

PROOF OF EVIDENCE

Need and Safety

on behalf of CAPRI

**Town and Country Planning Act 1990
(incorporating Planning and Compulsory Purchase Act 2004)**

APPEAL UNDER SECTION 78

by

National Grid plc

against the decision of the Forest of Dean District Council for

Refusal of Planning Permission for

a Pressure Reduction Installation

Grid Reference: E372854 N226169

Planning Inspectorate Reference: APP/P1615/A/06/2029294/NWF

Local Planning Authority Reference: DF.1374. P0624/06/FUL

Date of Public Inquiry: 24th April 2007

Date of Proof of Evidence: 22nd March 2007

PROOF OF EVIDENCE

Professional background

I am Dr. Richard Anthony Furness of Rydal Water, The Old Pitch, Tirley Gloucestershire GL19 4ET shall say the following at the public inquiry:

1. I am Dr Richard Anthony Furness, DipChemE PhD CEng FInstMC ISA Fellow MinstPet.
2. I qualified as a Chartered Engineer in 1986, although I have had experience in water, oil and gas pipelines since 1982. My career in measurement and control (especially the flow of all fluids) spans almost 40 years. My professional credentials are given in Appendix **RAF1**.
3. I am currently the only person to hold professional Fellowships in both UK and US professional Institutions concerned with my discipline of Measurement and Control and one of only 3 people in Europe to hold the highest American accreditation.
4. My experience is both practical and theoretical and I have been responsible for developing and giving courses to senior Professional and Chartered engineers in many parts of the world on oil, gas and other fluid metering.

5. Recent theoretical and experimental work in large diameter pipelines has allowed me to question the assumptions usually made in many standards and in pipeline models. I have independent detailed knowledge of the historic development of the national transmission system (NTS) that allows a different perspective to be brought to the Inspectors' notice.

2. Structure of evidence

In my evidence I shall be making reference to a written statement prepared by my colleague Paul Anderson of the University of Warwick, a copy of which is attached (as Appendix **RAF 28**). The structure of my evidence is as follows:

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2. Structure of evidence
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3 Background

- (i) National Grid are seeking to construct a Pressure Reduction Installation (PRI) on land to the north of Staunton Gloucestershire as part of a new pipeline designed to convey natural gas from the new LNG terminal now under construction at Milford Haven into the NTS at the above ground installation (AGI) at Tirley. This installation is asserted to be the most convenient for the connection of these new facilities into the grid system for onward distribution.
- (ii) The Tirley site has been in operation since 1969 when permission was granted to the Gas Council to construct a station as part of a 600mm pipeline to convey gas from Wormington (to the east of this location) westwards into South Wales. This pipeline has been in operation for 37 years, with as far as I am aware, satisfactory operation.
- (iii) The site was expanded in 2000 when an additional pipeline of 900mm in diameter was laid to run west to east towards the compressor station at Wormington. As far as I am aware, this pipe has not been used for gas transmission, but was envisaged to provide extra gas capacity for westerly transmission into Wales. This is an excellent example of a decision having been taken, costing many millions of pounds to implement, that was rendered otiose within a few years.
- (iv) In 2001 decisions were taken at a National level to safeguard the future of UK gas supplies and a major project to import liquefied natural gas

was drawn up for Milford Haven which has subsequently been passed for construction. National Grid believe that eventually some 20% of the UK's natural gas imports will be through this route.

- (v) Before this time the UK relied on oil and gas drawn from the North Sea following major finds over 30 years ago. Reserves are still large and new fields are still being discovered. Infrastructure to support these finds is well developed along the east coast of Great Britain. The decision on the choice of Milford Haven is not clear but work is now well advanced at this location and support infrastructures (gas pipelines and some associated installations) have recently been approved by the Secretary of State for phase 1 Milford to Aberdulaish and Felindre and in February 2007 consent was given for the phase 2 of this pipeline (running from Felindre to Tirley).
- (vi) In May 2006, the Appellant registered an application with the Forest of Dean District Council to construct a PRI near to the existing Tirley AGI. These first plans did not contain all the subsequent information that now forms the basis for this Inquiry. First meetings with local residents mentioned fewer than the 12 stacks finally presented by the Appellant to the Forest of Dean Council on 18th July 2006 (ref planning application P0624/06/FUL). The height of the vent stacks (at 8.5m) was not mentioned during the July presentation, nor was the dimension and detail of the associated boiler buildings (see Appendix **RAF 2**).

- (vii) Repeated requests for information revealed the actual intrusive visual nature of the proposal and during October 2006, planning permission was refused by Forest of Dean Planning Committee on environmental grounds. This has resulted in an appeal and this inquiry.
- (viii) The present application is being made in addition to an application for a PRI at Treaddow to the north of Ross-on-Wye, which is proposed to allow gas from the new terminals to be transported northwards via an existing pipeline.

3.1 Appellant's justification for a PRI

3.1.1 The high pressures at which gas is transmitted in bulk means that pressure drops have to be accepted at places within the network. PRIs are required whenever operational gas conditions undergo a step change in pressure.

3.1.2 It is the decision to connect a new high pressure (94Barg), large diameter (1200mm) pipeline to the two existing Tirley AGI pipelines (600mm and 900mm pipes that run at 75 Barg) which forms the case of need for this PRI at all. If there was a better match of operating pressures and pipe sizes, the need for any pressure reduction installation would disappear completely. Great Britain is covered with some 150PRIs showing the random and haphazard way sections of the NTS have been joined together as the demand for gas has increased. The existence of PRIs in such numbers, each with its own portfolio of financial costs, inefficiencies and environmental damage, is a

further indication of the endemic lack of forward planning within the NT network.

3.1.3 When the pressure of a gas is suddenly reduced, it undergoes adiabatic cooling and its temperature will fall. As a consequence, it may be necessary to install heating systems prior to the pressure reduction because:

- (i) During a temperature drop, any moisture that may be present in the gas will become significant in the formation of methane hydrate. This is a lattice like crystalline substance huge amounts of which underlie our oceans and permafrost. In cold temperatures or conditions where a rapid temperature fall occurs, such conditions may promote crystal formation. This is undesirable because the crystals that may form can agglomerate and promote line plugging, instrument failure or valving problems. The consequences of this are quite obvious.
- (ii) If the cooling is severe, stresses can be set up in the pipe which could affect its integrity.

3.1.4 A pressure drop of 1 Barg will reduce the gas temperature by between 0.5 and 0.7⁰C. For an incoming gas, the pressure of which is say 92 Barg (having started at 94 Barg at Milford Haven), the drop in pressure to 75 Barg will be around 17 Barg (or around 10⁰C). If the gas in ground is running at 10 to 12⁰C, this means the gas will enter the smaller pipes at around 2⁰C if no heating is used. When the pressure drop exceeds 25 Barg, heating is usually

incorporated. The fact that this pressure drop will never be reached leads us to question the need for such large amounts of heating for this proposed installation. In smaller pipes, some concern may be attributable to the agglomerated formation of methane hydrate, but the pipes at Tirley are 600mm and 900mm respectively and the possibility of plugging is reduced.

3.2 Appellant's justification for a PRI in this location

3.2.1 The following replies were received by the Forest of Dean Planning Officers during the application for consent to build the PRI. The relevant sections have been taken directly from the Appellant's documents to show the justification for a PRI at Corse. The pipeline route has now been defined as Felindre to Tirley. This route has just been approved by the Secretary of State (7th February 2007 – Appendix **RAF 3**). A connection is therefore required to the existing (or modified) pipe layouts. It has been assumed all along that the two existing smaller pipes will remain. This will be addressed in sections 4 and 5 of this statement. As I explain below, from my reading of the documents, the only reason why a PRI is proposed at Corse is ease of connection and lowest cost.

3.2.2 National Grid's justification for siting the PRI close to the AGI is as follows:-

b) Site selection - why in principle does the siting have to be near to the existing station at Tirley (the fact that a station exists nearby is in itself not a sufficient reason)?

Under National Grid's Gas Transporters Licence, the Company is obliged to provide the required gas transmission capacity that is necessary to transport natural gas between the new Liquefied Natural Gas (LNG) importation terminals at Milford Haven and the main centres of demand in the UK. Under the Gas Act 1986 (as amended) and the Company's Gas Transporters Licence, National Grid must develop & maintain a safe, efficient, co-ordinated & economical gas transportation system.

National Grid needs to connect the proposed new 1220mm (48") diameter gas pipeline from Felindre in South Wales to the existing National Transmission System (NTS) at Corse/Tirley, in order to feed gas into two existing 900mm (36") & 600mm (24") buried gas pipelines that already run east of here to provide the gas transmission capacity that is necessary to transport the volumes of gas that are going to enter the UK at two new LNG importation terminals that are under construction at Milford Haven, whilst minimising the necessary pipeline length, consistent with our statutory duties and the principles of sustainable development. The existing NTS westwards of Tirley consists of a single 600mm pipeline, and eastwards consists of a 600mm and a 900mm pipeline in parallel (see Figure 1 below).

3.2.3 The required gas transmission capacity is a matter of a private contractual obligation.

3.2.4 As far as the reference to the Gas Act 1986 is concerned, NG must:

- provide gas transmission capacity between the import terminals and the main centres of demand in the UK.
- develop and maintain a safe, co-ordinated, efficient and economical gas transportation system
- deliver the necessary reinforcements and modifications by October 2007.

3.2.5 The discretion available within this statutory duty is sufficiently wide for it to be difficult to assert that the statutory duty is itself a justification for the PRI at Corse.

3.2.6 The proposed reinforcements for the whole scheme from Milford Haven are shown in Appendix **RAF 4**

3.2.7 The Appellant has also made a case (E.S. addendum doc 2 p2) that:-

Connection to the west means it would fail to provide:

- (i) The required pressure and
- (ii) The gas transmission capacity.

And that connection to the east would:

- (i) Incur greater environmental impacts with longer pipeline sections
- (ii) Need more AGI equipment than is necessary
- (iii) Provide capacity that is not required
- (iv) Incur greater cost than is necessary

3.2.8 National Grid have repeatedly contended that the proposed PRI at Corse is an essential part of the NTS requirements to transport vital gas supplies from the new Milford Haven LNG terminals and connect into the NTS. As I explain below, this PRI is only one solution for the gas to flow. I believe that it is not essential for the stated capacity of gas to flow and that even if it is, other solutions exist. These will be addressed in section 5.

3.2.9 The Government has said adequate gas supplies should be supplied, but has not said how they should be supplied. This is National Grid's decision. It is

therefore important to discriminate between “National Need” and “National Grid Need”. The Government is responsible for underpinning the National need on behalf of the people who elected them, whereas National Grid’s responsibility is to the Shareholders who fund them.

3.2.10 In their grounds of appeal, National Grid state that the benefits of the proposed PRI outweigh any adverse affects that may arise as a consequence of this development proceeding. They also admit that this PRI will give rise to some landscape and visual effects but make a case that these will not be intrusive or detrimental to the character of the immediate locality or on the surrounding landscape. I believe that the proposal to locate the PRI at Corse is all but wholly driven by it being the most cost effective solution for the Appellant but that it may not be the best solution in the public interest. If alternative solutions are available that remove (or reduce) landscape issues at this location, remove emissions at this location and give greater safeguards of supply in the National interest, then these (in my opinion) should be preferred, or at least properly explored.

4 Analysis of the case for the PRI

4.1 This issue is dealt with in the attached statement of Paul Anderson (Appendix **RAF 28**)

4.2 Analysis of Appellant's justification for a PRI in this location

- 4.2.1** I turn to consider the justification put forward by the National Grid set out at paragraph 3.2.2 above.
- 4.2.2** In my opinion, there is no operational limitation to justify a the PRI should be sited next or very close to the AGI, yet this is the criterion which apparently justified the very narrow “alternative site” selections that have been put forward by NG.
- 4.2.3** It is interesting to note that at the Cilfrew site, the PRI site is in an elevated position on the opposite side of the valley to the proposed connection point (Appendix **RAF 5**). Any additional cost is merely the cost of interconnecting pipes between the proposed PRI and the existing AGI, as has been incurred at Cilfrew by moving the final PRI site about a mile away to the north of the intended connection valves.
- 4.2.4** The statement that pipe length will be minimised is in reality a reference to cost. It is perfectly feasible and is entirely logical to abandon the existing AGI and the smaller pipes and take a new larger pipe straight to the main junction point at Wormington (see section 5). This will lower the carbon emission footprint locally, will remove the need for destruction of open fields, will enable a manned station to contain all the key components (so security issues are removed) and in the longer term will be more cost effective for the operation of the NTS as a whole. It will also remove completely the wastage of gas required to enable the adiabatic expansion to match the operational pressure changes at Corse.

4.2.5 National Grid does occupies a monopoly position within the UK's infrastructure and last year made £1.9 billion profit. Any additional cost for further pipe expansion is passed to the consumer in any event.

4.2.6 I turn to the points raised at paragraph 3.2.7 above:

- (i) Connecting further west would not affect the operating pressure because any interconnecting pipe could also be 1200mm. The only limitation here is the existing smaller pipes between Tirley and Wormington. It is NG plan to use these rather than dispensing with them that gives rise to this PRI application in the first place. If these smaller constructing pipes are abandoned both NG arguments disappear. It is only a matter of cost.
- (ii) With regard to connections to the East, burying a 1200mm pipeline will have a far lower environmental impact than a PRI located at Tirley that is discharging tonnes of extra emissions daily, counter to the current Government policy on the environmental emission reductions.
- (iii) I also dispute the claim that additional AGI equipment would be needed. The Corse PRI could easily be located in the brownfield site right alongside the Wormington compressor station site. Interconnection pipes here would be minimized. This may mean the compressors would work less often with therefore less noise and less loss of energy. The whole scheme may become more cost

effective, with an overall requirement for less, rather than more, AGI equipment.

- (iv) As to the assertion that capacity would be provided that is not required - gas is plentiful at present and prices have fallen sharply. This new scheme will give a huge system overcapacity for next year and for several years to come. The real capacity of this pipeline may or may not be needed depending upon whether NG's population projections and demand match the forecasts at the same time as reserves from other sources run down as expected. This is far from clear. I therefore believe that massive over-capacity is already present in the system and that the NG argument here is erroneous.

- (v) As to cost - the cost of running the extra and larger diameter pipe to Wormington is only 1.3% of NG profit last year. Over the 30 year life of such a piece of infrastructure, this extra cost would represent 0.05% of the profitability of NG, given the same levels of profit being made today. Such a sum is not in context significant. It is well inside the financial capability of this company. The improvement in our environment would be substantial (no emissions at Corse and no visual impact), the running costs of the system would fall, there would be no loss of energy because of the operational parameter mismatch at Tirley, and there would be more security of supply because a greater mass of gas would be in the system.

- 4.2.7** The justification for the PRI is based upon the further assumption that gas needs to be delivered from Milford Haven at 94 Bar. Once a bottleneck has been created at Tirley, the effect to the east cannot be recovered. This raises a question as to advantage of delivering to Tirley at 94%, when the amount of gas that can be transported eastwards from Tirley will be settled by the impact of the bottleneck. If gas were to be run at 75 Barg from Milford Haven, there would be no need for a PRI at Corse.
- 4.2.8** The justification given for running at 94 Barg depending upon the terms of a private contractual arrangement to produce capacity should be treated with caution. This is a different matter from the amount of gas that is needed to satisfy the national interest. This is a matter of great uncertainty and depends, amongst other things, upon the relationship of Government policy to reduce reliance on gas, how the current problem of massive oversupply will be resolved and the ability of other sources to meet demand.
- 4.2.9** In any event, even if it can be proved that gas needs to be transported to Tirley at 94 Barg, the incoming flow area from the new 1200mm pipe (1.121 sq m) would be 23% greater than the outgoing flow area of the 600/900mm pipes to the east (0.9192 sq m). This bottleneck in the system could be removed if the gas were transferred beyond Corse to Wormington at 94 Barg.

5. Further options

5.1 It has been assumed all along the planning cycle by the Appellant (though this is not clear from public records) that the Tirley AGI will be the connection point from this new 1200mm pipeline into the NTS. The real problem with this site is the restrictive number 2 feeder, a 600mm pipe laid in 1970. This is now 37 years old and must be approaching the end of its useful life. Good engineering practice shows that 37 years is a reasonable life for this piece of equipment anyway, especially when it is stated that this will carry up to 20% of the total gas entering the NTS and it is vital to the National interest. It is quite sobering to think that 1/5th of our future energy needs will depend on a short piece of 37 up to 50 year old pipe (projecting forward to 2020).

5.2 The replacement of this pipe would be a further advantage of transporting the gas to Wormington in a new 1200mm pipe.

5.3 Other major advantages over the existing proposal would include:

- Visual appearance: The pipeline would be buried.
- Security 1: Pipeline would be buried – no longer a consideration
- Security 2: The need for remote monitoring would disappear: Wormington is manned and security is already in place
- Emissions: no longer a consideration
- Removal of the wastage of gas necessary to operate a PRI
- Future demand: Capacity already in place a minimal cost: no need for any future attention in this zone

- Wormington is an existing and developed site with easier connections to many feeders in the NTS

5.4 Further options include:-

5.4.1 Operating the new pipeline from Milford Haven at 75 Barg, as discussed above

5.4.2 Investigating less environmentally intrusive sites removing the assumption that the PRI has to be in very close proximity to the AGI – again, as discussed above

5.4.3 Developing the Treaddow PRI to accommodate a pressure reduction in the pipe onwards to Tirley/Wormington, removing the necessity for a PRI at Tirley.

6. Safety

6.1 As gas is a potentially lethal substance if ignited with air, the consequences of building industrial complexes concerned with gas handling and transmission are central to the permission to proceed. Indeed the Appellant is obliged to ensure the safety of the entire system for the transportation of gas. During the 18th July presentation it was stated that *“Safety is paramount in all aspects of National Grid’s activities and in the past 35 years we have an exemplary*

safety record, with no serious incidents involving the 6,900 kms of the network and including all 150PRIs which form part of a total of 950 AGI's" .

- 6.2** Reference to the corporate website gives a very similar impression, though the wording is slightly different. This is presented as Appendix **RAF 6**. Under the second heading of "safety" on the website, the Appellant repeats the claims regarding 35 years of established safety records. The second sentence however now reads *"There has never been a serious incident affecting life or property on the NTS in all of that time"*.
- 6.3** The important words here are '*life*' and '*property*', but combined with previous presentations, I believe that the clear impression is given that there have not been any serious incidents for 35 years. If so, this is not correct. It is true that life and property have not been affected by NTS incidents (although the A74 was closed for several hours), but it is not true there have been no serious incidents.
- 6.4** On 22nd December 1993, a full line fracture occurred on the main feeder running south from Scotland towards England near the village of Moffatt. A picture of the site is shown as Appendix **RAF 7** and an extract from the BG report follows this as Appendix **RAF 8**. The pipeline pressure at the time of the incident was 48 Barg (718 psig) in a pipe of 914mm diameter and wall thickness 19.05mm Appendix **RAF 9**). The sudden fracture produced a crater 10m long by 10m wide and 4m deep around the fracture point. Earth and debris was scattered over a wide area and the nearby A74 was closed for

several hours. It is very surprising to me that no mention has ever been made of this incident in any of the National Grid submissions or papers.

- 6.5** What I find to be even more surprising is the contents of the Safety and Reliability Report (Appendix **RAF 10**) submitted to the Forest of Dean as part of the original application. The area of concern is highlighted on page 6. The failure frequency section again does not mention the 1993 Palaceknowe accident. I believe that this makes this report extremely misleading. The wording talks about *ignition events* and not ALL events, so the 600,000 kilometre-years of safe experience mentioned is of very limited value. In these circumstances, I believe that it is right to question the overall validity of National Grid's safety assessment (and indeed all others issued by them since the 1993 Palaceknowe incident). This is an important element of this Inquiry.
- 6.6** The Milford Haven pipeline will operate at pressures between 70 and 94 Barg. Other sections of the NTS are designed for 94 Barg pressure (the Montrose feeder for example in Scotland), but examples that actually operate here are not common. Despite repeated questions on how many km-years of experience National Grid has at these conditions, I have not received any definitive answers. The only figure that I can find is the 600,000 km-years stated in Appendix **RAF 11**, which I believe to be very misleading.
- 6.7** My research indicates that this will be the first long distance cross country pipeline that may operate at 94 Barg. My research has found some limited operational experience by other companies (ethylene grid for example in

northern England and Ruhrgas in Germany). However both of these are not as large in diameter as the Milford to Tirley 1200mm line.

- 6.8** The ethylene grid mentioned is only 300mm in diameter. Statistically such examples are not significant so it is hard to judge the true safety (in the longer term) of this 94 Barg 1200mm pipeline using such references. Expert opinion exists that operating at higher pressures significantly increases the risk of failure. One such piece of evidence is shown in Appendix **RAF 12** This comes from Dr. Jane Haswell who shows that between 75 Barg and 94 Barg, the probability of failure doubles.
- 6.9** Calculations on the basis of possible accident risks have been carried out and submitted to the Forest of Dean as part of my original input surrounding the planning application of October 2006. This calculation using the statistical database from the UKOPA report R8099 (April 2005) on pipeline loss incidents for all products, shows there is the possibility of one serious incident occurring somewhere along the pipeline during the working lifetime (30 years assumed). This was rejected by National Grid but endorsed by Ian Hirst during my meeting with the HSE at Bootle on 2nd November 2006. His calculations indicated a 1" hole could appear from the statistical data. If this hole does occur then further wall weakening is a real possibility, leading to a larger rupture. I am at pains to stress this is a statistical calculation, similar to my own submitted to the Forest of Dean in August 2006.
- 6.10** The database used for this assessment is shown as Appendix **RAF 13** (figure 4 from UKOPA R8099). NTS report NTSR 06-16 calculates the risk

assessment for the Corse PRI (attached as Appendix **RAF 10**) by National Grid. However this is based on a failure model developed by National Grid themselves so has not been independently verified. It makes assumptions that I have questioned during my meeting with the HSE (full correspondence with the HSE is given as Appendix **RAF 15**). Several key questions have not been answered despite repeated requests. In my recent studies of flow in large pipes, I have been able to determine that asymmetric forces can exist in pipelines and that the flow may not be purely axial as many models assume. This asymmetry can affect flow measurement accuracy, and pipe stresses and therefore mass balance calculations and safety. This has been discussed with the HSE.

- 6.11** It is not clear to me that such real asymmetric effects are built into existing models and predictive tools: therefore there is an uncertainty associated with the discharge flowrates that would occur close to bends and similar pipe fittings and that these locations represent weak points. Combined with any weld defects at the same location (as discussed by Professor Storrar below), we could have a potentially catastrophic weak point. The stresses at bends and other fittings need to be understood in order to fully understand the margins of safety. This was the main conclusion coming from my HSE 2nd November 2006 meeting at Bootle. At this meeting I passed across my recent technical papers, to which I have yet to receive a reply. Again, I posed additional questions – and again I have received no reply. In my opinion therefore not all the relevant factors are included nor understood in a potential accident situation and the risk assessment already submitted is subject to additional and unquantified uncertainties.

- 6.12** The quality of the welds is a further area of concern in the risk assessment. Attached as Appendix **RAF 18** are photographs of the pipe surfaces especially circumferential welds inside the phase 1 pipe near Trebanos, South Wales, during protestor occupation. The pictures were submitted to the HSE for comment in November 2006 and their reply by email dated 1st December 2006 is at **RAF 19**. From this reply, no dressing of the welds will be undertaken before the pipeline is put into operation. The HSE reply also states that they will ensure the construction of the pipeline is completed to recognized industry standards.
- 6.13** Attached as Appendix **RAF 20** is a statement from Professor Andrew Storrar relating to weld quality and long term stability. He has major concerns about the long term safety and comments that the hydrostatic test at 1.5 times working pressure may not be an adequate test, especially during the cycles of pressure that will occur during the lifetime of operation. This view is supported by events on the Williams pipeline in the USA in 2003. This had been hydrostatically tested one year prior to the accident shown in Appendix **RAF 21** occurring.
- 6.14** From all the forgoing evidence presented within this section, I am of the opinion that industry standards may not have included recent thinking on large pipeline dynamics and several other experts have acknowledged that in certain areas our knowledge is not complete in other related areas (For example see Appendix **RAF 22** from the University of Loughborough, Appendix **RAF 23** from the University of Newcastle and Appendix **RAF 24** which is an assessment of the safety codes for pipelines). These together

with other information in the public domain means there is a risk of the basic codes not adequately covering the safety of this first long distance high pressure and large diameter pipeline. Despite assertions from some parties that there are adequate margins of safety (for which proof is not available) I question this conclusion, based on the quality of construction, the incompleteness of accepted standards, the basic dismissal of stress corrosion effects and the non-independence of safety assessments submitted during the original application in 2006.

7. Points on Environmental Information

7.1 Several documents have been available during the consultation period of this project. These included the presentation by Steve Knight-Gregson to the Forest of Dean (ref planning application P0624/06/FUL) on 18th July 2006 and Appendix **RAF 2**), the Environmental Statement dated 7th April 2006, an addendum to this dated 11th August 2006 and various fact sheets on the project and the on the proposed PRI itself. The wording from one of these fact sheets is presented as Appendix **RAF 25**. This states that *“the route has been chosen after extensive consultations with key bodies”*. It also states *“that consultations will continue with a wide range of organisations, local government, landowners and individuals in refining the route and undertaking an EIA”*. At no time has National Grid consulted with the people of Corse that the proposal directly affects, though they did present their outline plans at meetings. At no time have any discussions taken place with CAPRI to

examine alternative proposals to this PRI despite serious and credible objections being made during the original planning application.

- 7.2** One other fact sheet considered was Number 7, covering the Corse PRI. The main photograph in question and my comments on this are found in Appendix **RAF 26**. Data from Potterton (the boiler supplier) has allowed CAPRI to construct the figure shown in Appendix **RAF 27**, to allow local residents to appreciate what is really being planned. The data and public information from National Grid mentioned little about the PRI itself, except that it is essential to the Nation's energy system and that environmental disturbance would be minimal. They also stated that tree planning would screen the site. This is highly disputed.
- 7.3** The Appellant's 18th July presentation (Appendix **RAF 2**) again does not make reference the Palaceknowe incident nor does it mention noise concerns in any detail. Reference to Bureau Veritas report 740611/1 dated 11th Jan 2006 shows the following sources of noise exist at PRIs and alongside the corresponding noise levels expected.

PRI regulator valves	=	94 db
PRI Skid units	=	78 db
PRI boiler houses	=	63 db
PRI boiler flues	=	70 db
PRI periodic "venting"	=	120 db

7.4 Such figures again show the Appellant has not been as open as it could have been with respect to this whole application. Emissions are barely mentioned in their presentation and absolutely no detail is given on emission rates and normal operative pollution levels. CAPRI has calculated this is several tonnes per day so that over the lifetime of the pipeline the local environment is subject to more than 200,000 tonnes of unnecessary pollutants. This is quite unacceptable environmentally.

8. Conclusions.

1. There is no real need for a PRI at Corse for the foreseeable future. The project is being driven by commercial pressure only.
2. Alternative sites have not been adequately explored. The proposal only looks at adjacent fields.
3. The PRI does not have to be next to the existing AGI. The PRI now being built at Cilfrew is over a mile from the main connection point
4. Better alternatives to the proposed PRI at this location exist. These include the removal of the restrictive 600mm no.2 feeder and running the new 1200 mm pipe direct to a nearby brownfield site, running gas at 75 Barg from Milford Haven, or using the proposed PRI at Treaddow.

5. Noise and emissions are contrary to existing and acceptable levels at this location
6. Unanswered questions remain with regard to overall safety. The statistical approach used by NG to justify its case is not proven
7. Existing standards and codes of practice do not include the latest information. Evidence from independent sources questions the completeness of the IGE/TD/1 code used as the basis for this project. HSE replies do not yet satisfactorily answer these questions.