FAO:
Public Accounts Committee
Room 371
Parliament Buildings
Ballymiscaw
Stormont
Belfast
BT4 3XX

16th March 2021

RE: Inquiry into Renewable Energy Generation

To Whom It May Concern,

We are a Group of women with many many concerns about the environmental, health, social and economic impacts of industrial wind plant and related infrastructure. We welcome the chance to bring many key points in relation to the recent NIAO Report to the attention of the Public Accounts Committee and also in relation to the carbon footprint and other issues surrounding wind turbines that are never taken into account.

NIAO Report

We have considered some financial aspects of wind energy as we were alarmed at the RHI Inquiry revelations and strongly suspected similar shortcomings with other renewables schemes. Confirmation was found in the recent report from the NIAO which was professionally completed in connection with single turbines and anaerobic digesters. Renewables NI have alleged the NIAO report is "not fit for purpose" citing that "the quality and methodology of research and analysis used to calculate the rate of return for investment in small scale wind projects was deeply flawed", we strongly disagree. Perhaps this should be said of the rapidly produced KPMG report produced on behalf of Renewables NI, given that the figures presented are based on a dataset that is frequently referred to but not presented as evidence. This makes affording credibility to the figures presented impossible, hopefully this is something your committee has access to, otherwise the KPMG report cannot be taken as factual.

Even with the limited information we have access to, there are a few points that cause concern. The KPMG report only appears to look at 706 "small scale wind assets" between 100kw -250kw, however the NIAO report stated there were 1,209 small scale standalone turbines in Northern Ireland. We wondered why 503 turbines had been excluded and came to the conclusion they may be Microgenerators which appear to operate without any governance. According to the most recent DFE report "Electricity consumption and renewable generation in NI" (year ending June 2020) none of the departments or organisations involved in the oversight of electricity generation in Northern Ireland appear to know exactly how many microgeneration stations there are, how much electricity they produce (and get paid for) and how much of this electricity they are using themselves or 'spilling onto the grid' or indeed generating at all.[1] We also noted that KPMG based their calculations on renewables figures from 2018 when there are more current figures from 2020 available, surely it would be good practice to use the most current figures if available?

The number of stations accredited in NI after the cut off period in July 2016 was extremely concerning with the most common year of accreditation being year ending March 2017. This echoes the RHI scheme therefore we would like to know what checks were carried out to ensure that these turbines were fully operational at the time and still qualified for accreditation? It is also clear from the report that de-rating of larger turbines has become

[1] https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Issue-16-Electricity-consumption-renewable-generation-northern-ireland-july-2019-june-2020.pdf

common practice with the most common size of turbine in the report being listed as 224KW. Now that we are aware of this practice (one that was probably never anticipated by the policy makers) we believe there is a need for a new condition to prevent any further applications that take advantage of this loophole. Are there checks in place to ensure that the larger turbines have actually been de-rated? Page 17 of the KPMG report states one of the benefits of repowering turbines as "providing increased energy without additional turbines" an admirable objective given the proliferation of turbines across Northern Ireland but if this is a goal why limit the capacity of the replacement turbines at all?

There are a number of sources that substantiate the NIAO conclusions of subsidies being overly generous and return on investment periods. Invest NI's literature stated a four-year payback is possible. We believe payback could be achieved in even less than four years as a lot of the small-scale renewables also benefited from grants to purchase, install and create associated infrastructure (also from the public purse through Invest NI grants, Rural Development Partnership for renewable energy schemes and farm diversification schemes). We are certainly not alone in this belief as Dr Gordon Hughes recent report and the spotlight investigation team also concur as does the salesperson Ralph Hubert featured on the programme stating payback periods of "3-4 years maximum". Renewables NI appear to be the only organisation disagreeing and their report does nothing to disapprove it, given the omission of evidence to support their projections and the absence of any grants being declared or other income payments being shown. The cost to purchase and erect second-hand turbines in the KPMG report seems excessively high in comparison to those that dealers and owners are quoting. If these extremely high capital costs and expenses are being used in tax returns and accounts it would explain how the turbines qualify for small business rates relief despite their very lucrative income. Capital expenditures have been made difficult to track for turbines and wind farms as they change ownership so often, actual costs of purchase are written off multiple times.

The Requirement for Cost Benefit Analysis.

It is clear from the NIAO report that a cost benefit analysis was never properly produced and that cost controls weren't properly implemented. Indeed, it appears that the only performance indicators used to assess the success of renewables is the uptake of the different schemes and the amount of renewable energy available. Given that the schemes were introduced to fill an environmental target, surely one of the key performance indicators and objectives should be the environmental impact? Has there been a positive or detrimental environmental impact e.g., loss of peat bog, effect on protected habitats, bog slide, water pollution etc.? What have the actual CO2 savings and the fossil fuel reductions been, if any, considering the amount of fossil fuels used in the manufacture, transportation, construction, operation and requirement for spinning inertia along with baseload. When all is said and done, we still depend on fossil fuels to guarantee our lights are kept on.

There have been many unsubstantiated claims made regarding the 'cheap and free' energy that is provided by wind, unfortunately consumers are yet to experience this. In real terms electricity prices have increased over the interim years in tandem with the cost of renewables and an associated subsidy harvesting that is beyond reasonable bounds of incentivization.

The perceived economic benefits of renewables have never been retrospectively and independently assessed. Given the fact that no cost saving measures to safeguard the public purse were implemented, together with the admissions and revelations during the RHI inquiry, it is vital that a full independent inquiry is conducted into all other renewable schemes in Northern Ireland. For example, the rates which local councils were promised from wind farms have recently been significantly reduced.

The Report by the Environment Committee at Stormont on their Inquiry Into Wind Energy published 2nd March 2015 stated that the ETSU-R-97 Noise Guidelines "WERE SERIOUSLY OUT OF DATE, NOT FIT FOR PURPOSE AND IN URGENT NEED OF REVIEW"
How can planning department grant approval for industrial wind turbines in the knowledge that the noise guidelines they refer to are "NOT FIT FOR PURPOSE"?

Setback distances of wind turbines to dwelling is "based on a rule of thumb"

There is NO medical of scientific evidence to prove that it is safe to erect industrial wind turbines so close to dwellings.

By their own admission, the serious issues of infrasound and low frequency noise and shadow flicker are NOT properly assessed in any planning application for any industrial wind turbine or wind farm in Northern Ireland.

The Government of Great Britain & Northern Ireland signed up to the Aarhus Convention in February 2005 but even though this has been signed up to, it has not been transposed.
Under this Aarhus Convention, the government (DOE) is responsible for conducting Environment Impact Assessments, NOT the developer.
NO developer will include any information in their EIA that will jeopardise their investment and intentions. Quite often the information in their EIA is extremely vague and not transparent and a lot of relevant information is omitted, hence why developers EIA statements are a breach of the Aarhus Convention.

How many believe the Clean Green Renewable Spin? Save the Earth? Perhaps they need to take time and investigate properly how the dirty mining (worldwide) is so closely linked to the wind industry.
We are aware that 'many' support "Green energy" in its totality but the 'Green energy' word has become twisted and misused by Corporations and Individuals to sustain their Bank Account Balances. Some of us on the Earth or more concerned with a different type of balance, this balance is conducive to a heartfelt respect and love of the Earth and it cannot be turned on and off by conflicted interests.

What it takes to Build a wind farm/Wind Turbine?

Concrete, Steel, Non-Recyclable, materials

One modern wind turbine requires 45 tons of plastic, 900 tons of steel & 2,500 tons of concrete

Why Coal Miners, Oil and Gas Producers Simply Love Wind Power

Even before the blades start spinning – the average wind farm clocks up thousands of tonnes of CO2 emissions: "embedded" in thousands of tonnes of steel and concrete. So, every wind farm starts with its CO2 abatement ledger in the negative.

Why are we damaging the natural environment of an area that helps capture carbon?

There is an eagerness to damage the very natural environmental ability of an area that helps capture carbon such as this, to achieve renewable targets, while at the same time threatening habitats and wildlife and restricting biodiversity. Not only is there a natural ability to capture and store carbon but a sanctuary for wildlife and habitats.

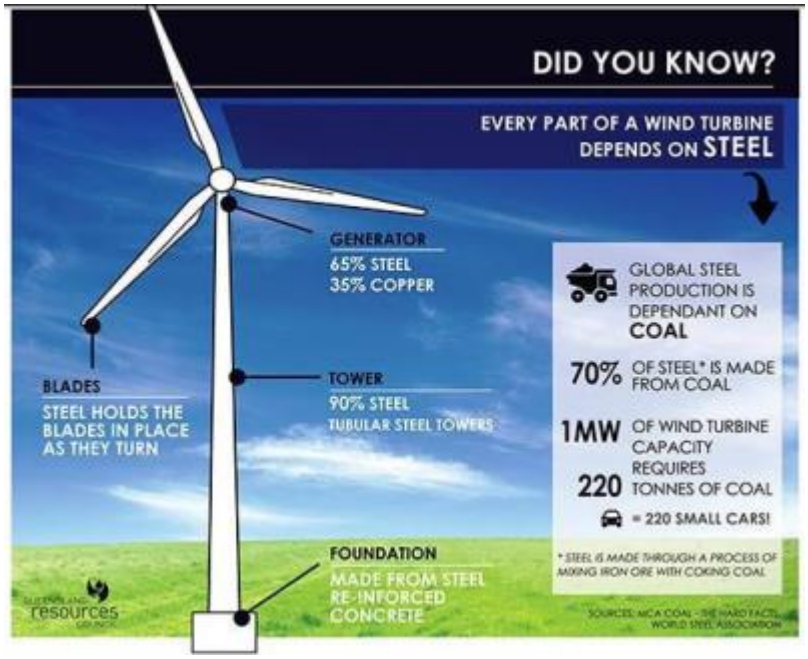
One of the primaries aims of renewable energy policy is the reduction of CO2 emissions. Would you consider asking the applicant to calculate how much carbon will be released into the atmosphere through the permanent displacement of peat during the construction phase and in the long term during the maintenance phase and the eventual decommissioning phase?

"It has not clearly stated how it intends to recycle the turbine blades upon decommissioning along with the concrete foundations and all ancillaries.

"Neither can we find any information as to CE markings on all materials used throughout the wind farm. However even before the blades start spinning – the average wind farm clocks up thousands of tonnes of CO2 emissions: "embedded" in thousands of tonnes of steel and concrete. So, every wind farm starts with its CO2 abatement ledger in the negative. A large quantity of concrete is poured followed by steelwork and now the steel work requiring in excess of sixty lorries full of concrete for one small turbine. Cement is one of the worst elements created by man as regards carbon footprint and yet we are told by government and developers how green wind farms are because the wind is free. Bases which will never be removed but simply covered over at the end of the wind farms life. The damage to the eco system, water runoff and the peat moorland that it displaces will remain for millenia.

There is no disclosure of just how much CO2 goes to build one of these things.

So what's the carbon foot print of a wind turbine with 45 tons of rebar & 481m3 of concrete?
Its carbon footprint is massive – try 241.85 tons of CO2.
Here's the breakdown of the CO2 numbers.
To create a 1,000 Kg of pig iron, you start with 1,800 Kg of iron ore, 900 Kg of coking coal 450 Kg of limestone. The blast furnace consumes 4,500 Kg of air. The temperature at the core of the blast furnace reaches nearly 1,600 degrees C (about 3,000 degrees F).
The pig iron is then transferred to the basic oxygen furnace to make steel.
1,350 Kg of CO2 is emitted per 1,000 Kg pig iron produced.
A further 1,460 Kg CO2 is emitted per 1,000 Kg of Steel produced so all up 2,810 Kg CO2 is emitted.
45 tons of rebar (steel) are required so that equals 126.45 tons of CO2 are emitted.
To create a 1,000 Kg of cement.
calcium carbonate (60%), silicon (20%), aluminium (10%), iron (10%) and very small amounts of other ingredients are heated in a large kiln to over 1,500 degrees C to convert the raw materials into clinker. The clinker is then interground with other ingredients to produce the final cement product. When cement is mixed with water, sand and gravel forms the rock-like mass know as concrete.
An average of 927 Kg of CO2 is emitted per 1,000 Kg of cement. On average, concrete has 10% cement, with the balance being gravel (41%), sand (25%), water (18%) and air (6%). One cubic metre of concrete weighs approx. 2,400 Kg so approx. 240 Kg of CO2 is emitted for every cubic metre.
481m3 of concrete are required so that equals 115.4 tons of CO2 are emitted.
Now we have not included the emissions of the mining of the raw materials or the transportation of the fabricated materials to the turbine site so the emission calculation above would be on the low end at best.
Extra stats about wind turbines we not told about:
The average towering wind turbine previously installed now is over 80 metres in height. The rotor assembly for one turbine – that's the blades and hub – weighs over 22,000 Kg and the nacelle, which contains the generator components, weighs over 52,000 Kg.
All this stands on a concrete base constructed from 45,000 Kg of reinforcing rebar which also contains over 481 cubic metres of concrete (that's over 481,000 litres of concrete – about 20% of the volume of an Olympic swimming pool).



Each turbine blade is made of glass fibre reinforced plastics, (GRP), i.e. glass fibre reinforced polyester or epoxy and on average each turbine blade weighs around 7,000 Kg each.

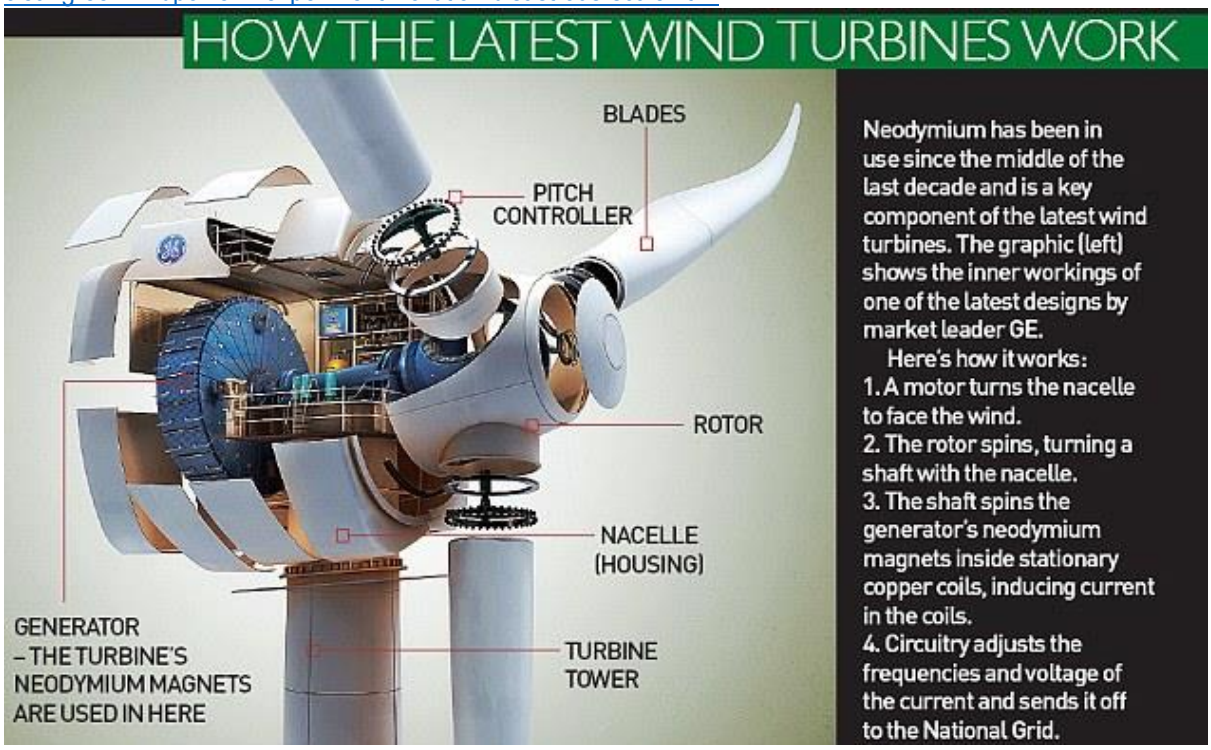
Each turbine has three blades so there's 21,000 Kgs of GRP and each blade can be as long as 50 metres.

A typical wind farm of 20 turbines can extend over 101 hectares of land (1.01 Km2).

Each and every wind turbine has a magnet made of a metal called neodymium. There are 2,500 Kg of it in each of the behemoths that have just gone up around Australia.

The mining and refining of neodymium is so dirty and toxic – involving repeated boiling in acid, with radioactive thorium as a waste product – that only one country does it – China..Neodymium is commonly used as part of a Neodymium-Iron-Boron alloy (Nd2Fe14B) which, thanks to its tetragonal crystal structure, is used to make the most powerful magnets in the world. Electric motors and generators rely on the basic principles of electromagnetism, and the stronger the magnets they use, the more efficient they can be. It's been used in small quantities in common technologies for quite a long time – hi-fi speakers, hard drives and lasers, for example. But only with the rise of alternative energy solutions has neodymium really come to prominence, for use in hybrid cars and wind turbines. A direct-drive permanent-magnet generator for a top capacity wind turbine would use 4,400lb of neodymium-based permanent magnet material. There's not one step of the rare earth mining process that is not disastrous for the environment. Ores are being extracted by pumping acid into the ground, and then they are processed using more acid and chemicals. https://www.dailymail.co.uk/home/moslive/article-1350811/In-China-true-cost-Britains-

cleangreenwindpower experiment-Pollution-disastrous-scale.html



hhttp://www.nrmca.org/sustainability/CONCRETE%20CO2%20FACT%20SHEET%20FEB%202012.pdfttps://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/3_Volume3/V3_4_Ch4_Metal_Industry.pdf

All this for an intermittent highly unreliable energy source.
And we haven't even considered the manufacture of the thousands of pylons and tens of thousands of kilometres of transmission wire needed to get the power to the grid. And what about the land space needed , not only destroying everything in their midst beneath, above and around them.

Wind turbines and their associated infrastructure — notably power lines and towers — are among the fastest-growing threats to birds and bats. We estimate that hundreds of thousands of birds and bats die every year when they accidentally collide with turbine blades. Fragile-bodied bats can even succumb to the pressures created when the giant turbine blades pass through the air, a phenomenon known as barotrauma.

Associated power lines and towers, which **carry the electrical power generated by wind turbines** into the grid, will kill an additional millions of birds every year through collisions and electrocutions. Furthermore, wind energy development can also contribute to habitat loss and road and other infrastructure construction, all of which can have significant impacts on birds."If you only consider local birds in an environmental assessment, and not those migrated into the area. you're not really evaluating the effect that facility may have on the entire population, Introduction Areas underlain by a deep peat resource should be avoided for wind farm developments due to the potential damage to fragile habitats and associated species. In addition, the loss of the carbon storage function of deep peat and the release of carbon that occurs when peat is disturbed may undermine any carbon saving benefits of renewable wind development.

Wind farm development on deep peat sites should be avoided, unless it can be shown not to be damaging to current or potential ecological interests. The impact of the development on the overall carbon balance should also be taken into account-

Nobody is paying any attention to the fact that you have to smelt iron ore – that's **a carbon footprint**; then you have the manufacture of these turbines – that's a carbon footprint; then you have to get them onto a great big boat because they are probably coming from Germany or China – that's a carbon footprint.
Then they arrive in Ireland and they are loaded up onto big trucks – that's another carbon footprint;

How much diesel will be used to transport these turbines? How much diesel will be used in all of the operating machinery on site?

"So, how is wind energy supposedly saving on carbon?

Contrary to popular opinion, the life cycle of a modern wind turbine is no more than 20 to 25 years. Since turbine blades cannot be burned and are not recyclable, the recommended option is landfill disposal. But not every landfill can even accept these massive structures, even after they are broken into their parts.

According to Pu Liu and Claire Barlow (*Waste Management,* April 2017), there will be 43 million metric tons of blade waste worldwide by 2050, with China possessing 40% of the waste, Europe 25%, the United States 16%, and the rest of the world 19%. The problem of blade disposal, they conclude, is just beginning to emerge as a significant factor for the future.

A 2017 report from researchers Katerin Ramirez-Tejeda, David A. Turcotte, and Sarah Pike (*New Solutions)* asserts that "the environmental consequences and health risks are so adverse

Ramirez-Tejeda, *et al.,* added that landfilling turbine waste is especially problematic "because its high resistance to heat, sunlight, and moisture means that it will take hundreds of years to degrade in a landfill environment. The wood and other organic material present in the blades would also end up in landfills, potentially releasing methane, a potent greenhouse gas, and other volatile organic compounds to the environment."

How do you suggest this problem is dealt with?

Wind farm developments on deep peat sensitive areas should be avoided where they will be damaging due to: • • • Habitat loss and hydrological disruption by installing turbines. The loss of associated sensitive species, some of which occur in internationally or nationally important populations outwith the protected area network. The associated release of carbon, which significantly reduces the carbon saving benefits of renewable wind development.

It is important to note that the illustrated areas show where a peat resource exists (not necessarily peat over 1 metre deep), but to determine the exact depth of peat, a site-bysite assessment will be required. Peat depths can be highly variable in a given area, subject to the underlying geology and topography. Much of the deep peat resource identified underlies areas designated as a Site of Special Scientific Interest (SSSI), a SPA or a SAC. There are, however, some areas that are not designated for their nature conservation interests and yet support important bird populations and/or habitat communities. Other areas identified would not qualify as a SSSI/SPA/SAC in their nature conservation importance, but nonetheless still have an important deep peat resource.

You see, renewables such as wind turbines will incur far more carbon dioxide emissions in their manufacture and installation than what their operational life will ever save.
We ask the question doesn't the "cure" of using wind turbines sound worse than the problem? A bit like amputating your leg to "cure" you're in-growing toe nail?

For the sake of us all, we must preserve our peatland/ blanket bog

the pressing need to reduce carbon emissions requires informed strategies. Policies formulated on ill-informed opinions, or incomplete knowledge are just as great a risk to our future as carbon emissions.

Everything we humans do has an impact that, through ignorance, can have unforeseen negative results.

The resulting damage to the deep peat cover will, over time, release huge amounts of carbon. There is irony in this too; we express our concern at deforestation of the Amazon and at the same time condone activities which destroy our peatlands. Peat is different; it locks up carbon permanently. Trees, whether in the Amazon or elsewhere, only recycle carbon. Understanding this difference is crucial.

.

Encouraging the regeneration of native woodland in areas where it existed previous to human intervention is entirely appropriate. Natural woodland occurs on well-drained land where peat is not a significant feature.

The Golden Plover has had an 80% decline in numbers since the Gordonbush wind farm in Uk became operational.

A short flight to extinction and wind company's couldn't give a toss about how many birds, bats and insects they annihilate, how many hundreds of acres they destroy and how many lives they impact upon.

Climate change: Electrical industry's 'dirty secret' boosts warming

By Matt McGrath Environment correspondent

- 13 September 2019

Over deployment of wind in Scotland, as in many other countries around the globe, has reached epidemic proportions and the only ones who can't seem to see it are zero wit policy makers and those who believe the wind industry propaganda without question. Any who believe spearing thousands of industrial wind turbines into our precious environment will do anything to sort out the reported climate change/crisis/emergency/panic/hysteria need to take a good long look at the faux green 'solution' they are supporting. They may just be surprised at what they find out. If they are not they are not looking in the right places. There is a plethora of information out there regarding the multiple adverse impacts of wind turbines and no one has an excuse to say 'I didn't know'.

If you support something you should at least understand what you are supporting and we would urge those current wind supporters to leave the 'dark side' (no pun intended), find out the truth and join our fight against the most heinous industry we have ever known.

Fight back friends. Fight back hard. Do not waver. Do not attempt to appease ministers. Do not believe anything a wind developer tells you until you have verified it for yourself.

These people cannot lie straight in bed!

Clean energy is great, as long as it's in someone else's backyard.

And then there's SF6 sulphur hexafluoride issue recently making news. Strange coincidence that this topic had been raised at the Doraville inquiry as one of our families live just 24m from a 33kv substation where this SF6 was leaking as a result of issues with circuit breakers Apparently, it's worse for the climate than CO2, and it's mainly used by the electrical industry. So, as we increase transmission and substations to serve renewable generators in order to save the climate, we're actually destroying it faster.

The electrical industry continues to be the largest user of SF6 because of its superior properties as a gaseous dielectric insulating medium to prevent high voltage electrical breakdown and electrical explosion hazards. Advantages resulting from its high dielectric strength, compared to air, nitrogen, oil and fluorinated ketones, include size reduction of electrical equipment, superior arc-quenching protection in circuit breakers, self-healing of arcing products, large current interruption, noise-free operation, minimal moisture problems, lower fire risk, absence of carbon deposition, and low maintenance cost.
Currently, electrical utilities and equipment are responsible for consuming 80% of the 10 000 tons of SF6produced every year, an amount which is growing with the increasing global production and demand for

renewable forms of energy, such as wind and solar. As a result, there has been an increase in the number of connections to the electricity grid compared with the traditional fossil power stations, with the consequential rise in the use of switchgear to deal with arcing and to stop short circuits.

For those supporters of Turbines Windfarms at any cost

Would you agree that renewable energy should be sited near point of use and due consideration given to all forms of renewables?

Friends of the Earth, the Green Party and indeed all of the political parties strongly promote turbines/ windfarms, wind turbines if you so believe in their success and agree that they should be sited near point of use is it not possible to construct a windfarm on the land's acreage around Stormont? Or close by the Titanic quarter or indeed the Castlereagh Hills, Belfast Hills therefore near the point of use?

Would you recommend a strategic environment assessment of renewable energy provision within Northern Ireland taking into to account the true cost benefit analysis of all energy provisions so that a coordinated strategy can ensure that all opportunities would be exploited instead of a rash of developments in environmentally or economically unsuitable locations?

Nature and people first
We're working with people across the counties to protect the things we all care about: flourishing nature, clean air, real food, and healthy communities. Together we can get Northern Ireland:
an environmental protection agency that has the freedom to do its job properly
a Climate Change Act that cuts pollution and creates clean jobs
a planning system fit for people and nature
strong environmental laws.
Supporting Turbines is certainly NOT putting nature and people first.

"How can a wind farm/turbine on a "protected habitat" be deemed as a healthy decision for the future well-being of our planet?"

There are those who say

Wind turbines are a well-developed, tried, and tested technology.

Tell that to those who are suffering as a result of noise and shadow flicker, or whose lives are in danger because of accidents, those with cardiac pacemakers defibrators insulin pumps etc. Can you give a written guarantee that Wind Turbines are 100% safe?

Can you guarantee that wind turbines will not impact on protected birds flower fauna and habitats?

A report drawn up under the direction of the Noise Working Group.

http://www.garyabraham.com/files/wind/Allegany/7_ETSU-R-97_summary.pdf

ETSU-R-97

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/49869/ETSU_Full_copy__Searchable_.pdf

While the information contained in this report is given in good faith, it is issued strictly on the basis that any person or entity relying on it does so entirely at their own risk and without the benefit of any warranty or commitment whatsoever on the part of the individuals or organisations involved in the report as to the veracity or accuracy of any facts or statements contained in this report. The views and judgements expressed in this report are those of the authors and do not necessarily reflect those of ETSU, the Department of Trade and Industry or any other participating organisations.

Mrs Ursula Walsh, the acoustics expert from the University of Ulster, confirmed that the **ETSU** guidelines are **not fit for purpose.**

http://www.niassembly.gov.uk/assembly-business/official-report/committee-minutes-of-evidence/session-2014-2015/september-2014/wind-energy-inquiry-mrs-ursula-walsh-university-of-ulster/

https://www.theguardian.com/environment/2009/aug/13/wind-farm-peat-bog

Are you aware how Turbines and associated infrastructure is causing so much anxiety and distress in communities? How they change the fundamental nature of the local area and the wind industry does not take into consideration the physical health effects or consider the wider issues of well-being and overall quality of life of people.

Energy consumption in wind facilities
*Large wind turbines require a large amount of energy to operate. Other electricity plants generally use their own electricity, and the difference between the amount they generate and the amount delivered to the grid is readily determined. Wind plants, however, use electricity from the grid, which does not appear to be accounted for in their output figures. At the facility in Searsburg, Vermont, for example, it is apparently not even metered and is completely unknown [**click here**].* The manufacturers of large turbines — for example, Vestas, GE, and NEG Micon — do not include electricity consumption in the specifications they provide.*
Among the wind turbine functions that use electricity are the following:†

- *yaw mechanism (to keep the blade assembly perpendicular to the wind; also to untwist the electrical cables in the tower when necessary) — the nacelle (turbine housing) and blades together weigh 92 tons on a GE 1.5-MW turbine*
- *blade-pitch control (to keep the rotors spinning at a regular rate)*
- *lights, controllers, communication, sensors, metering, data collection, etc.*
- *heating the blades — this may require 10%-20% of the turbine's nominal (rated) power*
- *heating and dehumidifying the nacelle — according to Danish manufacturer Vestas, "power consumption for heating and dehumidification of the nacelle must be expected during periods with increased humidity, low temperatures and low wind speeds"*
- *oil heater, pump, cooler, and filtering system in gearbox*
- *hydraulic brake (to lock the blades in very high wind)*
- *thyristors (to graduate the connection and disconnection between generator and grid) — 1%-2% of the energy passing through is lost*
- *magnetizing the stator — the induction generators used in most large grid-connected turbines require a "large" amount of continuous electricity from the grid to actively power the magnetic coils around the asynchronous "cage rotor" that encloses the generator shaft; at the rated wind speeds, it helps keep the rotor speed constant, and as the wind starts blowing it helps start the rotor turning (see next item); in the rated wind speeds, the stator may use power equal to 10% of the turbine's rated capacity, in slower winds possibly much more*
- *using the generator as a motor (to help the blades start to turn when the wind speed is low or, as many suspect, to maintain the illusion that the facility is producing electricity when it is not,‡ particularly during important site tours or noise testing (keeping the blades feathered, ie, quiet)) — it seems possible that the grid-magnetized stator must work to help keep the 40-ton blade assembly spinning, along with the gears that increase the blade rpm some 50 times for the generator, not just at cut-in (or for show in even less wind) but at least some of the way up towards the full rated wind speed; it may also be spinning the blades and rotor shaft to prevent warping when there is no wind§*

Could it be that at times each turbine consumes more than 50% of its rated capacity in its own operation?! If so, the plant as a whole — which may produce only 25% of its rated capacity annually — would be using (for free!) twice as much electricity as it produces and sells. An unlikely situation perhaps, but the industry doesn't publicize any data that proves otherwise; incoming power is apparently not normally recorded.

Full post **here**.

As such, the amount of wind power produced are effectively being overstated by official figures, if this own consumption is not taken into account. This is especially relevant when wind turbines are consuming electricity when the blades are not turning.

It also raises the questions of subsidies, which are paid to wind farms based on gross output. Surely these should only be payable for net output?

Pollution costs
Wind turbines when isolated from the electric grid produce negligible amounts of carbon dioxide, carbon monoxide, sulfur dioxide, nitrogen dioxide, mercury and radioactive **waste** when in operation,

https://en.wikipedia.org/wiki/Environmental_impact_of_wind_power

Let's add in Friends of Earth vision

A clean and safe future for Northern Ireland

A healthy environment, happy communities, and worthwhile jobs: this is our vision for Northern Ireland.

People should have shared access to nature. And our resources should be managed fairly.

We believe these things are critical if we're to build a peaceful society.

Why we need nature to thrive

Nature brings us everything we need to survive: food, shelter, water, warmth.

Just as important, nature enriches our lives — from inspiring views of landscapes to spotting a busy bee at work.

We want to restore and preserve nature everywhere — not just in nature reserves but in cities, towns, the countryside, our rivers and seas.

High-quality nature should be as normal as having decent schools, housing, local shops and transport.

Nature needs the support of people like you. From saving bees to defending our nature laws, there are many ways you can get involved with our nature campaigning. Find out more below.

Health benefits of nature

Nature is good for us – we get clean air, water and food from a healthy natural environment. And many medicines are sourced from the diverse plant kingdom.

We also feel better when we get outside to see, hear, smell and experience nature — from walks in local parks to simply seeing the colours change with the seasons.

More and more studies are showing how daily contact with **nature brings us multiple benefits**. We're more likely to be physically active if we have access to good green spaces - and this means savings to the National Health Service.

Nature also helps children's healthy mental and physical development, education and learning. One study found that children exposed to nature had better concentration and self-discipline; better reasoning and observational skills; did better in reading, writing, maths, science and social studies; and were better at working in teams.

A healthy natural environment is one of our best allies in the fight against **climate change** – if we keep it in good condition.

Nature is perhaps our best defence against flooding, storm surges, famine and more. It's better than ever-higher concrete flood walls or artificial reefs: natural reed beds, coral and mangroves can hold back tides and support more wildlife.

True, climate change is already affecting nature - but it's not inevitable. We must not allow runaway climate change to, for example, warm our oceans and turn them so acidic that plankton, corals and fish can no longer survive.

It is not beyond the wit of humankind to avoid the double trouble of climate change and nature's decline.

Hope in the fight against climate change

The switch to clean **renewable energy** is happening at breathtaking speed. Fossil fuel companies that want to extract more coal, oil and gas are finding that people will no longer tolerate their future being put at risk.

A global movement of ordinary people is **achieving extraordinary things** in the fight to protect our planet.

https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/3_Volume3/V3_4_Ch4_Metal_Industry.pdf

The residents within the Sperrin's AONB are feeling extremely anxious about their health, homes and future as a matter of fact they are extremely worried about their very existence. Their passion and deep understanding about the issues they are campaigning on means that their family life has been stolen from them Climate change is not the elephant in the room, we can talk openly about it and we know our carbon footprint is so small that amongst us we have the clean water, the protected species, the bats and bees, the curlews, the flower and fauna, the silence, the natural landscape, archaeology in an abundance, and we have no light pollution. From our humble beginnings in we took the first step then towards protecting this special place basked in nature and archaeology, we connected with each other as one happy family in kind meaningful ways.

Aims

We were passionate about the issues, increasing in confidence working to help and educate others providing them with opportunities on their own doorsteps.

Until in stepped the vultures with their lies and pure bullshit of clean green renewable energy we listened, we questioned, we learned, and we educated ourselves on the subject of renewable energy and we soon understood just exactly what sort of scam this was. Solar and wind energy capturing devices as well as nuclear are not alternative energy sources. They are extensions of the fossil fuel supply system. There is an illusion of looking at the trees and not the forest in the "Renewable" energy world. Not seeing the systems, machineries, fossil fuel uses and environmental degradation that create the devices to capture the sun, wind and biofuels allows myopia and false claims of renewable, clean, green and sustainable.There is a massive infrastructure of mining, processing, manufacturing, fabricating, installation, transportation and the associated environmental assaults. Each of these processes and machines may only add a miniscule amount of energy to the final component of solar or wind devices yet the devices cannot arise without them. There would be no devices without this infrastructure.
A story in pictures and diagrams:
From Machines making machines making machines
https://sunweber.blogspot.com/2011/12/machines-making-machines-making.html
and
An oak tree is renewable. A horse is renewable. They reproduce themselves. The human-made equipment used to capture solar energy or wind energy is not renewable. There is considerable fossil fuel energy embedded in this equipment. The many components used in devices to capture solar energy, wind energy, tidal energy and biomass energy – aluminium, glass, copper, rare metals, petroleum in many forms to name a few – are fossil fuel dependent.

Wind used by sailing ships and old style “dutch” wind machines is renewable and sustainable.

Our planet does indeed stand at a critical time with climate chaos unfolding and disaster capitalism causing extreme environmental damage,

To Get Wind Power You Need Oil

Each wind turbine embodies a whole lot of petrochemicals and fossil-fuel energy

Wind turbines are the most visible symbols of the quest for renewable electricity generation. And yet, although they exploit the wind, which is as free and as green as energy can be, the machines themselves are pure embodiments of fossil fuels.

Large trucks bring steel and other raw materials to the site, earth-moving equipment beats a path to otherwise inaccessible high ground, large cranes erect the structures, and all these machines burn diesel fuel. So do the freight trains and cargo ships that convey the materials needed for the production of cement, steel, and plastics. For a 5-megawatt turbine, the steel alone averages [pdf] 150 metric tons for the reinforced concrete foundations, 250 metric tons for the rotor hubs and nacelles (which house the gearbox and generator), and 500 metric tons for the towers.

If wind-generated electricity were to supply 25 percent of global demand by 2030 (forecast [pdf] to reach about 30 petawatt-hours), then even with a high average capacity factor of 35 percent, the aggregate installed wind power of about 2.5 terawatts would require roughly 450 million metric tons of steel. And that’s without counting the metal for towers, wires, and transformers for the new high-voltage transmission links that would be needed to connect it all to the grid.

A lot of energy goes into making steel. Sintered or pelletized iron ore is smelted in blast furnaces, charged with coke made from coal, and receives infusions of powdered coal and natural gas. Pig iron is decarbonized in basic oxygen furnaces. Then steel goes through continuous casting processes (which turn molten steel directly into the rough shape of the final product). Steel used in turbine construction embodies typically about 35 gigajoules per metric ton.To make the steel required for wind turbines that might operate by 2030, you’d need fossil fuels equivalent to more than 600 million metric tons of coal.

A 5-MW turbine has three roughly 60-meter-long airfoils, each weighing about 15 metric tons. They have light balsa or foam cores and outer laminations made mostly from glass-fiber-reinforced epoxy or polyester resins. The glass is made by melting silicon dioxide and other mineral oxides in furnaces fired by natural gas. The resins begin with ethylene derived from light hydrocarbons, most commonly the products of naphtha cracking, liquefied petroleum gas, or the ethane in natural gas.

The final fiber-reinforced composite embodies on the order of 170 GJ/t. Therefore, to get 2.5 TW of installed wind power by 2030, we would need an aggregate rotor mass of about 23 million metric tons, incorporating the equivalent of about 90 million metric tons of crude oil. And when all is in place, the entire structure must be waterproofed with resins whose synthesis starts with ethylene. Another required oil product is lubricant, for the turbine gearboxes, which has to be changed periodically during the machine's two-decade lifetime.

Undoubtedly, a well-sited and well-built wind turbine would generate as much energy as it embodies in less than a year. However, all of it will be in the form of intermittent electricity—while its production, installation, and maintenance remain critically dependent on specific fossil energies. Moreover, for most of these energies—coke for iron-ore smelting, coal and petroleum coke to fuel cement kilns, naphtha and natural gas as feedstock and fuel for the synthesis of plastics and the making of fiberglass, diesel fuel for ships, trucks, and construction machinery, lubricants for gearboxes—we have no nonfossil substitutes that would be readily available on the requisite large commercial scales.

How do you define the waste on Landfill sites of the Blades?

Unfurling The Waste Problem Caused By Wind Energy

September 10, 20194:37 PM ET

More than 720,000 tons of blade material to dispose of over the next 20 years, a figure that doesn't include newer, taller higher-capacity versions.
There aren't many options to recycle or trash turbine blades, and what options do exist are expensive,
"These towers may be supporting as much as 150,000 pounds, 250 feet in the air," Van Vleet said. "The stands are an inch and a half thick steel ... so they're very strong."
The blades made of a tough but pliable mix of resin and fiberglass — similar to what spaceship parts are made from — are a different story.
"The blades are kind of a dud because they have no value," he said.
Decommissioned blades are also notoriously difficult and expensive to transport. They can be anywhere from 100 to 300 feet long and need to be cut up onsite before getting trucked away on specialized equipment — which costs money — to the landfill.

Claim: The Green Energy Lithium Rush is Destabilising South America
This may be another country but its very much concerning renewablesRenewables are not exactly covering themselves in glory on the geopolitical stage. Cobalt, a vital component of high capacity batteries, is extracted by teams of children working in dangerous mines operated by brutal Congolese warlords. Chinese peasants suffering toxic pollution released by their hideous rare earth mine (rare Earths are used to produce high strength magnets, vital for efficient wind turbines). Now we can add corruption and political instability in South America to the cost of renewables.

For now, the price of our renewable revolution is toxic waste, child exploitation, bloodshed, revolution and oppression.

And then there is the constraint's payments?

Constraint Payments Rise To £124 Million
FEBRUARY 17, 2019
By Paul Homewood

These are paid when there is too much wind power for the grid to handle, and the cost is added to electricity bills.

Clean Energy"–But At What Cost?
SEPTEMBER 21, 2019
(Doesn't it look dodgy when unrelated bidders come up with exactly the same price?)

As usual, things are not quite as simple as they are presented to us!

For a start, the prices are at 2012 levels, so you can add 13.3% to them, giving us a range of £44.92 and £47.15/MWh. This is only slightly lower than the wholesale price of around £50/MWh.

This all begs the question, of course, of why these offshore projects have not already been started with the intention of selling at market prices, rather than waiting for the CfD auction.

Given that the CfD prices are index linked, they could well be up to £55/MWh by the time the projects are commissioned.

Wholesale prices, of course, may have also risen by then, and this is where the the operators can play the market. If market prices are well above the CfD price by the time of start up, it would make good business sense, (and still be perfectly legal), to simply cancel the CfD contracts, and earn the higher market price on offer. There would be a small penalty to pay, but I suspect they would still be quids in.

On the other hand, the CfD contract offers a guaranteed, index linked price, which is itself very valuable.

Either way, they can keep their options open. By going in at an ultra low auction bid, these operators, who have clearly colluded, have managed to exclude other higher bids, and cornered the market for themselves.

Of course, what the proponents of wind power never mention is the cost of intermittency, as standby capacity has to be paid for.

It is well accepted amongst energy experts that you cannot directly compare costs of wind power with dispatchable sources, such as gas. The proper comparison is between the TOTAL COST of wind power, and the MARGINAL COST of gas power, etc.

The logic is that we still have to pay for the fixed and capital costs of gas generation anyway. Wind power only makes sense if its total cost is less than the marginal cost of gas generation, principally the gas itself.

To achieve that, wind power would probably have to come in below £30/MWh.

Gamble? What he fails to mention is the enormous, obscene cost already paid or committed to, in order to get us to this stage.

So let's take a closer look at these costs.

1) Renewable Obligation Certificates (ROCs)

These were the original method of subsidising renewable energy

In the last financial year, they **awarded subsidy payments** of £3.3bn to wind power operators, on top of the value of electricity sold.

These payments will increase each year, broadly in line with inflation, and will continue for the life of each project.

Although the system has now been abandoned for new projects, at current rates the subsidy will cost bill payers something in the region of £82.5bn, at current prices and assuming a 25-year life, over the lifetime of the assets.

2) Contracts for Difference (CfDs)

Prior to this latest round, contracts awarded under CfD have totalled 7541 MW, at an average price of £119.40/MWh:

Given that the **current market price** is about £50/MWh, this represents a subsidy of £69.40/MWh, index linked for 15 years.

Assuming a capacity utilisation of 40%, producing 26.4 TWh a year, the annual subsidy equals £1.8bn, which is payable for 15 years.

3) Capacity Market

Because of the hopeless intermittency of wind power, the Grid has to pay for standby capacity. This year alone this will cost bill payers £1.0bn, and this is forecast by the OBR to rise to £1.2bn by 2023.

Given that all of the current coal capacity will have gone soon after, this figure will undoubtedly rise substantially in years to come, as spare capacity gets tighter:

https://notalotofpeopleknowthat.wordpress.com/2018/11/01/cost-of-green-subsidies-rises-to-66bn-in-next-5-years/

4) Constraint Payments

Because of the innate unpredictability of wind power, there are times when there is too much generation on the system for the grid to absorb. At times like this, the Grid has to pay wind farms to switch off.

Last year **this cost bill payers** £124m.

However this is the thin end of the wedge. As wind power capacity grows, there will inevitable be many days in the year when there is far too much power available. **Independent experts** reckon that these constraint payments could soon rise to £1bn a year in the foreseeable future.

5) Total Costs

If we add all of this together over the lifetime of the wind power assets, the subsidies amount to:

a) ROCs – 25 years at £3.3bn

b) CfDs – 15 years at £1.8bn

c) Capacity market – £1.2bn a year

d) Constraint payments – £1.0bn a year

This comes to a total of £165 billion, over the 25-year lifetime of wind power assets, either already operational or under contract.

And this is not even counting other, uncosted items, such as investment in new transmission networks, balancing services and so on.

AEP likes to pretend that we would not have got these new low prices for offshore wind , without expending hundreds of billions. However this is Bull. Denmark and other countries have been trying to develop offshore wind for years. Instead of wasting billions doing it ourselves, we should have let them or the Chinese do it themselves, building up technology and economies of scale, and then taken advantage of the results ourselves.

If anybody had suggested ten years ago that we should spend £165 billion in order to develop a new energy source that still cost more than the existing one, they probably would have been regarded as barmy.

Constraint payments to wind farms last year cost £124 millions last year, at an average of £72.29/MWh.

Did that include Northern Ireland ?NO

This is only one of many landslides that have taken place at sites of windfarm construction.

November 12, 2019 - 10:38 AM

A €5m fine has been imposed by the EU's top court on the State over its failure to comply with EU legislation that might have prevented landslides linked to the construction of a wind farm in the west of Ireland in 2003.

The penalty is set to increase further as the Court of Justice of the EU set an additional daily fine of €15,000 until the Government achieves compliance with environmental legislation on assessing the impact of the wind farm at Derrybrien, Co Galway.

The fine is due to the "seriousness and duration" of the failure to carry out an environmental impact assessment on the wind farm in the 11 years since a previous CJEU ruling on July 3, 2008.

The legal action by the European Commission followed a massive landslide at Derrybrien on October 16, 2003 during which tonnes of peat were dislodged and polluted the Owendalulleegh River, resulting in the death of around 50,000 fish.

At the time Derrybrien was the biggest ever wind farm in the Republic and one of the largest in Europe with 70 turbines. Its construction required the removal of large areas of forest and the extraction of peat up to a depth of 5.5 metres.

The European Commission said two investigations had concluded the environmental disaster had been linked to the construction work on the wind farm.

The Government had claimed that delays in carrying out the requirement of the 2008 ruling to conduct an environmental impact assessment of the Derrybrien wind farm was due to the complexity of the underlying legal issues.

The owner of the windfarm has refused to undergo a "substitute consent" procedure which is used in exceptional circumstances to allow for the regularisation of planning permissions granted for applications which breach EU environmental legislation.

The Government claimed it could not legally compel the owner of the windfarm to submit to the process and a remedial environmental impact assessment could only be carried out with their voluntary cooperation.

However, the CJEU rejected the State's argument over legal complexities and said there was nothing to prevent an assessment being carried out after the construction of the wind farm.

Ireland had claimed the action was unfounded as it could not legally withdraw the planning permission granted to the operators of the wind farm.

Earlier this year Department of Housing, Planning and Local Government said it had been in regular communication with officials in Brussels on the issue and remained committed to ensuring that an appropriate environmental review of the wind farm took place.

https://www.belfasttelegraph.co.uk/news/republic-of-ireland/man-dies-after-landslide-on-wind-turbine-farm-35290289.html

https://www.shetlandtimes.co.uk/2015/10/30/mid-kame-landslip-on-proposed-windfarm-site

https://www.yumpu.com/en/document/view/42854979/scandal-on-the-braes-industrial-wind-action-group

https://www.wind-watch.org/news/2014/08/05/landslide-raises-windfarm-fears/ and who owned this windfarm?

https://www.researchgate.net/publication/38177228_Landslides_in_blanket_peat_on_Cuilcagh_Mountain_northwest_Ireland

https://www.leitrimobserver.ie/news/sligo/436394/landslides-forces-sligo-road-closure-this-afternoon.htm

https://www.independent.ie/regionals/kerryman/news/locals-believe-windfarm-is-linked-to-bog-slide-disaster-27377601.html

How many can guarantee that private water supplies will not be contaminated?

http://www.windsofjustice.org.uk/2015/11/water-contamination-and-windfarm-construction-update-and-what-you-can-do-about-it/

This is just a little starter so please do not tell us how clean green and economical wind power is?

Retrospective economic assessments of the wind programme to date demonstrate loss of jobs in the total economy, a slowdown in economic activity and an increase in the balance of payments deficit. Examples from all around the world clearly show that wind is a major waste of economic resources with no demonstrable benefits, simply unchallenged claims. Something that would have been revealed much sooner if the assessment of cost and benefits against alternatives, required by the legal framework, had been undertaken at the appropriate time. The disbenefits have never been considered, especially the potential for future litigation cases such as the Knock Iveagh wind turbine, Meenbog peat slide, adverse health and personal injury cases associated with wind turbines and associated infrastructure including substations, overhead powerlines and Battery Energy Storage Systems (BESS).

The Future of Renewables in Northern Ireland

We would like to see the points raised addressed and other issues surrounding all wind energy projects investigated. We sincerely believe there is a need for a further independent enquiry if not a criminal investigation, considering a number of the decision makers involved, were also involved in the RHI scheme.

There were 44 recommendations made by the RHI inquiry. How many of these have been implemented to ensure the same mistakes cannot occur again, given that the same departments will be responsible for future energy policy?

In the interest of transparency and accountability, there is an urgent need for cost control measures and checks to be put in place to safeguard the public purse and deliver value for money for consumers. As the only part of the UK allowed to set its own energy policies, it is vital the issues raised are addressed before any further renewable energy scheme incentives are created.

We respectfully request acknowledgement of this submission.

Kind Regards,

Kerry McCrory
Mary McKenna

On Behalf of
Standing Our Ground Women of the Sperrin's