



Office for
Nuclear Regulation

ONR RESPONSE TO THE NERA REPORT

“THE ECONOMIC IMPACT OF ONR SAFETY REGULATION”

February 2018

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Executive summary

For many years ONR, and its predecessor organisations, has taken account of economic factors in its regulatory decision making as long as these factors do not detract from ONR's main focus of maintaining safety and security of the nuclear industry. ONR's own guidance, and the guidance it shares with HSE, reflects a willingness, where appropriate, to take account of costs during engagement with dutyholders.

Any consideration of cost crucially depends on the circumstances and there are clearly instances, such as meeting fundamental nuclear safety principles and/or established relevant good practices, where ONR will not entertain arguments that such measures are too costly. Furthermore, in light of the Deregulation Act 2015 confirming the economic growth duty on non-economic regulators, ONR concluded that it already gives proper regard to the issue of economic growth in its independent regulation of the nuclear industry. Nevertheless, ONR considered it was worth proactively investigating what more could be done and commissioned external consultants, NERA Economic Consulting, to examine the economic impact of civil nuclear safety regulation. The aim of the work was to consider the economic impact in terms of charges to the industry related to ONR activity (i.e. the cost of inspection and assessment) and the cost impact of work required as a result of those activities (e.g. responding to requests or demands from ONR for improvement) to bring the industry into compliance with the law and the expected standards.

NERA's report highlighted a number of positive findings, but also concluded that there was scope for further improvements and identified five potential areas for ONR's consideration:

- encouraging more external comment and comparisons;
- more effective promotion and monitoring of the Enabling Regulation initiative;
- improving ONR's knowledge of the costs imposed by regulatory decisions;
- the use of economic advice in the framing and assessment of some issues; and
- refinement of its current guidance on 'so far as is reasonably practicable' (SFAIRP) and gross disproportion

We accept these recommendations and have proposed actions to implement them.

This report provides ONR's response to NERA's report. It highlights ONR intended management actions to address these findings as well as clarifies ONR's position where any finding is not considered appropriate given the legal framework within which we operate.

Where new work is proposed this will be subject to endorsement by ONR's Regulatory Management Team in line with our established change and prioritisation process. Some of the proposals offer gains in the short term and could be initiated and completed in the short term, i.e. this financial year. Others may be initiated in this financial year, but will take longer to implement as discussion and negotiation with the industry is necessary before any tangible benefits can be realised.

List of abbreviations

ALARP	As Low As Reasonably Practicable
BEIS	Department for Business, Energy & Industrial Strategy
IAEA	International Atomic Energy Agency
NEA	Nuclear Energy Agency
OECD	Organisation for Economic Cooperation and Development
RMT	Regulatory Management Team
SFAIRP	So Far As Is Reasonably Practicable
WENRA	Western European Nuclear Regulators Association

1. Introduction

Background

1. In light of the Deregulation Act 2015 (Ref. 1) confirming the economic growth duty (Ref. 2) on non-economic regulators, ONR concluded that it already gives proper regard to the issue of economic growth in its independent regulation of the nuclear industry, consistent with the overarching duty to regulate proportionately. Nevertheless, ONR considered it was worth proactively investigating what more could be done and commissioned external consultants, NERA Economic Consulting, to examine the economic impact of civil nuclear safety regulation. The aim of the work was to consider the economic impact in terms of charges to the industry related to ONR activity (i.e. the cost of inspection and assessment) and the cost impact of work required as a result of those activities (e.g. responding to requests or demands from ONR for improvement) to bring the industry into compliance with the law and the expected standards; the objectives of the work undertaken by NERA are provided in Annex 1. Ref. 3 summarises the output of NERA’s work.
2. NERA’s work drew on extensive published literature, and the views of inspectors, regulated bodies across all ONR civil operational safety divisions and other public bodies that interface with ONR. These exchanges focused on the interactions between ONR and those whom it regulates and the consequent safety and other economic impacts, including the handling of balances between the benefits and costs of risk reduction. The work also considered the institutional structure and the incentives facing ONR and its inspectors.

Purpose of this report

3. The purpose of this report is to consider NERA’s findings, conclusions and areas for consideration, and provide ONR’s response to NERA’s report. It highlights ONR intended action to address these findings, as well as clarifies ONR’s position where any finding is not considered appropriate given the legal framework within which we operate.
4. ONR is an independent regulator and ensuring a safe and secure nuclear industry is our overriding priority. We are robust in upholding the law and use our regulatory enforcement powers to hold the industry to account wherever necessary. The actions are consistent with this priority.

2. NERA conclusions and areas for further consideration

5. NERA concluded that “ONR is an impressive safety regulator” that “appears to be fully meeting its primary responsibility to the nation, as an effective enforcer of nuclear safety regulation”, but noted that this overall outcome “cannot be sensibly monetised”. Instead NERA’s focus was on individual Programmes within ONR and a review of cases where there were more visible trade-offs between costs incurred as a result of regulatory decisions / recommendations and the benefits associated with increased safety.
6. The following positive findings were noted:

- The reformed regulatory structure and culture at Sellafield since April 2014 is making a major contribution to productivity at that site.
 - Across other areas, licensees report good professional relationships with the senior inspectors with whom they are dealing. And it appears that the regulatory fees of ONR, for reactors and other operating facilities, are significantly less than those in the US.
 - The Generic Design Assessment approach is widely recognised as a good one, likely to result in cost savings over the long term.
7. NERA also concluded that there was scope for further improving ONR’s economic impact and identified five potential areas for consideration:
- encouraging more external comment and comparisons;
 - more effective promotion and monitoring of the Enabling Regulation initiative;
 - improving ONR’s knowledge of the costs imposed by regulatory decisions;
 - the use of economic advice in the framing and assessment of some issues; and
 - refinement of its current guidance on ‘so far as is reasonably practicable’ (SFAIRP) and gross disproportion
8. We accept these recommendations and have proposed actions to implement them. Since issue of revision 0 of this report, we have engaged with NERA to clarify key areas and to ensure that ONR and NERA understand any differences of opinion.

3. ONR proposals to address recommendations for improvement in economic impact

9. Each of the five potential areas for consideration is discussed in turn, with ONR proposals to address them outlined. In addition, other findings identified following a detailed review of the NERA report, and not implicitly covered by the four areas for consideration, are discussed and any further ONR proposals to address these outlined.
10. In some cases there is already significant ongoing work (e.g. recommendation 2 on Enabling Regulation) and here we simply map over NERA’s findings into that programme of work. For some other potential areas for consideration there is the opportunity for us to improve what we already do and the way we do it (e.g. recommendation 4 on the use of economic advice).

3.1 Recommendation 1: encouraging more external comment and comparisons

11. Under this recommendation NERA identified two key areas of focus: firstly relating to feedback from regulated bodies and secondly a systematic, quantitative international comparison of factors such as regulatory costs and standards as applied in practice.

12. Regarding the first area, NERA noted that although ONR actively encourages challenge on specific regulatory decisions, there has never been, to the best of its knowledge, any independent survey to record the opinions held of ONR by any set of regulated bodies. Given NERA's interactions with regulated bodies and public sector stakeholders as part of this work, which provided rich and detailed feedback, NERA suggested that even in cases where ongoing relationships are good, with regular meetings, it is likely that occasional independent surveys may reveal substantive, constructive criticisms that would not otherwise be heard. And in other cases such independent survey work would most likely reveal significant problems that would otherwise escape the attention of ONR management.
13. Regarding the second area, NERA noted that there are many difficulties, because of differing legal and institutional structures and regulatory conventions, and at present the only information available on comparative costs, or views of regulated bodies, appears to be ad hoc and sketchy. However, it considered that there could be a case for investigating what information could be collected, without disproportionate effort, to help indicate how ONR's economic impact in specific types of regulation compares with some other regulators.
14. Recommendation 1 is potentially broad and could embrace a number of activities. A survey as suggested by NERA sent to dutyholders or possibly wider stakeholders would, if carefully constructed, gather a wide range of information on ONR's impact. ONR already actively seeks external comment on our regulatory expectations (Safety Assessment Principles, Technical Inspection Guides and Technical Assessment Guides) so actions to enhance economic awareness identified under recommendations 3 and 4 will automatically attract external comment and review. In terms of comparisons, the protocol proposed under recommendation 3 could serve for national comparison purposes, though industry fears and sensitivity over commercial confidentiality could limit progress.
15. Internationally we could attempt to interest the International Atomic Energy Agency (IAEA), the Western European Nuclear Regulators Association (WENRA) or the Organisation for Economic Cooperation and Development's (OECD) Nuclear Energy Agency (NEA) in carrying out such work, but in reality the success of achieving any tangible outcomes will depend on their priorities. Generally we find great resistance in many of our international regulatory colleagues even to acknowledge that cost is a feature at all. This has been particularly evident in our negotiations to develop a common understanding on the term 'reasonably practicable' within Article 8 of the EU Nuclear Safety Directive.
16. Proposals to address recommendation 1 are:
 - Within our corporate plan for the 2017/18 financial year, we are planning to seek feedback on our effectiveness through the industry's Safety Directors' Forum. As part of this we will further develop and issue an independent survey to dutyholders, and wider stakeholders, to gather data on an infrequent but regular basis to inform a view on and improve the economic impact of ONR. (Medium term – 1-3yr)

- Expanding our international engagement strategy to include seeking and pressing for sharing information on plant improvements to include cost information. This is unlikely to lead to short term benefits, but it is a start and a move in the right direction. (Long term – >3yr)

3.2 Recommendation 2: more effective promotion and monitoring of the Enabling Regulation initiative

17. ONR's 'Enabling Regulation' is identified by NERA as a key initiative leading to efficient and effective regulation, and therefore cost effective regulation, which NERA has considered in detail in its work. NERA concluded that the Enabling Regulation initiative is courageous and having an impact, but noted that the impact varied across ONR's Programmes and individuals. Based on views from those that NERA engaged, the following findings were noted:
 - The Enabling Regulation initiative is widely welcomed across the industry, although views differ on its breadth, and the general message is applied in some programmes and by some inspectors more than others.
 - The principles of Enabling Regulation do not explicitly address the issue of cost / risk trade-offs, or 'cost effectiveness', which is fundamental to ONR's economic impact.
 - There were a range of perceptions within ONR, and among licensees and others, of Enabling Regulation, and indeed its level of implementation varied across divisions within ONR and inspectors.
18. Although the principles within Enabling Regulation are not new compared with how ONR operates, the descriptor is new, and at the time of NERA's work ONR was in the process of developing further guidance and briefing its staff and others. It is therefore not surprising that a range of views were expressed. Since NERA's work, further briefing has taken place both within and outside ONR. For example, presentations have been made to industry and other stakeholders, briefing has been made to all ONR staff, guidance has been developed and issued within ONR and to external stakeholders, which provides examples of the implementation of Enabling Regulation, and Enabling Regulation 'champions' have been identified across ONR's Divisions. However, more could and is being done to fully implement a consistent approach to Enabling Regulation.
19. The following are already planned:
 - An action plan has been produced to embed Enabling Regulation across ONR (Ref. 4). This includes focused discussion on Enabling Regulation by ONR's Professional Leads within their specialisms, development and running of internal bitesize training, meetings and discussion with external stakeholders, for example a Safety Directors' Forum workshop, and review of any feedback and update of the guidance.
 - Publication of ONR's framework for risk informed regulatory decision-making, which should help ensure the principles of Enabling Regulation are consistently applied.
20. Additionally, by using the Safety Director's Forum as our conduit, we encourage the industry to play its part in Enabling Regulation, for example by engaging in

an much more open and trusted dialogue with ONR, by enhancing its own internal regulator arrangements, and by raising the quality of its safety cases and implementing these adequately to reduce risks from its operations SFAIRP.

21. Notwithstanding, we make the following additional proposals to address recommendation 2:
- Further publicise at a high level within government the success of Enabling Regulation and the great importance, for efficient and effective regulation, of it being maintained. (Short term – proposed to be actioned this financial year)
 - Review and if necessary update of the Enabling Regulation principles to include explicit consideration of ONR's economic impact. (Medium term – 1-3yr, as this will need careful consideration, and given the guidance has only just been issued)
 - Develop and implement a mechanism for regular feedback from dutyholders on the impact of Enabling Regulation and how the principles are embedded across ONR. (Medium term – 1-3yr)

3.3 Recommendation 3: improving ONR's knowledge of the costs imposed by regulatory decisions

22. NERA concluded that there appears to be a case, in some contexts, for introducing procedures that make inspectors more aware of both the resource costs and the technical implementation costs that their activities impose. NERA also stated that this could in some cases usefully include the (voluntary) support of the regulated body on which the costs fall, and that this support might in many cases be readily provided, even to the extent of figures being shared or even published. NERA therefore proposed recommendation 3.
23. Recommendation 3 has potential benefits for ONR and dutyholders and we propose to cover both direct charging and the cost impact of additional work dutyholders undertake in response to ONR recommendations or requirements.
24. For direct charging there is already some ongoing work to provide a better breakdown of our regulatory activities and to improve our forecasting as part of implementing the new Fees Regulations. This should enable more informed debate and discussion on charges and will include all activities that we charge, from direct inspection / assessment costs to overhead. No additional action is therefore proposed on this aspect. There is also benefit in ensuring that the charges to industry reflect as accurately as possible the effort expended and that inspectors have greater awareness of their impact on costs to industry. ONR has already started raising awareness of the importance of accurate and disciplined use of the current time recording system. In order to bring focus and improve, the following action is therefore proposed to ensure enhanced accuracy of the information gathered as part of the time recording system:
- provide focused training to staff on existing time recording mechanisms and disciplines (Short term – proposed to be actioned this financial year)
 - Review and, if necessary, implement a modified or alternative solution to the current time recording system to ensure that charges to industry are accurate whilst minimising the overhead on users. (Medium to long term –

next financial year to complete the review, but longer to implement if significant changes are required)

25. To gain better knowledge on the cost impact of additional work dutyholders undertake in response to ONR recommendations or requirements, we will need to broaden our engagement with them, to see how they can best provide us with this information and seek to make it part of the inspectors’ routine information gathering. Clearly it would be of real value to see how a dutyholder’s estimates of pre-regulatory decision and post implementation compare so we can gain insight for sensitivity analysis in the cost screening process described under recommendation 4 below. There may be some potential dis-benefits. Dutyholders may wish to avoid costs associated with making economic arguments where they feel best served by reliance on traditional ‘good practice’ cases. We should not force them to do work that they can reasonably justify is not needed. Notwithstanding, we make an additional proposal to help address recommendation 3:
- Engage with industry (possibly through the Safety Directors’ Forum) to agree a protocol for request and provision of cost information on the financial impact of regulatory requirements or recommendations, in particular where there is a difference of opinion between ONR and a licensee’s position in relation to implementation of a safety enhancement measure. This protocol needs to recognise that some requirements will be mandatory and not subject to any test of reasonable practicability. Depending on the outcome of the engagement it may be beneficial to revise selected elements of our published guidance (Technical Inspection Guides / Technical Assessment Guides) for inspectors. (Medium to long term – 2/3 yr to establish viable protocol, longer for it to deliver)

3.4 Recommendation 4: the use of economic advice in the framing and assessment of some issues

26. NERA concluded that ONR’s economic impact would be improved by access to some quantitatively modest but high quality economic advice. It noted that an in-house economist might be too isolated, and an external academic or consultancy source might be too far from the practical realities. However, NERA considered that a suitable person, perhaps professionally associated with and sometimes working with the HSE economics team, would be worth considering. NERA therefore proposed recommendation 4.
27. Economic advice could relate to the impacts from changes to regulations and guidance, but also the impacts from the regulatory activity we undertake and the resultant regulatory decisions. In the former case, economic impact is already taken into account by ONR through the requirement to carry out Impact Assessments for new or modified regulations or through the requirement to carry out a Business Impact Target assessment for new or modified guidance. No ONR management action is therefore proposed in this area. The focus of the actions proposed in this report is in relation to the economic impact from the regulatory activity we undertake (inspections and assessment) and the resultant regulatory decisions.
28. ONR does in fact use cost benefit information to help frame some of our assessment work. This is either from the cost benefit analyses occasionally

submitted by dutyholders to support their argument that risks have been reduced as low as reasonably practicable (ALARP) or ballpark estimates developed by ONR as a screening tool.

29. Regarding formal cost benefit analysis, NERA noted that ONR generally leaves it open to the dutyholder to submit such analysis to help inform its arguments regarding demonstrating ALARP, but in practice this appears to be extremely rare. Indeed, NERA was only made aware of one cost benefit analysis, whereas there are a number of examples from the last few years. Notwithstanding, even where a formal cost benefit analysis is not submitted, dutyholders still need to consider and provide evidence of the costs in terms of time, money and trouble, which is often in qualitative terms, as part of an ALARP demonstration. This provides some visibility of the economic impact of any proposed change.
30. It is true, however, that formal cost benefit analyses submitted by dutyholders are rare. As part of our non-prescriptive regulation, we leave it for dutyholders to determine the most appropriate way for them to make a case. If a dutyholder submits a formal cost benefit analysis as part of its safety case we will consider it as necessary. We do not disallow cost benefit analyses, but we discourage sole use of a cost benefit analysis because of the uncertainties involved. First and foremost we seek to ensure that fundamental nuclear safety principles, such as defence in depth, that are embedded into international standards and guidance, for example from the IAEA, are considered and met. A cost benefit analysis which accompanies a safety case that pays little attention to key nuclear safety principles is unlikely to be compelling. We believe our guidance on the role of cost benefit analysis, which is consistent with HSE's, and associated regulatory training, is sufficiently clear on these points and therefore do not propose any management action.
31. ONR also already has a good understanding of the major economic impacts of our decisions, for example the revenue that an operating reactor would lose due to the delay in making a timely regulatory decision.
32. Regarding cost screening by ONR, typically this will utilise published guidance (HSE / ONR methodology (Ref. 5) and Public Health England accident cost information (Ref. 6)) to establish a 'ballpark' estimate of what it may be worth spending to reduce a particular risk, once it has been established that there are no significant gaps in the key engineering or operational features. This 'ballpark' estimate can be a powerful screening tool that enables swift decisions to be made on whether or not to:
 - press for further improvements;
 - request dutyholders to refine the 'ballpark' estimate; or
 - content ourselves with establishing that the dutyholders derivation of risk figures (a key input to the 'ballpark' estimate) is adequate.
33. That this 'cost screening' was not reflected in NERA's work indicates room for improvement in its prominence and awareness within ONR and dutyholders.
34. In addition, for situations where the economic input may be pivotal, or there is a need to refine the cost estimates, we believe that there could be value in having

more or better access to independent expert advice on financial and economic matters.

35. The proposals to address recommendation 4 are:

- Update our published guidance (NS-GD-TAST 005 – Ref. 7) to more explicitly include cost screening. This will help ONR inspectors and also aid dutyholders’ awareness of how they are being judged and may encourage them to be more upfront including cost related matters. (Short term – proposed to be actioned this financial year)
- Include cost screening within the regulatory core training programme for inspectors (specifically courses N33 and N34) (Short term – proposed to be actioned this financial year)
- Decide if ONR needs to establish better ‘intelligent customer capability’ on economic matters and/or identify appropriate supply chain resource (e.g. through call-off contract). (Medium term – acquisition of intelligent customer capability could take significant time to realise by recruitment and role definition – beyond this financial year)
- Decide if additional economic capability on the ONR Chief Nuclear Inspector’s independent advisory panel is needed and if so identify suitable candidates (Short term – proposed to be actioned this financial year).

3.5 Recommendation 5: refinement of its current guidance on SFAIRP and gross disproportion

36. As economists, NERA look for an optimum balance between costs and benefits and consider that the terminology of ‘gross disproportion’ could potentially lead to an economically inefficient outcome. NERA also have concerns that ONR’s guidance gives the impression that the interpretation of SFAIRP using ‘gross disproportion’, i.e. the 1949 Edwards vs the Coal board judgement (Ref. 8) is fixed and unchangeable. Both HSE and ONR are acutely aware that future health and safety court cases may lead to a change in interpretation and subsequently HSE and ONR policy on the meaning of SFAIRP within our guidance.

37. Neither HSE nor ONR are resistant to change and our policy does change in response to developments in legal precedent. For example HSE’s “Reducing Risks, Protecting People” (R2P2) publication (Ref. 9) embraced a new legal interpretation of the meaning of ‘risk’ in 2001, demonstrating our openness and willingness to change. Similarly, ONR has modified its training material to reflect legal interpretation from recent ‘decided cases’ (Ref. 10). The ongoing monitoring and review of legal interpretation is already embedded within our processes and ONR’s Legal Advisory Service regularly updates the ONR Intranet page on ‘decided cases’ and their implications.

38. In terms of ‘gross disproportion’, we recognise that NERA are sensitive to the term ‘gross’, as it potentially indicates an undue economic imbalance, and to the length of time since the 1949 Edwards judgement. For our part we consider that ONR (and HSE) use a modern interpretation based on evidence given at the Sizewell B public inquiry together with our guidance on ‘tolerability of risk’ (Ref. 11), which we revisited as recently as 2017 (Ref. 12). HSE’s and ONR’s interpretation of gross disproportion is consistent across all sectors, including

other energy producers, hence there is no relative commercial detriment to nuclear within the UK. Furthermore we are not aware of any instances where application of 'gross disproportion' has led to higher standards for new build reactors*. NERA do recognise that nuclear safety sometimes demands a "substantial margin of safety" and we see this being entirely consistent with the modern interpretation of gross disproportion. Although we do not necessarily share NERA's concerns regarding SFAIRP and gross disproportion, we nevertheless recognise that ONR can make some improvements.

39. The proposals to address recommendation 5 are:

- Modify ONR guidance (NS-GD-TAST 005 – Ref. 7) to clarify that the court's interpretation of SFAIRP is not fixed and can change depending on the circumstances of the case under consideration.
- Consider formalising the advice from ONR's Legal Advisory Service on decided cases into published guidance, such as a companion guide for (NS-GD-TAST 005 – Ref. 7) or an annex within that guidance.

3.6 Other recommendations

40. In addition to the four recommendations discussed above (key potential areas for consideration), a detailed review of NERA's report identified the following themes where further ONR actions are proposed:

- dealing with disagreements / challenging ONR; and
- proportionality.

3.6.1 Challenging ONR

41. Regarding challenging ONR, NERA highlighted an occasional area of concern is that of technical judgements when unreconciled disagreements persist on major decisions between world class experts, and that there appeared to be no efficient process for resolving such an issue.

42. There are already a number of ways in which a dutyholders can challenge ONR, including:

- normal regulatory interactions and escalation through level 4 to level 1 meetings;
- regular communication between ONR delivery leads and dutyholder senior managers;
- formal decision review process (Ref. 13); and
- formal complaints process.

43. Notwithstanding, improvements can be made regarding publicising the process through which dutyholders can challenge regulatory decisions or the timeliness of making decisions, and emphasising the role of ONR's Professional Leads (technical discipline leads) in resolving significant differences in technical opinion. The following management action is therefore proposed:

- Review and revise as necessary ONR’s published processes and guidance in relation to dutyholders challenging regulatory decisions, significant differences in technical opinion and the timeliness of ONR coming to a decision. This should include the prominence of ONR’s current processes and guidance internally and externally. (Short / medium term – proposed to be actioned this financial year with any implementation in the following financial year)
- Clarify the role of Professional Leads in dealing with significant differences in technical opinion between inspectors and dutyholders (Short / medium term – work could be progressed this financial year with any implementation in the following financial year)

3.62 *Proportionality*

44. Regarding proportionality, NERA made an overall conclusion that it would be useful to develop procedures that draw out a deeper, more critical assessment of the budgeting of some divisions that included more explicit regard to the costs imposed on industry. The report also highlighted a number of other areas of occasional concern that relate to proportionality:
- number of meetings between ONR and dutyholders and the resource required;
 - level of sampling in assessment / inspection and timeliness in resolving some differences in technical opinion; and
 - regulatory approach on low nuclear consequence sites (e.g. decommissioning sites where the fuel has been removed).
45. In terms of the budgeting of divisions, for example the number of inspectors and their specialism allocated to a given dutyholder or ONR division, there is already a systematic process in place. This is based on ONR judgement and takes account of the scale, nature and complexity of the safety issues balanced with our judgements on the past / current performance of the dutyholder. This resource related cost affects not only the ‘split’ between dutyholders, but also the absolute cadre and future recruitment programme and will include all activities that we charge, from direct costs to overhead. Our direct costs are part of this consideration, as discussed under recommendation 3. We also have a formal change management process and carry out regular reviews of the resource profile and/or technical support contracts across the organisation. No further action, above that already on-going in ONR, is considered necessary. Regarding indirect costs, we propose actions to improve our economic impact under recommendations 3 and 4.
46. In terms of number of meetings between ONR and dutyholders this is very dependent on the magnitude and nature of the hazard, the complexity of the operation and maturity of the dutyholder. It therefore will vary across dutyholders. However, there is some benefit in considering whether the management of the effectiveness of interactions could be monitored and improved. Delivery Leads have a key role in ensuring efficient and effective regulation in their sub-divisions, part of which will already consider the effectiveness of interactions. Notwithstanding, there are elements of good practice across ONR that could be further promulgated. The following action is therefore proposed:

- Review and revise as necessary ONR's existing methods of promulgating effective regulatory interactions by ONR's Delivery Leads. (Short / medium term – proposed to be actioned this financial year with implementation of any improvement measures in the following financial year)

47. The level of sampling can have a direct economic impact, as it can affect the timeliness of making a decision, focus on areas that are risk insignificant and distract a dutyholder's resource from focusing on the key issues for nuclear safety. ONR already places significant focus on appropriate sampling through published guidance, regulatory training, the oversight by Professional Leads and mentoring by more experienced inspectors. Further management action is therefore not considered necessary.
48. Regarding the regulatory approach on low nuclear consequence sites, NERA presented views that the regulatory framework may not always be proportionate in such circumstances. Work is on-going already between ONR and licensees to address this, including a review of licensees' arrangement for compliance with licence conditions to simplify arrangements commensurate with the low or reduced level of the hazard and risk. This provides greater flexibility for the licensees in situations where decommissioning has progressed to levels where the bulk of nuclear material has been removed from the site or passivated. In addition, ONR is already working with the Department for Business, Energy & Industrial Strategy (BEIS) and other regulators to improve the legal framework for final stages of decommissioning and site clearance, enabling earlier release from the licensing regime. Further management action is therefore not considered necessary.

3.63 *Other findings*

49. A number of more specific detailed points were also raised by NERA that we believe are already implicitly captured by the recommendations, findings and management actions discussed in this report. In addition, the following on-going ONR initiatives will also address many of the detailed points:
- Enabling Regulation and its promotion (see recommendation 2); and
 - development of guidance on ONR's framework for risk informed regulatory decision-making (Ref. 12).

4. Areas of divergence between NERA and ONR

50. In Section 3.5 we have already identified that NERA are not comfortable with the legal precedence of 'gross disproportion' being used to define what is or is not reasonably practicable. However, we remain confident that ONR and HSE are using the appropriate legal precedent, as recommended by HSE solicitors, with an up to date interpretation and a flexible decision making framework (Ref. 12). We do not accept that there is any evidence that the use of case law to interpret SFAIRP is, as NERA believe, "increasingly anomalous". Nevertheless we do acknowledge that the courts are not necessarily bound to use this particular precedent and may alter or replace it depending upon the circumstances of the case under examination, perhaps even establishing new case law. ONR and HSE cannot second guess what the courts may decide but would accept such changes and modify the guidance accordingly. Until then we will follow the existing guidance and advice. The proposed actions to address

recommendation 5 should help alleviate some of NERA's concerns in this respect.

51. In a number of areas in the report, strong assertions have been made, or findings presented, that appear to be based on comments made from a very small sample, and in a number of cases based on opinions from a single individual. This is particularly evident in NERA's conclusions on transport regulation. ONR has expressed concern that the conclusions here are too strong given the small data set and its anecdotal nature. NERA do not share ONR's concern and pointed out that these were the views that were given to them and they were simply reporting back. We accept NERA's report must reflect their views and conclusions. Although we are keen to improve, we need a much firmer evidential basis on which to build, and consider that the actions we have proposed on stakeholder engagement could potentially provide that basis.
52. We consider that NERA's analysis of the Sellafield situation does not give sufficient prominence to the historical development of governance and regulation of the site. We also consider that the funding arrangements for Sellafield are far from straightforward in terms of their impact on the safety outcomes. Unlike many commercial activities in the nuclear sector, much of Sellafield's work is aimed at reducing risk rather than, say, producing electricity. As a result the safety justifications can be complicated by having risk on both sides of the argument where a delay in introducing an "improved" risk reduction measure can outweigh the benefit of improving the risk reduction measure itself. We feel that these factors are crucial to understanding the regulatory interactions with the dutyholder and we do not subscribe to the view that ONR is somehow part of an overall public service cause which makes things easier than regulation of a commercial enterprise. If Sellafield were doing the same things as a commercial enterprise, we would regulate them in the same way.
53. It is also worth noting that the UK is at the forefront of international nuclear regulatory bodies that explicitly take account of economic factors in regulatory decisions, where appropriate. The 'where appropriate' is important and covers situations where there are no obvious shortfalls in engineering or operational provisions (i.e. they meet the key engineering principles) but the risks may still be relatively high and additional or diverse provisions may need to be considered.
54. We have engaged fully with NERA to discuss their views and the reasons behind them and, for the most part, we have achieved a common understanding. Where this has not been entirely possible we have agreed to differ and NERA's report properly reflects their views, and similarly this report reflects ONR's. Overall we believe that NERA's report and the positive engagement with the authors has enabled ONR to identify a number of real improvement measures in terms of our awareness of, and approach to, our economic impact on the industry we regulate.

5. Conclusions

55. This report has provided a response to the NERA report and proposes management actions to address the recommendations raised by NERA.
56. ONR already has work in place that will address or help to address recommendations 1, 2 and 3.
57. Where new work is proposed this will be subject to endorsement, and subsequent monitoring, by ONR's Regulatory Management Team in line with our established change and prioritisation process. Some of the proposals offer gains in the short term and could be initiated and completed in the short term, i.e. this financial year. Others may be initiated in this financial year, but will take longer to implement as discussion and negotiation with the industry is necessary before any tangible benefits can be realised. It is difficult to put a figure on this but medium term 2-3 years should be sufficient to at least establish whether the direction of travel is sufficient to merit continuation.
58. Implementation of these actions is prioritised based on whether they directly address one of the main recommendations identified by NERA and whether they make a key contribution to addressing NERA's recommendations. If both criteria are satisfied, the action is judged as high priority. If only one criterion is met, the action is considered as medium priority. In order to ensure clarity of governance, a proposal has been made to identify a responsible director for implementing each of the actions.

6. References

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Table 1

Summary of ONR actions

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
1	1. Encouraging more external comment and comparisons	Within our corporate plan for the 2017/18 financial year, we are planning to seek feedback on our effectiveness through the industry’s Safety Directors’ Forum. As part of this we will further develop and issue an independent survey to dutyholders, and wider stakeholders, to gather data on an infrequent but regular basis to inform a view on and improve the economic impact of ONR.	Medium term – 1-3yr	H	Communications
2	1. Encouraging more external comment and comparisons	Expand our international engagement strategy to include seeking and pressing for sharing information on plant improvements to include cost information. This is unlikely to lead to short term benefits, but it is a start and a move in the right direction.	Long term – >3yr	M	Technical Division
3	2. More effective promotion and monitoring of the Enabling Regulation initiative	Further publicise at a high level within government the success of Enabling Regulation and the great importance, for efficient and effective regulation, of it being maintained.	Short term – proposed to be actioned this financial year	H	New Build – To retain “enabling regulation” continuity under Director of New Build –

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
4	2. More effective promotion and monitoring of the Enabling Regulation initiative	Review and if necessary update the Enabling Regulation principles to include explicit consideration of ONR's economic impact.	Medium term – 1-3yr, as this will need careful consideration, and given the guidance has only just been issued	H	Technical Division (closely working with New Build)
5	2. More effective promotion and monitoring of the Enabling Regulation initiative	Develop and implement a mechanism for regular feedback from dutyholders on the impact of Enabling Regulation and how the principles are embedded across ONR.	Medium term – 1-3yr	H	All Divisions within the Regulatory Directorate
6	3: Improving ONR's knowledge of the costs imposed by regulatory decisions	Provide focused training to staff on existing time recording mechanisms and disciplines.	Short term – proposed to be actioned this financial year	H	Finance lead with support from HR and Regulatory Divisions (given the action relates to implementing and adhering to good work recording principles)

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
7	3: Improving ONR's knowledge of the costs imposed by regulatory decisions	Review and, if necessary, implement a modified or alternative solution to the current time recording system to ensure that charges to industry are accurate whilst minimising the overhead on users.	Medium to long term – next financial year to complete the review, but longer to implement if significant changes are required	M	Finance (this is to do with work recording)

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
8	3: Improving ONR's knowledge of the costs imposed by regulatory decisions	Engage with industry (possibly through the Safety Directors' Forum) to agree a protocol for request and provision of cost information on the financial impact of regulatory requirements or recommendations, in particular where there is a difference of opinion between ONR and a licensee's position in relation to implementation a safety enhancement measure. This protocol needs to recognise that some requirements will be mandatory and not subject to any test of reasonable practicability. Depending on the outcome of the engagement it may be beneficial to revise selected elements of our published guidance (Technical Inspection Guides / Technical Assessment Guides) for inspectors.	Medium to long term – 2/3 yr to establish viable protocol, longer for it to deliver	H	Technical Division with support from Communications on overlaps with stakeholder survey work (see action 1)
9	4: The use of economic advice in the framing and assessment of some issues	Update our published guidance (NS-GD-TAST 005 – Ref. 7) to more explicitly include cost screening. This will help ONR inspectors and also aid dutyholders' awareness of how they are being judged and may encourage them to be more upfront including cost related matters.	Short term – proposed to be actioned this financial year	H	Technical Division

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
10	4: The use of economic advice in the framing and assessment of some issues	Include cost screening within the regulatory core training programme for inspectors (specifically courses N33 and N34).	Short term – proposed to be actioned this financial year	M	Technical Division (with HR support as training is in HR)
11	4: The use of economic advice in the framing and assessment of some issues	Decide if ONR needs to establish better ‘intelligent customer capability’ on economic matters and/or identify appropriate supply chain resource (e.g. through call-off contract).	Medium term – acquisition of intelligent customer capability could take significant time to realise by recruitment and role definition – beyond this financial year	H	Technical Division
12	4: The use of economic advice in the framing and assessment of some issues	Decide if additional economic capability on the ONR Chief Nuclear Inspector’s independent advisory panel is needed and if so identify suitable candidates.	Short term – proposed to be actioned this financial year	H	RMT (this concerns the CNI independent advisory panel)

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
13	Other recommendations – challenging ONR	Review and revise as necessary ONR’s published processes and guidance in relation to dutyholders challenging regulatory decisions, significant differences in technical opinion and the timeliness of ONR coming to a decision. This should include the prominence of ONR’s current processes and guidance internally and externally.	Short / medium term – proposed to be actioned this financial year with any implementation in the following financial year	L	Technical Division in collaboration with SDFW Operating Facilities and New Build Divisions
14	Other recommendations – challenging ONR	Clarify the role of Professional Leads in dealing with significant differences in technical opinion between inspectors and dutyholders	Short / medium term – work could be progressed this financial year with any implementation in the following financial year	L	Technical Division
15	Other recommendations – proportionality	Review and revise as necessary ONR’s existing methods of promulgating effective regulatory interactions by ONR’s Delivery Leads.	Short / medium term – proposed to be actioned this financial year with implementation of any improvement measures	L	Technical Division (Tier 1 assurance)

Action number	NERA recommendation	ONR action	Timescale	Relative priority	Lead Division
16	5: Refinement of its (ONR's)current guidance on SFAIRP and gross disproportion	Update our published guidance (NS-GD-TAST 005 – Ref. 7) to clarify that the court's interpretation of SFAIRP is not fixed and can change depending on the circumstances of the case under consideration.	Short term – proposed to be actioned this financial year	H	Technical Division
17	5: Refinement of its (ONR's)current guidance on SFAIRP and gross disproportion	Consider formalising the advice from ONR's Legal Advisory Service on decided cases into published guidance such as a companion guide for (NS-GD-TAST 005 – Ref. 7) or an annex within that guidance	Medium term 2/3yr subject to resource	M	Technical Division

Annex 1

Objectives of NERA's work

59. Based on ONR's statement of service requirements, the objectives of NERA's work are outlined in this annex.

The study should provide qualitative and quantitative judgements supported by evidence on a number of issues including:

- The degree to which economics considerations are built into the UK health & safety regulatory system and provide safeguards against disproportionate regulation;
- Social research into the extent to which licensees chose to use cost benefit analyses to demonstrate compliance with the UK legal duty to reduce risks SFAIRP, including:
 - the reasons dutyholders often chose other less quantitative means of demonstrating the above, and the cost implications of the different alternatives;
- The balance between optimal and excessive regulation and the cost of bridging such a gap (where it might exist), including:
 - the degree to which industry investments are affected by the direct costs of regulation. These include (but are not limited to) ONR cost recovery, developing and maintaining written arrangements for complying with licence conditions, and developing company standards;
 - as above in respect of indirect costs flowing from regulatory requirements. These include (but are not limited to) maintaining plant to meet safety case requirements, modifying plant to close gaps between the original design and modern standards, regulatory work resulting from misunderstandings of regulatory positions, income lost and costs incurred as a result in delays in granting regulatory permissions, and insurance to cover the licensee's absolute but limited liability under the Nuclear Installations Act for harm resulting from radiological accidents;
 - the extent to which measures required by the regulatory system duplicate commercial drivers, to enable the overhead solely attributable to regulatory requirements to be gauged. One example in the need for high reliability systems to both reduce demands on protection systems and support high generating load factors on nuclear power stations;
 - initial and recurring costs averted through effective regulation, including those associated with major accidents, and major remediation issues e.g. the legacy facilities at Sellafield; and
 - the contribution of regulatory requirements, including post-Fukushima modifications, to new build cost escalation.