Radioactive Substances Regulation: Management Arrangements at Nuclear Sites

Record of changes

Version	Date	Change
1.0	September 2009	Issue
2.0	April 2010	Revised for launch of phase 2 of the Environmental Permitting Regime with minor changes to terminology only. This document applies to nuclear sites only

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RSR: Guidance on management arrangements for Radioactive Substances: a quick guide

This guidance is aimed at our regulators, and it supports our assessment of operators' environmental management arrangements relating to our regulation of radioactive substances at nuclear licensed sites. It sets out what is expected of good arrangements and considerations, to help inform our regulators' judgments.

The guidance addresses environmental management arrangements in their broadest sense. It includes those aspects covered by section 1.1 (Management) of permits issued under the Environmental Permitting Regulations which relate to management arrangements.

This guidance has been written using headings consistent with those of the Health and Safety Directorate's (HSE's) Nuclear Installations Inspectorate . This underlines our common expectations for management arrangements at nuclear licensed sites. Separately we and HSE have published a joint document that supports the production and use of an integrated management prospectus at nuclear sites, clarifying how our regulatory expectations are aligned and how we work together in assessing management arrangements.

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1: Introduction

This guidance is aimed at our regulators, and it supports our assessment of environmental management arrangements relating to radioactive substances at nuclear licensed sites. It sets out what is expected of good arrangements and considerations, to inform our regulators' judgments.

The guidance addresses environmental management arrangements in their broadest sense. It includes those aspects covered by:

- section 1.1 (Management) in permits issued under the Environmental Permitting Regulations; and
- Schedule1 condition 6 of RSA93 authorisations which became environmental permits under the transitional provisions of the Environmental Permitting Regulations. Although this condition is somewhat differently worded from the current version, we consider that it imposes essentially the same requirements.

This guidance expands on the Government's Core Guidance for Environmental Permitting. It also takes account of our wider expectations of environmental performance. Environmental risks are just one aspect of a business and should be treated in much the same way as any other business risk such as safety, economic and quality requirements. A truly integrated management system is one which will bring the most benefit.

Good environmental management arrangements have an important role to play in strategic environmental management, ensuring the organisation is capable both now and into the future. This guidance clarifies what we expect a 'capable organisation' to look like and how these capabilities might be demonstrated to us. In particular it highlights some of the capabilities that have become increasingly important in recent years within the sectors we regulate. This includes the need for organisations to have arrangements to ensure strong environmental governance and leadership, and to manage contract resource.

A capable organisation is much more than one that merely complies with permits in a 'tick-box' sense. Instead it is one that encourages the right approaches, behaviours and ways of working, alongside written procedures and systems. It has management arrangements that enable it to perform its duties effectively and achieve the appropriate level of control and direction.

Waste management is a key factor and there is a strong theme of compliance with waste hierarchies throughout the guidance. A fundamental aspect of this is the management of radioactive waste throughout the lifecycle of a process from the design through to decommissioning and clean up. An approach which includes :

- not creating waste where practicable ("avoidance");
- reducing waste arisings to the minimum through the design and operation of processes and equipment and effective use of waste characterisation, segregation, volume reduction etc.;
- minimising quantities of waste requiring disposal through storage, re-use and/or recycling.

The guidance is written as a series of Chapters which address different aspects of management arrangements. Specific interpretation for new reactor build is included in Annex B. Each chapter is structured around:

- An Overview which gives a summary of the main points and themes of the topic area;
- A Table of 'Expectations' and 'Considerations' - the expectations set out the attributes we are looking for and the considerations give more guidance and measures against which judgements can be made.

In a similar way to the Radioactive Substance Regulation Environmental Principles (REPs), this guidance assists our decision making in our direct regulatory roles and in our wider consultative and advisory roles. It provides a reference set from which we should select the elements relevant to each situation; they are not to be used as a checklist to work through.

In developing the guidance we have taken account of other regulators' expectations of management arrangements, in particular those of the Health and Safety Executive's Nuclear Installations Inspectorate (NII), and have aligned expectations as far as possible. For example our chapter headings are intended to give a structure and flow to the guidance that aligns with chapter headings used within the NII's Technical Assessment Guide (TAG) on a safety management prospectus. Together with the NII we have published a summary document (available on our websites), describing how our respective expectations can be delivered through an integrated management prospectus.

We recognise that at existing nuclear sites and in considering new nuclear build we need to continue to work closely with the NII who have many similar interests in organisational arrangements. We will continue to work closely with the NII in ensuring that our regulation of the sites is consistent and co-ordinated.

1.1 Our framework of regulation and guidance for management arrangements

Radioactive substances should be managed to meet the needs of current and future generations by preventing, and where that is not possible minimising, adverse effects on people and the environment, and so that environmental damage is remedied.

There are some important references to management arrangements and their expected content in UK regulation and in national/international guidance, for example:

- **IAEA Fundamental Safety Principles SF-1**,

  The fundamental safety objective is to protect people and the environment from harmful effects of ionising radiation.

  Principle 1: Responsibility for safety. The prime responsibility for safety must rest with the person or organisation responsible for facilities and activities that give rise to radiation risks.

  Principle 3: Leadership and management for safety

Effective leadership and management for safety must be established and sustained in organisations concerned with, and facilities and activities that give rise to, radiation risks.

Para 3.13. A safety culture that governs the attitudes and behaviour in relation to safety of all organisations and individuals concerned must be integrated in the management system. Safety culture includes:

- Individual and collective commitment to safety on the part of the leadership, the management and personnel at all levels;
- Accountability of organisations and of individuals at all levels for safety;
- Measures to encourage a questioning and learning attitude and to discourage complacency with regard to safety.

- **IAEA Publication Number G-SR-3 The Management System for Facilities and Activities**

  Section 3 addresses management commitment. Section 2.1 emphasises the need for a strategic management system. And Section 2.8 details the requirements of the management system.

- **IAEA Safety Series – Safety Standard GS-G-3.1, Application of the Management System for facilities and Activities**

  This addresses a variety of aspects of management arrangements, for example it emphasises governance needs and the importance of demonstrating competence to implement the system. It also provides guidance on management system requirements specific to various phases from design through to decommissioning.

- **Environmental Permitting Regulations : "How to comply with your environmental permit for RSR activities on a nuclear licensed site"**

- **Radioactive Guidance Series, RSR1: RSR Environmental Principles (REPs)**

- The REPs provide technical guidance that helps underpin the decisions that we make relating to radioactive substances regulation, including those about permitting and compliance where we regulate directly and those where we are consultees or advisors or otherwise have influence. This guidance relates specifically to Section 5.1 of the REPs, Management and Leadership for the Environment, providing more detail on how to assess the management arrangements that enact these principles and requirements.

- **RSR Strategy 2006-2011**

  The Environment Agency's objective in radioactive substances regulation is that, consistent with Government policy and legislation, radioactive substances are managed to meet the needs of current and future generations by preventing, and where that is not possible minimising, adverse effects on people and the environment, and that environmental damage is remedied.

2. Activities and nature of the work

An organisation's management arrangements should be appropriate for the work that it does, together with the associated environmental hazards and risks. This drives proportionality and ensures the management arrangements support the operations and compliance with permit conditions.

2.1 Overview

One of our guiding principles in better regulation is that the degree of regulation and scrutiny applied to any organisation or activity should be proportionate to the level of environmental hazard and risk that the work presents and take account of actual or potential impact on the public and the environment. There are references[1] within our guidance that link the scale or complexity of operations and environmental hazard and risk to the degree of demonstration of compliance needed. We apply the same proportionate approach in the way we look for demonstration of adequate management arrangements. This chapter describes what we expect operators to consider in understanding its activities and ways in which it might demonstrate management of this.

In simple terms, a clear description is needed of the type of activity being carried out (e.g. manufacturing, reactor operations, decommissioning, new build etc.) and the nature of the environmental hazard, along with other activities which may have an effect on environmental safety (e.g. waste management, environmental monitoring). We also have an interest in wider activities that have the potential to impact on successful environmental management e.g. research and development, programme management.

If the work involves discrete stages, e.g. new build, then we need to understand what each major phase involves as well as understanding how full lifecycle requirements are being addressed. This might include the key activities taking place, any regulatory hold points and different interfaces that may exist.

We need to understand the environmental hazards and risks that exist now and in the foreseeable future in order to establish an appropriate level of scrutiny, to ensure our approach to regulation is proportionate. For this reason it is important that our understanding is current, and not based on what an organisation did historically (unless this is directly relevant to the situation today). Such an understanding also forms the basis for our assessment of future changes, including project phases.

Our particular interest is in those activities associated with waste management and compliance with environmental permits . We expect any operator to be able to describe clearly all current and foreseeable activities that may be relevant in these areas and deliver management arrangements appropriate to the proper control of these. This includes development of:

- the organisational structure (see Section 3)

[1] Creating a Better Place: Environment Agency Corporate Strategy 2010-2015, REPs 2009

- the capability of the organisation in terms of resource and competence (see Section 6)
- governance arrangements for direction and control (see Section 4).

We should also be able to understand the extent to which any organisation's management arrangements have been independently certificated to recognised standards e.g. EMAS (Eco-Management and Audit Scheme)[2], ISO14001, ISO18001, or which are intended to deliver any other regulatory requirements or obligations e.g. to address NII requirements.

2.2 Expectations and considerations

Activities and Nature of the Work	
Activities described	***REP Link: MLDP1***
Expectations	***Considerations***
Activities clearly defined	Can the organisation provide clear written and verbal descriptions of the work that is done, the types of materials involved and the key environmental hazards and risks for each site or part of the business? Does the description give sufficient information to: - understand the risks – not to have a detailed understanding of each and every process - set a proportionate approach to the risk e.g. we would not seek detailed descriptions of low risk activities such as the use of sealed sources in universities whilst for higher-risk activities, such as those on nuclear sites, a more detailed description would be appropriate. - understand relevant critical groups, sensitive environmental receptors as well as the risk of external challenges to activities from the environment such as flooding and landscape change - make clear any key dependencies or interfaces necessary in order to deliver waste management or RSR compliance e.g. existing or planned waste transfer or disposal routes?
Activities documented	Individual organisations are responsible for choosing how best to document such a description, e.g.: - as an introduction to environmental management arrangements documentation; - as part of an Environmental Aspects Register (for EMS purposes); - as part of an integrated Management Prospectus description of activities for a nuclear operator. Are references given to where more detailed descriptions of environmental aspects are defined? This could be through an environmental case or other assessment process.
Waste management activities are comprehensively described	Are those activities associated with waste management, including the creation of waste, clearly described?

[2] EMAS incorporates ISO14001 - by comparison with other certified schemes we recognise the value of its additional emphasis on legal compliance, environmental performance and public environmental reporting.

	Are research and development related to environmental needs included?
Description of activities is the basis against which changes are assessed	Is the description of the activities sufficiently clear to form the basis for significant changes in operations or phases of a project to be assessed?
Activities linked to stages	
Expectations	***Considerations***
Phased operations are clearly defined	Are there clear descriptions of whether the operations are: - Static; - going through progressive change (e.g. decommissioning); - or are phased due to other project demands (e.g. construction, commissioning etc.; particularly important for new build projects)? Can the description be matched with the systems for ensuring capability is appropriate at each stage/phase? (see Section 6)
Environmental management systems match activities	
Expectations	***Considerations***
Statements on EMS certification	EPP guidance states that: 'Complex regulated facilities are encouraged to put in place a formal environmental management system externally certified to the international standard ISO 14001 by UKAS accredited certification body or other European equivalent and to register for the EU's Eco Management and Audit Scheme EMAS'. Is there any certification of the EMS?
	'For simpler regulated facilities, externally certified schemes or a full EMS may be less appropriate but should still be carefully considered by operators and, where appropriate, encouraged by regulators. The step wise approach provided by BS8555 is particularly appropriate for smaller facilities and can make EMS implementation much simpler'. Again, for smaller operations, can a description be found of how the EMS is appropriate to the scale and complexity of the work carried out?

3 Organisational structure

Organisational structures should be appropriate for the needs of the business, including environmental management.

3.1 Overview

The structure should reflect current and foreseeable activities (see section 2, Activities and Nature of the Work), and should show how key responsibilities are allocated. This helps demonstrate an organisation is in control of its structure, and uses this to deliver its work. In particular we should understand how the structure supports an organisation's delivery of compliance with environmental permits, and delivery of integrated waste management, especially within complex or multi-site organisations.

We would expect new organisations to plan for and establish a structure based on principles that reflect the full range of activities they intend to perform (routine, non-routine and emergency response). Such a design basis helps organisations manage subsequent organisational changes which are inevitable as projects develop and activities change. It can be used to ensure that the structure remains suitable and effective, for example to minimise 'silo' work areas forming.

Even within established organisations it is important to ensure the structure remains a 'live' issue, continuing to match the business needs and being clear about responsibilities. No organisation is static, either as a result of internal or external influences. Successful management of change comes from being able to consider the impact of changes on the organisation's ability to manage its business and environmental performance, ideally prior to any change taking place. This includes looking at large changes in how the organisation is structured as well as the cumulative effect of what may be much more numerous, smaller changes. The organisational change control system should also consider changes in the nature of the work itself. For example in the new build situation it should be able to deal with the different stages leading up to full operation, and similarly the changes as an operational nuclear site moves into de-fueling, decommissioning and clean-up.

The organisational structure and management responsibilities for emergency situations will be different from the day to day arrangements. It should be clear how the organisation has developed the emergency management structure and how it implements and manages the change from one to the other. It is noted that on Nuclear Licensed Sites the NII are responsible for regulating this aspect and that more generally that they have regulatory responsibilities under the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR) and other legislation under the Health and Safety at Work etc Act 1974.

3.2 Expectations and considerations

Organisational Structure	
Organisation is appropriate	***REP Link: MLDP3***
Expectations	***Considerations***
The organisational structure should be fit for purpose	Has the organisation been designed against a set of design principles and criteria that take account of the needs of the business, lines of control, allocation of responsibilities etc?
	In most cases organisations have evolved over a number of years. Is there some form of assessment to show how well the structure now meets the needs of the business where the organisation was not designed on the basis of design principles from the outset?
	Is there evidence that the senior management team is monitoring the effectiveness of the organisational structure? If so, what are the results of the monitoring, how are these acted upon and what evidence of improvement is there?
Organisation matches the activities	Do organisational charts link to the work done? For example, if waste management is a key activity it should be clear how these responsibilities are discharged through the organisational structure. Is it easy to see how technical and governance responsibilities are assigned and cascaded throughout the organisation? This will ensure a thread running throughout, tracing the lines of responsibility and accountability. (see section 4 – Environmental Leadership, Direction and Control)
Organisation develops to meet changing business	Is there a plan to show how the organisation may develop in the future? Are organisational structure needs considered as part of project plans e.g. considered in Lifetime Plan, construction projects including new build and disposal facilities? If the work programme has different phases, is there evidence that there is a check that the organisational structure is fit for purpose? Is this checking part of the approval to proceed to the next phase e.g. a readiness review? (See section 7 – Change Control)
Environmental Emergency Management Organisation	***REP Link: MLDP3***
Expectations	***Considerations***
A clear structure for emergency preparedness	Are emergency response roles and responsibilities documented through to plans for clean-up and recovery? Are roles and responsibilities clearly defined?
	Are there organisational charts for management structures with clear lines of control identified?

Lines of Control	***REP Link: MLDP3***
Expectations	***Considerations***
Clear and unambiguous lines of responsibility and control	Are there organisational charts showing lines of control and accountability?
	Do individuals at all levels understand their roles and responsibilities?
	Are environmental roles reflected in job descriptions?
Senior level accountability for delivery (see section 4 – Environmental Leadership, Direction and Control)	Are there clear director responsibilities for environmental management?
	Are there clearly identified environmental responsibilities for the senior management team?
	Is there an identified lead on environmental management?
Structure of Executive and Advisory committees clear	Is the structure for committees that advise on or approve environmental matters defined with a clear explanation of how the structure works (see section 6 – Environmental Capability)?
Organisational Interfaces Understood	***REP Link: MLDP3***
Expectations	***Considerations***
Identifies and understands Interfaces	Does the organisation understand its interfaces with other organisations / stakeholders e.g. parent companies, regulators, customers, suppliers, contract support organisations?
	Is there a clear description of the nature of the relationship with those organisations which have the potential to significantly impact on their performance? (See section 4 – Environmental Leadership, Direction and Control)

4 Environmental leadership, direction and control

The management arrangements should show how, with the appropriate individual and collective attitudes and behaviours, environmental safety is directed and controlled.

4.1 Overview

Organisations should be clear as to the direction and control of environmental safety that they want to achieve. This should be reflected throughout the management arrangements. Such 'governance' is an essential feature of a capable organisation that understands and manages environmental hazard and risk.

The Board of directors of an organisation is key in establishing the leadership and management of environmental safety. Together with the senior management team, they put in place the policies and management approaches for environmental performance. Through their own actions and behaviours they also have the potential to significantly enhance an organisation's attitude and behaviours towards environmental performance. This includes setting policy on environmental management priorities and goes right through to rewarding behaviours that make a positive difference.

Whilst the overall accountability for the direction and control of an organisation sits with the Board as the permitted operator[3], or prospective operator, there are other groups who have an influence, e.g. parent companies, sponsoring government departments, key contractors and suppliers, etc. It is important however that it is the Board that remains in control of the decision-making process and has final accountability for decisions that are taken. By establishing a process of direction and control so an organisation can ensure responsibilities are correctly allocated in these relationships.

Leadership is at the heart of providing direction and control. Attitudes, values and behaviours of leaders have a significant effect upon others in the organisation, affecting how the overall organisation behaves and also significantly influencing other organisations with whom they interact. The appropriate leadership will influence behaviours and attitudes to ensure proper prioritisation of environmental safety. This is particularly important in organisations undergoing a period of change or facing commercial uncertainty where there may be a range of other pressures which could alter leadership approaches and drive wrong behaviours. In new projects the nature of environmental leadership and management that is established at the outset will influence the design and direction of the project, including the extent of engagement with ourselves. This has potential to affect the likely success of the project, including our own ability to provide appropriate regulation, and will affect eventual operation of the facility.

The role of the Board and senior management team in directing and controlling environmental activities calls for individual and collective responsibilities for setting policy, overseeing the organisations structure, resource and competence needs, measuring and

[3] on a Nuclear Licensed Site this is the Site Licence Company

assessing performance through to audit and review of standards achieved and making improvements. Section 6, Environmental Capability, highlights the need to look at all the competences required to manage the environmental hazards and risks, along with other activities which may have an effect on environmental safety. This includes governance activities related to directing and controlling performance.

There will always be tensions between different business drivers, including drivers for improvements in environmental performance. It is important that the Board is fully informed of these tensions in deciding on an appropriate policy for environmental performance, and, once agreed, is fully committed to ensuring delivery of its policy. Organisational management arrangements should provide for arrangements to support the Board in this, including an appropriate decision-making process and arrangements to ensure decisions are recorded, transparent and that progress in delivery of its decisions is regularly reviewed.

With the changes in the nuclear market, and in particular the way contract staff are used and the type of work they do, it is important that the system of direction and control includes work carried out by contract staff (see section 6 Environmental Capability). The Intelligent Customer capability that oversees this aspect needs to understand the direction and control needs for environmental management.

4.2 Expectations and considerations

Environmental leadership, direction and control	
Strategic environmental management	***REP Link: MLDP1,2,4***
Expectations	***Considerations***
Evidence of strategic management of environmental issues	Does the organisation have an Environmental Policy statement?
	Does the policy have supporting processes? Are environmental management issues given the appropriate attention (in proportion to the risk) alongside other issues such as safety, quality etc?
	Who owns the policy and how is it kept live?
	Are members of the Board and senior management team familiar with the environment policy and how it should be implemented? Are they able to explain how it affects the way they work and the decisions they make? What assurance does the Board seek in considering the ability of the organisation to deliver its environmental policy? Technical directors need a good understanding of environmental aspects of the business and 'safety' directors need to understand the nature of the work. (See section 2, Activities and Nature of the Work). They also need a broad understanding of the organisation in the context of the sector in which it works in order to support benchmarking and to challenge and question performance.
	Are people across the organisation, employees and contractors, aware of the environment policy and what it means to them?

Environmental Leadership and Management	***REP Link: MLDP1***
Expectations	***Considerations***
Environmental Leadership and Board responsibilities are clear	Does the structure of the Board include challenge for environmental performance, ideally with a degree of independence from operational or commercial pressures? Where a Board is responsible for providing a product or service, is there evidence that they properly consider its environmental performance capabilities as part of their oversight of direction and control?
	Is there evidence of the Board driving good environmental performance and culture? For example: - Do they set clear policy that is meaningful to people in the organisation and that affects the way they work such that environment has the appropriate prominence? - Does the Board set performance measures and review them regularly acting to make improvements? - Are there clear environmental objectives that are communicated out to everyone, both within the organisation and externally where possible?
	Does the Board respond positively to challenge? Is it open to ideas and ways of improving? For example do they spend time considering ways to improve environmental performance, look at suggestions made by the workforce etc?
Correct behaviours are demonstrated and put into practice	Is there a corporate statement of expected behaviours? Do the behaviours of the Board/Senior Management team run through the organisation or are there different behaviours at different levels/areas within the business? Is there a marked difference between the two?
	Do reward systems for employees and contract staff reflect environmental improvement? Rewards based on reduction of environmental events should be treated with caution and looked at carefully to make sure they are as a result of real improvement rather than a reluctance to report issues properly. Are performance measures soundly based?
Robust decision making process	***REP Link:MDLP4***
Expectations	***Considerations***
Decision making takes account of environmental considerations	The key issue for a Board is that, irrespective of the topic that is being considered and decided upon, relevant environmental considerations are taken into account as part of the decision making process. Is there evidence that the Board takes account of relevant environmental considerations as part of the decision making process?

	Is the Board actively looking for innovation and improvement? Evidence such as: - Minutes of Board and management meetings including how work is prioritised and spend on improvement is decided. - Decisions are based on sound information - Where decisions have been made where there were uncertainties that there is evidence of conservative decision making? - Decisions made taking into account data and opinion which may challenge the status quo?
Timely decision making	Does the organisation anticipate key decisions that need to be made and prepare for them such that the appropriate information is available and they are founded on evidence, and that they are able to take account of the widest range of options? For example is there a programme for environmental decisions linked to the work programme and organisational strategy (e.g. decision-calendar), and clear why existing decisions have already been made? Are decisions open to scrutiny and communicated to people that they affect? Decision making should be open not hidden. In some cases the impact of decisions will be felt for years to come and the timescales for implementation can be many years, e.g. the Geological Disposal Facility. This means that it is even more important that the basis of the decision making is clear and that those further down the line can understand why decisions were taken and be able to draw on this information to inform their own decision making. (See section 8, Learning Organisation)
Control of Environmental Risks	***REP Link:MLDP2***
Expectations	***Considerations***
Actively manages environmental performance	The risk assessment process should deal with all business risks including environmental risk and ensuring that legal obligations are being met. Is there evidence that this happens?
	Is there evidence that the organisation uses the most appropriate assessment techniques to minimise and control radioactive waste? Is there evidence that : - the Board has visibility of these techniques being applied and is working properly - appropriate funding is allocated to ensure the recommendations of assessments are implemented - a review process continues to be used? -
	Is there evidence that the organisation has mechanisms in place to understand and plan its environmental performance? For example does it: - Regularly reviews against its objectives for performance?
	- Consider whether its objectives for environmental performance remain

	appropriate and that these drive forward improvement?
	The way in which the organisation uses committees and other working groups in environmental management is also of interest to us. Are the groups that have a role in the direction and control of environmental safety identified with a clear description of their role and remit, for example those committees that approve submissions and sanction moving on to the next stage in a programme with environmental implications? Are the key committees for environmental management identified and is there is a sensible flow of information and direction and control through them? Is it clear, e.g. from Terms of Reference (ToR), that these committees have the appropriate makeup and the role they are intended to have. Look at the minutes of these committees, does it work in practice as the ToR say it should? Where are the most significant environmental issues discussed? Is there, for example, an equivalent to the Nuclear Safety Committee (NSC) that deals with environmental safety or does the NSC consider environmental matters. Similarly, in non-nuclear organisations is there a Safety and Environment Group that might consider such issues? Where design safety review committees are in place, do these include a member(s) with responsibility for considering the environmental impact of design changes?
Direction and control of environmental management	***REP Link: MLDP1***
Expectations	***Considerations***
Appropriate allocation of responsibilities	Are environmental responsibilities properly assigned (section 6)? This is important in creating a system for direction and control where people have the responsibility, competence and authority required.
	Where responsibilities are delegated, is it clear who is ultimately accountable? Is there a clear route for people to get advice and technical guidance, including access to ourselves, to help them discharge these responsibilities?
Control of the environmental aspects of interfaces inside the organisation and outside to other organisations	Is there evidence that: - Environmental responsibilities of interfaces have been looked at; - The organisation is aware of these influences and - It has a process to manage them; - the organisation remain in control? Parent companies will have an interest and influence. Is the strategic planning process sufficiently robust to ensure that environmental planning is on the basis of risk and not as a result of funding or policies of another organisation?
	Where the organisation interacts with another organisation, e.g. it uses contract support, buys in services/products etc. are following the environmental implications clearly set out and managed: - allocation of responsibilities

	- information exchange needed - IC capability - Knowledge management If contractor organisations are undertaking work on behalf of the operator, or prospective operator, is there evidence that the contractor is doing this with the correct direction and control and approval of the organisation? Is it clear how these situations are managed?
The organisation is in control of the funding for environmental management	How does the organisation deal with changes in funding from an environmental viewpoint? How does it look at reallocation of funding and re-prioritisation of work? Is environment given the appropriate significance alongside other business risks? Is the funding linked to the work programme?
Review of performance	***REP Link:MLDP2***
Expectations	***Considerations***
Self regulation	Strong self regulation, or self checking, highlights issues early, helps share good practice and is an important thread of governance. Does the organisation review its own performance to give assurance that the environmental hazards and risks are being well managed throughout the full lifecycle? Does the organisation have a culture of self checking that challenges and questions assumptions and standards? Does this checking go further than the compliance needs checking into good ways of working and identifying areas where there are weaknesses that need to be addressed?
	What are the arrangements in place to stop work if environmental standards are at risk? How many times has this happened? Who has the authority to stop work on this basis? How was this dealt with and what follow up action was taken? Were lessons learned and improvements made?
Audit and review process visible and managed	Are the results of checking performance fed back to the senior management team and are the results used to help shape their policies? Does the senior management team look at KPIs and other measures? Are these understood and is the significance of them used in their decision making process?
	How are the results of the review process communicated to the organisation? (see section 8)
Supply chain management	***REP Link: MLDP3***
Expectations	***Considerations***
That the supply chain has the same values as the organisation expects of itself	Does the organisation assess the role/impact of services or goods supplied / it procures on environmental performance? This includes consideration not only of the nature of items / equipment that may be supplied, but also the attitudes and behaviours of consultants and contractors etc. Does the organisation reflect its environmental expectations within its
	quality control arrangements for procurement? Are the quality requirements

	of the supply chain reflected in suppliers arrangements?
	Does the provision of services take account of the environmental ethos and values of the organisation? Are checks made of contractor's suitability? Do they include what their environmental credentials are and their approach to environmental protection?
Capability management of contract support in key environmental posts (see section 6)	Is the way in which contract support used and overseen based upon a sound understanding of the in-house capability need and is it part of the overall resource strategy? Does the organisation demonstrate that it knows the types of roles contract staff are carrying out on their behalf and where they are being used in the organisation, including QE roles? We expect organisations to demonstrate that they have this level of understanding and to have looked at succession planning for key contracts and the IC capability to oversee them. Is there evidence of succession planning for replacement of contract staff in key environmental roles?

5 System implementation

It is important that a management system is designed to manage the work that is being carried out, whether that is design work, operations or decommissioning. It should be managed through its lifetime so that it is updated in a controlled way to address the changing needs of the business.

5.1 Overview

Environmental risks are just one aspect of a business and should be treated in much the same way as any other business risk such as safety, economic and quality requirements. A truly integrated management system is one which will bring the most benefit. The management system should have a breadth and depth to underpin claims made on all aspects of 'management arrangements' included in other chapters of this guidance.

The way in which a management system is designed and implemented can have a significant effect on its overall effectiveness and hence the environmental performance of the organisation. The IAEA Safety Standard Series No GS-R-3[4] (Management Systems for facilities and activities) states that:

'A management system shall be established, implemented, assessed and continually improved. It shall be aligned with the goals of the organisation and shall contribute to their achievement. The main aim of the management system shall be to achieve and enhance safety by:

- Bringing together in a coherent manner all the requirements for managing the organisation;

- Describing the planned and systematic actions necessary to provide adequate confidence that all these requirements are satisfied;

- Ensuring that health, environmental, security, quality and economic requirements are not considered separately from safety requirements, to help preclude their possible negative impact on safety.'

Where an organisation is certificated to a recognised environmental management system award then many of these aspects will already have been included in its design. In particular, there should be a clear system for setting policy, planning work, implementation, monitoring and improving performance, including a system for audit, review and self checking. We welcome organisations seeking and achieving external certification of their management system. However, we will still need however to be satisfied for ourselves that any such the system is sound and being properly implemented. This is at the centre of the concept of management arrangements being far more than written systems and procedures and covering behaviours, attitudes and approaches to the leadership, direction and control of the organisation.

[4] IAEA 2006

5.2 Expectations and considerations

System Implementation	
Compliance with Permits	***REP Link: MLDP2***
Expectations	***Considerations***
Written Management Arrangements	(EPR permit condition 1.1.1) For all those processes which are involved in compliance with the limits and conditions in the Permit, does the operator have written procedures to demonstrate compliance? How are these procedures implemented, maintained and reviewed? Are there written procedures for this and do they form part of the management system?
	(EPR permit condition 1.1.1) Are such processes for the control of modifications to the design and operation of systems and equipment capable of: - Identifying all systems and equipment which are relevant to the Permit. Is there a list or means of categorising systems and equipment that are part of RSR compliance? - Categorising changes so that emphasis is given to those systems and equipment of the most environmental significance? - Ensuring that no modifications are undertaken without an assessment of the likely environmental risk?
Environmental management is integrated into business systems	Is there an integrated approach to management systems, where all business risks are managed in a common way? If not how does the organisation make sure that it considers environment alongside other business aspects? Do people understand the management system and can they navigate their way through it? It should be designed so that it is not too complex or burdensome that people work around it rather than with it. Can the system be readily navigated? Ask people what their view is of the management system; they may have comments to make which may influence what parts to pay particular attention to.
The management system should show how limits and conditions of permits are met	The management system may be a collection of documents and processes; it may be an electronic system or a paper system. Is there a clearly identified management system which: - Specifies how compliance with the limits and conditions contained within the Permit is achieved? - Shows how legal requirements are addressed and in which part of the management system. - Allows specific requirements be traced through the system

	- Shows how environmental risks are addressed - Is adequate for the tasks being performed
	Is there evidence that there are supporting processes to underpin the management system? For example, if reference is made to the system being compliant with legislation, is there a process for identifying, implementing and reviewing new and existing environmental legislation?
	A good management system is clearly designed to achieve compliance in the most effective way. The best systems have usually been designed to a set of principles or criteria. Has the management system been designed and managed according to a set of well defined criteria? Often management systems have evolved over time and have become disproportionate to the nature of the activities. In many cases where deficiencies are found, more documentation is added rather than a review of the system undertaken. Is there evidence that the system is being properly managed and not just allowed to grow in an uncontrolled way?
The system should provide for consultation with Qualified Experts	(See section 6, Environmental Capability) (EPR permit condition 1.1.4) Does the system identify how to get advice and who to go to for specific technical guidance? Does it also set out the roles of technical experts in decision making and approvals?
Provision of written Environmental Operating Rules and operation instructions	Does the management system contain written procedures and processes for the identification and implementation of Environmental Operating Rules and operating instructions, where necessary? Does the system contain: – A definition of what constitutes an Environmental Operating Rule (EOR)? – How these are to be derived? – How the EORs are to be implemented on which plant/systems/equipment? – A process for the derivation of operating instructions to support EORs? – A review process to ensure EORs are maintained and remain appropriate? Do EORs link back to the key activities? Are they implemented in the management arrangements?

There shall be written maintenance schedule and instructions	Are there written maintenance schedules written down and do they contain all systems and equipment specified under the Permit? Do details in the maintenance schedules include: – a description of the item of plant/equipment – what function it performs – the maintenance period
	Is there a process for identifying if a maintenance period has not been met and are contingency plans identified for this situation? Is it clear whether or not the plant can carry on operating without the required maintenance periodicity and whether this is potentially a breach of the Permit/legislation? Is clear guidance given as to what to do in this situation?
There should be a process for identifying and appointing SQEPs	(See section 6, Environmental Capability) Condition 1.1.4 Does the management system contain a means of appointing suitably qualified and experienced people to adequately supervise the disposal of radioactive wastes? Are their names clearly displayed with each copy of the EPR permit.
	Are other SQEPs identified within the management system? These would be identified by the processes suggested in 'Capability'. There is no requirement to post these names as above, but it would be sensible to have a system which identifies all SQEP posts/people. Is such a system in place?
	Do Human Resource systems include environmental responsibilities in job descriptions, competence frameworks, training plans, awareness programmes etc (see section 6, Environmental Capability)?
Equipment and procedures should be verified as fit for purpose	Is there good control of the procedures people work to and the equipment they use? This type of control is very similar to configuration control and stops a gradual creep and impact on risk through un-assessed changes. Is there a process for bringing in new equipment that looks at the impact on the environment?
There should be a process for identifying, operating and maintaining systems and equipment to meet RSR requirements	Is there a process to identify systems and equipment which perform an environmental function? Are maintenance activity periodicities properly derived for these systems?
The organisation should have a system for self checking	) Is there a system for self-checking of compliance arrangements? Does this include planned and unplanned checks and address how well the management system is being implemented as well as the design and function of the system itself? Who does the organisation use to carry out these checks? How do they

	identify themes and topics for inspections? Is there a link to the learning from experience activities identifying potential problems and checking for similar problems/good practice? How are the results of monitoring and assessment activities communicated? How is it decided? Who are the interested parties for this information?
The system should have a process for notifying the Environment Agency	(See section 7) Is there a documented process for notifying the EA of changes to the management system or resources which might have, or might reasonably be seen to have a significant impact on how you comply with the conditions of the pemit. Is it in accordance with Permit condition 4.3.5 . Does the system include processes for notification of planned changes? Does it also cover what to do when advance notice is not possible for some reason?
There should be a process for environmental sampling, measuring and testing to support permit compliance	Does the management system identify the arrangements for sampling, measuring and testing and ensure they are subject to change control? Is there evidence that the arrangements for sampling, measuring and testing have been assessed to confirm they are fit for purpose? How does the organisation maintain an oversight of these programmes? How are missed samples etc. identified? What happens if a sample has been missed?
Operators should make and keep records	Is there a suitable system for operators to keep documented records and are they kept in line with permit requirements? Are records sufficiently detailed to inform future decision making activities? Are the means of maintaining records appropriate? Are they sufficient to maintain the records over the required duration?

6 Environmental capability

An organisation's management arrangements should enable it to develop and maintain the resources and competences needed for sound environmental management.

6.1 Overview

We want organisations to have in place the resource (amount and type) to support their current and foreseeable environmental management activities. This means having in place arrangements to determine what amount and type of resource is needed and to plan for ways of securing this in the future. For example, this might take account of foreseeable changes in their activities e.g. expansion, construction, decommissioning and clean-up, as well as considering the specific needs of new build programmes and the greater competition for skills within their sector.

An organisation will need arrangements to help assess and put in place the structure, resources and competences necessary to ensure they continue to be a capable and responsible operator. This can then form the basis for day to day management and a sound reference point for assessing the impact of changes (see section 7, Change Control).

Organisations that hold Nuclear Site Licences prepare and implement a Nuclear Baseline for nuclear safety. Where possible we should encourage such operators to include environmental capability needs within an integrated Nuclear and Environmental Baseline. Alternatively organisations may choose to demonstrate this in some other manner e.g. through one document or in a number of documents with a plan to show how they fit together. Documenting such a baseline may also be useful for organisations that do *not* hold Nuclear Site Licences.

The assessment of environmental capability requirements should have sufficient breadth and depth. It should identify operational and supervisory roles for work that could have an impact on environmental safety, either immediately or in the longer term. By this we mean that organisations should consider roles that involve:

- Managing environmental risks. This includes, but is not limited to, work regulated by environmental permits;
- Carrying out and supervising routine activities which may have an effect on environmental safety;
- Environmental management following emergency situations;
- The management, control and supervision of people and processes involved in maintaining environmental safety standards;
- Being an Intelligent Customer for the products and services they use. The competence required needs to reflect the nature of the services and type of work being done;
- Assessing environmental safety and advising on modern environmental standards, including where these roles are found within specialist teams, such as technical authorities

Assessment of an organisation's capability needs does not stop once a baseline is established. Inevitably business activities change over time. We should understand the organisation's resource development strategy and the arrangements in place for on-going management and monitoring of the capability needs. Such arrangements might include consideration of:

- adequate flexibility to avoid staff being over-stretched;
- evidence of succession planning for key posts;
- environmental responsibilities being compatible with other duties;
- how contract staff will be used.

We understand that organisations may have to use contract resource to complement their in-house capability but we want to understand the implications this has for their ability to remain in control in the short and longer term. Environmental capability covers all resources and competences that have the potential to impact on the environment, regardless of whether the post holder is an employee or a contractor. What is important is to see that the organisation has assessed its in-house capability requirements so that it remains a capable operator in its own right and can oversee (i.e. be an Intelligent Customer) and manage the work where it uses contractors. A resource plan should help an organisation consider and achieve a suitable balance between employee and contractor numbers, taking these aspects into account.

Any assessment of resource and capability should make clear the links between competence and the requirements of legislation, including permits, and with other source of environmental responsibilities, such as accredited environmental management systems. The IAEA define competence as 'the ability to put skills and knowledge into practice in order to perform a job in an effective and efficient manner to an established standard' [1]. The set of competences should include: management and leadership, communication and behavioural skills as well as the technical competences. The management arrangements should show how the organisation achieves and maintains a trained, qualified and experienced workforce that matches this need.

Individuals at every level should be trained in environmental compliance needs, even if this is simply to ensure a basic level of awareness. Concepts of good environmental management should be familiar to all staff, and many should have job profiles and objectives that include some of those concepts. It is expected that individual and collective competences of the Board and Senior Executive team are included in this overall assessment. Staff designated "suitably qualified and experienced" (SQEP) need greater understanding of the requirements of environmental legislation in the context of the jobs they do, while expert advisers (including "Qualified Experts" in our environmental permit) need still greater breadth and depth of knowledge. We expect the assessment of environmental capability requirements to pay particular attention to identifying minimum requirements for these qualified and expert staff, to make sure there are no gaps.

An organisation's assessment of capability may highlight areas of strength and weakness. For example, identifying limited in-house technical competence or reliance on singleton posts or contract staff for environmental capability. We should understand how organisations plan to tackle these issues, both in terms of managing any current risks that may have been identified, as well as any plans for solutions in the longer-term.

6.2 Expectations and considerations

Environmental Capability	*REP Link: MLDP3*
Competent people with defined environmental responsibilities	***REP Link: MLDP2***
Expectations	***Considerations***
Technical and behavioural competence to meet the environmental management needs	IAEA defines competence as "the ability to put skills and knowledge into practice in order to perform a job in an effective and efficient manner to an established standard" Are all activities with the potential to affect the environment (including compliance with environmental legislation and permits) considered? Is there evidence of competence at all levels - to carry out day-to-day work, and to supervise, direct and control work (organisation culture and governance)? Is there a system for competence measurement and assessment? Do those in expert adviser and specialist environmental roles have appropriate level of awareness and understanding of the work done so that they can apply their knowledge to secure the best overall outcome? Do those not in specialist roles understand the relevance and importance of their activities, how they relate to environmental safety, and when they need to take expert advice?
	Do training and development programmes include technical and behavioural competence? Are these requirements applied to directors, managers, leaders and all other staff, reflecting their environmental responsibilities? Is it clear that the organisation has a training system that: – Looks at the needs of all staff, including contractors, that carry out activities that may impact on the environment? – Links with work plans and individuals' authorisation to carry out specific duties? – Responds to the needs of organisational change?
	Are core competencies identified for each role involved in environmental compliance, with clear and links to requirements of legislation, permits, and certificated environmental management systems?
Specialist environmental roles identified	Are environmental roles identified based on their potential to impact on the environment, rather than on where they are in the management structure? Evidence of this can be found in organisational charts, responsibility matrices, role profiles etc. Do environmental roles have the breadth and depth to carry out the full range of activities (see section 2, Activities and Nature of the Work)?

	Is the basis for Suitably Qualified and Experienced Persons (minimum requirements, also contingency) written down and put into practice? Are Qualified Experts appointed? If so, on what basis? Is this requirement reflected in job descriptions?
	Are technical authorities identified and in place?
Board competence	Is there a process for assessing the competence of Board members and the Senior Management Team to ensure they have the appropriate individual and collective capabilities? Does the process address their legal responsibilities as directors?
Environmental responsibilities understood by all	Are individual environmental responsibilities parts of job descriptions? Asking people what they understand their environmental responsibilities to be using job descriptions or similar written evidence is a good way of finding out if people understand what their responsibilities are and what this means in practice.
	Do people with environmental responsibilities know who to go to for advice on environmental issues? This is particularly important in matrix management where line managers may not be in the management chain for technical aspects such as environmental management.
Adequately resourced	
Expectations	***Considerations***
Process for ensuring the resource and competence profile meets the need	Do documents supporting the management arrangements either: - describe the staffing levels required and compare this to what is actually in place *or* - describe what is in place and explain how this is known to be adequate to achieve the appropriate outcomes? Is there a justification of key environmental roles – akin to what a nuclear baseline does but for environmental management? This can be done in a number of ways including an integrated environment and safety baseline if this is thought to be useful to the business. If this is not the case is it clear how environmental roles are identified and resourced?
	Are there measures that indicate whether the resource and competence profile is adequate? For example - how many posts with core environmental responsibilities are held by competent people; workload etc.. Is there evidence that specialists are still able to spend time on maintaining their expertise, training and development?

Phased work programmes are resourced	Is there evidence that before approval is given to go ahead, the appropriate level of environmental resource and competence is assessed and found sufficient in respect of each phase, both for the phased work and any other work carrying on in the background?
Capability is assessed and shortfalls identified	Can evidence be found of some form of vulnerability assessment or gap analysis that looks at the capability as it stands and asks questions such as: - Are there enough competent people in posts with environmental responsibilities? - Are there any singleton posts or capability gaps and is action being taken to strengthen capability in these areas? - Are succession plans in place for the most important environmental roles? - Are arrangements in place to cope with losing environmental contract resource? - Is the operator in a position to suspend relevant activities if the number of competent persons drops too low? It is reasonable to expect to see some analysis of the actual capability against that in place and a plan for how any gaps will be fixed.
Action is taken when resources fall below the required level	Is there evidence of management of the resource profile and addressing resource shortfalls which includes consideration of moving staff to other work, stopping work or using contract resource (after assessment of whether this is suitable)? Is there evidence that the work programmes look at what resource is needed?
An Intelligent Customer	
Expectations	***Considerations***
The organisation should have the capability to have a clear understanding of the product or service provided by others	Does the Intelligent Customer competence form part of the capability assessment? Is the competence required to oversee work undertaken by contract support and to understand the environmental significance of products and services provided by others addressed to make sure that people carrying out these IC roles are suitably qualified and experienced? (See Manage Contract Resource below)
	Is there a process for ensuring the IC capability continues to match the need as it changes? IC competence includes technical and behavioural aspects and will depend upon the particular situation. If there is an increase in the amount of work undertaken by contract staff or in the type of work that they do for example, is there evidence that this is reflected in a change in the IC capability requirement? Are IC needs considered in organisational change submissions, making sure the IC function remains fit for purpose? (see section 7, Change Control)

	Is there evidence of succession planning for the most important IC roles?
Strategic resource planning	
Expectations	***Considerations***
Manage resource	Is there a clear policy for how capability is maintained and a plan for how it is achieved?
	Is there adequate succession planning for the most important environmental posts and IC posts? Is this working?
There should be a sound basis for assessment of organisational change	Is there evidence that changes in resource and competence levels are assessed against the defined capability need? Where an integrated Baseline has been produced for nuclear and environmental safety, is this maintained as the reference point?
	Does the change management process look at the impact of organisational change, programme change etc. on the capability profile? (see section 7)
There should be a process for managing environmental competence	Is there a process for measuring and assessing competence? This is likely to use the competence management system, resource planning arrangements and other parts of the wider business management system. Is the operator able to provide an overview for how these aspects are pulled together to produce a process?
	Does the senior management team maintain an oversight of capability status, for instance is this a topic at senior management team meetings? Does this take account of evidence from performance indicators, audits etc?
Manage contract resource	
Expectations	***Considerations***
Manage contract resource	Is there a clear approach to the use of contract resource that considers - Core in-house environmental capability needs - The Intelligent Customer requirement - How the use of contract staff in roles with environmental responsibilities is monitored?
	Are contract staff identified in the capability assessment where they have continuing roles in the organisation's environmental management arrangements? In reality they are part of the permit holder's pool of resource. If operators do not do this then they will not be managing their capability properly. It is reasonable to expect to see which posts are filled by contract resource and the rationale behind this profile. Is this process clear and functioning? Do project management arrangements provide evidence that the work carried out by contract staff is organised and controlled by a capable IC?

The balance of in-house capability and contract capability should be managed	Is the balance of in-house capability to contractor resource known and managed? As the use of contract staff increases in the industry as a whole the types of roles they carry out and the proportion of the workforce that is contractor based alters. It is important that there is control of the roles contractors are used to do so that the environmental management capabilities of the permit holder are not degraded to a level where they are no longer capable of holding a permit.
Manage Environmental hardware capability	
Expectations	***Considerations***
Identifies and maintains critical environmental equipment	Do instructions show clearly who the relevant SQEPs and Qualified Experts are for operation and maintenance of the equipment?
	Are there signs that the equipment is labeled appropriately and, where relevant, its status is displayed centrally to operational staff?
	Are maintenance requirements up to date on maintenance schedules?

7 Change control and living management arrangements

Management Arrangements should describe the approach to managing change of the organisation, systems, resources and competences. They should also show how the management systems are maintained as living, reviewed and updated to provide a true reflection of the management and compliance arrangements

7.1 Overview

Environmental Permits include a requirement for organisations to tell us if the way in which they achieve compliance changes significantly. If appropriate we may assess these changes. We expect permitted organisations to have a system in place to assess such changes as part of their management arrangements. This system should assure the organisation that they are still capable of meeting the requirements of management systems, structures and resources so that they remain in compliance.

The objective and benefits of the change should be clear including the environmental impact. If changes result in residual environmental management issues, for example new training needs, competence assessment or alterations to post profiles, then the system should describe how these are addressed.

It is also important that Management Arrangements are regularly reviewed, revised and updated to make sure they are and remain an up to date reflection of the compliance needs and a true reflection of what is done. This ensures the system remains useful and geared towards ensuring safe operations and good performance, in other words that the management arrangements are 'living'.

7.2 Expectations and Considerations

Change Control and Living Management Arrangements	
A system which manages changes effectively	***REP Link: MLDP3***
Expectations	***Considerations***
Changes are assessed and categorised accordingly	Changes to procedures, processes, plant or equipment all need to have a mechanism for assessment and categorisation which takes account of the potential impact on environmental performance. Is there a system which includes all aspects of change control (plant, process, organisational changes etc)?

	Is there a process in place for control of changes which have the potential to impact on environmental performance? Does the scope of the system include (but not limited to): - Strategic changes to an organisation e.g. ownership, composition of the Board or executive team? - Organisational structure which may affect compliance with the permit? - Capability including resource levels and in-house capability? - Facility, plant and equipment changes? Does the system have clear guidance for what constitutes a change, how significant the change is and when this needs to be notified .
The scope of change control is broad enough	Although the emphasis is on organisational changes, does the scope of the process also consider the effects of funding changes (+ve and –ve), changes to timescales for delivery of plans/programmes which may be a condition of the permit and other aspects which may affect overall capability of the operator/prospective operator? The types of issues we expect to see considered include: - Does the change involve key environmental posts/waste management posts? - Does the change affect the environmental responsibilities of stakeholder interfaces or the way environmental management/waste management is directed or controlled? - Does the change place additional requirements on other posts, if so what is the effect? - Does the change alter: i. Numbers of staff for environmental roles/waste management? ii. Competencies required? Are there additional training needs or new skill sets? iii. Contingency or succession arrangements for key posts with environmental responsibilities? iv. Interfaces where there are environmental responsibilities? (including Intelligent Customer responsibilities) v. The control and direction of management for environmental safety including the management and control of sub-contractors vi. Defined environmental work plans or standards?
	Does the management system include a process whereby the effects of cumulative changes are recognised, assessed and managed?
	Where an operator has included environmental considerations as part of an integrated Management Prospectus, are changes to the basis of this document considered from an environmental/waste management perspective? Where an integrated Management Prospectus has not been chosen, is there an alternative arrangement to consider changes to the strategic level management arrangements which would normally form part of a management prospectus.?

The change control system is understood at all levels	Are Board members knowledgeable about the change management process? Do they use it for their own decisions, assessing the impact of their decisions and applying the Management of Change process as necessary? Is there evidence that they have assessed options and that the outcome of this assessment has informed their organisation change management decisions? Does the Board understand that a slow creep of the organisational structure away from the assessed baseline is a risk? How does the Board maintain an oversight of how small changes affect their capability?
	Is there evidence that the change control process is understood across a wider range of people within the organisation?
	Are there any signs of changes taking place which have not been assessed? Have changes been categorised according to the change control process defined within the management arrangements?
Changes are assessed for significance	
Expectations	***Considerations***
Changes are assessed and categorised accordingly	Does the system set out criteria for notifying changes to the Environment Agency? Have these been agreed with us?
	Does the categorisation system distinguish between those changes of a minor nature and those with a significant impact in terms of environmental compliance/good waste management practice? 'Significance' may be multi-faceted but might include: - Change to a discharge limit or compliance with the limit (part of the change control process here may require a change to the permit itself) - Increase in discharges within limits - Changes which have an overall impact on permitted activities e.g. change in processes, plant or equipment of significance in terms of compliance. This could be linked to 'Activities'. - Changes in resource levels which may affect the way in which the organisation complies with permits etc Changes to key posts/roles within an organisation, with respect to environmental compliance, including maintenance and SQEP training.
	Is there a process for assessing changes to the management system itself, taking into account the impact these might have on the overall arrangements and specifically for compliance with the limits and conditions in a permit? For example, if discharge monitoring arrangements are being changed,

	then the impact of this needs to be assessed. Other considerations include changes to plans or programmes which may be part of the conditions of compliance.
	Does the system have a process for categorisation of changes that also addresses changes to capability as defined in section 6 – Environmental Capability? Is the system able to identify when a change is required, whether the change is 'significant' and whether notification is needed (see below)? For nuclear safety, changes would be assessed against a properly constructed Nuclear Baseline. Where environmental capability has also been included in this 'baseline' then change can be assessed against this document. Where environmental capability is not included in a baseline, then alternative means of assessing changes should be in place. Is the baseline against which changes assessed clear? How is this baseline constructed? The key elements of a nuclear baseline can provide a useful starting point for assessment of alternative arrangements. Is this used?
Changes are properly implemented and reviewed	
Expectations	***Considerations***
The effects of change should be reviewed	Do significant changes have implementation plans? Is there a process for reviewing implementation of any significant change, including setting success criteria before the change takes place?
Changes are notified properly	
Expectations	***Considerations***
Significant changes must be notified to us in advance or 'without delay'	Is there evidence of such changes having been notified to us? Are there any learning points from these notifications? Has the organisation made any changes to its processes following these learning points?
Records of changes are managed	
Expectations	***Considerations***
Changes needed to be recorded	Is the way in which an operator maintains records of changes clear?
	Are records kept of changes to arrangements? It may be useful to have a log of changes made, particularly with respect to limits and conditions of the permit.
	The effect of cumulative changes should be considered with regular reviews of the effects of cumulative changes; typically this should be considered as part of the periodic review of a permit at a nuclear site.. Is there a system for assessing the cumulative effects of changes?

Management Arrangements are regularly reviewed	
Expectations	***Considerations***
There is a process for review of management arrangements	Is there evidence that management arrangements and the key documents which support the arrangements are reviewed at regular intervals and at an appropriate level within an organisation?
	Is there evidence within key documents that they have been kept up to date and are 'living'? Are there planned reviews? Is there peer review of the most important documents and processes? Is there evidence of the documents being used as strategic tools and not left 'on the shelf'? Are Board members aware of key elements of the management arrangements and able to describe how they affect their decision making, e.g. how the safety and environment policies affect the way they work?

8 Learning organisation

The Management Arrangements should describe how the organisation encourages a culture of learning

8.1 Overview

A learning organisation is skilled at creating, acquiring and transferring knowledge and reflecting this in the way the people and the organisation behave. The learning organisation ethos helps drive improvement and with the proper leadership, direction and control achieve real environmental progress.

A learning organisation is one that encourages improvement and the behaviours and attitudes that make this happen. It avoids complacency, but welcomes challenge, questioning and looking for better ways of working. The Management Arrangements should turn these elements into reality with processes and systems to:

- Analyse and understand issues – both from inside and outside the organisation
- Share experience;
- Seek better ways of working;
- Learn from others;
- Manage the way knowledge is maintained and transferred to others
- Ensure good communications across the organisation.
- Train and develop staff

Integration of environmental issues into other aspects of running the business should be encouraged; if individual elements of the business are dealt with separately then there is a risk that the organisation will miss problems or opportunities for improvement. Organisations should think about building learning processes into all their interactions both within and outside the company; there is much to be gained from extending the learning ethos and processes to all who carry out activities on the site or are involved in decisions that may affect future capability.

There should be a ‘Learning from Experience’ process that takes good practice and issues from an analysis of the company’s performance and other nuclear operators as well as industry in general and looks at them from the organisations viewpoint. For example, reactor vendors and operators participation in owners groups to share experience.

We expect to see the organisation using performance measures as part of its oversight of capability and standards and the ongoing management of vulnerabilities. Measures of how well the system itself is performing should be part of this ongoing review process. Indicators should be leading where possible and used intelligently with a proper understanding of their limitations. It is often the case that measures are more down to what can be measured than what needs to be measured. We will be looking for evidence that the organisation has an understanding of how the measures should be used and a plan for developing better indicators and data collection to support their use if necessary.

IAEA uses a definition of knowledge as ‘the acquiring, understanding and interpreting of information’ as well as ‘the capacity for effective action’; these definitions show the

breadth of what knowledge applies to. We expect to see the system for managing knowledge and information to cover all acquired and generated knowledge. It should address how information is captured, stored, transferred and used.

Finally, the real benefit of capturing and analysing information is to communicate the lessons across the organisation. Good communications are an attribute of a capable organisation with systems that understands the information flow and needs of the audience. An organisation without an effective communication system will find it difficult to succeed and whether communication is to consult, inform, involve, or require some action it needs to be effective.

8.2 Expectations and Considerations

<table>
<tr><th colspan="2">Learning Organisation</th></tr>
<tr><td colspan="2">Environmental management is learning driven REP Link: MLDP5, MLDP1</td></tr>
<tr><td>Expectations</td><td>Considerations</td></tr>
<tr><td rowspan="3">The organisation should promote and support learning at all levels</td><td>Is there evidence that leaders within the organisation at all levels demonstrate commitment with honest and open communication?</td></tr>
<tr><td>A learning and questioning attitude should be encouraged at all levels of the organisation. Is there evidence of this?

This should be evident in training, awareness, self assessment activities etc. all of which show a willingness to improve and a lack of complacency.

Does the board look to other organisations to benchmark its own performance and share experience?

Are people encouraged to:
– Put forward ideas?
– Challenge when witnessing activities (human or otherwise) they suspect are not best for the environment?
– Report issues they feel are examples of poor practice or where improvement can be made?
– Use suggestion schemes?</td></tr>
<tr><td>Does the Board and Senior Management Team take time to look at feedback and opportunities for learning? Do they act to improve performance, behaviours and overall culture?

Is there time on the Board and senior management meetings agendas to look at lessons and experience?</td></tr>
</table>

There should be processes to learn from experience, both operating experience within the organisation, and from others	Is there a process for identifying and assessing issues? Does this look outside the organisation as well as within? Is the organisation part of any experience sharing forums? Are recurrent themes identified? How does this happen and who takes action?
	When changes are put into practice is the effect on the culture of the organisation considered?
	Is there a follow up check after action has been placed to confirm it has been carried out as intended? Who does this and how is the result recorded and communicated?
Performance should be assessed on the basis of evidence	Are measures in place which indicate that environmental roles, including waste management roles, are being delivered to the appropriate standard and that the resourcing and organisation for environmental safety are a key part of assessing performance? We would like to see organisations using leading measures that can highlight weaknesses early and direct management action to putting things right. We recognise that lagging indicators will also be used but this is only really useful for retrospective analysis. Is there a balanced set of performance measures? Do Performance Indicators look at: - how well environmental outcomes have been achieved - achievement of staffing levels - achievement of competence requirements?
An integrated culture for good performance	
Expectations	***Considerations***
Integration of management for the environment with business decisions	We encourage an integrated approach where all elements of managing facilities and activities are considered together to ensure that inter-related economic, safety health, quality and environmental matters are considered together. Is the approach integrated? (see section 5)
The Learning process should be mindful of the impact of change on people	An abundance of data does not mean knowledge and we expect to see information used in a way that is meaningful and useful to the people that use it to inform their work. Is information and data handled appropriately? Do performance measures include objectives of the learning process and monitoring to see how well these are being achieved?
Learning should be part of managing organisational relationships ***REP Link: MLDP***	
Expectations	***Considerations***
Interactions with contractors, suppliers, customers etc. should address learning aspects.	Exchange of information is part of the spirit of cooperation that successful interactions are based on. Ensuring that opportunities for learning are built into these interactions will help strengthen the environmental management element of the relationship with a common understanding and open dialogue on areas of weakness or opportunities to improve ways of

	working. Is there evidence that contractors have improved their ways of working or adopted new approaches in response to learning from experience encouraged by the operator organisation?
	Organisations should also look to be influencing regulatory and government decisions with their operational experience. We welcome such constructive involvement. Is there evidence that the organisation is actively involved in this process?
In-house interactions should ensure opportunities for learning are taken	Are interactions between different parts of the organisation and different teams etc. managed so that these interactions are used effectively to gain information and share experience? People should be encouraged to challenge and ask questions. Is there evidence of this being done in practice?
Knowledge management for now and the future	***REP Link: MLDP3***
Expectations	***Considerations***
There should be a process for ensuring corporate knowledge is maintained	Is there a process for Knowledge Management? Does it address what and how information is captured, stored, transferred and used? The knowledge of the Board concerning past experiences, performance, legacy issues etc. should be maintained. Is this something the Board is aware of, and what is done to maintain their knowledge and capture their decisions and experience?
	Are the knowledge management needs of new long-term projects considered from the outset? This should bear in mind that in some cases it will be several decades until some decisions are fully enacted and the Board and regulators need to be able to come back to decisions and understand the rationale behind them. For new build projects, is there a process for the proper recording of, for example: - Land status and legacy issues, as these may be important factors for post closure planning? - Records for fuel from manufacture to eventual storage and disposal?
Knowledge and capability	Is there a plan for how the knowledge management approach will achieve the organisational objectives? For example: – how the organisation will ensure that individuals are and remain competent and experienced; – how the corporate knowledge library will be maintained and – how for instance future decisions will be able to draw upon past experience?
Communication	
Expectations	***Considerations***
Communication should create a	Does the communication system support the governance arrangements?

dialogue upwards to the Board and down to the workforce	For example does it cover communication of matters such as: - Examples of poor and good performance - Environmental events and observations that could increase the environmental risk - Policy and expectations - Stakeholder expectations and company achievement - Environmental assessment information Are there signs that this two way communication is working? Is there evidence that the Board listens to what the workforce have to say on environmental issues and even acts to change some of its decisions if they hear something that alters their understanding?
	Are people properly consulted in environmental management decisions and in developing environmental management processes?
The communication arrangements should include all interested parties in an open and honest dialogue	Is there an integrated communications process for safety, health and environment matters? Does this address the needs of the different people involved in a timely and effective way? We expect to see arrangements include communication for: - Experience sharing - Lessons learned, including urgent action required to secure environmental protection - Plans and programmes - Actions in the event of an emergency to address environmental issues - Policy development - Environmental awareness etc.

9 Glossary

Contractor	An organisation or individual or person(s) who provide a service but are not in the employment of the operator.
Environmental Case	The documentation held by an operator which demonstrates that he is complying with his permit conditions and in particular the use of Best Practicable Means or Best Available Techniques)
Environmental Permit	A permit granted under the Environmental Permitting Regulations (England and Wales) 2010. This includes former RSA93 registrations and authorisations which became environmental permits on 6 April 2010.
Environmental Risk	Potential for harm to the environment to be realised as a result of failure to adequately manage or control activities (e.g. spill of material, inadequate characterisation of wastes), including failure to take proper account of the impact of changes in the environment on the activity e.g. climate change, flooding.
Environmental Hazard	Potential of activity or material to do harm to the environment e.g. toxicity, bioaccumulation, global warming potential.
Intelligent Customer	The capability of the organisation to have a clear understanding and knowledge of the product or service being supplied (IAEA, Draft Safety Guide DS349)
Intelligent Supplier	The capability of the organisation to have a clear understanding and knowledge of the products or services it has been contracted to supply, and the expectations of its customer in terms of its environmental performance.
Knowledge Management	*IAEA*
Lifecycle	Full lifecycle considerations taken to include design, commissioning, construction, operation, decommissioning and clean-up. Where applicable this also includes site selection, post-closure and de-licensing.
Management Prospectus	A strategic document which underpins the demonstration of a licensable organisation. *See NII TAG*
Nuclear Baseline	This is the means by which the licensee demonstrates that its organisational structure, staffing and competencies are, and remain, suitable and sufficient to manage nuclear safety throughout the full range of the licensee's business. *See NII TAG.*
practice	A practice is any human activity that increases radiation exposures and where these exposures can be introduced in a controlled way.
radioactive contaminated land	As defined in regulations and statutory guidance for Part 2A of the Environmental Protection Act 1990, ie land on which long-term radiation doses to individuals are currently 3 mSv per

	year or more.
radioactively contaminated land	As defined in the HSE SAPs 2006, ie land on which the radioactive contamination is such as to preclude HSE agreeing to delicensing. (Individual risks greater than 1 in a million per year)
radioactive materials	As defined in schedule 23 of the Environmental Permitting Regulations. .
radioactive substances	Radioactive materials and radioactive wastes.
radioactive substances management	All the activities involved in the creation, treatment, storage and disposal of radioactive materials and wastes.
radioactive substances regulation or regime (RSR)	The regulation of radioactive substances under the Environmental Permitting Regulations (and formerly under the Radioactive Substances Act 1993).
radioactive wastes	.As defined in schedule 23 of the Environmental Permitting Regulations
remediation	For contaminated land, as defined in Part 2A of the Environmental Protection Act 1990. Remediation includes assessing the condition of the land, doing any work to remove or control the movement of contamination, and inspections to keep the condition of the land under review.
risk	In this context, an assessment informed by: o the identification of a potential for causing harm, arising from an intrinsic property or disposition of something to cause detriment, and an assessment of its magnitude – "the hazard"; and o an evaluation of the likelihood that this hazard might occur. In assessing risk appropriate attention should be given to each of these factors
RPA	Radiation Protection Adviser (appointed under the Ionising Radiations Regulations 1999)
SQEP	Suitably Qualified and Experienced Person
stakeholder	Anyone with an interest in RSR, including operators, other regulators, NGOs and various groups within the public.
validation	In this context, showing that a product, system, set of measures or service fulfils its purpose. For example, showing that a model represents the real world adequately, or showing that remediation of contaminated land has reduced human health risks to the required extent.
verification	In this context, showing that a product, system, set of measures or service meets the objectives set for it. For example, showing that a computational model implements a mathematical model correctly, or showing that remediation of contaminated land has been carried out as planned.

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Meeting the Energy Challenge, A White Paper on Nuclear Power, January 2008

Annex A – Extract from Environmental Permitting Regulations RSR nuclear permit template

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that is sufficient to ensure compliance with the conditions of the permit; and

(b) using sufficient competent persons and resources.

1.1.2 The operator shall maintain records demonstrating compliance with condition 1.1.1

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall manage and operate the activities in consultation with such suitable RPAs, or other such qualified experts approved by the Environment Agency in writing, as are necessary for the purpose of advising the operator as to compliance with this permit

Annex B – Considerations for new reactor build

Overview

The Management Arrangements Guidance sets out our general expectations for management arrangements. These apply equally to the operators/vendors (requesting parties) of a new reactor build facility. The process being undertaken within the UK to support regulation of any new nuclear build programme broadly involves two types of activities: Generic Design Assessment (GDA) of reactor designs and Site-specific permitting.

We take our lead from the requirements of the 'Meeting the Energy Challenge, A White Paper on Nuclear Power, January 2008' which states that:

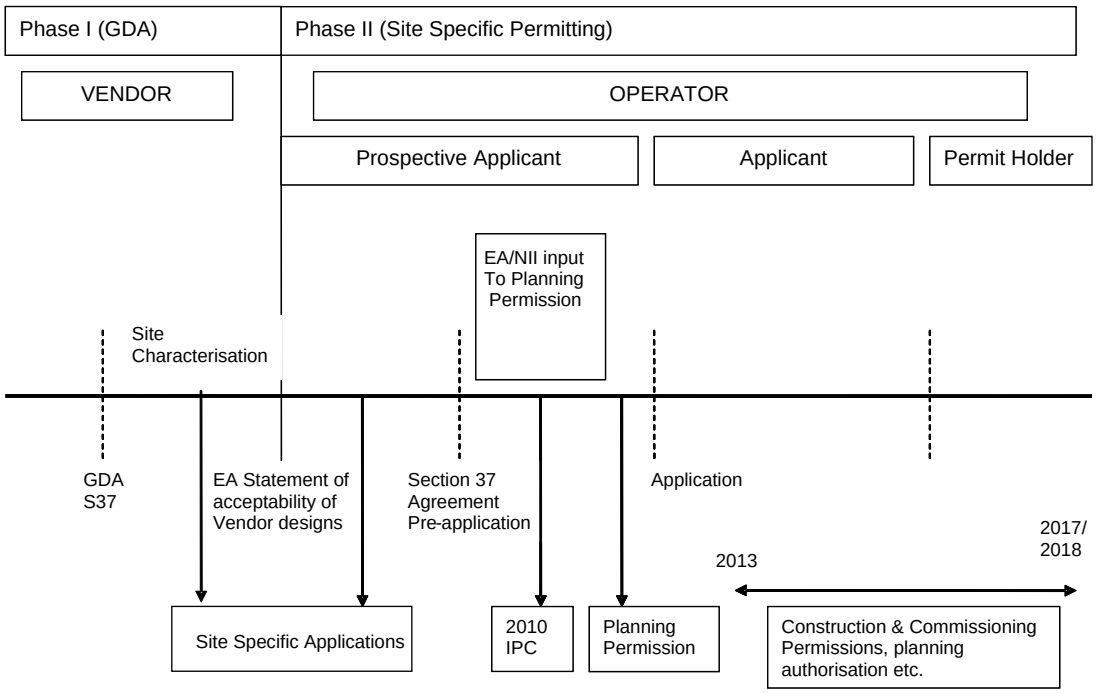
'The environment agencies will ensure that radiation exposure of members of the public from disposals of radioactive waste, including discharges, are ALARA by requiring new nuclear installations to use the best available techniques (BAT) to meet high environmental standards. This will help ensure that radioactive wastes created and discharges from any new UK nuclear power stations are minimised and do not exceed those of comparable power stations across the world.'

In undertaking GDA we work primarily with reactor vendors, whilst in considering site-specific permitting our activities focus on potential or actual site operators. This Annex summarises the key issues in terms of operator management arrangements that apply to the two phases of the GDA process and interprets the key expectations as they apply to new build.

Figure 1 shows how the different parts of the process fit together and the main management arrangements related activities including some of the key hold points. During each activity we will have an interest in the management arrangements:

- GDA (Phase I) to ensure the provision of a robust reactor design that will deliver the environmental protection standards that we expect to see, and which is capable of being operated by a separate organisation.
- site-specific permitting (Phase II) to ensure that the operator is capable of taking on the reactor construction, commissioning and operation.

Figure 1: Illustrative New Reactor Build Process



Key: IPC Infrastructure Planning Commission

Most of our generic expectations for operator management arrangements will apply. In this new build programme we expect the reactor vendor and eventual operator of the reactor to work together, to understand one another's needs and expectations and translate this into suitable working arrangements. In particular we will be looking to see a strong knowledge management process that ensures the vendors are 'intelligent suppliers' and the prospective operators are 'intelligent customers'.

For this reason, in considering the management arrangements of a potential reactor vendor and potential reactor operator we should consider the effectiveness of management arrangements to address fundamental requirements of:

Design for the environment: arrangements that recognise the relevant environmental protection, including waste management, requirements that we expect to see delivered, and to demonstrate the ways in which the design is intended to achieve this – highlighting in particular any internal / external environmental management control arrangements that will be necessary. In particular we would look for reactor design organisations to have arrangements in place that actively review the effectiveness of designs that may already be in operation in order to learn lessons and identify potential improvements, and incorporate these in new designs. Also to fully understand the actual performance that can be delivered – in particular relating to emissions and waste production and opportunities for minimisation during both operation and decommissioning / clean-up.

Design for operation: arrangements that recognise the needs of the potential operator in understanding how to operate and maintain the reactor and associated systems to deliver the environmental and waste management standards that the design is intended to achieve. To participate in operator feedback forums to share learning from experience. Also to understand any internal / external control requirements, design assumptions and risks associated. This might consider for example issues ranging from the operating language that will apply (and provision of appropriate warning signs / labels), through to provision of operator training, in addition to any particular consideration / amendment that may be necessary to take account of the specific site at which development is intended to take place.

Design for waste management and decommissioning: arrangements that take account of the waste management hierarchy, in minimising the creation of wastes during construction, commissioning, operation and decommissioning. Also arrangements which do not create wastes for which there are no available or anticipated waste management options.

Design for decommissioning: arrangements that seek to minimise the impact of ***(Section 5 REPs – DEDP3 Considering Decommissioning during design and operation')***

Strategic management of reactor design support: arrangements within potential / actual operators that considers the extent to which they will need ongoing support from the reactor vendor (taking account of their own plans for Environmental Capability) and arrangements to ensure that this support can be secured or otherwise resourced from elsewhere. We expect to see strategic planning and control that is mindful of environmental protection issues at future stages and of the impact that decisions taken now can have on these stages.

There are also expectations that are more specific to the different phases and stages within them.

GDA Phase I Activities

Pre-Application and Provision of detailed design information to support regulatory assessment

In this phase we need to have confidence that the vendor management arrangements have the appropriate breadth and depth and that the correct elements are being put in place mindful of future needs. This includes how the organisation complies with the principles of, and uses Best Available Techniques (BAT) to prevent emissions or to reduce emissions to a minimum. Management arrangements are one of the process and information requirements we will be considering as part of our assessment process.

We will be looking for a strong management system that includes management for the environment. Design control is an important part of this system with a clear understanding of the design envelope against which changes are assessed. We will need assurance that the design envelope is understood by the vendors and prospective operators. We also expect to see design safety review committees with environmental competences.

The design team should have competences that include RSR compliance and management systems as well as other technical competences.

Peer review is a function that we will be looking to see maintained throughout; from the beginning organisations should ensure they have plans to maintain access to an independent review capability.

The Board of a vendor organisation will be expected to show independent challenge and learning from experience in line with the guidance and a focus on the environmental performance of the product. Prospective applicants will need to show that they have thought about the practicalities of knowledge management in their management arrangements and that they have a system for identifying how information should be managed.

Prospective applicants should put in place an organisation that is capable of holding all the necessary permits and has appropriate systems and working arrangements. We expect to see how in-house capability needs have been determined and that plans exist to consider and secure the future needs of subsequent stages. Specialist environmental roles for this stage should be identified e.g. those required to evaluate the significance and impact of design changes. There

should be evidence that the organisation is being designed to meet the needs of each stage of the project. We expect to see competences to implement techniques for BAT and understand regulatory expectations for operation up front. These considerations should be explicitly addressed in the planning considerations. There should be a process for succession to sustain capability to match the need. Legal, commercial and financial capability should be considered.

If contract support is used the Intelligent Customer capability to remain capable should be established. How prospective applicants develop and put in place an Intelligent Customer capability to meet the changing needs is of interest in this stage. We recognise that contract support will be used to supplement the operators own in house capability. It is essential that right from the earliest stages the operator is and remains competent through a carefully assessed resource profile of in-house and contract support. It should be clear that the operator has the appropriate competence to oversee the work that contractors are providing and we expect to see the Intelligent Customer roles and responsibilities identified for each aspect of the work programme.

GDA Site Specific Activities

Site Selection & Characterisation

During this stage we expect to see how prospective operators will evolve and build the organisation towards full capability for active commissioning in a planned way, growing as the activities change through the stages.

To support the application activities, including planning consent and permission, of particular interest to us will be the Environmental Impact Assessment (EIA) capability as well as broader assessment of the site. This includes competences for Intrusive and Non-intrusive assessment. Part of the development process includes the assessment and agreement as to how any existing liabilities will be dealt with, and plans to avoid the creation of new contamination/liabilities.

Information from this stage will be used to inform site specific statements addressing issues such as: the status of the land, source term pathways and receptors, climate, flood protection, grid connectivity etc. in support of site-specific applications.

Site Licence Preparation & Application

During this phase in preparation for Site Licence and Permits we expect a clear understanding of the RSR responsibilities and wider responsibilities for management for the environment. Our expectations will be in line with the generic guidance. In line with the Statutory Guidance to the Environment Agency on the regulation of radioactive discharges into the environment, before granting permits for radioactive discharges, we will expect to see that a systematic and proportionate examination is made of waste management options having regard to the waste hierarchy. We will also expect to see that the waste management strategy chosen by operators under the Environmental Permitting Regulations represents the use of BAT to provide proper protection for people and the environment. Waste management decisions by such holders are based on BAT in order-

- to prevent the unnecessary creation of waste or discharges;
- to minimise waste generation; and
- to minimise the impact of discharges on people and the environment.

Construction Phases

Activities during the construction stage have the potential to impact on environmental safety in the same way as any large construction project. Proper management of the environmental impact of

this work and the waste management of the associated spoil and other waste generated from the construction work should have been assessed prior to starting work as part of the Environmental Impact Assessment (EIA) in the site selection stage. The assessment should include aspects such as waste generation, footprint, and construction traffic etc. part of the overall considerations. We will be looking to see that controls are in place as agreed.

In particular, we would expect to see the project management capability of the organisation fully developed and in operation at this stage that takes account of environmental regulation and performance.

At the end of this stage the organisation should be well developed from a systems and environmental capability viewpoint that should be confirmed before moving on to inactive commissioning.

Inactive Commissioning

In addition to building full demonstration of the expectations in the generic guidance we expect to see the commissioning organisational structure with clear lines of control and allocation of responsibilities.

As part of the approval to go the next stage of active commissioning we expect to see confirmation that the management arrangements as well as the organisation, resource and competences meet the need and how the organisation is confident that testing is comprehensive and completed to standard achieving the expected outcomes.

In particular in this phase we will be seeking assurance that systems and processes associated with RSR compliance are in place and working.

Active Commissioning leading to Operation

We will expect to see the full scope of our management arrangements expectations applied with from this point forwards.

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