CabinetOffice

Summary of Consultation Responses

Summary of Responses to the Strategic Framework and Policy Statement on Improving the Resilience of Critical Infrastructure to Disruption from Natural Hazards

March 2010

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EXECUTIVE SUMMARY

This document summarises responses provided between 6 November 2009 and 25 January 2010 to the Cabinet Office Critical Infrastructure Resilience Programme's *Strategic Framework and Policy Statement on Improving the Resilience of Critical Infrastructure to Natural Hazards..*

Seventy two organisations, representing all National Infrastructure sectors, responded to the consultation, of which:

- 92% supported the aims of the programme.

- 95% supported an approach to standards based on continuity of service, risk-based and varying in and between sectors.

- 97% supported action to improve information sharing.

- 67% supported proposals for LRFs to assess interdependencies.

- 54% supported funding based on the 'user pays' principle.

Issues highlighted include:

- Information sharing between Category 1 and Category 2 responders.

- Inconsistencies in resilience activity between sectors.

- LRF capacity to manage improved resilience.

- The role of emergency services during an emergency.

- Lack of targeted funds for resilience building.

- Limited understanding of interdependencies.

- Lack of awareness of CNI by responders.

The Cabinet Office is publishing an updated *Strategic Framework and Policy Statement* alongside this Summary. This is part of an evidence-gathering process which will contribute to a National Resilience Plan for Critical Infrastructure, to be published in late 2010.

INTRODUCTION

In spring 2009, the Critical Infrastructure Resilience Programme (CIRP) was established in response to recommendations 50-54 in Sir Michael Pitt's review of the summer 2007 floods. These recommendations included building resilience to flooding, development of sector resilience plans in conjunction with lead government departments, producing interim guidelines for for regulators on resilience, extension of business continuity and production of a national framework and policy statement.

On 6 November 2009, a non-statutory consultation paper on the Critical Infrastructure Resilience Programme's *Strategic Framework and Policy Statement* was published to seek views on the proposed policy intent, scope, aims, timescales and workstreams to establish a systematic programme for resilience building.

It was released to facilitate discussion with Government, regulators, industry groups and infrastructure owners and operators on these issues. In particular, responses were sought on how best the Government might set proportionate standards of resilience, and on the potential impact and costs of any such standards.

Seventy two responses were received over the two and a half month consultation period, from a range of organisations and individuals.

It is, however, noted that some sectors were more widely-represented than others and that these were the sectors most engaged with the Critical Infrastructure Resilience Programme's work to date. In addition, some sectors, such as Central Government, had already been provided opportunities for comment on the programme. The largest group of respondents were the emergency services, followed by energy operators and local government.

Further consultation is being undertaken through direct engagement with industry and Local Resilience Forums.

A summary of points raised in respect of each consultation question is set out over the following pages.

Categorisation, Definitions and Abbreviations

- LRF' refers to Local Resilience Forums.

- 'CNI' stands for Critical National Infrastructure[1] and 'CI' refers to Critical Infrastructure.

- The category 'Cross' (and later 'Cross Sector') includes Local Resilience Forums (LRFs) which may have an interest in all infrastructure sectors.

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[1]CPNI defines this as "those infrastructure assets (physical or electronic) that are vital to the continued delivery and integrity of the essential services upon which the UK relies, the loss or compromise of which would lead to severe economic or social consequences or to loss of life" (http://www.cpni.gov.uk/, accessed 19 March 2010)

- The category 'Other' includes other interested parties, such as academics and government agencies which have no direct relationship with any of the nine CNI sectors.

- The majority of the government response has been provided by local authorities (national government has been engaged separately).

- The Civil Contingencies Act 2004 identifies Category 1 and 2 responders. Category 1 responders are those organisations at the core of the response to most emergencies (e.g. emergency services, local authorities, NHS bodies). Category 1 responders are subject to the full set of civil protection duties. Category 2 organisations (e.g. Health and Safety Executive, transport and utility companies) are "co-operating bodies" and are less likely to be involved in the heart of planning work but could be heavily involved in incidents that affect their sector.

- Percentages throughout the document are presented as percentages of respondents to the question, not overall respondents to the consultation. It

- Ait should be noted that not all respondees provideddid provide answers to every question.

ABOUT YOUR ORGANISATION

national infrastructure sites or assets as defined by the CPNI; an organisation that represents national infrastructure operators; a government department that sponsors a national infrastructure sector(s); or a regulator?

Question 1 – Is your organisation: an operator (including government department or emergency service) of

Question 2 - Which of the nine national infrastructure sectors does your organisation fall into, represent or sponsor?

		Role						
		Ops.	Reps.	Reg.	Dept.	LRF	Other	TOTAL
Sector	Comms.	4	-	-	-	-	-	4 (5%)
	ES	15	2	-	-	-	-	17 (24%)
	Energy	7	1	-	-	-	-	8 (11%)
	FS	-	-	1	1	-	-	2 (3%)
	Food	-	1	-	-	-	-	1 (1%)
	Govt.	7	-	-	-	-	1	8 (11%)
	Health	4	1	-	1	-	1	7 (10%)
	Transport	5	1	1	-	-	-	7 (10%)
	Water	4	2	1	-	-	-	7 (10%)
	Cross	-	-	-	-	6	-	6 (8%)
	Other	-	1	-	-	-	4	5 (7%)
TOTAL		46 (65%)	7 (10%)	3 (4%)	2 (3%)	6 (9%)	6 (9%)	

Abbreviations: 'ops' – operators; 'reps' – representatives of operators; 'reg' – regulators; 'dept' – government department; 'ES' – Emergency Services; 'FS' – Financial Services.

DEVELOPING A RESILIENCE PROGRAMME

Question 3 - Is your organisation able to support the aims of the Programme to improve the resilience of critical infrastructure?

Sector	Yes	Yes, if	No
Communications	3	1	-
Cross Sector	4	1	-
Emergency Services	14	2	-
Energy	3	4	1
Food	1	-	-
Financial Services	2	-	-
Government	5	2	-
Health	6	-	-
Other	4	-	-
Transport	5	2	-
Water	6	1	-
TOTAL	53 (79%)	13 (19%)	1 (2%)

Respondents from all sectors expressed support for the aims of the programme; a number reported that they were already undertaking related activity. In addition, they highlighted the following:

Strategic leadership: Two points of view were expressed regarding top down management of the programme. Many local authority and other Category 1 responders requested that infrastructure resilience be identified as a high level strategic priority to ensure the necessary funds and other resources. Category 2 responders and other private sector organisations raised concerns regarding potential governmental 'micro-management' of work many are already undertaking.

All hazard/threat approach: For reasons of practicality and resourcing, resilience of infrastructure to all hazards and threats should be looked at in the round. This should take into account the work of other organisations in the field, as well as existing programmes in each sector working to tackle climate change.

Evidence: Evidence on potential natural hazards and their impact on infrastructure is incomplete and / or inconsistent.

Definitions: Clearer definitions of 'CNI' and 'essential services' are are sought by a number of responders.

Question 4 - What action have you taken since the floods in 2007 to build a level of resilience into infrastructure assets to ensure continuity during a worse case flood event? (Pitt Recommendation 52).

Respondents have highlighted varying levels of activity since the 2007 floods:

Communications: Following internal reviews of organisational risk assessment and response strategies, the telecommunications sub-sector has undertaken limited activity since the 2007 floods and regards its current infrastructure as sufficiently resilient. New technologies have been developed by some companies in order to develop resilience during emergencies.

Emergency Services: Operational sites have been reviewed for flood risk and business continuity plans updated and many emergency services providers have supported partners in delivering these activities and sharing information. Providers have launched campaigns to raise community awareness of risk from natural hazards. Operational capabilities and resourcing have also been reviewed and exercised, although the Fire and Rescue Service is waiting for government direction on its statutory role during an emergency. Lessons learned have been shared with other relevant responders.

Energy: The Energy Networks Association has worked with government and providers to develop a standard for protection of its assets: ETR 138. This has led energy

companies to assess risk for key sites and erect defences and purchase barriers where necessary. Providers have looked at interdependencies with water and the social impact of energy loss. This has been used to draw down resilience funding from the regulator. Locations for new sites are being reviewed against flood maps and resource sharing mechanisms have been put in place, in case of emergency.

Financial Services: Operators are regularly reviewed to ensure high levels of service resilience and existing arrangements already cater for natural hazards.

Food: No work has been undertaken on a sectoral level, although resilience activities may have been carried out by individual operators.

Government: Risk assessments, exercises and work on interdependencies have been carried out, with multi-agency flood plans developed in response. These are monitored by established working groups. Drainage has been specifically reviewed and equipment has been purchased to ensure an effective response to an emergency.

Health: The NHS has published Emergency Preparedness Guidance, used at a local level, although this lacks detail on minimum requirements. Infrastructure flood mapping has been undertaken at a regional level. In some regions this has been taken forward to develop resilience plans, whilst elsewhere information has been passed to specific

healthcare trusts for response. Backup systems have been checked and tested.

Transport: Funding has been provided for rail companies' activities 2009-14 which must include improved resilience in order to meet their performance targets. Research on infrastructure resilience has been undertaken and core sites have been assessed against flood maps. This has led to some organisations implementing a programme of work to address gaps and assess new infrastructure proposals. Some ports have flooding included on their general list of business risks, addressed as part of the business continuity management process and are looking at their backup facilities and other sites, in conjunction with the Environment Agency.

Water: In the immediate aftermath of the 2007 floods the sector reviewed lessons learnt. A number of operators erected defences and reviewed interdependencies, particularly with the energy sector. The regulator facilitated funding for improved resilience by providing a methodology paper on network and asset resilience and commissioning a service risk framework for flood standards in preparation for its latest price review (PR09, 2010-2014). This provided the necessary framework for operators to assess flood risk and request funding as part of their Business Plans. In this funding cycle, the regulator has provided £414m for improved resilience; this will be used to protect 150 high risk sites from flooding and implement 13 major network resilience programmes. Individual operators

are also providing funding for improvements, including work to reduce sewer flooding.

Cross sector: Local Resilience Forums have undertaken extensive risk mapping and response framework development, including exercises and workshops to understand interdependencies and residual risk. They have also worked closely with specific infrastructure providers, supporting them in Business Continuity development. *Circa* 10% of respondents have organised committees to look at resilience of Critical Infrastructure.

Other: Organisations have carried out and disseminated research and participated in conferences.

Question 5 - If you own or operate infrastructure assets, how have you identified the vulnerability and risk of your assets to flooding? (Pitt Recommendation 51).

Respondents have assessed risk and vulnerability by:

Working with the Environment Agency: Using Environment Agency data to carry out risk assessments for sites and consulting the Agency on proposed sites for new development.

Understanding the impact of loss: Carrying out loss exercises for core sites.

Scoping exercises: Research on the potential impact of climate change and other possible future changes in weather patterns.

Partnership: Working with other relevant organisations to understand their risk and vulnerability.

A number of respondents also identified blockers to effective assessment, these include:

Insufficient information: Lack of available information on potential water depths, groundwater and surface flooding and reservoir inundation.

Funding: Insufficient funding is available to deliver on recommendations.

Interdependencies: Insufficient information is available / shared for infrastructure providers to effectively map interdependencies and the risk and impact of the loss of other services on their operations. Some operators have noted dependency on other infrastructure, the development of which they cannot influence, such as the Thames Barrier.

Neighbouring sites: Operators have limited relationships with neighbouring landholders or organisations and can be impacted by poor maintenance and subsequent groundwater flooding on these sites.

Understanding of role: The Fire and Rescue Service highlighted that lack of clarity regarding its role in an emergency has led to limited work on strategic vulnerability.

Question 6 - What further guidance do you think is needed from the Government to enable the regulator within your sector (or for others where there is no regulator) to support a programme of building improved resilience? (Pitt Recommendation 53). Would you support a voluntary approach? How could this work in you sector, or what other approaches could you suggest?

Respondents have expressed a variety of opinions regarding the regulatory and / or voluntary approaches:

Communications: Majority oppose increased regulation and support the voluntary approach, stating that the industry is already cooperating effectively on resilience issues through a high level planning group, Electronic Communication – Resilience & Response Group (EC-RRG). Some respondents suggested that further cooperation with CPNI, providing timely and informative responses to its questions on resilience would be appropriate.

Emergency Services: Mixed opinion on the appropriate approach. Some argued that an enforced approach to resilience would be more effective and cohesive; stating that historical reliance on a voluntary approach hashas been dependent on the emergency services filling in gaps where this fails.

They also state that any further guidance would need to be supported by funding and prioritisation. There is sector support for mandatory information sharing between local government and Category 2 responders.

Others emphasise the need for a voluntary approach, engaging community groups. All support clearer guidelines, outlining risk assessment processes, service expectations, response expectations, providing more details on information sharing and defining resilience. Lack of guidance to the Fire and Rescue Service has meant that response has been inconsistent and can be withdrawn; this undermines others' emergency planning assumptions.

Energy: Majority oppose any intervention in the sector, arguing that the sector has already set its own standard, ETR138, which is used as the basis for funding requests, and that resilience standards are built into sector development regulations. The unregulated part of the sector supports the voluntary approach, as resilience standards will be improved due to market competition. Improved planning guidance and clearer definitions of CNI are requested. There is sector support for a phased approach to adaptation reporting, with reporting for new infrastructure instituted first.

Food: Support in gaining understanding of degree of risk is needed.

Government: Majority oppose further assistance, as their activity in this area is underway and they are already required to have business continuity plans in place.

Health: Mixed opinion on the appropriate approach. Some support a standard of resilience set by the Department of Health and actioned and performance managed locally. Mandatory standards would make

sure funding was made available and ensure standards were met by Foundation Trusts, which work as independent bodies.

Transport: Mixed opinion on the appropriate approach.   Some support for mandated standards, as this would lead operators to prioritise this activity and would allow them to draw down government funding. Some support for the voluntary approach as infrastructure managers already have duties on health and safety and adapting to climate change which cover many similar issues. The ports sub sector relies on industry association guidance and / or government intervention to provide continuity of service in case of an emergency. There is support for improved guidance on planning assumptions for natural hazards, information sharing and measures to mitigate risk. Transport for London has raised concerns about lack of resilience standards for other related sectors, particularly sewage.

Water: All support mandatory standards for the sector, provided by the regulator in conjunction with the Department for Environment, Food and Rural Affairs. It is agreed that voluntary guidance is not sufficient for a competitive market and that a standard should be based on continuity of service, not asset protection. A standard would allow operators a clear framework under which to draw down funds for increased resilience activity from the regulator.

Cross sector: Majority support additional duties and compliance checks for existing

regulators and inspectors. Opposes reliance on a voluntary approach, claiming this leads to incoherence, but supports use of good practice guides, particularly for the unregulated sectors, covering issues including business continuity management and identifying vulnerabilities.

Other: Mixed opinion on the appropriate approach. Some support for compulsory, audited standards, for each sector, overseen by regulators. Some support for locally managed standards. There is academic support for risk sharing between operators and designers of infrastructure to encourage resilient design.

DEFINITIONS

Question 7 - What natural hazards are most likely to have an adverse impact on the supply of essential services by your organisation/sector?

Sector	Flood	Hot*	Cold*	Storm	Wind*	All	Other
Communications	4	-	1	1	1	1	Fire, Earthquake
Cross Sector	5	1	3	1	1	1	Landslide
Emergency Services	14	8	13	4	6	2	Space, Landslide, Fire, Earthquake
Energy	5	5	4	1	7	-	-
Food	1	-	-	-	-	-	-
Financial Services	1	-	1	-	-	1	-
Government	7	3	3	3	3	3	Torndados
Health	3	-	3	-	-	4	-
Other	2	3	2	-	1	1	-
Transport	4	3	5	2	3	2	-
Water	6	7	3	1	2	3	Landslide
TOTAL**	52	30	38	13	24	18	

* Hot weather includes droughts. Cold weather includes ice and snow. Although not on the original list of hazards, high winds were referenced by a large proportion of respondents

** The total reflects the cumulative mention of specific hazards. Each different reference made by a respondent to a hazard is scored above, allowing references to multiple hazards for each respondent.

Generally, support was expressed for use of hazards in the National Risk Register Regioster only. Some respondents questioned why additional issues, such as flooding from canals and surface water flooding were not being addressed.

Some respondents suggested that other hazards should be addressed differently as they impact on service delivery more than assets.

Question 8 - The Government has defined "critical national infrastructure". The Pitt Review talked more generally of "critical infrastructure and essential services". How do you define what is "critical" for the infrastructure in your organisation / sector?

Respondents have expressed a variety of opinions regarding the above definitions:

Communication: Service delivery and not specific assets or systems should be emphasised. Critical infrastructure for the sector is regarded as data centres and Public Switched Telephone Network (PSTN), which is also relied on by mobile phone operators. Some customers pay for increased resilience and therefore their connectivity is rated more critical than that of other customers. If other infrastucture sectors would like their connectivity to be assessed as more criticalthey would have to fund this as is the case for other consumers.

Emergency Services: Service delivery and not specific assets or systems should be emphasised. The critical role of the emergency services is to handle calls and respond to incidents and for this access for appropriate personnel is imperative. The sector favours the wider definitions of 'critical' provided in Annex A. Some organisations within the sector also have sight of information on critical infrastructure for their region, where provided by operators, as a key component of their response role.

Energy: Assessment is made by cost of loss, volts supplied, customers supplied, potential time period of disruption and impact of loss on other sectors' infrastructure sites (where cases are marginal). The Electricity Supply Emergency Code provides a prioritisation matrix for essential services to be considered. The electricity sub-sector supports the development of a definition of critical network infrastructure and an overview of the criticality of power generation at a sub-sector level; it is understood individual power stations are insufficiently critical to be considered.

Financial Services: Exchanges, clearing houses, payment systems and telecommunications. It is often hard to tell which aspects are particularly critical after an incident.

Food: Temperature controlled storage facilities.

Government: Decisions are made by departments with reference to specific risks, focussing on impacts which are life threatening, have the potential to cause serious harm to health or would lead to serious financial loss. Local authorities must look at the resilience of their assets, as with other sectors, but are also relied upon to supplement critical infrastructure in other sectors, where information on these sites is provided.

Health: The majority of services define their critical infrastructure locally through the business continuity management process – this should be signed off at Executive level. Some specify that critical infrastructure is that which provides services which, if lost, could be life threatening: community hospitals, health centres and GP practices.

Transport: Critical infrastructure is primarily that which delivers safety, followed by that which delivers reliability. Priority is given to routes in and out of London for rail, and support to the function of ro / ro services for ports. Airports regard their Critical Infrastructure as that which provides a functional airfield.

Water: Support for an emphasis on service delivery and not particular assets. Assessment is made by customers supplied and impact on other CNI, taking into account impacts that can be mitigated elsewhere in the system. The sector notes that the Department for Environment, Food and Rural Affairs provided a different definition of CNI to that provided in the Strategic Framework and Policy Statement.

Cross sector: Essential services, as identified by impact analysis form the basis of critical infrastructure. This includes all infrastructure sectors. There is sector support for use of the European Union, rather than UK, definition of CNI, which is regarded as more holistic.

Other: The organisations stress the importance of interdependencies and favour the wider definitions of 'critical' provided in Annex A.

STANDARDS

Question 9 - The Government's view is that resilience should be built into critical infrastructure to meet a minimum standard or level of expectation. What level of risk to disruption of services are your customers or the public currently expected to tolerate? How was this level determined or established?

Respondents understand and evaluate customer tolerance in a variety of ways:

Communications: Competition in the market and customer expectations of service drive improvements to service standards whilst minimum service standards are defined by the regulator.

Emergency Services: Customer expectations focus on response capability and continued response with quick attendance times for life threatening events. There is a higher level of willingness to accept reduced standards in other areas during an emergency. Consultation has been used to map expectations and service degradation standards have been established and expectations published at the local level. Computer modelling is used to assess the impact of any changes to activities and standards during an emergency.

Energy: The electricity sub-sector service standard is set by ER P2/6 which includes

standards for supply of security based on customer demand. Compliance is mandatory although the regulator has the option to cap the impact of non-compliance based on specific events. This standard focuses on circuits rather than substations and measures compliance by customer minutes lost. The regulator has also established an Interruption Incentive Scheme, to raise incentives for improved service across the sector and resilience standards targeted specifically at flooding are included in ETR138.

Financial services: Almost no disruption to markets services is tolerated, with system availability expectations at 99%. Independent research has identified overall toleration of loss of financial services for two to four hours. In the event of an emergency, emergency funding can be provided in conjunction with HM Treasury.

Government: There are no set standards for this sector, but tolerance of disruption is low for legal duties and those which impact on life and health. Other issues which impact on tolerance include local priorities, political expectation, penalties for loss of service and availability of necessary resources. As this sector provides diverse services, tolerance and risk is assessed for each service as part of business continuity planning by departments. There is an expectation in the sector that some impacts of emergencies will be mitigated by community and householder response.

Health: Each NHS Trust is required to have business continuity, surge and escalation

plans in place, outlining critical activities. There is almost no toleration of loss of emergency response capability. Allowances are made for reduced support for those with non-urgent concerns, as long as plans to re-establish these services at the earliest opportunity are in place.

Transport: Government performance standards for cancellation and significant lateness look to match customer expectations. Network Rail has established standards of resilience based on customer expectation (for flooding this is 1:50 chance on primary routes; 1:25 on secondary and 1:10 on tertiary, with upgrades to meet 1:200 standards). Some ports have established standards of time delays for cars, coaches and freight, based on experience. Levels of airline disruption are outlined in customers' terms of service, which they subscribe to. Customers' expectations are influenced by the media, but they are generally more open to disruption clearly beyond the operator's control.

Water: Defra's standards of service are based on the assumption that customers can only tolerate loss of water for 24 hours before water must be supplied by operators from alternative sources. This standard includes a recognition that severe weather may impact on promptness of alternative supply. In addition, the Director General of Ofwat (the Water Services Regulation Authority) sets standards for water in areas including reliability of supply, water pressure, interruptions, restrictions and customer service. Some water companies have

carried out research to establish the value of uninterrupted supply to their customers, through understanding of their 'willingness to pay'.

Cross sector: Statutory obligations, public service agreements, political influence and local / national morale impact on service standards. Those risks assessed in the Community Risk Register are expected to be tolerated by the public, once they have been provided with the opportunity to respond through the consultation process. Many private sector responders identify their maximum tolerable level of disruption when complying with BS25999 Business Continuity Standard..

Other: Tolerance is higher for emergencies which appear more 'unique'.

Question 10 – a) Are you able to support the setting of the initial interim standard for resilience to flooding as proposed?

Sector	Yes	Yes, if	No
Communications	-	3	-
Cross Sector	4	-	-
Emergency Services	10	2	1
Energy	2	2	2
Food	-	-	-
Financial Services	-	1	-
Government	3	1	-
Health	3	1	-
Other	1	2	-
Transport	2	4	-
Water	4	1	-
TOTAL	29 (60%)	16 (33%)	3 (7%)

A number of respondents supported the interim standard with many claiming their operations already meeting or exceeding it. Concerns raised by respondents include:

Insufficient risk information: Environment Agency flood maps focus on 1:100 and 1:1000 year fluvial flood events. Specialists would have to be brought in to look at the impact of 1:200 year events in certain areas.

Existing standards: The electricity, water and transport sectors all have existing standards, agreed with their regulators and / or lead government departments which do not match the proposed interim standard. Funding for resilience work is based on current regulator standards.

Regulatory monitoring: Most regulators currently monitor service delivery and not resilience standards – in order to meet the 1:200 event standard, regulators would have to review this.

Timescales: Timescales for meeting the standard are unclear and these would impact on operators' support for and ability to meet the standard.

Setting the standard: All relevant industry bodies should be consulted when setting standards and establishing what the CNI is for the sector. Some respondents suggested that CNI should include CPNI Category 2 infrastructure.

Cost: Bringing infrastructure up to this standard has not been assessed by cost / benefit analysis and is likely to be highly costly, particularly for the water sector, which includes a disproportionate amount of the UK's CNI.

Flexibility of standard: Standards could be more flexible, depending on issues within the sector. Some sectors have short life assets which are often renewed (such as rail track). The cost of ensuring this entire infrastructure meets a 1:200 event standard would be extremely high.

Enforcement: It is unclear how this standard would be monitored and, in particular, enforced.

b) What is the resilience of the existing infrastructure in your sector/organisation compared to this standard (if known)? What further work, time and investment is needed to understand the resilience of your critical infrastructure and bring it up to these standards? Will the

arrangements described in this document result in appropriate and proportionate action on the ground?

Responses were highly varied between and within sectors:

Communications: Whilst some respondents claimed high levels of sector resilience, others reported that, based on recent incidents, 'last mile' resilience has proven to be low. In addition, there is a lack of will or finance to improve the situation. There is sector support for a review of resilience and the setting of a self-regulated standard.

Emergency services: The sector lacks guidance on resilience standards which means that no consistent approach is delivered and priorities in this area often go unidentified. Greater engagement and potential enforcement of information sharing with Category 2 responders is needed before planning for improved resilience can be delivered effectively.

Energy: The industry supports the standard established in conjunction with the regulator (1:1000 event for CNI; 1:200 coastal flooding event for primary substations; 1:100 fluvial flooding event for primary sub stations) and is working to meet these requirements. Further standards would involve additional costs which may be unsuitable following cost / benefit analysis and would have to be agreed with the regulator. Operators feel that they have established a standard for their industry which they are working toward and generally oppose any government intervention.

Financial services: Sector resilience is good and monitoring processes are already in place. Many key aspects of sector infrastructure are located overseas.

Government: Currently, a great deal of sector infrastructure does not meet this standard, but the standard should be put in place.

Health: Some business continuity activity has addressed vulnerabilities and additional work is underway to assess vulnerabilities; current levels of resilience are unknown.

Transport: During the floods of summer 2007 the rail network proved to be resilient. To date, the focus has been on the resilience of the railway network rather than individual sites. The resilience of specific parts is understood by engineers who upgrade and replace them where necessary. Research is underway to ascertain the impact of severe weather and climate change and this will help prioritise resilience activity.

Water: The majority of water sites are protected against a 1:100 event; to prepare for a 1:200 event would involve further modelling, resilience measures and agreement by the regulator on costs. Necessary investment in resilience has been provided under the latest price review.

Cross sector: Resilience in each area varies and overall resilience is often unquantifiable as Category 2 responders refuse to share sufficient information. Without improvements to the information sharing process the suggestions in the Programme will not be

delivered effectively. Information provided in the Strategic Framework and Policy Statement has already been used to establish working groups on these issues.

Other: Current focus on flooding may lead to a lack of engagement when an all hazards approach is broached. Assessing vulnerability is expensive and time consuming and it will be hard to persuade many organisations to undertake this activity proficiently.

Question 11 – a) Do you agree that Government 'standards of resilience' to natural hazards should be based upon continuity of service standards, should be risk-based, and should vary between and/or within sectors?

Sector	Yes	Yes, if	No
Communications	2	1	1
Cross Sector	3	1	-
Emergency Services	14	1	-
Energy	3	3	2
Food	1	-	-
Financial Services	2	-	-
Government	4	1	-
Health	3	1	-
Other	2	2	-
Transport	4	2	-
Water	5	-	-
TOTAL	43 (74 %)	12 (21%)	3 (5%)

The majority of respondents supported the approach outlined in Question 11, although concerns raised include:

Development of standards: Standards should be developed with a high level of input from the relevant sectors and underpinned by a robust regulatory impact assessment process.

Interdependencies: Interdependencies between sectors need to be fully understood before effective continuity of service standards can be put in place. Continuity of service standards have to include CNI interdependencies as well as direct customers. Interdependency could impact on differing standards, meaning that one sector cannot meet its standards due to the lower standards set for another sector.

Indirect customers: If a key asset is a key customer to a piece of sector infrastructure is this assessed as a single or multiple customers? If multiple, do other sectors' (indirect) customers get the same weighting

as those who pay directly for the resource? In most sectors there is no funding available for the necessary resilience to support indirect customers.

Minimum standards: Minimum baseline standards should be required of all sectors and should be included in relevant planning legislation. Industry should be free to set its own higher standards.

Simplicity: Too many different standards will confused both operators and assessors. Standards must be consistent across all risks. Standards should be the same across sectors to ensure they do not impact on competition.

Variety: Variety of standards can be useful within sectors where different infrastructure is assessed as having different levels of criticality or where other key sectors are dependent on some elements of infrastructure and not others.   Variety is useful in ensuring any new standards take into account existing standards in the sector.

Force Majeure / abnormal conditions: Many existing standards can be overridden during a number of emergencies, including extreme weather. Building in resilience to abnormal conditions is usually economically prohibitive. There needs to be a specific debate about resilience as regards these events, where traditionally no activity would be undertaken.

Guidance: This approach will need to be supported by sector specific guidance to ensure there is nationwide consistency.

Customer base: Some sub sectors do not have a direct customer base and therefore continuity of service is not an appropriate standard.

Impact on communities: An entirely risk-based approach would place a comparatively low priority on provision of all essential services to certain, often rural, communities.

b) How does your organisation (or sector) currently adopt risk-based approaches and decide upon the level of resilience within the infrastructure and corresponding level of emergency planning/response?

Eight mechanisms are utilised across sectors to assess and respond to risk:

Community Risk Registers (CRRs): Used by LRFs (cross sector) to assess risk for individual organisations and communities. Emergency Services assess their resilience against the risks highlighted in CRRs.

Integrated Risk Management: Used by some Emergency Services to assess risk and model responses. This looks at both risk to life and risk to premises and helps test a variety of responses.

Risk assessment: Used by the private sector to assess internal and supply-based risk over a variety of time frames. Response including contract and business continuity management and other resilience

development projects are implemented where commercially viable.

Major incident/emergency plans: Used by the public and private sector to prioritise service and deployment of services and manage communications. The aim of these plans is to restore normal service as efficiently as possible. Although these are designed to come into use the minute an event is noted, some operators have noted that complete deployment of these plans is not always possible with resources on site at the time of an incident, therefore deployment is often delayed. Regulated sectors, including water and energy, have their emergency plans audited.

Sector liaison groups: Liaison groups have been established within the water and energy sectors, alongside regulators and lead government departments, to develop sector understanding of hazards and threats and deliver appropriate responses.

Lead government department partnership: Used by the food, water and energy sectors to address specific risk and mitigation activities.

Regulatory standards: Some sectors (including health, energy, water and financial services) rely on standards set by agencies or regulators to establish appropriate minimum level of resilience / emergency preparedness. Higher impact organisations are expected to have a higher level of preparedness.

Lessons learnt: Operators including government and transport have implemented lessons learnt processes following severe weather events.

DEPENDENCY AND INTERCONNECTIVITY

Question 9 - The Government's view is that resilience should be built into critical infrastructure to meet a minimum standard or level of expectation. What level of risk to disruption of services are your customers or the public currently expected to tolerate? How was this level determined or established?

Sector	Yes	Yes, if	No
Communications	1	3	-
Cross Sector	6	-	-
Emergency Services	14	2	1
Energy	3	4	1
Food	1	-	-
Financial Services	2	-	-
Government	7	-	-
Health	1	-	-
Other	3	1	-
Transport	5	1	-
Water	5	-	-
TOTAL	48 (79%)	11 (18%)	2 (3%)

b) How does this currently work in practice and what further action is necessary?

Intra-sector information sharing is generally regarded as strong whilst inter-sector information sharing is regarded as weak. There is a general recognition that effective information sharing is vital, particularly in the assessment of interdependency. Respondents noted that, although in practice Local Resilience Forums (LRFs) and the Civil Contingencies Act 2004provide mechanisms for sharing information, in practice, this is not always achieved to best effect. Blockers highlighted include:

Commercial sensitivity / data protection: There is a perception among Category 1 responders that Category 2 responders invoke commercial sensitivity or data protection to an unnecessary degree, allowing them to fail to share information. Scottish Power was praised by LRFs for its positive attitude to information sharing.

The 'need to know' principle: There is a lack of clarity as to the meaning of this principle, its relationship to commercial sensitivity and data protection and when it can be utilised by Category 1 responders.

Security checks: A greater number of staff ionio LRFs need to have security checks in order to receive commercially sensitive information. Staff would also need education on the safe handling of sensitive information. This is an expensive and time consuming undertaking.

Use of data: Category 2 responders raised concerns that information was being collated without being utilised. In addition, they sought reassurance that those handling sensitive information about their sector had sufficient knowledge to understand the technical complexity of some issues.

LRF attendance: Category 2 responders do not attend LRF meetings with the regularity y of Category 1 responders. As many Category 2 responders are national organisations, resourcing attendance of all relevant LRF meetings can be onerous.

LRF profiles: LRFs (and other resilience fora) are allowed to establish their own styles of organisation and management. The difference in these profiles makes it particularly difficult for large organisations trying to interact with multiple LRFs.

Dependence on LRFs: A number of Category 2 responders noted that they did not attend all relevant LRFs and that LRFs would regard this as an issue. In response they stated that they used national methods of information sharing, including sector steering groups and meetings with lead government departments.

A number of respondents from across sectors and organisations included proposals which could be used to circumvent these blocks including:

Prescription: More prescriptive guidance from government – potentially contained in the Civil Contingencies Act Enhancement Programme – regarding what information

must be shared, when and by whom. This could include targeting and benchmarking processes.

National Resilience Extranet (NRE): The NRE could be used to improve information sharing.

Contacts: Emphasis on the development of contacts in other sectors to ensure personal relationships could be relied upon for information sharing, where necessary.

Research body: Establishment of a dedicated research body, comprising academics, policy makers and industry, to collate and analyse data on CNI.

Use of experts: Improved use of experts in place of industry representatives in some fora.

Financial Services noted that it has interdependencies with overseas locations.

Question 13 – a) Would you support the Local Resilience community taking on the role to assess dependencies and interconnectivity of essential services in the local area and using this to drive improvements within sectors?

Sector	Yes	Yes, if	No
Communications	-	1	4
Cross Sector	3	3	-
Emergency Services	5	8	3
Energy	3	2	3
Food	-	1	-
Financial Services	-	-	-
Government	2	3	2
Health	2	2	1
Other	1	-	3
Transport	3	-	3
Water	1	2	2
TOTAL	20 (32%)	22 (35%)	21 (33%)

b) What arrangements would be needed to enable this to happen? Would a voluntary approach work or are changes needed to legislation or regulations (e.g. enhancements to Civil Contingencies Act 2004)?

The majority of respondents supported a role for LRFs in co-ordinating the assessment of interdependencies. Many respondents expressed concerns regarding LRFs managing the entire process from assessment of interdependencies to enforcement of improvements and called for amendments to the Civil Contingencies Act 2004. Concerns raised include:

Role of national operators: National operators (including most Category 2 responders) are unable / unwilling to attend all relevant LRFs; this process is too bureaucratic. In addition, their understanding of interdependencies focuses on a national, strategic level. If national operators agree to a local decision, they will have to carry this out throughout their network, which may not reflect the wishes of other LRFs.

Role of regulators: Regulators already impose rules on utilities. Utilities cannot comply with LRF mandates which conflict with these.

'User Pays': LRFs may require utilities to provide resilience for indirect customers, undermining their 'user pays' approach to improvements.

LRF areas: LRF areas rarely correlate with areas covered by regional utility companies and other organisations. In addition, activities undertaken in one LRF area often impact on those undertaken in a neighbouring area; this would be hard to assess through an LRF.

LRF expertise: LRFs have insufficient expertise to fully understand complex interdependencies. They rarely have established leadership with the capacity to analyse detailed information.

LRF composition: Not all CNI operators / owners are Category 1 or 2 responders and therefore many do not attend LRFs.

LRF approaches: Each LRF is unique and has its own approach to co-operation and resilience. Management by them would lead to inconsistency in assessment and delivery.

Enforcement: LRFs have no power to drive through improvements to resilience.

Resources: LRFs are voluntary partnerships with a wide range of priorities and insufficient resources to deliver this effectively. LRFs lack the technical capacity to understand complex interdependencies – this is best done by relevant sectors.

In addition to expressing concerns, a number of respondents suggested changes to the role and management of LRFs in order for them to take on this additional duty:

Clearer mandate: Greater clarity regarding the role of LRFs in assessing interdependencies and the requirements of CNI owners and operators to provide information to LRFs. Centrally provided financing for the process and enforcement powers should be included in this.

Consistency: An audit / oversight process should be put in place to deliver consistency, potentially managed through RRFs.

TIMETABLE

Question 14 – a) Are the timescales for the programme realistic and achievable for infrastructure owners in your sector?

Sector	Yes	Yes, if	No	Undecided
Communications	1	-	-	3
Cross Sector	1	-	-	-
Emergency Services	5	1	1	9
Energy	6	-	2	-
Food	-	-	-	1
Financial Services	1	-	-	1
Government	3	-	2	-
Health	2	-	1	3
Other	-	2	2	-
Transport	1	1	4	1
Water	2	1	2	-
TOTAL	22 (37%)	5 (8%)	14 (24%)	18 (31%)

b) How does the timetable fit with the investment and funding cycles in your organisation/sector?

The majority in all sectors requested further clarity on timescales and requirements before confirming whether these could be met. Each sector provided comments on timescales, as follows:

Communications: Budgets have been set in the sector until end 2010 and no funding has been allocated to this issue.

Emergency services: As yet, there has been no sector assessment of the investment required so this is hard to judge. Insufficient time is provided for collecting and collating information and currently the services lack resources and finance to do this. Budgets

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are allocated in 3-5 year funding cycles and will take a year to build additional priorities into budget submissions. New build is dependent on PFI timescales which do not match annual funding cycles.

Energy: Office of the Gase and Electricity Markets (Ofgem) provided funding for improved resilience during the price review for 2010-15. Additional hazards will have to be addressed in the next funding cycle.

Financial Services: Timescales can be met.

Government: Some work has already been undertaken as local authorities have a statutory duty to undertake business continuity management. There is insufficient time to develop plans and a lack of funding for delivery.

Health: There is no funding to meet the timescales.

Transport: The timescales do not match the sector's funding and investment cycles; funding for any work in this area would need to be provided by government.

Cross sector: Timescales do not match the funding cycles of utilities and there is insufficient funding in the public sector for delivery at this stage.

Other: Regulated industries – and some others – work to funding cycles under which no impact will be seen for 3-5 years unless emergency government funding is provided.

MONITORING

Question 15 - What measures would be necessary to determine whether the resilience standard has been achieved, and how can this be monitored, reported and enforced across sectors?

Respondents agreed that more stringent monitoring and enforcement processes should be put in place to address resilience issues. Proposals include:

Use of current auditing processes: The majority of sectors already have auditing processes which could be adapted to include resilience. For utilities, these are managed by Lead Government Departments and regulators, whilst local government and emergency services can be monitored through their Comprehensive Area Assessments and Local Area Agreements. For others outside this, the BS25999 process could be used.

Civil Contingencies Act enhancement: Act to include upgraded 'Indicators and Expectations of Best Practice' covering monitoring and auditing processes.

Self assessment: A number of Category 2 responders proposed a self-assessment process, at least initially, providing written assurance to government and the regulator.

Government lead: Government to monitor as part of the process of developing Sector Resilience Plans or, at least, to oversee sector Key Performance Indicator's and lessons learnt and provide feedback.

Independent inspection: A small number of respondents supported independent auditing; particularly those from the water sector who already have arrangements in place for this.

Exercises: Exercises to be used to test specific areas of resilience.

Phased compliance: The electricity sub sector has requested phase compliance, focussing on new builds at the start as much sector infrastructure will be phased out over the next 25 years.

Planning regulations: Planning regulations should be altered to ensure delivery of resilience for new developments.

Other issues raised by respondents included:

Incentives: Support for cash incentives / disincentives to ensure standards are met.

Shared understanding: Support for shared understanding of and / or similarities of standards and monitoring across all sectors, to ensure there is sufficient understanding and trust between sectors. LRFs could hold central information about all relevant sector auditing processes, results of audits and learnings.

Expertise: Concerns were raised about lack of sufficient skills and expertise to effectively challenge resilience plans.

Question 16 - What additional arrangements would ensure there is an appropriate overview within government of the level of resilience of critical infrastructure in your sector?

A wide variety of responses were provided. These included proposals for use of local government, lead government departments, the Cabinet Office, regional government and the development of new bodies.

Lead government departments:

Sector experts: Some members of the communications sector propose that experts to be seconded to government departments to lead on resilience liaison.

Assurance questionnaires: Some members of the emergency services and water sectors propose government departments provide assurance questionnaires to organisations within their sector, covering resilience issues.

Annual reviews: Some members of the communications sector propose relevant organisations provide information to government departments on an annual basis, allowing them to publish a public summary of sector resilience. This would include examples of best practice.

Regional government:

Regional bodies: Some members of the emergency services sector propose that regional government and resilience forums have a duty to provide regular updates to relevant central government departments on resilience.

National government:

Lead government department: Some members of the energy, transport and emergency services sectors propose lead government department to monitor and audit resilience.

Civil Contingencies Secretariat (CCS): Some members of the communications, emergency services, energy and water sectors and some LRFs propose that CCS retain an overview of activity with increased enforcement powers. Sectors to provide peer-reviewed information to the CCS.

National Capabilities Survey: Some members of the health sector propose extended use of the National Capabilities Survey – managed by the Cabinet Office – to provide greater understanding of sectors' CNI resilience.

New organisations:

High level committee: Some members of the local government sector and relevant academics propose the establishment of a new high level committee to be established by the Cabinet Office, bringing together all relevant departments to deliver a new strategic statement and provide targets and ongoing guidance.

New agency: Some members of the water sector and relevant academics propose the establishment of a new body, similar to CPNI to provide benchmarks for assessment, guidance, standards, training and advice, working closely with government. Other water

The health, energy and water sectors reported that relationships are in place with relevant government departments, ensuring they are regularly informed of resilience activities, among other things.

FUNDING

Question 17 – a) Can the Government adopt the "user pays" principle to fund the building of greater resilience in critical infrastructure?

Sector	Yes	Yes, if	No
Communications	2	-	2
Cross Sector	2	-	-
Emergency Services	-	4	10
Energy	4	1	2
Food	-	-	1
Financial Services	-	1	-
Government	-	3	2
Health	1	1	1
Other	-	-	2
Transport	1	1	1
Water	4	1	1
TOTAL	14 (29%)	12 (25%)	22 (46%)

Respondents noted flaws in utilising the 'user pays' principle for all sectors; a number noted that whether funding is provided by direct charges or taxation, customers pay either way. Other flaws noted include:

Impact on competition: Cost of meeting standards could disadvantage smaller organisations. In some areas, use of this principle may cause inflation.

Regional impact: Cost could be disproportionately high to those unlucky enough to live in areas with a high number of CNI sites.

The market & shareholders: Shareholders are focussed on company profit and are likely to limit the development of resilience. The market works to reduce costs and increase efficiency and does not leave much room for resilience and redundancy.

Determining the user: It is not always possible to pre-determine users for all CNI sites. This analysis rarely takes interdependency into account and it can be perceived that companies are profiting at users' expense.

Prioritisation: The 'user pays' principle is already applied to a number of issues, so if this were the only method of funding used, there is not assurance that resilience funding would be prioritised.

Consistency: If applied as is common, the principle would cause inconsistency between areas and may lead to unnecessary duplicated procurement.

Mindset: The current mindset in the UK is to depend on government to fund risk management in a lot of cases.

Research in the water sector has shown that there is however, noted, and growing, willingness to pay for resilience on the part of users.

b) What alternative options are available to fund resilience-building in your organisation/sector? Which is your preferred solution and why?

Respondents provided a number of alternative solutions for funding resilience building. These include:

Collaborative funding: LRFs, government and / or the Environment Agency managing resilience funding for a local area to ensure communities, not just assets, are protected and that activities are not duplicated.

Government financial support: Government providing interest free loans for resilience building or provides tax incentives for resilience building.

Insurance companies: Government working with insurance companies to provide funding for resilience, which is in their interest.

Provider pays: Providers / operators to pay out of their own budgets; based on the 'polluter pays' principle. This could be used when ensuring companies are accountable for their choice of infrastructure location. Some work can be undertaken as part of the upgrade and replacement process.

Beneficiary pays: Beneficiaries are mapped to ensure that only those who benefit pay. If the operator is perceived to have the most benefit, they pay.

Emergency services charges: Emergency services to charge operators / authorities directly for support provided in an

emergency. This would provide greater
resilience through market forces.

Use supplier contracts: Make resilience
levels a core issue when agreeing contracts
with suppliers.

ADDITIONAL COMMENTS

Programme – breadth

- What is the relationship between this and terror resilience programmes?

- Does the programme impact on non-CNI sites?

- Does the programme include a complementary communications strategy?

Programme – analysis

Support expressed for read-across to other programmes.

- What is the relationship between this and terror resilience programmes?

- Has the Cabinet Office analysed different impacts on different sectors?

- Has analysis of service level agreements within / between sectors been undertaken?

Programme – Sector Resilience Plans

- Who are the authors and consultees for the Sector Resilience Plans?

- Should the National Resilience Plan precede the Sector Resilience Plans?

- Is it practical / valuable to develop Sector Resilience Plans annually?

Consultation

- How does the consultation provide the necessary evidence to develop standards?

Legislation

- What is the relationship of this project to the new Risk Regulations?

- What is the relationship of this project to the Floods and Water Management Bill?

- Local planning policies should be reviewed as part of this process.

- PPS25 and TAN15 (in Wales) can be used to build resilience.

Stakeholders

- Is the Cabinet Office in conversation with Society of Local Authority Chief Executives (SOLACE) / the Local Government Association (LGA) on these issues?

- What is the relationship between the centre and other departments on these issues?

- What is the relationship of the programme to Infrastructure UK?

- The role of Local Resilience Forums, regional government, local government, CPNI, the devolved administrations, the emergency services and the Environment Agency is unclear.

- This document does not clearly reflect the independence of regulators.

Terminology

- What is 'resilience'?

- What is an 'effective emergency response'?

- Are local authorities part of the government sector?

- Use of chance and probability language should be agreed. What is the impact of climate change on this data?

- The definition of 'short term' and 'medium term' is unclear.

- Is CNI a legally recognised term? What is its relationship to Critical Infrastructure?

NEXT STEPS

for the statutory consultation period of three months. Responses will be used to amend the National Resilience Plan, with the final Plan being published in 2011.

An updated Strategic Framework and Policy Statement will be published alongside this Summary of Responses.

This consultation is part of a wider evidence-gathering exercise, currently being undertaken which includes one-to-one meetings, sector and regional workshops and is due for completion late 2010.

All evidence will feed into the Critical Infrastructure Resilience Programme's nine workstreams; and in turn, each of these workstreams will feed into the development of a National Resilience Plan. The Programme's workstreams are:

- Regulation

- Standards

- All hazards

- Interdependencies

- Business continuity

- Social considerations

- Regulatory impact assessment

- Sector Resilience Plans.

Following completion of these workstreams, the National Resilience Plan will be published

RESPONDENTS

Thirteen respondents not declared.

Association of Electricity Producers

Avon Fire and Rescue Service

Bedfordshire and Luton LRF

Birmingham City Council

Birmingham International Airport

British Ports Association

CE Electric UK

Central Networks

Chief Fire Officers Association

Cheshire Fire and Rescue Service

City of York Council

Consumer Council for Water

Cumbria Fire and Rescue Service

Department of Health

Dudley Metropolitan Borough Council

EDF Energy

Electricity North West

Environment Agency

Essex Fire and Rescue Service

Financial Services Authority

Gatwick Airport

Greater Manchester Resilience Forum

Institute of Civil Protection and Emergency Management

International Association of Emergency Managers

Gematech

Government Office East Midlands

Hampshire Fire and Rescue Service

Health Protection Agency

Kent Fire and Rescue Service

Lancashire County Council

National Police Improvement Agency

Network Rail

Newcastle University, Dr Richard Dawson and Prof Jim Hall

NHS Cheshire

NHS Northwest SHA

NHS Nottinghamshire County

Norfolk Resilience Forum

Northumbria LRF

North Wales Police

North West Ambulance Service

Northumbrian Water

Nottinghamshire Fire and Rescue Service

Office of Rail Regulation

Ofwat

Rail Safety and Standards Board

RWE NPower

Salford City Council

Scottish Power Energy Networks

Severn Trent Water

South East Water

South West National Resilience Group

South West Strategic Health Authority

Staffordshire Fire and Rescue Service

Suffolk Resilience Forum

Surrey Fire and Rescue Service

Transport for London

University of Leeds, Dr P. Purnell

Vodafone UK

Warrington Borough Council

Water UK

Western Power Energy Distribution

West Yorkshire Fire and Rescue Service

Yorkshire Water

Additional information provided by

Gatwick Airport Ltd

Institution of Civil Engineers

Royal United Services Institute