Written evidence submitted by the Welsh Government

SUMMARY

We welcome the Welsh Affairs Committee's inquiry into the future of nuclear power in Wales and are very happy to present written evidence. Our comments are focused on the five areas of the inquiry where we feel best able to contribute, namely:-

i. What role can, or should, nuclear power play in achieving net zero and UK energy security?
Welsh Government agrees that nuclear has a role to play in ensuring energy security and helping to achieve net zero by 2050 but as part of a wider energy mix. Welsh Government wants to work with UK Government and potential developers to support development and delivery options for Wylfa and Trawsfynydd but not at any cost – we expect clear economic benefits to be accrued to the North Wales region.

ii. What are the main challenges to delivering the UK Government's commitment to bring at least one large-scale nuclear project to final investment decision by the end of this Parliament?
The challenges include addressing hitherto ineffectual policy frameworks, the lack of an appropriate funding model in place and the lack of direct UK Government buy-in. These are now being addressed but the only project that has any prospect of reaching FID in this Parliamentary term is SZC.

iii. How important is the finance model to ensuring a successful nuclear project, and is the regulated asset base (RAB) model the best one to deliver this?
An effective finance model is seen as essential to help deliver a successful nuclear project. A financing model that supports upfront investment is very much needed but whether the RAB model provides an acceptable and complete solution is still open to debate, especially within the context of the current energy crisis climate and the added risk that RAB may present to consumers. RAB will require careful implementation and management.

iv. What practical steps can the UK Government take to support the nuclear industry in developing a range of nuclear technologies, including small modular reactors?
The establishment of the Great British Nuclear delivery vehicle is a positive step in helping to address the entry to market issues that have stymied developer efforts over the past decade. A review of licensing and planning regimes, a new siting strategy to introduce new sites and proactive community engagement are further practical steps that can be taken to support the sector and help enable delivery.

v. What is the potential economic impact for Wales of a new nuclear power station at Wylfa?
The expectation is that a project on the scale of the Bechtel/Westinghouse proposals - using Westinghouse AP1000 reactors – will have a similar economic impact to that which was expected from the Wylfa Newydd project. The delivery of 2 Westinghouse AP1000 reactors in the USA recently created up to 9,000 jobs during construction

while 800 long term jobs are expected once the plant is fully operational by the end of 2023.

Background

1. The nuclear industry in Wales is well established having hosted two operating Magnox power stations over a 50 year period from 1965. At the time of the previous Wales Select Committee inquiry in 2016, the civil nuclear industry directly employed almost 1,500 in Wales, roughly 2.4% of the 63,000 people employed across the UK. According to latest Nuclear Industry Association Jobs Map (NIA)[1], the civil nuclear industry in both The the UK and Wales has shrunk slightly since then, directly employing almost 800 in Wales in 2021, roughly 1.5% of the 61,000 people employed across the UK.

2. The drop in nuclear sector employment in Wales over this period is primarily due to the loss of jobs at both Wylfa and Trawsfynydd. Power generation ended at Wylfa in December 2015 resulting in several hundred redundancies while a number of North Wales based Horizon Nuclear Power employees also lost their jobs when the Wylfa Newydd project was suspended in 2019. Direct employment by Magnox has also reduced at Trawsfynydd over the same period.

i. What role can, or should, nuclear power play in achieving net zero and UK energy security?

5. It is clear that the UK Government sees a key role for nuclear in achieving net zero and UK energy security. Over the past 12 months, it has published two key documents that will help drive the decarbonisation agenda in which nuclear is identified as a key technology solution.

6. In October 2021, the *Net Zero Strategy – Build Back Greener* (NZS)[2] document outlined a vision of a wholly decarbonised power system by 2035, a system consisting of renewables and cutting edge new nuclear power stations to be delivered via five key policies and proposals. In addition to setting a 2030 target for 40GW from offshore wind (including 1GW from new floating platform technologies) more onshore, solar, and other renewables, the strategy also commits to securing a positive decision on *at least one* large-scale nuclear plant by the end of this Parliament. The NZS also launched a new £120m Future Nuclear Enabling Fund to support future nuclear technologies, including Small Modular and Advanced Modular Reactors. Of specific interest to us in Wales, the Wylfa site was explicitly highlighted as a key site for future large scale nuclear within the strategy.

7. In April this year, the *British Energy Security Strategy* (BESS)[3] document further outlined a highly ambitious target of 24GW of electricity to be generated from nuclear by 2050. The BESS document also referenced the initial plan to establish the Great British Nuclear delivery vehicle, a development that is regarded as essential by both government and industry to help speed up the delivery of new projects.

8. Welsh Government agrees that nuclear has a role to play in ensuring energy security and helping to achieve net zero by 2050, but would comment that its main contribution is likely to be made towards the latter end of the target period (i.e.

from mid 2030s onwards) given the time involved in navigating the complex finance and construction issues associated with existing nuclear projects. With respect to the current energy crisis and short to medium term energy resilience, nuclear won't be able to provide any relief since projects take too long to reach maturity. In the medium-long term, the sector has potential to offer some insulation from the actions of hostile jurisdictions that affect energy prices worldwide.

9. While the setting of nuclear related policy is not a devolved matter and is therefore an issue primarily for UK Government, our approach to net zero is broadly compatible with, and complementary to UK Government policies in helping deliver our mutual decarbonisation objectives. Our priorities in tackling energy challenges are primarily focused on the adoption of renewable technology solutions as outlined in the *Net Zero Wales* suite of documents. However, we acknowledge the significant role that nuclear can also play and are supportive of deployment of new projects on existing sites (i.e. Wylfa and Trawsfynydd) subject to the accrual of socio-economic benefits across Ynys Môn and the wider North Wales region along with assurances that there will be mitigation for any incurred disbenefits.

10. Specifically in terms of energy policy, our approach to nuclear projects in Wales is captured in *Net Zero Wales*[4] by policies such as *Policy 27* which highlights the aim of *Maximising Welsh benefit from commercially operated infrastructure projects in Wales*. The Wales infrastructure plan - *Future Wales – the National Plan 2040*[5] also references nuclear and is explicit under *Policy 24 – North West Wales and Energy* in highlighting North West Wales as '*a location for new energy development and investment and in supporting proposed developments associated with the Isle of Anglesey Energy Island Programme, Wylfa and Trawsfynydd as means to create significant economic benefits for the area as well as generating renewable or low carbon energy*'.

11. Welsh Government wants to work with UK Government and potential developers to support development and delivery options for Wylfa and Trawsfynydd. With respect to Trawsfynydd, Cwmni Egino (the Trawsfynydd Site Development Company) has been established specifically to help provide a project delivery vehicle that can support investment proposals and create job opportunities and economic growth through the deployment of SMR/AMR technology. It is essential that we look to these existing structures to develop plans for the site and enable rapid deployment of SMR technology for any significant progress is to be made on the net zero carbon target.

12. We would however comment that the BESS plan to '*increase .. deployment of civil nuclear to up to 24GW by 2050 – 3 times more than now and representing up to 25% of our projected electricity demand*' is a hugely ambitious target. Current UK generating capacity is 7GW and this is likely to fall to 4.3 GW as the AGR fleet is shut down by 2030 - even with the Hinkley Point C station coming online in mid-2026 as currently expected. The recent House of Lords enquiry into *Investing in Energy*[6] asks why is UK Government aiming for a target of 24GW in the first place, when this is more than double the 10GW 'Balanced Pathway' capacity assumed as being

necessary by the UK's Climate Change Committee[7]? Given the enormous delivery challenges, we also ask the same question.

13. Further, it is unclear from the BESS document whether the 24 GW target means that 20GW of additional nuclear will be under construction by 2050 or merely commissioned? It states that – *'depending on the pipeline of projects, these ambitions could see our nuclear sector progressing up to 8 more reactors across the next series of projects, so we improve our track record to deliver the equivalent of 1 reactor a year, rather than 1 a decade'.* Regardless of the answer, the UK Government track record is not good in this area and even with very significant extra resources made available, it is difficult to see where the workforce and supply chain capability and capacity will be found to deliver on the promise.

14. It is worth noting that Friends of the Earth, ClientEarth and the Good Law Project have taken UK Government to court over the legality of NZS policies and proposals claiming that they are legally deficient in various respects (e.g. no evidence to back set targets is provided). The High Court has recently declared that the UK's NZS is indeed in part unlawful and ordered the Secretary of State to revise. This is not expected to lead to any significant change in tackling climate change policy direction but should provide clarity for example on the evidence base for the setting of the 24GW target for new nuclear – or revise to a more deliverable and defendable quantum.

ii. What are the main challenges to delivering the UK Government's commitment to bring at least one large-scale nuclear project to final investment decision (FID) by the end of this Parliament?

15. Some of the main challenges for nuclear developers in attempting to reach FID over the past decade have included: -

    i) **Ineffectual policy frameworks** – UK Government has not been able to convince developers that the energy (nuclear) policies in place have been sufficiently robust to enable and safeguard long term investment decisions,
    ii) **Having an appropriate funding model in place** - given the timescales involved sheer complexity of GW scale projects has demonstrated that an industry acceptable funding model is needed to provide investor assurance at key milestones along the development journey;
    iii) **Lack of direct UK Government buy-in** – the reluctance by UK Government to provide any direct financial support to projects has raised questions regarding its commitment to national asset development and undermined efforts by developers and investors to assemble the considerable funding required.

16. These challenges are evident in the difficulties faced by the projects proposed to date that:-

    iv) are already under construction, but struggling to maintain time and cost profiles (i.e. Hinkley Point C);

v) are well into the planning process but struggling with funding and financing issues to reach FID (i.e. Sizewell C (SZC)) and Bradwell B); or

vi) have, despite developer best endeavours, ultimately failed to progress as a result of UK level uncertainty around policy and funding objectives and decisions (i.e. Moorside and Wylfa Newydd).

17. Of the five new build projects that have started the development journey since 2009, only EDF's Hinkley Point C is currently under construction. HPC managed to eventfully reach FID in 2016 but even within EDF there were concerns about the project costs resulting in the resignation of their Finance Director[8]. Both NuGen's Moorside and Horizon Nuclear Power's Wylfa Newydd projects failed to reach FID and were abandoned by their owners Toshiba and Hitachi, which leaves Sizewell C and Bradwell B as the only two possible projects that could be brought to FID by the end of this Parliament.

18. The Bradwell B project at Bradwell-on-Sea in Essex is a proposed new nuclear power station being progressed by a China General Nuclear (CGN) and EDF partnership. During the development phase CGN has a 66.5% share and EDF Energy a 33.5% share. The proposed technology is the Hualong Pressurised Reactor (UKHPR 1000) which following the successful completion of the Generic Design Assessment process in February this year, is now licensed to be deployed in the UK.

19. However, the project is only at Stage 1 (pre-application) within the Development Consent Order (DCO) process and the partnership is yet to apply for a Nuclear Site License and there is no decision as yet as to who the plant operator will be. Given the project's current status it is highly unlikely that the Bradwell B project will be able to consider any FID by the end of this Parliament. There are also reports regarding UK Government concerns over CGN involvement in new nuclear in the UK[9] - an issue that would create significant funding issues for the Bradwell B project.

20. The only project therefore that has any realistic prospect of reaching FID in this Parliamentary term is SZC. The project is aiming to replicate the HPC approach as much as possible and apply all lessons learnt. The same EPR technology being deployed at HPC will be deployed at SZC and as much as is possible of the HPC supply chain will be transferred to SZC. The SZC project DCO has recently been granted - seen as a key hurdle for the project – which could now pave the way for a FID to be considered in the next 12 months.

iii) **How important is the finance model to ensuring a successful nuclear project, and is the regulated asset base (RAB) model the best one to deliver this?**

21. As outlined in response to Question 2, an effective finance model is seen as essential to help deliver a successful nuclear project. A financing model that supports upfront investment is very much needed but whether the RAB model provides an acceptable and complete solution is still open to debate, especially within the context of the current energy crisis climate and the added risk that RAB may present to consumers.

22. The Contract for Difference (CfD) funding scheme has until recently been UK Government 's main mechanism for supporting low-carbon electricity generation. The scheme aims to incentivise investment in energy projects by providing developers with high upfront costs and long lifetimes with direct protection from volatile wholesale prices. The mechanism also places a cap on the amount that can be charged to consumers to provide protection from paying increased costs when electricity prices are high.

23. The CfD model works reasonably well for renewable energy projects (and will potentially work for SMR scale projects) but companies have to find the initial funding from their own resources and the cost of capital creates significant risks over the long development and construction periods for large scale nuclear. Of the three projects that have advanced proposals via this funding method, only EDF's Hinkley Point C project has resulted in an agreement. The CfD model however has proved controversial with some arguing that at £92.50 per MWh, it is a poor deal for consumers.

24. However, financing a nuclear plant from a company's own resources is really only an option for the largest utilities and developers – arguably backed by national governments. The cost of a 3GW reactor plant will likely cost c.£20bn and the cost of capital over a construction period of up to 10 years before any revenue is generated is a huge challenge for even the largest companies. Neither the Moorside nor the Wylfa Newydd developers succeeded in closing a financial deal with UK Government via CfD.

25. A different funding model that is both workable and acceptable to industry and consumers alike is therefore vital to enable progress. The introduction of the RAB model into nuclear via the recent Nuclear Energy (Financing) Bill does hold out some potential – it is designed to transfer risk from developers to consumers but is also designed to bring more investors to the table[10]. The way the model is structured should be able to provide assurance to both developers and their funders that there will be flows of revenue at various agreed times during the project and this should in turn help to bring down the cost of capital. The RAB model has been successfully used in the UK on large scale infrastructure projects albeit non-nuclear, for many years.

26. Nevertheless, there are some questions that still remain, and further clarity is required on the full range of eligible expenditure within RAB. The Act allows for nuclear generation companies to receive '*a regulated revenue stream during the construction, commissioning, and operation of a new nuclear project'* but it is unclear whether the substantial development phase costs pre-FID can be included as qualified expenditure?

27. The lack of clarity around this could be an impediment to the restart of any significant activity at Wylfa. The development phase expenditure pre-FID on the Wylfa Newydd project was reported as being c. £2bn – would any of these costs have been eligible for consideration as Allowable Revenue within RAB?

28. The House of Lords enquiry into *Investing in Energy* reports that from the evidence heard that the RAB model may well unlock private sector investment for nuclear, but questions remain about the cost impact on consumers. Critics of the model suggest RAB lacks sufficient incentive to manage costs effectively, with consumers having to take on the additional fiscal burden if a project goes wrong. We require further assurances that sufficient checks and balances are in place through Ofgem as the Economic Regulator, to minimise the possibility of the model being misused. We remain concerned about the potential impact on consumers.

iv What practical steps can the UK Government take to support the nuclear industry in developing a range of nuclear technologies, including small modular reactors?

29. We welcome many of the practical steps the UK Government has already engaged to support new nuclear technologies, as highlighted in the 2020 *Ten Point Plan for a Green Industrial Revolution*[11] and *Energy White Paper*[12]*.* These confirmed the intention to developing a range of small and advanced nuclear projects and committed up to £385m to supporting the Advanced Nuclear Fund and invest in the next generation of nuclear technologies.

30. The Advanced Nuclear Fund is broken down to include up to £215m SMRs and up to £170m for a RD&I programme to deliver an AMR demonstration by the early 2030s. UK Government has since announced that it has chosen high-temperature gas-cooled reactors (HTGRs) as its preferred advanced reactor technology for the AMR Demonstration Programme[13].

31. In the NZS, UK Government also announced up to £120m for the new Future Nuclear Enabling Fund to help address the barriers that prevent projects from making progress. This fund is expected to open to applications this summer and successful applicants informed by the end of 2022 and is open to technology vendors in the SMR, AMR and large-scale nuclear arena. The establishment of the Great British Nuclear delivery vehicle is also a positive step in helping to address the entry to market issues that have stymied developer efforts over the past decade.

32. In Wales, Welsh Government has been playing our part in helping to address some of the barriers to development associated with gaining access to suitable project sites. Cwmni Egino is focused on working with the NDA, the Trawsfynydd site owner, to agree an appropriate lease arrangement than enables the site to be brought forward for development. A practical step that UK Government can take within this context is to continue supporting Cwmni Egino in its efforts to redevelop the Trawsfynydd site so the first of a kind SMR in the UK can be deployed by the early 2030s.

33. However, there are further practical steps that UK Government could also take:-

i. **Licensing and Planning** – To deploy nuclear as part of the energy mix and at scale, the planning and permitting regimes need to be reviewed and streamlined to ensure the process is as lean as possible but without compromising safety or security;

ii. **Sites** – there is an insufficient number of identified sites across the UK for any fleet deployment of SMR and/or AMR technology. Without access to sites, technology vendors will struggle to make the case to invest in the necessary supporting infrastructure (e.g. new factories for reactor and/or allied module production). A siting strategy review is needed as soon as possible with clear criteria set to enable new sites to be considered for both general electricity generation and support specific industrial sites with heavy electrical demand (e.g. steel and petrochemical plants);

iii. **Community Engagement** – while there is a broad political consensus on the need for new nuclear deployment in the collective effort to tackle climate change, the level of support at a community level is far more nuanced and should not be taken for granted. To nurture informed debate and understanding, significantly more effort is needed by UK Government to explain the reasoning behind its support for nuclear, why its firm load characteristics will continue to be required within the energy systems of the future and why new sites will be needed to accommodate the sector's planned growth with respect to AMR/AMR. Such a narrative which also clearly explains the short- and long-term solutions to waste management and disposal, would be very helpful in alleviating public concern and scepticism around further nuclear deployment.

v. What is the potential economic impact for Wales of a new nuclear power station at Wylfa?

34. During the last decade, the Wylfa Newydd new build project had the potential to be the single largest investment project in Wales and therefore likely to have a significant impact on the economy and communities on Ynys Môn and in the wider North Wales region. The scale of the potential investment would have been enormous for the island and the socio-economic benefits were considered to be potentially transformational. There are no definitive proposals in place at this time for any new project at Wylfa but if the Bechtel/Westinghouse plans are converted to a deliverable project then the scale of its economic impact is expected to be of similar quantum to that of Wylfa Newydd.

35. In 2014, Welsh Government commissioned Miller Research[14] to investigate the capability of businesses in Wales to respond to opportunities in the nuclear supply chain over the ensuing 20 years. The research highlighted the limited skills availability, the business support required to maximise supply chain benefits, the market size and its structure, as well as forecasting the potential economic impact of the sector in Wales. According to Miller, some of the impacts from the planning, build, operation and maintenance of the proposed Wylfa Newydd plant was forecast

to generate an estimated 36,500 years of employment* in Wales between 2013 and 2033 with the majority of this related to the project planning and construction phases.

36. Between 2013 and 2033, the planning, construction, operation and maintenance of the plant were forecast to make a £2.4 billion gross value-added contribution to the Welsh economy and once the plant started to generate electricity, it was forecast to contribute nearly £87 million in gross value added each year (all estimated at 2013 prices). The expectation is that a project on the scale of the Bechtel/Westinghouse proposals will contribute similarly to the Welsh economy given that the construction of the Vogtle Units 3 and 4 in Georgia, USA - using Westinghouse AP1000 reactors – has created up to 9,000 jobs while 800 long term jobs are expected once the plant is fully operational by the end of 2023[15].

37. We would also expect additional employment and wider business and community benefits to accrue in North Wales from a project on the scale of the Bechtel/Westinghouse proposals. As with the Wylfa Newydd project, additional legacy benefits (e.g. off-site infrastructure improvements, investment in educational/training facilities and supply chain development to enter the global market) should be gained for hosting a project that has the potential to cause severe disruption for residents at various intervals throughout the project's construction period.

38. We further recognise that there are potentially negative impacts associated with projects of this scale and if left unchecked, these impacts can become problematic for the host area. Under the previous project proposals, Welsh Government attempted to quantify such impacts and counter measures were proposed as part of the mitigation process to be addressed within the context of the project DCO. The potential negative impacts identified included personnel and budgetary challenges in areas of housing, employee displacement, community cohesion, pressures on the Welsh language locally and on front line services such as health and policing.

39. Such issues of concern remain but a number have become more acute and immediate, since the halting of Wylfa Newydd and post the Covid pandemic. The evidence base on which solutions for mitigation are derived thus needs to be re-examined. Some of the key issues to revisit include:-
    i) **Housing and Language** – the housing market on Ynys Môn continues to be challenging in attempts to provide affordable options for the local population. The impact of second homes issue on the Welsh language and the availability of housing for local people has come into even sharper focus since Covid. According to Welsh Government's most recent data (2021-22), Ynys Môn with 9%, now has the third-highest proportion of all second homes in Wales;
    ii) **Covid and the Labour Market** – there have been significant changes to the labour market post Covid which is affecting the availability of staff across

* *Note : One job year is a single person in employment for one year.*

multiple sectors. The attraction of the expected higher than average wages associated with any new Wylfa project will place a strain on indigenous North West Wales businesses, particularly in construction, scaffolding disciplines etc., to retain their workforces;

iii) **Transport** – In the past 12 months the Telford Suspension Bridge in Menai Bridge has had weight restrictions imposed as the bridge increasingly shows its age and its limitations in coping with today's traffic. The issues of regular congestion on the A55 Britannia Bridge crossing remain and would undoubtedly increase with any new Wylfa project. Planning for a third Menai crossing effectively stopped following the demise of Wylfa Newydd but would need to be restarted with any new project at Wylfa;

iv) **Grid Connectivity** – the issue of new pylons across the island was arguably more contentious within the context of the Wylfa Newydd project than the power station itself. The National Grid's DCO was not pursued once Wylfa Newydd was suspended but the requirement for new and additional transmission capability will once again come into focus with a new project restart. Welsh Government is keen to see this issue addressed as soon as possible and for National Grid to be proactive in the process to seek alternative solutions to large scale pylon lines from Wylfa across the island to the North Wales mainland.

40. The nuclear sector is also facing a number of skills challenges. The workforce is an ageing one that is driving replacement demand for critical skills and in Wales there has been a shift in requirements from operations to decommissioning as well as a burgeoning demand for skills to build and operate a new fleet of nuclear power stations. Five years ago, it appeared that the Hinkley Point C, Wylfa Newydd, and Moorside projects would all by now be competing for the same skilled workforce. Experience has shown however, that despite the shelving of the Wylfa Newydd and Moorside projects, the remaining HPC project alone has at times struggled to find sufficient workers and sufficiently qualified companies within the supply chain to deliver the project. We recognise that re-skilling and up-skilling existing workers to meet nuclear new build requirements must be a priority in terms of training and is a key impact that would need to be addressed as part of any approach to a new Wylfa project.

41. The disappointment on Ynys Môn was palpable when the *'100-year commitment'* given by Hitachi to the island in the context of Wylfa Newydd came to nothing. It is essential that UK Government rebuilds trust around new nuclear at Wylfa and we will urge all parties to avoid making statements that cannot be realised as part of this work. UK Government needs to demonstrate a sustained commitment to investment and work in genuine partnership with Welsh Government, local stakeholders and North West Wales communities to maximise the positive economic impact while at the same time minimising and mitigating the disbenefits.

29 July 2022