of concerns, particularly important was the point raised by Professor Frank de Vocht, epidemiologist at Bristol University who stated that 'You cannot really prove that something is "100 per cent safe" using scientific methods' and a discussion followed about this article.

Date of next meeting Wednesday 6th November 2019.



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 13th November 2019 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr M Smyth, Chris Baker, Derek Cooper, Toby Hall, Roy Procter, Sandra Spearing, Mark Swann.

APOLOGIES: Cllrs Lund, MacDougall, Michell, Outten, and Tucker; Susan Jones, David Swain.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

1. The Clerk informed that Carol Roberts has tendered her resignation from the 5G working group with immediate effect.
2. **Approve the minutes of the meetings held on 2nd and 17th October 2019**
The minutes of the meeting held on 2nd October were amended to include which International organisations are now adopting the precautionary principal with regards to 5G.

The 17th October minutes are to have removed the quote from Frank de Vocht as it was not quoted in full and could be taken out of context. These amendments having been made; the chair signed both sets of minutes as an accurate record.

3. **Presentation from Roy Procter 'Seeing the wood from the trees'**
Roy provided information on his career as an aeronautical engineer and his interest particularly in Spiritual Healing, for which he is on the professional register. He has been involved with Chalice Well and is a former chairman of the Trustees. A particular expertise is the earth's energies and ley lines. This can have a similar subtle adverse effect as Wi-Fi etc., on some people. Following the installation of the Glastonbury Wi-Fi, and in the Town Hall, Roy's wife started to feel unwell in town and subsequent research leaned towards the effects of Wi-Fi on the electromagnetic fields, which caused a kind of allergic reaction. Similar effects are experienced by many other people. But the source of this reaction is not generally recognised.

Roy noted that the present UK radiation limits are based solely on the heating effect over a short period. They ignore any non-thermal or extended use effects. Regulators have ignored many scientific reports over years urging revision. Many other countries have much lower limits.

He also presented the results of a meta-analysis that suggested that 435,000 people in UK (0.56% of the population) are severely affected to the extent that ability to work is compromised. The research gave figures for the many others who suffer to a lesser degree.

In summary, concerns that the planned increase in ground level devices and that the USA will 'blanket' the earth with electro-magnetic fields by distributing 5G transponders in Space, together with concerns regarding falling insect numbers and seemingly less pregnancies suggests that we are sliding towards a difficult time, hence his support for the precautionary principal with regard to 5G.

4. Update of speakers invited to future meetings

Chris Baker has been in contact with Professor Martin Pall who was available for a presentation via skype. It was agreed to utilise the opportunity and a connection was made to America where Professor Pall provided an overview of his beliefs with regards to 5G and took questions from those present. The session was recorded, so it is hoped can be placed in the review section of the website to be shared with others.

Chris Baker agreed to make a presentation on Wednesday 27th November and Hamish McCloud from Mobile UK has agreed to visit and present on Wednesday 11th December.

5. Review of papers to be considered for the library

There are now in excess of 45 reviews, papers and technical documents held within the review section of the website. Hazel Pegg has suggested that those documents from an officially recognised source be transferred to the library section of the website. By majority vote, this idea was rejected. At the next meeting one paper is to be identified and discussed before it is decided whether or not to transfer the document from review to library.

The Clerk informed that two members of the group have yet to attend a meeting and that their vote at the end of the process if permitted may be misinterpreted by others outside of the group. It was **AGREED** to include this item on the agenda of the next meeting for further discussion.

6. Date and times of next meetings

The next meeting is scheduled for Wednesday 27th November.

The meeting closed at 9:40 pm



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 27th November 2019 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr M Smyth, Cllr B Outten, Cllr P Lund, Cllr L MacDougall, Cllr D Michell, Derek Cooper, Susan Jones, Roy Procter, Sandra Spearing, Mark Swann.

APOLOGIES: Cllrs Barnet, Cottle, and Tucker; Chris Baker and Toby Hall.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

1. Approve the minutes of the meetings held on 13th November 2019

The minutes of the meeting held on 13th November needed amending. The minute describing the content of Roy Procter's presentation at the previous meeting needed a small amendment which was agreed. Derek Cooper requested that the summary of the presentation which has been placed within the review section of the website be amended. It was agreed to change the title of the presentation summary to 'Seeing the wood from the trees'. It was further agreed to remove the final paragraph which informed that the report had been endorsed by the Town Council. Use of the word 'beliefs' used within the minute describing Prof Pall's presentation was discussed, suggesting that it be replaced with the word 'research', although this was not resolved.

2. Presentation from Doctor Andrew Tresidder.

Dr Tresidder is a medical practitioner in Chard and provided an overview of his experiences with electro magnetics. He had always considered himself healthy but had mumps as a junior doctor. This hit him so hard that he had to take three months off work, for it took some long to recover his energy – a post-viral fatigue (with the virus being mumps). As a result, he has always been more sensitive to things than many people – for instance for years after the mumps coffee and tea would give him a headache.

One year, on returning from holiday and finding the computer screens changed. (black and white monitor had been changed for a colour cathode ray tube monitor). Within hours of sitting in front of this, he felt sick and unwell. The same happened the next day – so he changed the cathode ray tube for a flat screen monitor (at a time when they cost £700), and he felt well again. A flat screen works on just a few volts, whereas a CRT bombards your body with charged particles if you sit too close.

Dr Tresidder acknowledged that he was not as well versed as other members of the committee in some aspects of technology. He embellished his presentation with a number of handouts, which have all been placed within the review section of the website. He took numerous questions following which he was thanked for his attendance.

3. Update of speakers invited to future meetings.

The clerk informed that the next meeting on 11th December, Hamish McCleod from Mobile UK will be presenting to the group. Other speakers suggested included Erica Mallory-Blythe and Dr Anthony Miller. Cllr Cousins informed that he had a radio-biologist contact and would pursue a presentation from the Planning Department at Mendip DC.

4. Review of papers to be considered for the library

There was insufficient time to review any of the documents currently held within the review section. This item is to reappear on the next agenda.

5. Date and times of next meetings

The next meeting is scheduled for Wednesday 11th December 2019.

The meeting closed at 9:10 pm



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 11th December 2019 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr M Smyth, Cllr B Outten, Cllr I Tucker, Cllr S Barnet, Derek Cooper, Roy Procter, Sandra Spearing, Mark Swann Chris Baker.

APOLOGIES: Cllr L MacDougall, Susan Jones, and Toby Hall.

IN ATTENDANCE: Gerard Tucker (Town Clerk).
Hamish MacLeod (Director Mobile UK).
Gareth Elliott (Head of Communications Mobile UK).

1. Approve the minutes of the meetings held on 27th November 2019

The minutes of the meeting held on 27th November required an embellishment regarding the Dr Tresidder's acknowledgement that he was not an expert in all areas. The Clerk confirmed that Dr Tresidder's presentations and supplementary information has been posted in the review section of the website.

2. Presentation from Hamish MacLeod and Gareth Elliott from Mobile UK.

The short presentation entitled: *The Safety Framework for electromagnetic fields (EMF) – including 5G*. The growing demand for access to data was emphasised with expectations of faster, more efficient delivery, particularly in the areas of transport, health care and agriculture.

Reference was made to the international body that oversees safety – *International Commission of Non-Ionising Radiation Protection (ICNIRP)*. Mr MacLeod presented slides that demonstrated the effects of radiation at various distances, proving that the further way, the dramatic reductions in radiation. Many questions followed including:

- *Why if the technology is so safe, do people get sick?*
- *Electro-sensitivity has been detected on a very low budget, how come there is not more research on this subject?*
- *There was no mention of local antennae, only masts!*
- *Scientific approaches are not respectful of people with sensitivities. Six-minute thermal assessment only, previously experts consider safety checks are flawed. Would you agree or disagree with the statement?*
- *Expansion from 4G to 5G, are more masts required?*
- *5G masts will be located just 200m apart, is this true or not?*
- *5G is a more directed signal, how does this work?*
- *Smart meters have non-thermal effects on insects, are they affected?*
- *Has the ecology of railway embankments been changed to accommodate 5G?*
- *Smaller cells, what does this mean?*

3. Reflection of presentations by Dr Tresidder and Prof Pall.

A discussion on the key messages presented by both speakers was held. Concerns were raised by some members of the group about the authenticity of some of the points raised, which were defended by other members of the group.

4. Update of speakers invited to future meetings.

The clerk informed that the next meeting on 15th January will not have a speaker present. It was agreed to use this meeting to reflect on the articles, documents and presentations placed within the review section of the website. Also, to reflect on the progress of the group and address how to proceed towards a recommendation to be presented to the Town Council. On 29th January, Frank de Vocht who is a Reader in Epidemiology and Public Health at Bristol University will present. He joined the Centre for Public Health, which is part of Population Health Sciences at Bristol Medical School in 2014.

5. Review of papers to be considered for the library

This item is to reappear on the next agenda and will form the basis for discussion on that evening.

6. Membership eligibility of the 5G Working Group.

Derek Cooper raised a point of order that he considered some members of the group do not meet the terms of reference requirements. He questioned why some people who do not live or have a business in Glastonbury were allowed to continue with a presence on the group. In response, the process of selecting applicants with a cross section of knowledge and expertise had been carried out by Councillors and was considered robust. There is a requirement to revisit the terms of reference for the group to ensure the eligibility of members.

7. Date and times of next meetings

The next meeting is scheduled for Wednesday 15th January 2020.

The meeting closed at 9:10 pm.



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 15th January 2020 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr M Smyth, Cllr I Tucker, Cllr S Barnet, Cllr D Michell, Cllr P Lund, Cllr L MacDougall, Susan Jones, Roy Procter, Sandra Spearing, Mark Swann, Chris Baker.

APOLOGIES: Toby Hall and Derek Cooper.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

- 1. Approve the minutes of the meetings held on 11th December 2019**
The minutes of the meeting held on 11th December were considered an accurate record.
- 2. Approval of the revised Terms of Reference**
The Clerk projected the revised terms of reference, which were considered an accurate recording of the required amendments.
- 3. Reflection of presentation by Hamish MacLeod.**
There were indifferent opinions on the content of the presentation from Mobile UK at the last meeting. What was agreed is the appreciation of Mr MacLeod to give his time to visit Glastonbury. In subsequent correspondence, Mr MacLeod had forwarded a link to a ruling by the Advertising Standards Authority, which has been placed on the website.
- 4. Review of the most read papers to be considered for transfer to the library**
Eight papers have been acknowledged as being read and the majority have had some comments attached. Of these, Paper 027 was considered, and it was agreed to transfer to the library section of the website. An open discussion followed, the majority of which focussed on the application of 4G and 5G technology, how it works, its use, together with the pros and cons of the technology behind the science.
- 5. Date and times of next meetings**
The next meeting is scheduled for Wednesday 29th January 2020.

The meeting closed at 9:20 pm



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 29th January 2020 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr I Tucker, Cllr P Lund, Cllr B Outten, Susan, Roy Procter, Sandra Spearing, Mark Swann Chris Baker, Toby Hall.

APOLOGIES: Cllrs Barnet and Michell.

IN ATTENDANCE: Gerard Tucker (Town Clerk).

1. Approve the minutes of the meetings held on 15th January 2020

The minutes of the meeting held on 15th January were considered an accurate record.

2. Presentation by Frank de Vocht

The clerk was unable to attend the beginning of this presentation. He captured the key messages as being:

- Additional studies are required as the case for either the promotion or removal of 5G is not easily defined. Electrosensitivity is an identified area which would benefit from additional research.
- Companies need to be more transparent when promoting 5G by providing additional information.
- 5G uses less power than other systems 0.1% of causal link to any form of health risk.

3. Review of the progress to date

There was insufficient time to discuss this topic. It was recommended that this form the basis of the next meeting of the 5G Committee.

4. Date and times of next meetings

The next meeting is scheduled for Wednesday 12th February 2020.

The meeting closed at 9:20 pm



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 12th February 2020 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr P Lund, Cllr B Outten, Cllr S Barnet, Cllr D Michell, Susan Jones, Roy Procter, Sandra Spearing, Mark Swann, Toby Hall.

APOLOGIES: Cllr Tucker and Chris Baker

IN ATTENDANCE: Gerard Tucker (Town Clerk)

1. Approve the minutes of the meetings held on 29th January 2020

The minutes of the meeting held on 29th January were considered an accurate record, with one small amendment.

Derek Cooper circulated an email resigning himself from the committee, which was duly noted.

2. Presentation by Mark Swann

The key messages relayed by Mark Swann entitled 'Electromagnetic radiation, what it is and how it interacts with matter'. The key messages were:

- Light and the effects of light have been studied for more than 20 years;
 - Electromagnetic Radiation is simply light;
 - Electro does **not** mean electricity;
 - Light consists of photons;
 - The body is translucent as demonstrated when a torch is placed against it;
 - Mobile phones transmit light, not electricity;
 - Man-made and naturally occurring photons are exactly the same;
 - 5G transmitters are very small and use a phased array of directing light where it is required, rather than through blanket coverage;
 - Light is not considered dangerous until high frequency radiation such as ultraviolet and x-rays;
 - A candle emits more photons than a mobile telephone as demonstrated
- There has been no increase in the levels of reported cancers and illness despite an enormous growth in the number of mobile phones now used.

3. Review of the progress to date.

Cllr Cousins informed that the work of the group is almost complete and after the next and (last meeting) the non-councillors on the group will be invited to write up to 500 words explaining their position and any conclusions reached.

4. Date and times of next meetings

The next (last) meeting is scheduled for Wednesday 26th February 2020.

The meeting closed at 9:20 pm



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 26th February 2020 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr P Lund, Cllr B Outten, Cllr S Barnet, Cllr L MacDougall, Cllr M Smyth, Susan Jones, Roy Procter, Sandra Spearing, Toby Hall, Chris Baker.

APOLOGIES: Cllr Tucker and Cllr Michell

IN ATTENDANCE: Gerard Tucker (Town Clerk)

1. Approve the minutes of the meetings held on 12th February 2020

The minutes of the meeting held on 12th February were considered an accurate.

Mark Swann had circulated an email resignation from the group to all participants.

Unfortunately, an attempt at linking with Professor Anthony Miller in Canada failed.

2. Presentation by Roy Procter

The key messages relayed in Roy's presentation included a history of how he and his wife first identified they were sensitive to electromagnetic radiation. A dowsing talent was affiliated to spiritual healing which they practiced for many years. Assisting clients with addressing 'electro smog' issues has regularly proved that people sensitive to electromagnetic radiation seem to have similar effects as adverse earth energies. This is an area where further research and understanding is required.

Roy continued by informing of the scientific methods of trying to explain the presence of electro smog, advising that the body's control system is electric. He continued by explaining the method behind his own research which was published in Dowsing Today. His presentation completed with the sharing of the detail of a questionnaire circulated to clients and photographs showing the effects of plants that have been watered with both microwave and purified water.

3. Review of the progress to date.

Cllr Cousins informed that it was intended that this meeting would be the last as the work of the group was almost complete. Susan Jones requested that she and Chris Baker be allowed to make a joint presentation at just one more meeting and after much discussion, this was permitted with the date being Wednesday 4th March.

Non-councillor members of the group were reminded that they are to submit to the Town Clerk up to 500 words explaining their position and any conclusions reached.

4. Date and times of next meetings

The next (last) meeting is scheduled for Wednesday 4th March 2020.

The meeting closed at 9:20 pm



Glastonbury Town Council

Meeting of the 5G Working Group held on Wednesday 4th March 2020 in the Council Chamber at 7 pm.

PRESENT: Cllr J Cousins (chair), Cllr S Barnet, Cllr L MacDougall, Cllr D Michell, Cllr M Smyth, Cllr I Tucker, Susan Jones, Roy Procter, Sandra Spearing, Toby Hall, Chris Baker.

APOLOGIES: Cllr Outten and Mark Swann

IN ATTENDANCE: Gerard Tucker (Town Clerk)

1. Approve the minutes of the meetings held on 12th February 2020

The minutes of the meeting held on 26th February were considered accurate

2. Discussion led by Susan Jones

Reference was made to a number of omissions considered to be missing from ICNIRP. An example being resolution 1815 from the Council of Europe where the legal guidance is that all reasonable measures have to be taken to reduce exposure. Outer space treaty 1967 guides against exposure to harmful substances, EU environmental policy 191 refers to the need to protect through environmental measures and policy 174 to adopt the precautionary approach, something Glastonbury Town Council introduced in June 2019. Susan also made reference to the detail that the installation of 5G at locations where 3G and 4G is already in place, that no additional planning consent is required. This may result in any blame for future issues arising will fall on the landowner.

I would like to clarify/rectify certain facts in minutes of 4th March before approved, regarding my presentation; ICNIRP, Dr Sarah Starkey points to a number of omissions in the guidelines. i.e. failure to take into consideration non-thermal long-term exposures.

There are a number of legal references such as 1815, Council of Europe(2011) directs to take measures to reduce exposure to Electro-magnetic fields especially radio frequencies from mobile phones. Outer Space Treaty 1967 requires the use of space to be conducted so as to avoid harmful contamination and also adverse changes in the environment of Earth. EU Treaties Article 191 indicates protection through environmental measures. Article 174 Requires a precautionary approach to judging health and environmental risks.

*Ray Broomhall Australian Barrister shows how individuals or a group in a class action can initiate legal action with medical evidence against emitters and the Authorities.
Best Wishes Susan*

3. Discussion led by Chris Baker.

Chris had been able to connect with Professor Tom Butler from Cork University via a video link. The quality of reception was not great, although sufficient to progress. The key points from Professor Butler's presentation was the suggestion of a study, using a control of people who use technology against those who don't. To enable this to happen, there is a need to identify scientists who are in the 'middle ground' and not influenced by their own understanding of 5G. Assessing the impact of antioxidants on the body is considered important when concluding.

Following the video call, Chris Baker made a short presentation in which he challenged the credibility of the organisation – International Commission on Non-ionising Radiation Protection (ICNIRP) – particularly the membership base. Every four years, membership of this organisation changes and is due for change again in 2020. His main concern is that he remains perturbed by the fact that ICNIRP has failed to research the impact beyond thermal effects.

4. Date and times of next meetings

There are no plans to reconvene this group. Non-councillor members of the group are to present a 500-word summary to the clerk by 20th March for circulation to the Councillors on the group. When disseminated, this will form the basis of the appropriate recommendation to the Town Council.

The meeting closed at 9:20 pm

